4.3 Biological Resources

This section describes the existing biological resources conditions of the project site and vicinity, identifies associated regulatory requirements, evaluates potential project and cumulative impacts, and identifies mitigation measures for any significant or potentially significant impacts related to implementation of the Santa Cruz Water Rights Project (Proposed Project). The analysis is based on extensive data and literature review, field reconnaissance, the Fisheries Habitat Effects Modeling (Appendix D-3) and Biological Resources Evaluation Tables (Appendix F) prepared for the Proposed Project.

A summary of the comments received during the scoping period for this environmental impact report (EIR) is provided in Table 2-1 in Chapter 2, Introduction, and a complete list of comments is provided in Appendix A. Comments related to biological resources were received from the State Water Resources Control Board (SWRCB), Soquel Creek Water District, and a number of organizations and individuals. Issues identified in public comments related to potentially significant effects on the environment under the California Environmental Quality Act (CEQA), and issues raised by responsible and trustee agencies, are identified and addressed in this EIR.

4.3.1 Study Approach

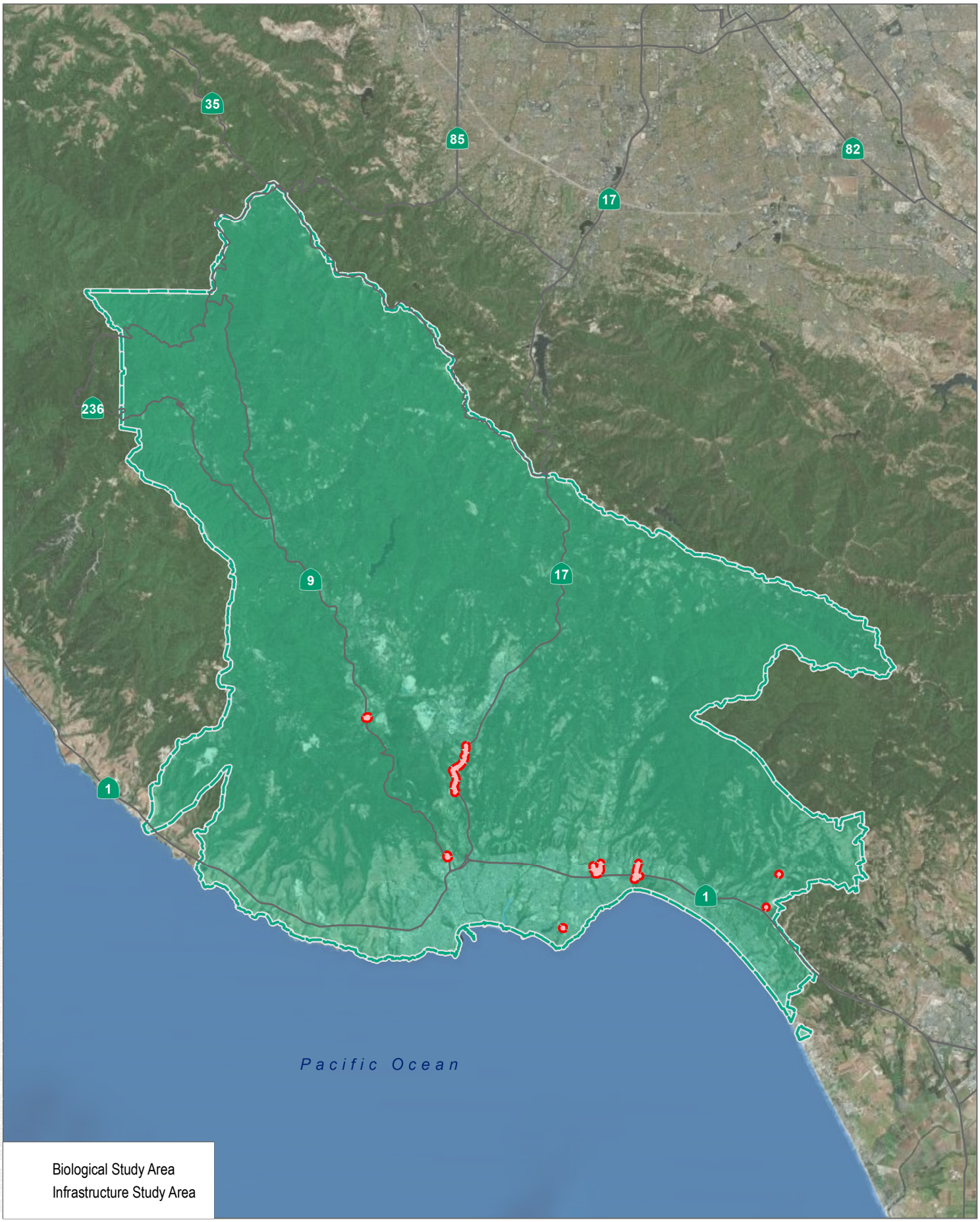
4.3.1.1 Biological Study Area

The Proposed Project covers a large geographic area within the County of Santa Cruz (Figure 4.3-1). For the purposes of introducing and describing biological resources for the Proposed Project, a biological study area was established using a watershed-approach to capture the aquatic and terrestrial ecosystems and species that occur within the region. The biological study area encompasses approximately 162,166 acres and includes the following:

- The expanded Places of Use (POU) jurisdictional boundary, which comprises the water system and areas served by the City of Santa Cruz (City), the water service areas of San Lorenzo Valley Water District (SLVWD), Scotts Valley Water District (SVWD), Soquel Creek Water District (SqCWD), and Central Water District (CWD), and the Santa Cruz Mid-County Basin and Santa Margarita Basin, as described in Chapter 3, Project Description.
- Subwatershed areas[1] that are associated with the three main sources of water supply (Loch Lomond Reservoir, San Lorenzo River diversions, and the North Coast streams diversions [Liddell Spring[2], Reggiardo Creek, Laguna Creek, and Majors Creek]); plus, any subwatersheds or portions of subwatersheds that overlap with the expanded POU jurisdictional boundary.

While the overall biological study area includes a wide variety of vegetation community and habitat types, the areas anticipated to be potentially affected by the Proposed Project would be limited to the following: (1) streams and associated riparian zones, including fringe wetlands, along drainages within the biological study area; and (2) areas in the vicinity of proposed infrastructure components, as further discussed below.

1 Subwatershed and groundwater basin boundaries were obtained from the County of Santa Cruz's GIS Portal.
2 The subwatershed boundary for Liddell was modified to account for the actual contributing catchment of Liddell Creek and its associated tributaries.



SOURCE: Bing Hybrid Basemap 2020, County of Santa Cruz 2020

DUDEK

0 1.5 3 Miles

FIGURE 4.3-1

Proposed Project Biological Study Area and Infrastructure Study Area

Santa Cruz Water Rights Project

Streams and Associated Riparian Zones

For the purposes of analyzing impacts resulting from the water rights modifications component, upland plant communities and wildlife habitat that occur beyond the riparian zones and fringe wetlands associated with Loch Lomond Reservoir, San Lorenzo River, and the North Coast streams are considered to be outside the influence of the water rights modifications. Upland habitats, such as grasslands, coastal forests, oak woodlands, chaparral, and coastal scrub would not be affected by this project component. More specifically, the Proposed Project's impacts are limited to the riparian zones along the San Lorenzo River and North Coast streams to the top of bank, and the lateral extent of adjacent vegetation that is dependent on the water in Loch Lomond Reservoir and therefore these areas have been included within the biological study area. The extent of riparian trees and shrubs were included because they can be deeply rooted and dependent on subsurface waters from a stream or river or groundwater in some cases. While that is the case, the regulated water level within Loch Lomond reservoir creates an abrupt change between barren shoreline and upland vegetation with no extensive riparian zone present.

Riparian zones, including fringe wetlands, are also analyzed in localized areas along streams that may be affected by groundwater injections and extractions associated with the aquifer storage and recovery (ASR) facilities.

Proposed Infrastructure Component Sites

A more specific "infrastructure study area" has also been defined to address the following specific project and programmatic infrastructure component sites: ASR sites where known, City/SVWD intertie site, City/SqCWD/CWD intertie site, Felton Diversion fish passage improvements site, and Tait Diversion and Coast Pump Station improvements site. ASR would include new ASR facilities at unidentified locations (referred to as "new ASR facilities" in this EIR) and Beltz ASR facilities at the existing Beltz well facilities (referred to as "Beltz ASR facilities" in this EIR). As there are no definitive sites identified to date for new ASR facilities, site-specific conditions are not available. While these new ASR facilities are likely to be located within a developed, urban setting, given the need for proximity to urban services, the analysis considers that these facilities could be located on sites that support special-status biological resources (see definition in Section 4.3.1.2, Literature Review). The infrastructure study area includes these infrastructure components and the proposed pipeline alignments/rights-of-way, plus a 500-foot buffer.

4.3.1.2 Literature Review

An extensive data and literature review of all special-status biological resources throughout portions of Santa Cruz County was conducted. Special-status biological resources are defined as follows: (1) plant species listed as threatened or endangered under the federal Endangered Species Acts (FESA) and/or California Endangered Species Act (CESA), state-listed as rare under the Native Plant Protection Act of 1977, assigned a California Rare Plant Rank of 1 or 2; and/or covered by a regional conservation plan ("special-status plant species"); (2) wildlife species (including fish) listed as threatened or endangered under the federal ESA and/or CESA, designated as California Species of Special Concern by the California Department of Fish and Wildlife (CDFW), designated as Fully Protected under the California Fish and Game Code (CFGC), and/or covered by a regional conservation plan ("special-status wildlife species"); (3) sensitive vegetation communities that are designated as Sensitive Natural Communities by CDFW (2019a) or are of particular value to wildlife (e.g., riparian vegetation); (4) jurisdictional waters and wetlands subject to the permitting authority of the U.S. Army Corps of Engineers (USACE), CDFW, and Regional Water Quality Control Board (RWQCB); and (5) wildlife corridors and habitat linkages.

The following sources were consulted to compile a list of potentially occurring special-status plant and wildlife species, sensitive vegetation communities, aquatic resources, and wildlife corridors and habitat linkages within the region of the Proposed Project:

- Annotated Checklist of the Vascular Plants of Santa Cruz County, California (Neubauer 2013)
- California Natural Diversity Database (CNDDB) (CDFW 2020a)
    - Database query included the following U.S. Geological Survey (USGS) 7.5-minute quadrangle maps: Big Basin, Castle Rock Ridge, Davenport, Felton, Laurel, Loma Prieta, Los Gatos, Mt. Madonna, Santa Cruz, Santa Teresa Hills, Soquel, and Watsonville West
- Calflora: Information about California Plants for Education, Research and Conservation (Calflora 2020)
- CDFW California Natural Community List (CDFW 2019a)
- CDFW Special Animals List (CDFW 2019b)
- California Native Plant Society (CNPS) Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2020a)
    - Database query included the same USGS 7.5-minute quadrangle maps as the CNDDB query
- County of Santa Cruz General Plan/Local Coastal Program (County of Santa Cruz 2020a)
- County of Santa Cruz GIS Web Portal (County of Santa Cruz 2020b)
- City of Santa Cruz General Plan 2030 (City of Santa Cruz 2012)
- City of Scotts Valley General Plan 1994 (City of Scotts Valley 1999)
- City of Capitola General Plan (City of Capitola 2019) and Local Coastal Program (City of Capitola 2005)
- Draft City of Santa Cruz Anadromous Salmonid Habitat Conservation Plan (City of Santa Cruz 2021b)
- City of Santa Cruz Operations and Maintenance Habitat Conservation Plan (OMHCP) (City of Santa Cruz 2021a)
- Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2020b)
- U.S. Department of Agriculture, Natural Resources Conservation Service Web Soil Survey (USDA 2020a)
- U.S. Fish and Wildlife Service (USFWS) Information, Planning and Conservation (IPaC) Trust Resource Report (USFWS 2020a)
- USFWS National Wetlands Inventory (USFWS 2020b)
- U.S. Geological Survey Historical Topographical map data (USGS 2020a)
    - Map review included same 7.5-minute quadrangle maps as CNDDB and CNPS queries
- U.S. Geological Survey National Hydrography Dataset (USGS 2020b)
- Wildlife studies:
    - North Coast Anadromous Creeks Snorkel Fish Counts and Habitat Survey Data Summary 2018 (Berry et al. 2019)
    - Unpublished data: results of 2006-2019 annual snorkel surveys (City of Santa Cruz 2020)
    - Red-Legged Frog Habitat Surveys for the City of Santa Cruz Diversion Sites (Entrix Environmental Consultants 1997)
    - Steelhead, Red-Legged Frog, and Western Pond Turtle Habitat Surveys in Laguna and Majors Creeks (Entrix Environmental Consultants 2002)
    - Additional Habitat Studies: Liddell, Laguna, and Majors Creeks (Entrix Environmental Consultants 2004)

- Program Environmental Impact Report for the North Coast System Repair and Replacement Project (Entrix Environmental Consultants 2005)
- "Resident Reach Habitat Survey of North Coast Streams." Technical Memorandum to Chris Berry, City of Santa Cruz Water Department (Hagar 2014)
- North Coast Streams Limit of Anadromy (Hagar et al. 2017)
- Biological Resources Assessment, North Coast System Rehabilitation Phase 3 – Coast Segment (LSA 2014)
- Laguna Creek Diversion Retrofit Project: California Red-Legged Frog Habitat Assessment and April 9 Interagency Meeting; email communication (Mitcham, C. 2020)

4.3.1.3 Field Reconnaissance

On May 6, 2020, a Dudek biologist conducted a reconnaissance-level field assessment of the project and programmatic infrastructure component sites (i.e., infrastructure study area). The purpose of the assessment was to verify existing vegetation communities and land cover types, and evaluate habitat suitability for special-status species at each site. Observations of dominant vegetation, wildlife species, and potential habitat features were recorded using binoculars, digital data collection tools (e.g., Gaia GPS, Theodolite for iOS), and a field notebook. Most of the sites (e.g., Beltz ASR facility sites, Felton Diversion site, and Tait Diversion and Coast Pump Station site) were surveyed on foot. Windshield surveys were conducted for the regional intertie alignments, with occasional spot checks of stream crossings and associated riparian habitat. Areas within the 500-foot buffer of the infrastructure study area were scanned with binoculars.

4.3.1.4 Vegetation Communities and Land Cover Mapping

Vegetation community and land cover mapping was accomplished via a combination of existing GIS data and limited field verification at the project and programmatic infrastructure component sites. Biologists reviewed CDFW's Biogeographic Information and Observation System (BIOS) online viewer and City and County websites for publicly available vegetation/land cover GIS datasets. The California Department of Forestry and Fire Protection (CAL FIRE) Fire and Resource Assessment Program (FRAP) vegetation dataset was ultimately selected as the basis for vegetation community and land cover mapping for the Proposed Project. This dataset is based on CDFW's Wildlife Habitat Relationship (CWHR) System classification scheme for wildlife habitat types in California (CDFW 2014). For the purposes of this EIR, the term "habitat type" is synonymous with "vegetation community" or "land cover type." Dudek verified and revised the FRAP vegetation mapping within the infrastructure study area to reflect current site conditions, as appropriate.

4.3.1.5 Special-Status Species

Dudek evaluated the potential for special-status species to occur in the biological study area and infrastructure study area based on the literature review and field reconnaissance described above. A total of 68 special-status plants and 50 special-status wildlife species were evaluated (Appendix F). Each species was assigned a "potential to occur" rating of "low," "moderate," "high," or "not expected to occur" based on relative location to known occurrences, vegetation communities (habitat) present, life history, elevation ranges, and soils.

4.3.1.6 Potential Jurisdictional Aquatic Resources

Jurisdictional aquatic resources include wetlands, streams, and creeks, among other aquatic features, that are regulated by the USACE, RWQCB, CDFW, and/or California Coastal Commission (CCC). The USACE regulates discharges to "wetlands" and "waters of the United States" pursuant to Section 404 of the Clean Water Act. The USACE defines wetlands as areas that contain hydrophytic vegetation, hydric soils, and wetland hydrology, in accordance with the procedures established in the USACE Wetland Delineation Manual (USACE 1987) and regional supplements. The USACE defines "waters of the United States" to include the following four categories: (1) the territorial seas and traditional navigable waters; (2) tributaries of such waters; (3) certain lakes, ponds, and impoundments of jurisdictional waters; and (4) wetlands adjacent to other jurisdictional waters (other than waters that are themselves wetlands). The RWQCB regulates discharges to "waters of the State" pursuant to Section 401 of the Clean Water Act and provisions of the Porter–Cologne Water Quality Act. The RWQCB defines "waters of the State" as any surface water or groundwater, including saline waters, within the boundaries of the state. The CDFW regulates activities that alter the natural flow or bed, channel, or bank of "waters of the State" pursuant to Section 1602 of the CFGC. The CDFW defines "waters of the State" to include any river, stream, or lake that supports existing fish or wildlife resource. Additionally, the CCC regulates activities in an effort to improve public access to coastal areas and preserve, protect, and restore wetlands pursuant to the California Coastal Act. The CCC defines wetlands to include lands within the Coastal Zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens. In addition, the California Coastal Act defines environmentally sensitive areas in a manner that includes rivers, streams, and other aquatic habitats. See Section 4.3.3, Regulatory Framework, for additional information about the federal and state regulations for jurisdictional aquatic resources.

Given that the components of the Proposed Project that could potentially affect jurisdictional aquatic resources are being evaluated at a programmatic level in this EIR, a formal delineation of wetlands, and waters of the United States and waters of the State using commonly accepted federal and state methods was not conducted. Potential jurisdictional aquatic resources were identified at a high level using the sources listed above (County of Santa Cruz 2020a, 2020b; USGS 2020a, 2020b; USFWS 2020b). Additionally, for the purposes of this EIR, riparian vegetation communities are assumed to be wetlands potentially under state and/or federal jurisdiction.

4.3.1.7 Wildlife Corridors and Habitat Linkages

To identify "established native resident or migratory wildlife movement corridors" that could be impacted by the Proposed Project, biologists reviewed the Critical Linkages: Bay Area and Beyond project report (Penrod et al. 2013) as well as applicable datasets (Penrod 2014a, 2014b) in CDFW's BIOS viewer (version 5.89.14c) and general species' life history literature.

4.3.2 Existing Conditions

This section describes existing biological resources within the biological study area based on the literature review and field reconnaissance described above. The overall setting of the physical and biological conditions throughout the biological study area is described first, followed by more detailed information about the project and programmatic infrastructure component sites.

4.3.2.1 Topography and Soils

The biological study area is characterized by diverse landscapes covering an approximately 253 square mile area between the coast and the crest of the Santa Cruz Mountains. It can be divided into four general regions: the rugged open space encompassing several coastal streams, or North Coast streams, that drain directly to the Pacific Ocean to the west; the mountainous open space of Bonny Doon and the upper portion of the San Lorenzo River Valley; the low-lying and highly productive agricultural areas around Watsonville to the south; and the low-lying, urban areas along the coast to the south that comprise the cities of Santa Cruz, Soquel, Capitola, and Aptos. Topography in the biological study area ranges from the crest of the Santa Cruz Mountains in the northeast to the gently sloping and flatter coastal areas to the southwest. Elevation ranges from approximately 2,000 feet above mean sea level in the upper watersheds to sea level at the Pacific Ocean.

Soils within the biological study area are also diverse. According to the Natural Resources Conservation Service's (NRCS) Web Soil Survey (USDA 2020), a total of 90 discrete soil mapping units have been mapped within the biological study area. Table 4.3-1 provides the acreages of these mapping units within the biological study area and general descriptions of the soil types within each group.

Table 4.3-1. Soil Mapping Units in the Biological Study Area

Soil Map Unit	Acres	General Description
Aptos loam, 15 to 30% slopes	14	Moderately deep and well drained loams on mountains and hills under brush vegetation
Aptos loam, warm, 15 to 30% slopes	403	
Aptos loam, warm, 30 to 50% slopes	196	
Aptos loam, warm, 50 to 75% slopes	3	
Aquents, flooded	51	Sandy to clayey sediment and mucky and peaty material that are frequently inundated by tides and runoff water along the coast and in narrow valleys near the coast
Baywood loamy sand, 0 to 2% slopes	581	Very deep, somewhat excessively drained soil in narrow valleys that are mostly cultivated for agriculture
Baywood loamy sand, 15 to 30% slopes	806	
Baywood loamy sand, 2 to 15% slopes	807	
Baywood loamy sand, 30 to 50% slopes	767	
Baywood variant loamy sand	12	Very deep, nearly level, moderately well drained soil mainly on alluvial plains
Beaches	515	Narrow strips between the ocean and the dune lands or coastal cliffs, and includes the beaches at the deltas of rivers and creeks
Ben Lomond gravelly sandy loam, 15 to 30% slopes	61	Deep, well-drained soil is on ridgetops, on short side slopes, and in rolling areas in the Santa Cruz and Ben Lomond Mountains
Ben Lomond sandy loam, 15 to 50% slopes	1,620	
Ben Lomond sandy loam, 5 to 15% slopes	1,997	
Ben Lomond sandy loam, 50 to 75% slopes	5,861	

Table 4.3-1. Soil Mapping Units in the Biological Study Area (continued)

Soil Map Unit	Acres	General Description
Ben Lomond-Casrock complex, 30 to 50% slopes	91	Soil complex composed of Ben Lomond sandy loam and Casrock sandy loam on mountains. The Ben Lomond soil is deep and well drained. The Casrock soil is moderately deep and well drained.
Ben Lomond-Casrock complex, 50 to 75% slopes	19	
Ben Lomond-Catelli-Sur complex, 30 to 75% slopes	15,448	Soil complex composed of about 30% Ben Lomond sandy loam, 30% Catelli sandy loam, and 20% Sur stony sandy loam. Located on mountains mostly in ridgetops to drainageways. The Ben Lomond soil is deep and well drained. The Catelli soil is moderately deep and well drained. The Sur soil is moderately deep and somewhat excessively drained.
Ben Lomond-Felton complex, 30 to 50% slopes	3,059	Deep and well-drained soil complex composed of about 35% Ben Lomond sandy loam and 35% Felton sandy loam; consists mainly of soils in concave areas near drainageways
Ben Lomond-Felton complex, 50 to 75% slopes	14,443	
Bonnydoon loam, 30 to 50% slopes	1,157	Shallow, somewhat excessively drained soil is mainly on south-facing side slopes of hills and mountains
Bonnydoon loam, 5 to 30% slopes	1,517	
Bonnydoon-Rock outcrop complex, 50 to 85% slopes	2,336	Shallow and somewhat excessively drained soil complex composed of about 45% Bonnydoon loam and 20% Rock outcrop on hills and mountains
Butano loam, very steep	1	Well drained, moderately permeable soils developed from weathered siliceous shales of the Monterey formation on sloping to steep topography under coniferous forests
Casrock-Skyridge-Rock outcrop complex, 8 to 30% slopes	111	Soil complex composed of Casrock soils, Skyridge soils, and rock outcrops. Casrock soils are moderately deep and well drained. Skyridge soils consist of shallow, well drained soils on mountains that formed in residuum from sandstone.
Cropley silty clay, 2 to 9% slopes	176	Very deep, well-drained soil on fans and benches
Dam	8	Dam
Danville loam, 0 to 2% slopes	359	Very deep, well-drained soil on alluvial fans and terraces
Danville loam, 2 to 9% slopes	465	
Diablo clay, 15 to 30% slopes	121	Deep, well-drained soil on hills and formed from material weathered from sandstone or shale
Diablo clay, 9 to 15% slopes	22	
Dune land	43	Sloping to very steep hummocks, mounds, and hills of loose, wind-deposited sand derived mostly from quartzitic sand blown up from beaches
Elder sandy loam, 0 to 2% slopes	483	Very deep, well-drained soil on alluvial fans and plains and in narrow valleys formed in mixed alluvium
Elder sandy loam, 2 to 9% slopes	822	
Elder sandy loam, 9 to 15% slopes	96	
Elkhorn sandy loam, 0 to 2% slopes	435	Very deep, well-drained soil on old alluvial fans and plains and on marine terraces
Elkhorn sandy loam, 15 to 30% slopes	1,484	
Elkhorn sandy loam, 2 to 9% slopes	3,307	
Elkhorn sandy loam, 9 to 15% slopes	651	
Elkhorn-Pfeiffer complex, 30 to 50% slopes	1,784	Deep and well-drained soil complex on dissected marine terraces and hills, composed of about 45% Elkhorn sandy loam and 25% Pfeiffer gravelly sandy loam

Table 4.3-1. Soil Mapping Units in the Biological Study Area (continued)

Soil Map Unit	Acres	General Description
Elsman-Maymen, 50 to 75% slopes	<1	Soil complex composed of Elsman and Maymen soils. Elsman soils consist of very deep, well drained soils on mountain slopes that formed in colluvium over residuum from sandstone and shale. Maymen soils are shallow and somewhat excessively drained on mountains and hills dominantly under brush vegetation.
Fagan loam, 30 to 50% slopes	48	Deep, well-drained soil in mountainous areas formed in residuum weathered from sandstone, siltstone, mudstone, or shale
Felton sandy loam, 5 to 9% slopes	265	Deep, well drained soils on mountains formed in material weathered from sandstone, shale, schist, or siltstone
Fluvaquentic Haploxerolls-Aquic Xerofluvents complex, 0 to 15% slopes	234	Deep, moderately well drained soils complex composed of about 50% Fluvaquentic Haploxerolls and 35% Aquic Xerofluvents formed in alluvium
Hecker gravelly sandy loam, 30 to 50% slopes	749	Deep, well-drained soil on mountains on south- and north-facing slopes mainly at or near fault zones formed in material weathered from sandstone, mudstone, or shale
Hecker gravelly sandy loam, 50 to 75% slopes	1,658	
Hugo and Josephine sandy loams, very steep, eroded	17	Deep, well drained soils on broad ridgetops, toeslopes, footslopes, and side slopes of mountains
Lompico variant loam, 5 to 30% slopes	774	Moderately deep, well-drained soil is on terraces and mountains, mainly on ridges and in small benchlike areas
Lompico-Felton complex, 30 to 50% slopes	9,696	Moderately deep to deep and well drained soils complex composed of about 35% Lompico loam and 30% Felton sandy loam dominantly on footslopes but are also in areas near ridgetops
Lompico-Felton complex, 5 to 30% slopes	5,985	
Lompico-Felton complex, 50 to 75% slopes	8,563	
Los Osos loam, 15 to 30% slopes	383	Moderately deep, well-drained soil on hills and mountains, dominantly on wide ridges formed in material weathered from sandstone, siltstone, mudstone, or shale
Los Osos loam, 30 to 50% slopes	389	
Los Osos loam, 5 to 15% slopes	327	
Madonna loam, 15 to 30% slopes	1,693	Moderately deep, well-drained soil is on or near the crest of mountains formed in material weathered from mudstone or shale
Maymen stony loam, 15 to 30% slopes	142	Shallow, somewhat excessively drained soil is on mountains mainly on the upper part of south-facing slopes; formed in material derived from shale, sandstone, or granitic rock
Maymen stony loam, 30 to 75% slopes	8,092	
Maymen variant sandy loam, 5 to 30% slopes	612	Shallow, somewhat excessively drained soil on mountains formed in material weathered from granite or schist
Maymen-Madonna complex, 30 to 75% slopes	446	Soils complex composed of about 40% Maymen stony loam and 25% Madonna loam on mountains. The Maymen soil is shallow and somewhat excessively drained on ridges and knolls and in convex areas. The Madonna soil is moderately deep and well drained in swales.
Maymen-Rock outcrop complex, 50 to 75% slopes	4,165	Shallow and somewhat excessively drained soil complex composed of about 45% Maymen stony loam and 25% Rock outcrop on ridges and the upper part of very steep slopes on mountains.

Table 4.3-1. Soil Mapping Units in the Biological Study Area (continued)

Soil Map Unit	Acres	General Description
Nisene-Aptos complex, 15 to 30% slopes	1,068	Soils complex composed of about 35% Aptos fine sandy loam and 30% Nisene loam mainly on foot slopes and wide ridges in the Santa Cruz Mountains. The Nisene soil is deep and well drained. The Aptos soil is moderately deep and well drained.
Nisene-Aptos complex, 30 to 50% slopes	3,027	
Nisene-Aptos complex, 50 to 75% slopes	14,693	
Pfeiffer gravelly sandy loam, 15 to 30% slopes	534	Deep, well-drained soil on hills and dissected terraces formed in material weathered from granitic rock or sandstone or in marine sediment
Pfeiffer gravelly sandy loam, 30 to 50% slopes	253	
Pinto loam, 0 to 2% slopes	319	Very deep, moderately well drained soil on coastal terraces formed in old alluvium and marine deposits
Pinto loam, 2 to 9% slopes	339	
Pinto loam, 9 to 15% slopes	89	
Pits-Dumps complex	882	Pits are open excavations from which soil material has been removed. Dumps are uneven areas of accumulated waste material. Included with this complex are small areas of Rock outcrop.
Riverwash	324	Consists mostly of water-deposited, stratified sand, pebbles, cobbles, and stones in areas that are subject to overflow by streams during and for short periods after prolonged storms of high intensity
Rough broken land	9	Consists of steep areas that are broken by many intermittent drains, deeply dissected by narrow, V-shaped valleys
Santa Lucia shaly clay loam, 30 to 50% slopes	58	Moderately deep, well-drained soil on hills and mountains formed in material weathered from siliceous shale
Santa Lucia shaly clay loam, 5 to 30% slopes	226	
Santa Lucia shaly clay loam, 50 to 75% slopes	641	
Soquel loam, 0 to 2% slopes	848	Very deep, moderately well drained soil on plains and in narrow valleys, formed in alluvium
Soquel loam, 2 to 9% slopes	2,990	
Soquel loam, 9 to 15% slopes	291	
Sur-Catelli complex, 50 to 75% slopes	8,674	Soils complex composed of about 35% Sur stony sandy loam and 25% Catelli sandy loam and consists of soils on mountainsides in areas extend from the ridges to the drainageways. The Sur soil is moderately deep and somewhat excessively drained. The Catelli soil is moderately deep and well drained.
Tierra-Watsonville complex, 15 to 30% slopes	963	Soils complex composed of about 55% Tierra sandy loam and 30% Watsonville loam on alluvial and marine terraces. The Tierra soil is very deep and moderately well drained. The Watsonville soil is very deep and somewhat poorly drained.
Tierra-Watsonville complex, 30 to 50% slopes	894	
Water	528	Water
Watsonville loam, 0 to 2% slopes	644	Very deep, somewhat poorly drained soil on coastal terraces formed in alluvium
Watsonville loam, 2 to 15% slopes	3,751	

Table 4.3-1. Soil Mapping Units in the Biological Study Area (continued)

Soil Map Unit	Acres	General Description
Watsonville loam, thick surface, 0 to 2% slopes	2,274	Very deep, somewhat poorly drained soil is on coastal terraces formed in alluvium
Watsonville loam, thick surface, 15 to 30% slope s	352	
Watsonville loam, thick surface, 2 to 15% slopes	3,004	
Xerorthents-Rock outcrop complex, 50 to 100% slopes*	1,218	Soils complex composed of about 45% Xerorthents and 35% Rock outcrop on mountains. Xerorthents consist of light-colored sand, loamy sand, or sandy loam. Rock outcrop consists of exposures of sandstone and shale.
Zayante coarse sand, 30 to 50% slopes	1,541	Very deep, somewhat excessively drained soil on hills and mountains formed in residuum weathered from consolidated marine sediment or sandstone
Zayante coarse sand, 5 to 30% slopes	3,600	
Zayante-Rock outcrop complex, 15 to 75% slopes	1,720	Soils complex composed of about 45% Zayante coarse sand and 30% Rock outcrop on hills and mountains. The Zayante soil is very deep and somewhat excessively drained. Rock outcrop consists of exposures of weathered sandstone bedrock and consolidated sediment.
Total[1]	**162,127**	—

Sources: USDA 1980, 2020; USDA and NRCS 2015.
Notes:
[1] The discrepancy with biological study area acreage (~162,166 acres) is due to different GIS dataset boundaries. The public datasets used for this and the other tables in this section are mapped at a coarser (i.e., more generalized) scale than the biological study area boundary created for this EIR.

4.3.2.2 Watersheds and Hydrology

As described in Section 4.3.1, Study Approach, the biological study area is based on watershed and subwatershed areas associated with the City's water supply sources. Watersheds and subwatershed boundaries were obtained from the County's GIS data (County of Santa Cruz 2020b), which was created to aggregate watersheds and associated geographic information by code number ranges, and to allow flexibility for future designation of additional subwatersheds. The boundaries were drawn onto USGS 7.5-minute quadrangle maps using existing topographic lines. These lines were then digitized using at least two known control points per quadrangle map. The digital lines were plotted and reviewed by the County's Water Quality Program Manager of the County's Environmental Health staff. Table 4.3-2 provides the acreages of these subwatersheds within the biological study area.

Table 4.3-2. Subwatersheds in the Biological Study Area

Watershed	Subwatershed	Acres
Aptos	Aptos*	9,972
Arana-Rodeo	Arana-Rodeo	6,822
Baldwin/Wilder	Baldwin/Wilder	11,993
Laguna	Laguna	4,986
Liddell	Liddell	2,212
Majors	Majors	3,189
Pajaro	Lower Corralitos*	1,190
	Upper Corralitos*	<1
	Watson Slough*	14
Pescadero	Pescadero	1,946
San Andreas	San Andreas*	2,448
San Lorenzo	Bean	6,168
	Bear	10,399
	Ben Lomond	344
	Boulder	7,293
	Branciforte	6,235
	Brimblecom	613
	Carbonera	4,780
	Fall	3,149
	Felton	805
	Glen Arbor	1,170
	Kings	4,929
	Lompico	1,791
	Love	1,913
	Lower S. Lorenzo	5,830
	Lower Zayante	56
	Mid Zayante	1,738
	Mid. San Lorenzo	4,259
	Newell	6,346
	Riverdale	525
	Two Bar	1,676
	Upper S. Lorenzo	7,439
	Upper Zayante	7,197
	Urban S. Lorenzo	2,351
San Vicente	San Vicente*	7
Sand Hill Bluff	Sand Hill	189
Scott	Big Creek*	55
Soquel	Lower Soquel	7,097
	Porter	2,067
	Upper Soquel	12,184
	West Soquel	7,959
Waddell	East Waddell*	789
	Total[1]	**162,125**

Source: County of Santa Cruz 2020b.

Notes: * indicates only a portion of the subwatershed was included within the biological study area.

[1] The discrepancy with biological study area acreage (~162,166 acres) is due to different GIS dataset boundaries. The public datasets used for this and the other tables in this section are mapped at a coarser (i.e., more generalized) scale than the biological study area boundary created for this EIR.

There are 31 major drainages or surface water bodies that occur within the biological study area. This total includes only the named, perennial and few intermittent streams associated with riparian vegetation communities identified in the County's GIS Web Portal (County of Santa Cruz 2020b), as well as the Loch Lomond Reservoir. Several other unnamed intermittent and ephemeral tributaries also occur within the biological study area. Brief descriptions of the following key drainages and water bodies within the biological study area are provided below: Loch Lomond Reservoir, Newell Creek, the San Lorenzo River and its tributaries, the North Coast streams (i.e., Laguna Creek, Reggiardo Creek [a first-order tributary to Laguna Creek], Liddell Creek and Spring, and Majors Creek), and the 14 named perennial and intermittent streams associated with mapped riparian vegetation.

Loch Lomond Reservoir

The Loch Lomond Reservoir is an impoundment of Newell Creek, which is a tributary to the San Lorenzo River, with a water storage capacity of approximately 8,646 acre-feet. Loch Lomond Reservoir sits at an elevation of approximately 577.5 feet above mean sea level. It provides a portion of the drinking water supply for the City and nearby areas. The reservoir also serves as a public recreational area offering boating, fishing, picnicking and hiking (see additional information in Section 4.11, Recreation). Loch Lomond Reservoir is surrounded predominately by mixed evergreen forest, including broadleaf and conifer species, and coast redwood forest.

Newell Creek

Newell Creek is a perennial drainage that measures approximately six miles in length, of which approximately 2.5 miles of the creek are considered the Loch Lomond Reservoir. The watershed ranges in elevation from 600 to 2,334 feet above mean sea level. Newell Creek is a tributary to the San Lorenzo River and their confluence is near Ben Lomond, which is approximately 1.7 miles downstream of the Newell Creek Dam and Loch Lomond Reservoir. Lands adjacent to Newell Creek largely consist of undeveloped watershed lands managed primarily for the purposes of water supply and limited recreational uses.

San Lorenzo River

The San Lorenzo River is a perennial stream that measures approximately 29 miles in length and drains approximately 138 square miles of watershed. The watershed ranges in elevation from sea level to 2,500 feet above mean sea level. It is the primary water supply for the City and flows through the San Lorenzo Valley and the unincorporated communities of Felton, Ben Lomond, and Boulder Creek. The San Lorenzo River has ten named, perennial tributaries that are associated with riparian vegetation communities located within the biological study area, and those are as follows: Newell Creek (discussed above), Zayante Creek (which includes Bean Creek, Lompico Creek, Ruins Creek, and Lockhart Gulch tributaries), Bull Creek, Shingle Creek, Bear Creek (which includes Deer Creek tributary), and Branciforte Creek (which includes Carbonera Creek tributary). Lands within the upper watershed consist largely of undeveloped open space; however, the lower portion of the river within the City is surrounded by urban development.

North Coast Streams

Laguna Creek

Laguna Creek is a perennial stream that measures approximately 8.5 miles in length and drains approximately 7.8 square miles of watershed from Bonny Doon to the Pacific Ocean. The watershed ranges in elevation from sea level to 2,440 feet above mean sea level. Land use within the Laguna Creek watershed is primarily public lands, rural residential, and rangeland. Reggiardo Creek is a first order tributary to Laguna Creek.

Liddell Creek

Liddell Creek is a perennial stream whose point of origin is Liddell Spring. The creek measures approximately 5.8 miles in length and drains approximately 3.6square miles[3] of watershed from Ben Lomond Mountain into the Pacific Ocean. The watershed ranges in elevation from sea level to 1,800 feet above mean sea level. Liddell Creek contains an east and west branch that runs through land uses such as rural residential, mining, timber harvesting, and agricultural.

Majors Creek

Majors Creek is a perennial stream that measures approximately 5.5 miles in length and drains approximately 4.7 square miles of watershed from the Empire Grade into the Pacific Ocean. The watershed ranges in elevation from sea level to 1,835 feet above mean sea level. Land uses within the Majors Creek watershed include open space, agricultural, rangeland, rural residential, and public lands.

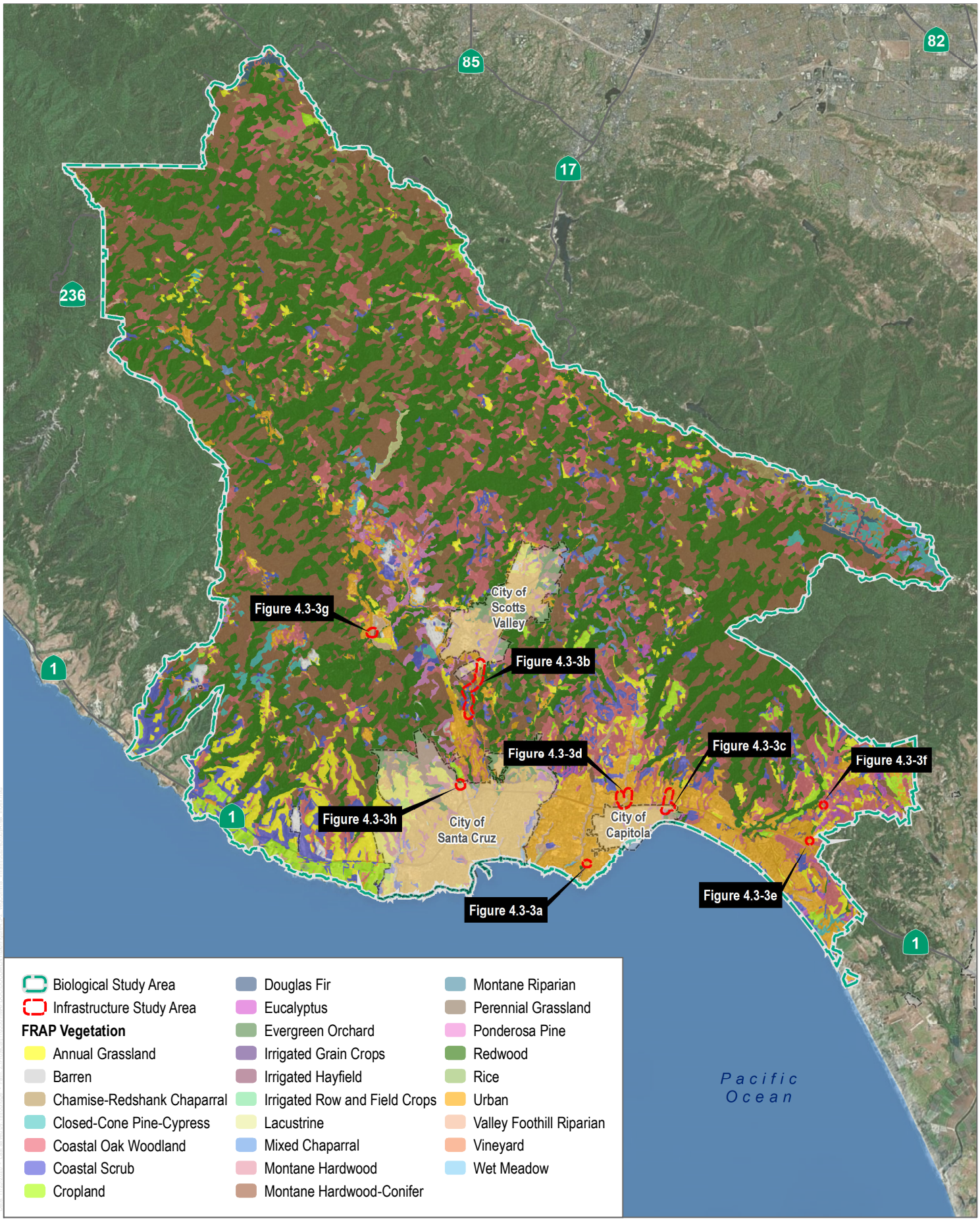
Other Streams

There are 14 additional named, perennial and intermittent streams associated with riparian vegetation communities within the biological study area, including the following: Aptos Creek (which includes Valencia Creek tributary), Arana Gulch, Baldwin Creek, Soquel Creek (which includes Bates Creek and Nobel Gulch tributaries), Borregas Creek (intermittent stream), Leona Creek, Moore Creek, Rodeo Creek, Wilder Creek (which includes Meder Creek, an intermittent tributary) and Tannery Creek (intermittent stream).

4.3.2.3 Vegetation Communities and Land Cover Types

A total of 16 vegetation communities and five land cover types were mapped in the biological study area (Figure 4.3-2); 9 of these, including addition of the riverine land cover type, were mapped in the infrastructure study area (Figures 4.3-3a through 4.3-3h). Complete descriptions of each vegetation community and land cover type are provided below. Table 4.3-3 provides the acreage of each vegetation community or land cover type in the biological study area and infrastructure study area.

[3] The subwatershed boundary for Liddell was modified from 7.6 square miles to 3.6 square miles to account for the actual contributing catchment of Liddell Creek and its associated tributaries.



SOURCE: Bing Hybrid Basemap 2020, County of Santa Cruz 2020

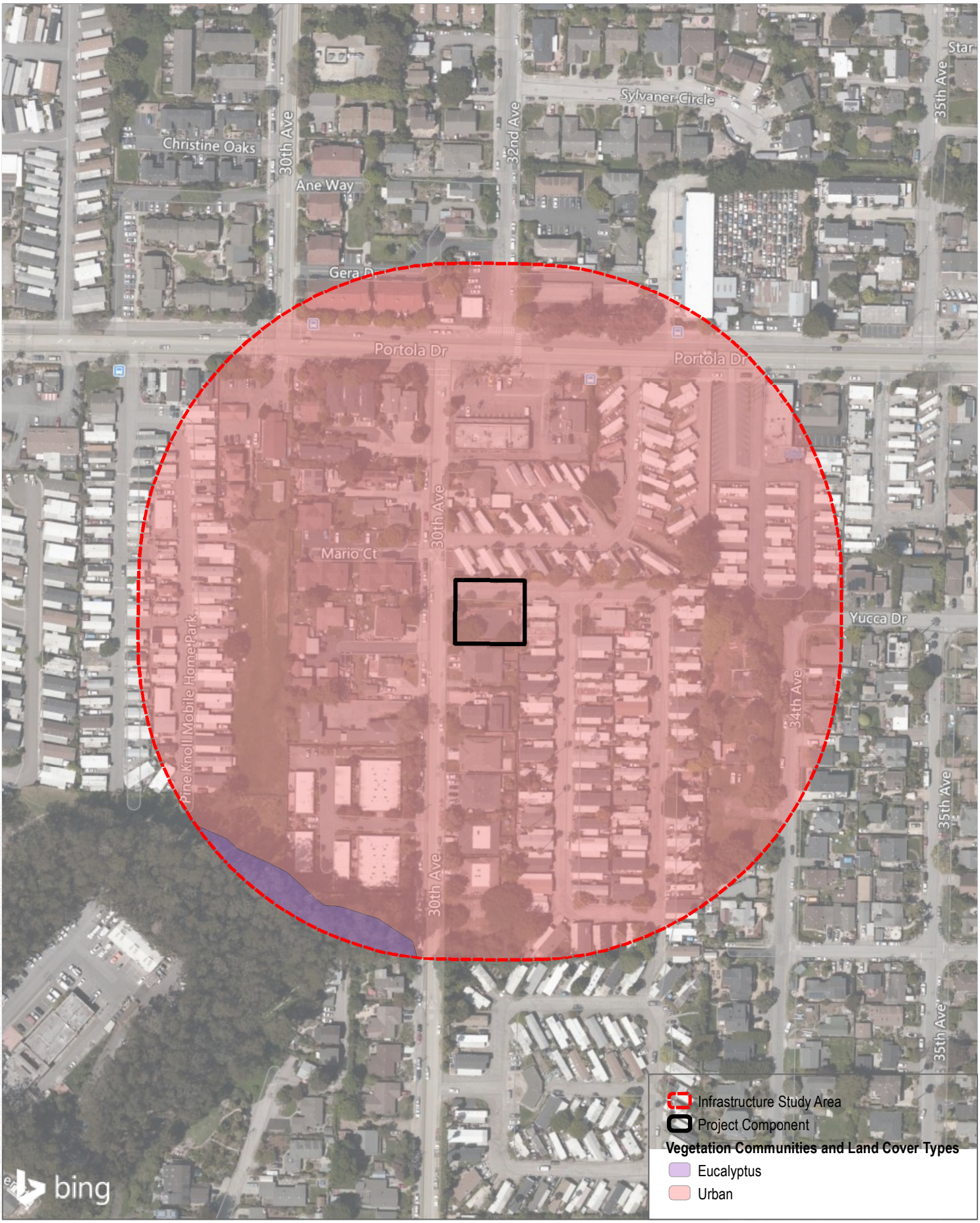
DUDEK

0 1.5 3 Miles

FIGURE 4.3-2

Vegetation Communities Index Map

Santa Cruz Water Rights Project



SOURCE: Bing Hybrid Basemap 2020, County of Santa Cruz 2020

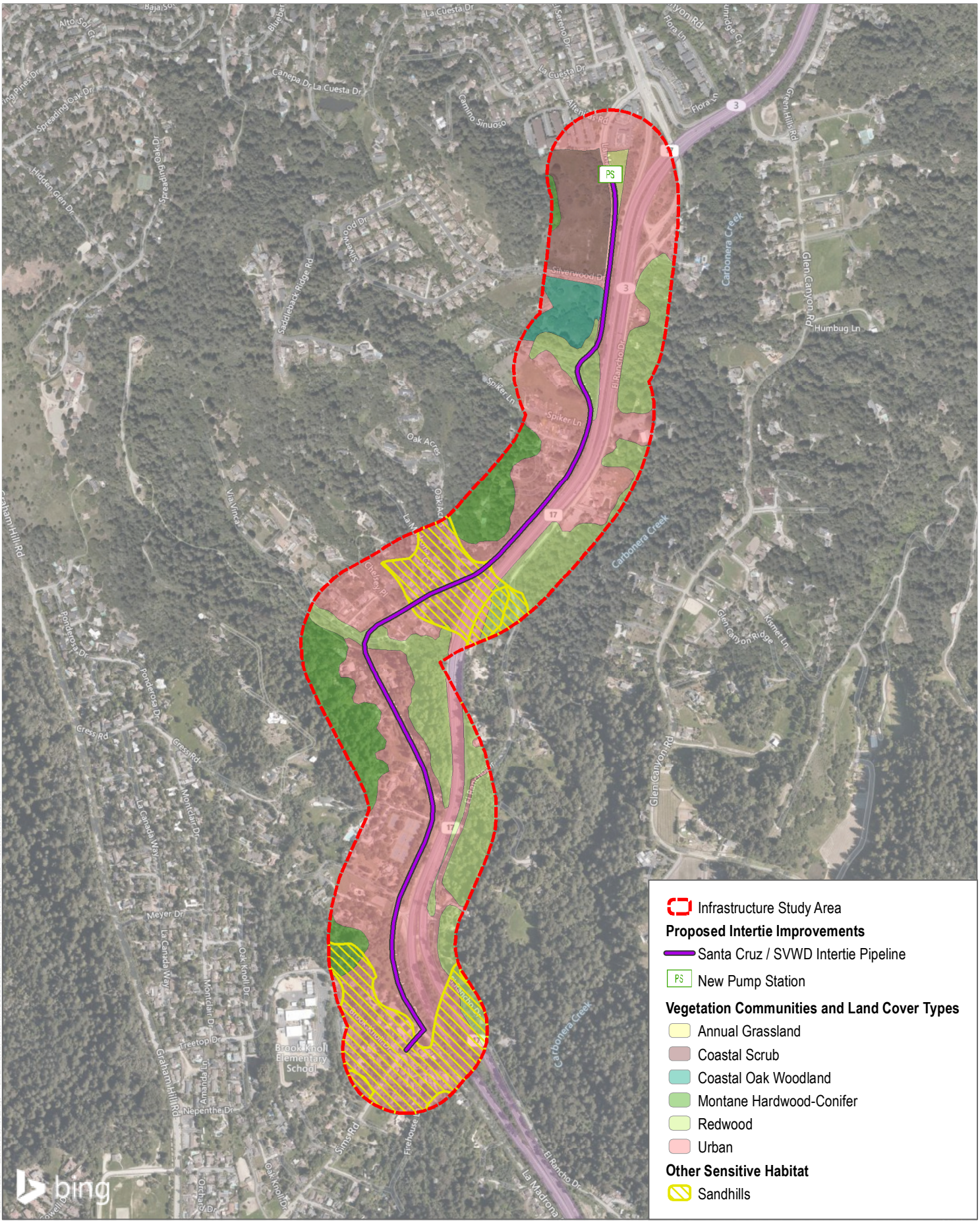
DUDEK

0 100 200 Feet

FIGURE 4.3-3A

Vegetation Communities Map - Beltz 9 ASR Facilities

Santa Cruz Water Rights Project



SOURCE: Bing Hybrid Basemap 2020, County of Santa Cruz 2020

DUDEK

0 500 1,000 Feet

FIGURE 4.3-3B

Vegetation Communities Map - City of Santa Cruz and SVWD Intertie

Santa Cruz Water Rights Project

SOURCE: Bing Hybrid Basemap 2020, County of Santa Cruz 2020

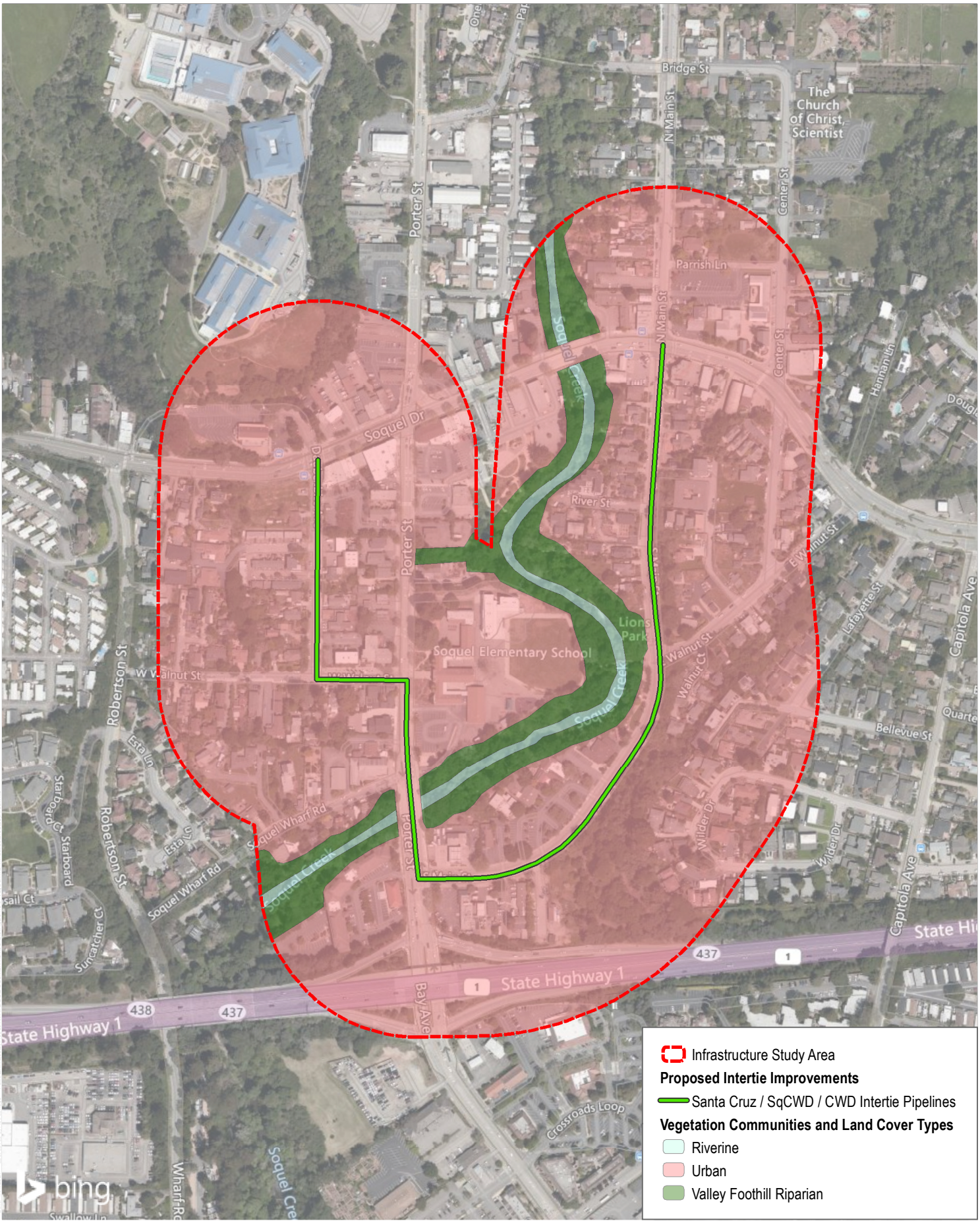
DUDEK

0 200 400 Feet

FIGURE 4.3-3C

Vegetation Communities Map - City of Santa Cruz and SqCWD Intertie

Santa Cruz Water Rights Project



SOURCE: Bing Hybrid Basemap 2020, County of Santa Cruz 2020

DUDEK

0 200 400 Feet

FIGURE 4.3-3D

Vegetation Communities Map - City of Santa Cruz and SqCWD Intertie

Santa Cruz Water Rights Project

SOURCE: Bing Hybrid Basemap 2020, County of Santa Cruz 2020

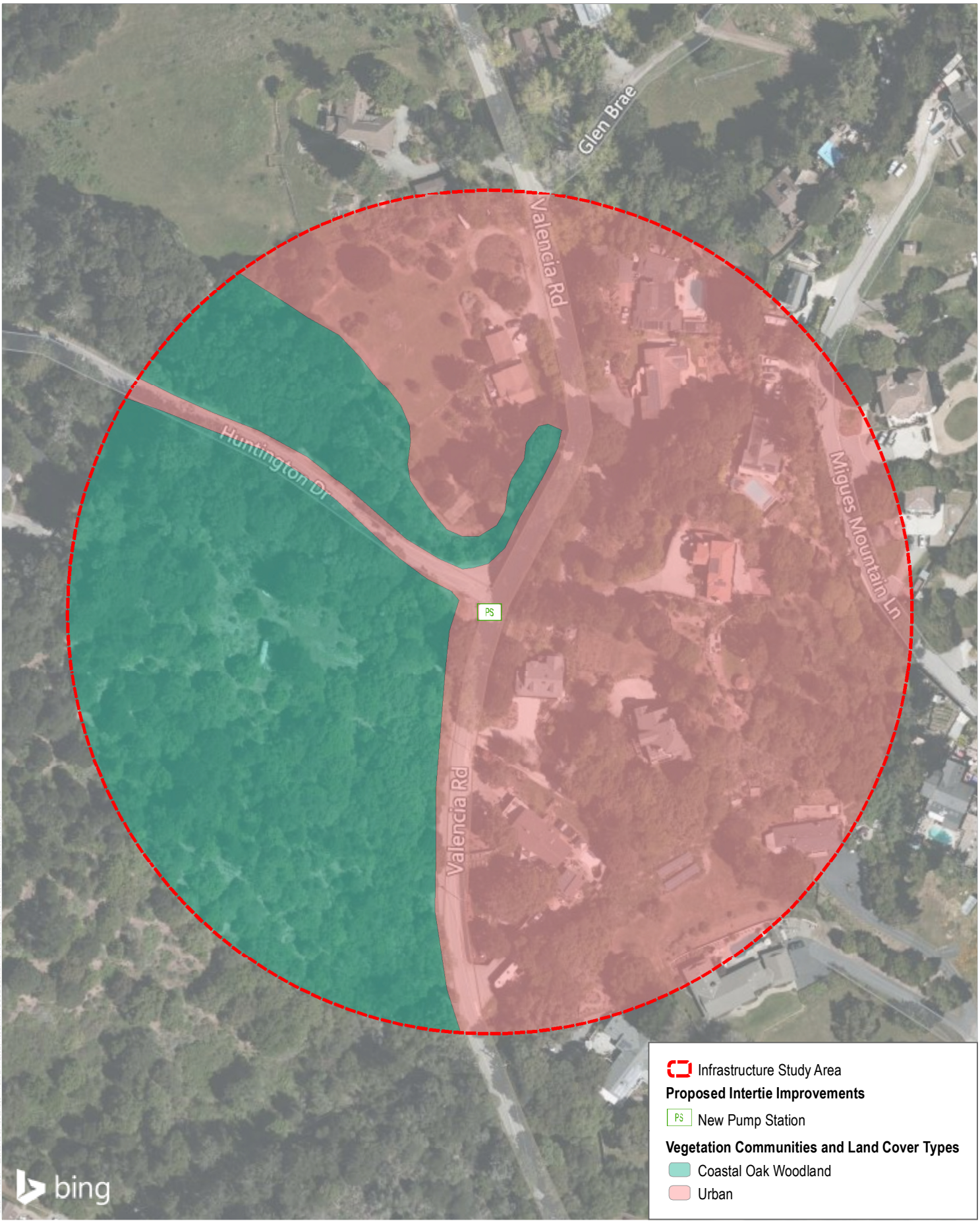
FIGURE 4.3-3E

DUDEK

0 75 150 Feet

Vegetation Communities Map - SqCWD and CWD Intertie at Freedom Boulevard

Santa Cruz Water Rights Project



SOURCE: Bing Hybrid Basemap 2020, County of Santa Cruz 2020

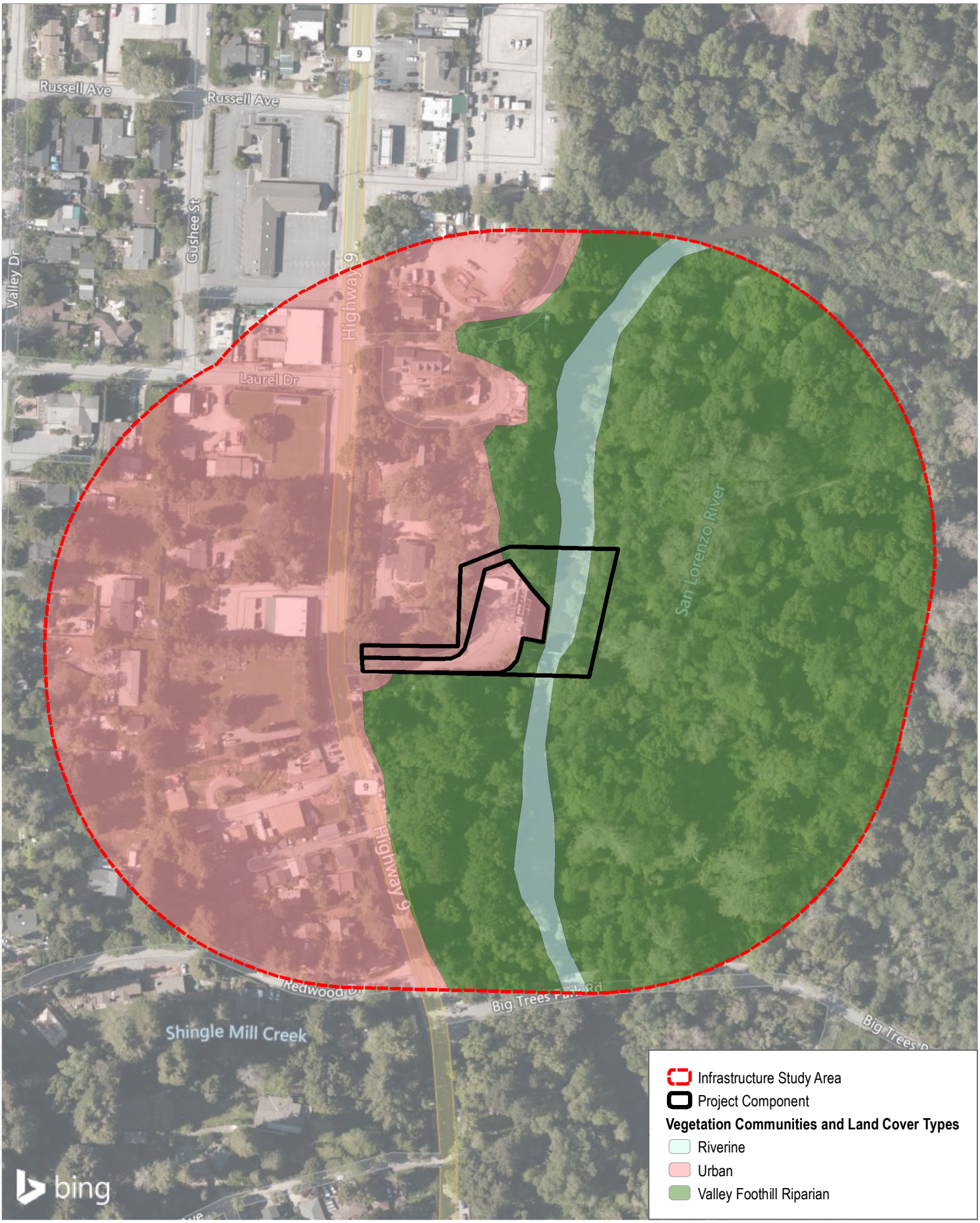
FIGURE 4.3-3F

Vegetation Communities Map - SqCWD and CWD Intertie at Huntington Drive

Santa Cruz Water Rights Project

DUDEK

0 75 150 Feet



SOURCE: Bing Hybrid Basemap 2020, County of Santa Cruz 2020

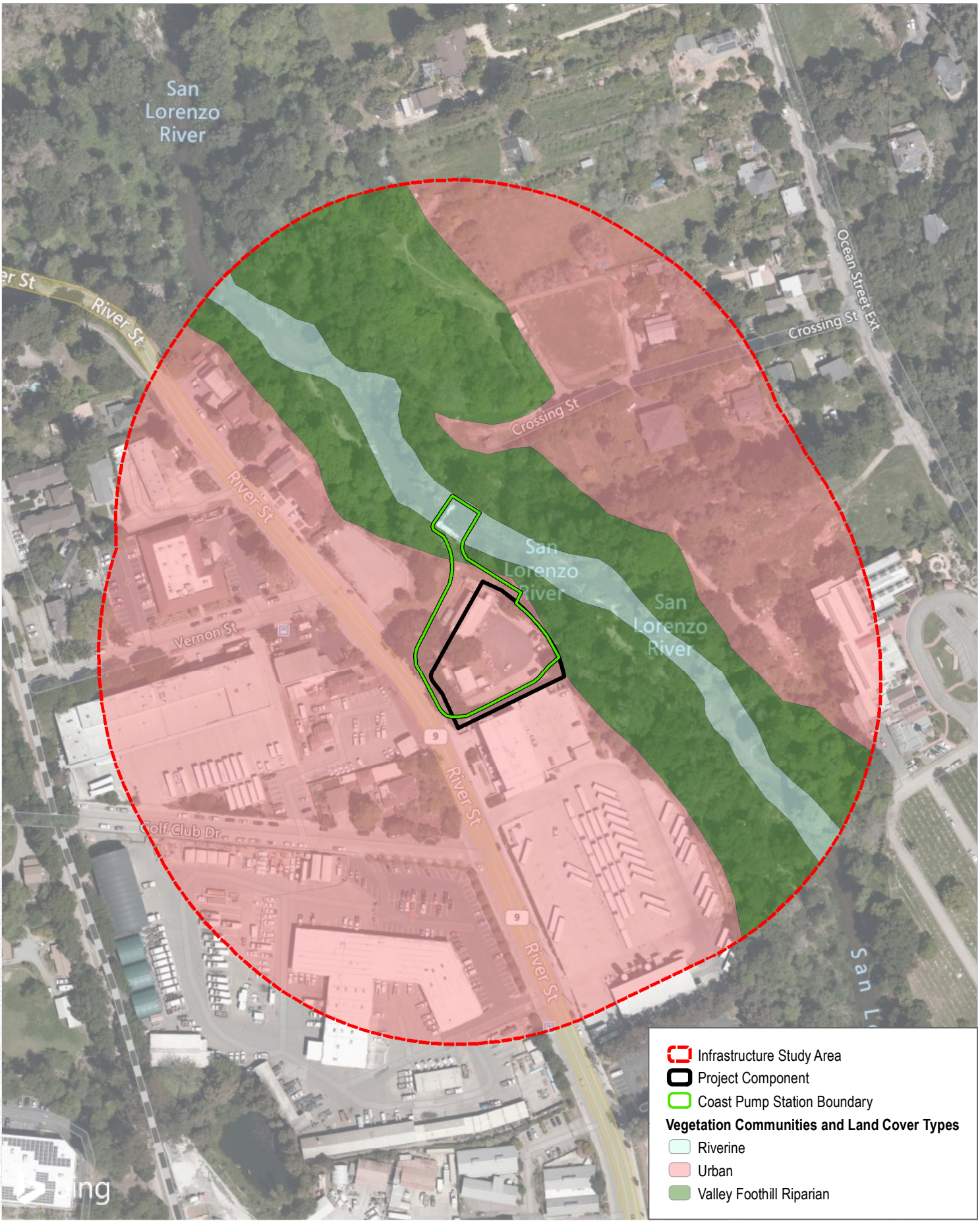
DUDEK

0 100 200 Feet

FIGURE 4.3-3G

Vegetation Communities Map - Felton Diversion

Santa Cruz Water Rights Project



SOURCE: Bing Hybrid Basemap 2020, County of Santa Cruz 2020

DUDEK

0 100 200 Feet

FIGURE 4.3-3H

Vegetation Communities Map - Tait Diversion / Coast Pump Station

Santa Cruz Water Rights Project

Table 4.3-3. Vegetation Communities and Land Cover Types in the Biological Study Area and Infrastructure Study Area (acres)

Vegetation Community or Land Cover Type	Biological Study Area[1]	Infrastructure Study Area[2]							
		Beltz 8 ASR	*Beltz 9 ASR*	*Beltz 10 ASR*	*Beltz 12 ASR*	*City/SWWD Intertie*	*City/SqCWD/CWD Intertie*	*Felton Diversion*	*Tait Diversion and Coast Pump Station*
Natural Vegetation Communities									
Annual Grassland	7,157	—	—	—	—	1	—	—	—
Chamise-Redshank Chaparral	3,717	—	—	—	—	—	—	—	—
Closed-Cone Pine-Cypress	1,412	—	—	—	—	—	—	—	—
Coastal Oak Woodland	16,703	—	—	—	—	5	7	—	—
Coastal Scrub	6,764	—	—	—	—	10	-	—	—
Douglas Fir	507	—	—	—	—	—	—	—	—
Eucalyptus	812	—	0.4	—	—	—	10	—	—
Mixed Chaparral	892	—	—	—	—	—	—	—	—
Montane Hardwood	27	—	—	—	—	—	—	—	—
Montane Hardwood Conifer	45,461	—	—	—	—	19	—	—	—
Montane Riparian	46	—	—	—	—	—	—	—	—
Perennial Grassland	7	—	—	—	—	—	—	—	—
Ponderosa Pine	1,027	—	—	—	—	—	—	—	—
Redwood	55,459	—	—	—	—	41	—	—	—
Valley Foothill Riparian	1,050	—	—	—	—	—	21	16	7
Wet Meadow	21	—	—	—	—	—	—	—	—
Semi-Natural Vegetation Communities/Unvegetated Land Cover Types									
Barren	1,008	—	—	—	—	—	—	—	—
Cropland	3,205	—	—	—	—	—	—	—	—
Lacustrine	229	—	—	—	—	—	—	—	—
Riverine[3]	N/A	—	—	—	—	—	2	1	2
Urban	16,433	27	23	24	26	128	183	14	21
Total[4]	**161,940**	**27[5]**	**23**	**24**	**26**	**204**	**223**	**32**	**30**

Sources: CAL FIRE 2020, Dudek field observations May 2020.

Notes: — = not present

1 The biological study area includes all infrastructure study areas.

2 The infrastructure study area represents a subset of the biological study area.

3 The Riverine habitat type from CAL FIRE (2020) was not used for the biological study area to avoid conflicts with County of Santa Cruz (2020b) stream mapping summarized in Section 4.3.2.2, Watersheds and Hydrology. However, this land cover was used within infrastructure study area for the purposes of analyzing potential impacts at anticipated construction sites.

4 Discrepancies with biological study area acreage (~162,166 acres) are due to different GIS dataset boundaries. The public datasets used for this and the other tables in this section are mapped at a coarser (i.e., more generalized) scale than the biological study area boundary created for this EIR.

5 The Beltz 8 ASR and Beltz 10 ASR 500-foot study area buffers overlap with each other for approximately 1.58 acres.

Natural Vegetation Communities

Annual Grassland

The annual grassland vegetation community is composed primarily of annual herbaceous plant species. Vegetation composition and structure in annual grasslands depend largely on weather patterns and livestock grazing, where present. Fall rains cause germination of annual plant seeds. Plants grow slowly during the cool winter months, remaining low in stature until spring, when temperatures increase and stimulate more rapid growth. Large amounts of standing dead plant material can be found during summer in years of abundant rainfall and light to moderate grazing pressure. Introduced annual grasses are the dominant plant species in this habitat. Common grass species may include canary grass (*Phalaris* spp.) barley (*Hordeum* spp.), fescue (*Festuca* spp.), medusa head (*Elymus caput-medusae*), soft chess (*Bromus hordeaceus*), red brome (*Bromus madritensis*), ripgut brome (*Bromus diandrus*), wild oats (*Avena* spp.). Common forb species may include bur clover (*Medicago polymorpha*), clovers (*Trifolium* spp.), filaree (*Erodium* spp.), turkey mullein (*Croton setiger*), and many others (Mayer and Laudenslayer 1988).

Within the biological study area, annual grassland comprises a total of 7,157 acres. Within the infrastructure study area, annual grassland is only present within the City/SVWD intertie site, comprising a total of 1 acre.

Chamise Red-Shank Chaparral

Chamise red-shank chaparral is a single layered vegetation community that is generally lacking well-developed herbaceous ground cover and overstory trees. Fire occurs regularly in chamise-redshank chaparral and influences habitat structure. Shrub canopies frequently overlap, producing a nearly impenetrable canopy of interwoven branches. Mature redshank frequently is more open than chamise and can have sparse herbaceous cover between shrubs. Chamise-redshank chaparral may consist of nearly pure stands of chamise or redshank, a mixture of both, or with other shrubs. This vegetation community can occur in varied topographies, on soils that commonly shallow over colluvium and many kinds of bedrock. The purest stands of chamise occur on xeric,[4] south-facing slopes. Common species may include California buckwheat (*Eriogonum fasciculatum*), chamise (*Adenostoma fasciculatum*), chaparral yucca (*Hesperoyucca whipplei*), buck brush (*Ceanothus* spp.), common manzanita (*Arctostaphylos manzanita*), Eastwood manzanita (*Arctostaphylos glandulosa*), interior live oak (*Quercus wislizeni*), monkeyflower (*Diplacus* spp.), poison oak (*Toxicodendron diversilobum*), Santa Cruz manzanita (*Arctostaphylos andersonii*), scrub oak (*Quercus berberidifolia*), sage (*Salvia* spp.), toyon (*Heteromeles arbutifolia*), and yerba santa (*Eriodictyon californicum*) (Mayer and Laudenslayer 1988).

Within the biological study area, chamise red-shank chaparral comprises a total of 3,717 acres. This vegetation community does not occur in the infrastructure study area.

Closed-Cone Pine-Cypress

The closed-cone pine-cypress vegetation community includes several different evergreen, needle-leaved trees. The height and canopy closure of this vegetation community is variable and depends upon site characteristics, soil type, the age of the stand, and the overall floristic composition. Generally, the understory is a well-developed shrub layer of chaparral species that are on open, well-drained sites; and a low, dense cover of shrubs and herbs on the poorly drained soils. After fire, particularly on good sites, both cypress and pine species can form dense, even-aged stands. As the stand matures, the stocking density decreases, but single species site dominance is common. Closed-cone pine-cypress vegetation communities that are present along the weathered coastline, or on very shallow infertile

[4] Xeric refers to areas characterized by, relating to, or requiring only a small amount of moisture.

soils, often contain stunted and wind-pruned individuals. In general, associated species change as the dominant species changes in this vegetation community. Along the central coast region, Santa Cruz cypress stands, are present and often include knobcone pine (*Pinus attenuata*), Ponderosa pine (*Pinus ponderosa*), and Santa Cruz cypress (*Hesperocyparis abramsiana*), silverleaf manzanita (*Arctostaphylos silvicola*). Other tree species that are found in this vegetation community may include Bishop pine (*Pinus muricata*), Monterey pine (*Pinus radiata*), and Torrey pine (*Pinus torreyana*) (Mayer and Laudenslayer 1988).

Within the biological study area, closed-cone pine-cypress comprises a total of 1,412 acres. There is no closed-cone pine-cypress within the infrastructure study area (CAL FIRE 2020).

Coastal Oak Woodland

Coastal oak woodland is extremely variable. The overstory of this community consists of deciduous and evergreen hardwoods. In mesic[5] sites, the trees are dense and form a closed canopy. In drier sites, the trees are widely spaced, forming an open woodland or savannah. The understory is equally variable. In some instances, it is composed of shrubs from adjacent chaparral or coastal scrub vegetation communities, which form a dense and impenetrable understory. More commonly, shrubs are scattered under and between trees. Where trees form a closed canopy, the understory varies from a lush cover of shade-tolerant shrubs, ferns, and herbs to sparse cover with a thick carpet of litter. When trees are scattered and form an open woodland, the understory is grassland, sometimes with scattered shrubs. The interrelationships of slope, soil, precipitation, moisture availability, and air temperature cause variations in structure of coastal oak woodlands. These factors vary along the latitudinal, longitudinal and elevation gradients over which coastal oak woodlands are found. Common species may include Arroyo willow (*Salix lasiolepis*), big leaf maple (*Acer macrophyllum*), black oak (*Quercus kelloggii*), boxelder (*Acer negundo*), and California bay laurel (*Umbellularia californica*), California sycamore (*Platanus racemosa*), coast live oak (*Quercus agrifolia*), Fremont's cottonwood (*Populus fremontii*), Pacific madrone (*Arbutus menziesii*), and valley oak (*Quercus lobata*) (Mayer and Laudenslayer 1988).

Within the biological study area, coastal oak woodland comprises a total of 16,703 acres. Within the infrastructure study area, coastal oak woodland is present within the City/SVWD intertie site (5 acres) and the City/SqCWD/CWD intertie Valencia Road pump station site (7 acres).

Coastal Scrub

The coastal scrub vegetation community can be found at river mouths, stream sides, terraces, stabilized dunes of coastal bars, spits along the coastline, coastal bluffs, open slopes, ridges. No single species is typical of all the coastal scrub vegetation communities in the central coast region. Structure of the plant species that comprise coastal scrub vegetation communities is typified by low to moderate-sized shrubs with mesophytic leaves, flexible branches, semi-woody stems growing from a woody base, and a shallow root system. Structure differs among stands, mostly along a gradient that parallels the coastline. Specifically, species composition changes most markedly with progressively more xeric conditions from north to south along the coastline. With the change from mesic to xeric sites, dominance appears to shift from evergreen species in the north to drought-deciduous species in the south. Variation in coastal influence at a given latitude produces less pronounced composition changes. Common species may include blue blossom (*Ceanothus thyrsiflorus* var. *thyrsiflorus*), California coffeeberry (*Frangula californica*), common cowparsnip (*Heracleum maximum*), coyote brush (*Baccharis pilularis*), Himalayan blackberry (*Rubus armeniacus*), Indian paintbrush (*Castilleja affinis* spp. *affinis*), monkeyflower (*Diplacus* spp.), oat

[5] Mesic refers to areas characterized by, relating to, or requiring a moderate amount of moisture.

grasses, poison oak, salal (*Gaultheria shallon*), wooly sunflower (*Eriophyllum lanatum*), silver bush lupine (*Lupinus albifrons*), and yerba buena (*Clinopodium douglasii*) (Mayer and Laudenslayer 1988).

Within the biological study area, coastal scrub comprises a total of 6,764 acres. Within the infrastructure study area, coastal scrub is only present within the City/SVWD intertie site, comprising a total of 10 acres.

Douglas Fir

The Douglas fir vegetation community occurs at low to moderate elevations and is juxtaposed with a number of other communities. Redwood communities occur at lower elevations to the west and mixed conifer communities occur to the east and at higher elevations within the range of Douglas fir. Typical stands of this community include a lower overstory of dense, broad-leaved evergreen trees (e.g., tanoak [*Notholithocarpus densiflorus*], Pacific madrone) with an irregular, often open, higher overstory of tall Douglas fir up to 295 feet.

Within the biological study area, Douglas fir comprises a total of 507 acres. This vegetation community does not occur in the infrastructure study area.

Eucalyptus

Eucalyptus vegetation communities range from single-species thickets with little or no shrubby understory to scattered trees over a well-developed herbaceous and shrubby understory. In most cases, eucalyptus forms a dense stand with a closed canopy. Stand structure for this vegetation community may vary considerably because most eucalyptus tree species have been planted into either rows for wind protection or dense groves for hardwood production and harvesting. Overstory composition is typically limited to one species of the genus, or mixed stands composed of other species of the same genus; few native overstory species are present within eucalyptus planted areas, except in small cleared pockets. The most common species may include blue gum (*Eucalyptus globulus*) and red gum (*Eucalyptus camaldulensis*) (Mayer and Laudenslayer 1988).

Within the biological study area, eucalyptus comprises a total of 812 acres. Within the infrastructure study area, eucalyptus is present within 500 feet but outside the Beltz 9 ASR site and the City/SqCWD/CWD intertie McGregor Drive pump station upgrade site, comprising a total of 10 acres.

Mixed Chaparral

The mixed chaparral vegetation community is a structurally homogeneous brush land type dominated by shrubs with thick, stiff, heavily cutinized evergreen leaves. At maturity, cismontane mixed chaparral typically is a dense, nearly impenetrable thicket with greater than 80% absolute shrub cover. On poor sites, serpentine soils or transmontane slopes, shrub cover may be only 30% to 60% and shrubs may be shorter in size. Considerable leaf litter and standing dead material may accumulate in stands that have not burned for several decades. Mixed chaparral is a floristically rich type that supports approximately 240 species of woody plants. Species composition changes between the northern and southern central coast region, as well as with precipitation regime, aspect, and soil type. Common species may include birchleaf mountain mahogany (*Cercocarpus betuloides*), buck brush, buckeye (*Aesculus californica*), chamise (*Adenostoma* spp.), chaparral pea (*Pickeringia montana*), manzanita (*Arctostaphylos* spp.), poison oak, scrub oak, silk tassel (*Garrya* spp.), toyon, and yerba santa (Mayer and Laudenslayer 1988).

Within the biological study area, mixed chaparral comprises a total of 892 acres. This vegetation community does not occur in the infrastructure study area.

Montane Hardwood

The montane hardwood vegetation community is composed of a pronounced hardwood tree layer, with an infrequent and poorly developed shrub stratum, and a sparse herbaceous layer. On better sites, individual trees or clumps of trees may be spaced close together, while on poorer sites, spacing between individual trees or clumps of trees increases. Where trees are closely spaced, crowns may close but seldom overlap. Snags and downed woody material generally are sparse throughout the montane hardwood habitat. Typical species in the biological study area include Douglas fir, tanoak, Pacific madrone, California laurel (*Umbellularia californica*), California black oak (*Quercus kelloggii*), and bristlecone fir (*Abies bracteate*). Understory vegetation is mostly scattered woody shrubs (manzanita, mountain mahogany (*Cercocarpus ledifolius*), poison oak) and a few forbs (Mayer and Laudenslayer 1988).

Within the biological study area, montane hardwood comprises a total of 27 acres. This vegetation community does not occur in the infrastructure study area.

Montane Hardwood Conifer

The montane hardwood conifer vegetation community includes both conifers and hardwoods, often as a closed forest. To be classified as a Montane Hardwood vegetation community, at least one-third of the trees must be conifer and at least one-third must be broad-leaved. This vegetation community often occurs in a mosaic-like pattern with small pure stands of conifers interspersed with small stands of broad-leaved trees. Species diversity consists of a broad spectrum of mixed, vigorously growing conifer and hardwood species. Most of the broad-leaved trees are evergreen, but winter-deciduous species also occur. Relatively little understory occurs under the dense, layered canopy this vegetation community. However, considerable ground and shrub cover can occur in ecotones or following disturbance such as fire or logging. Steeper slopes are normally devoid of litter; however, gentle slopes often contain considerable accumulations of leaf and branch litter. Common species may include black oak, big leaf maple, canyon live oak (*Quercus chrysolepis*), coast redwood (*Sequoia sempervirens*), Douglas-fir (*Pseudotsuga menziesii*), Pacific madrone, ponderosa pine, tanoak, and other localized species (Mayer and Laudenslayer 1988).

Within the biological study area, montane hardwood conifer comprises a total of 45,461 acres. Within the infrastructure study area, montane hardwood conifer is present within the City/SVWD intertie site (19 acres).

Montane Riparian

The vegetation of montane riparian habitats is quite variable and often structurally diverse. Usually, montane riparian habitats occur as a narrow, often dense grove of broad-leaved, winter deciduous trees with a sparse understory. It can also occur as alder or willow stringers along streams of seeps. At high mountain elevations, vegetation may not be well developed or may occur in the shrub stage only. Big leaf maple and California bay laurel are typical dominant species within the southern Coast Range where the biological study area is located. Other common species may include arroyo willow, Fremont cottonwood (*Populus fremontii*), black cottonwood (*Populus trichocarpa*), and white alder (*Alnus rhombifolia*) (Mayer and Laudenslayer 1988).

Within the biological study area, montane riparian comprises a total of 46 acres. This vegetation community does not occur in the infrastructure study area.

Perennial Grassland

Perennial grasslands typically occur on ridges and south-facing slopes, alternating with forest and scrub in the valleys and on north-facing slopes and occurs in two forms in California: coastal prairie, found in areas of northern California under maritime influence, and relics in habitats now dominated by annual grasses and forbs. The coastal prairie form is found within the biological study area. Perennial grasslands of the coastal prairie form occur along the California coast northward of Monterey County at lower elevations and seldom more than 100 km (62 mi) from the coast. Common species include perennial grass species such as California oatgrass (*Danthonia californica*), Pacific hairgrass (*Deschampsia cespitosa* ssp. *holciformis*), and sweet vernal grass (*Anthoxanthum odoratum*) (Mayer and Laudenslayer 1988).

Within the biological study area, perennial grassland vegetation comprises a total of 7 acres. This vegetation community does not occur in the infrastructure study area.

Ponderosa Pine

The Ponderosa pine is a vegetation community with often a mature overstory of conifer and hardwood tree species. The shrub layer of a Ponderosa pine vegetation community is open to continuous vegetation cover. The herbaceous understory is sparse, abundant, or grassy. This vegetation community can occur in all upland topography, floodplains, low-gradient depositions along streams, and raised benches. Common species may include black oak, canyon live oak, Douglas-fir, interior live oak, knobcone pine, and Ponderosa pine (USDA and NRCS 2004).

Within the biological study area, Ponderosa pine comprises a total of 1,027 acres. It does not occur in the infrastructure study area.

Redwood

The redwood vegetation community is characterized by even-aged structure with an open parklike appearance. Redwood and associated conifers also reproduce well by seed. The redwood habitat is a composite name for a variety or mix of conifer species that grow within the coastal influence zone (i.e., from the coast to approximately 31 miles inland). The redwood vegetation community occurs along raised stream terraces, benches, all slopes and aspects, and ridges. Coast redwood is the dominant species in the coastal zone, while further inland Douglas-fir becomes dominant with tanoak and madrone as the major associates. Common species may include Bishop pine, big-leaf maple, California bay laurel, California huckleberry (*Vaccinium ovatum*), California red huckleberry (*Vaccinium parvifolium*), coast rhododendron (*Rhododendron macrophyllum*), oceanspray (*Holodiscus discolor*), Oregon ash (*Fraxinus latifolia*), poison oak, salmonberry (*Rubus spectabilis*), thimbleberry (*Rubus parviflorus*), western chain fern (*Woodwardia fimbriata*), and western sword fern (*Polystichum munitum*) (Mayer and Laudenslayer 1988).

Within the biological study area, redwood comprises a total of 55,459 acres. Within the infrastructure study area, redwood is present in the City/SVWD intertie site (41 acres).

Valley Foothill Riparian

The valley foothill riparian vegetation community is typically a mature riparian forest with a canopy cover of 20% to 80%. Most trees are winter deciduous. There is a sub canopy tree layer and an understory shrub layer. Herbaceous vegetation constitutes about 1% of the cover, except in openings where tall forbs and shade-tolerant grasses occur. Generally, the understory is impenetrable and includes fallen limbs and other debris. Common species may include

boxelder, California blackberry (*Rubus ursinus*), California sycamore, California wild grape (*Vitus californica*), California wild rose (*Rosa californica*), cottonwood, elderberry (*Sambucus* spp.), miner's lettuce (*Claytonia parviflora*), Oregon ash, poison hemlock (*Conium maculatum*), poison oak, rushes (*Juncus* spp.), sedges (*Carex* spp.), stinging nettle (*Urtica dioica*), willows (*Salix* spp.), valley oak, and white alder (Mayer and Laudenslayer 1988).

Within the biological study area, valley foothill riparian comprises a total of 1,050 acres. Within the infrastructure study area, valley foothill riparian is present within the City/SqCWD/CWD intertie site (21 acres); the Felton Diversion site (16 acres); and the Tait Diversion/Coast Pump Station site (7 acres).

Wet Meadow

The wet meadow vegetation community has a simple structure consisting of a layer of obligate herbaceous plants. Shrub or tree layers are usually absent or very sparse; however, they may be present as an important feature of a meadow sedge. Within the herbaceous plant community, a microstructure is frequently present. The wet meadow vegetation communities occur with a great variety of plant species; therefore, it is not possible to generalize species composition. Fewer species occur as surface water depth increases during spring runoff. Species may differ, but several genera are common to wet meadows throughout the State. Common genera that may occur include bent grasses (*Agrostis* spp.), bulrushes (*Scirpus* spp.), oat grasses (*Danthonia* spp.), sedges (*Carex* spp.), rushes (*Juncus* spp.), and willows (*Salix* spp.) (Mayer and Laudenslayer 1988).

Within the biological study area, wet meadow comprises a total of 21 acres. This community does not occur in the infrastructure study area.

Semi-Natural Vegetation Communities/Unvegetated Land Cover Types

Barren

The barren land cover type is defined by the absence of vegetation. Any land cover with less 2% total vegetation cover of herbaceous, desert, or non-wildland species, and less than 10% cover of tree or shrub species, is typically defined as a barren land cover. Structure and composition of the substrate is largely determined by the region of the state and surrounding environment. In the marine and estuarine environment, barren land cover includes rocky outcroppings in the intertidal and subtidal zones, open sandy beaches, and mudflats. Along rivers, it includes vertical riverbanks and canyon walls. Urban settings covered in pavement and buildings may be classified as barren if vegetation, including non-native landscaping, does not reach the coverage percentage thresholds for vegetated habitats as described above (Mayer and Laudenslayer 1988). However, within the infrastructure study area, areas covered in pavement and buildings were classified as urban (see below).

Within the biological study area, the barren land cover type comprises a total of 1,008 acres. There is no barren land cover within the infrastructure study area.

Cropland

The cropland land cover type does not consist of native vegetation and does not conform to normal habitat stages. Instead, cropland is a highly managed land cover type and is regulated by the crop cycle in California. Most croplands support annuals planted in spring and harvested during summer or fall. In many areas, second crops are commonly planted after harvesting the first. This land cover type can either be annual or perennial, vary according to location in the California, or germinate at various times of the year. Specifically, the crop vegetation in this land cover types includes a variety of sizes, shapes, and growing patterns. For instance, although most crops are planted

in rows, such as alfalfa, hay, and small grains (e.g., rice, barley, and wheat), these crops can form dense stands with up to 100% canopy closure (Mayer and Laudenslayer 1988).

All cropland land cover types compiled within the biological study area total 3,205 acres. Specifically, the cropland land cover in the biological study area is comprised of the following land cover types: cropland (2,972 acres); evergreen orchard (0.2 acres), irrigated grain crops (1 acre); irrigated hayfield (1 acre); irrigated row and field crops (2 acres); rice (58 acres); and vineyard (171 acres). The cropland land cover type does not occur in the infrastructure study area.

Lacustrine

The lacustrine land cover type is an aquatic habitat type defined as an inland depression or dammed riverine channel containing standing water (Cowardin 1979). Lacustrine areas may vary from small ponds less than one hectare, to large areas covering several square kilometers. Depth can vary from a few centimeters to hundreds of meters. Typical lacustrine systems include permanently flooded lakes and reservoirs, intermittent lakes (e.g., playa lakes), and large ponds. However, the CDFW's coarse mapping of this habitat type also includes coastal bodies of water that may be influenced by the tides and contain salinity gradients, which more closely align with estuarine systems. The plants and wildlife species found in the littoral zone (i.e., nearshore) vary with water depth, and a distant zonation of life exists from deeper water to shore. Most permanent lacustrine systems support fish life; intermittent types usually do not. A blanket of duckweed may cover the surface of shallow water. Submerged plants such as algae and pondweeds serve as supports for smaller algae and as cover for swarms of minute aquatic animals. As sedimentation and accumulation of organic matter increases toward the shore, floating rooted aquatics such as water lilies and smartweeds often appear. Floating plants offer food and support for numerous herbivorous animals that feed both on phytoplankton and the floating plants (CDFW 2014). Lacustrine systems are also considered aquatic resources and are often regulated as a jurisdictional water.

Within the biological study area, the lacustrine land cover type comprises a total of 229 acres. The largest lacustrine system within the biological study area is Loch Lomond Reservoir. Other large bodies of water include the semi-enclosed coastal waters of Schwann Lake, Corcoran Lagoon, and Moran Lake (which are more estuarine) that occur within the southern portion of the biological study area. No lacustrine systems occur within the infrastructure study area.

Riverine

The riverine land cover type is an aquatic habitat type distinguished by intermittent or continually running water and is functionally equivalent to rivers and streams (Mayer and Laudenslayer 1988). These aquatic systems typically include 98% total cover of open water and less than 2% total cover of by vegetation in the continually exposed bank or shore zone. Aquatic zones within riverine systems include open water greater than 6 feet in depth and/or beyond the reach of floating rooted plants, the submerged zone between open water and the shore, and the shore that is seldom flooded. Small rivers and streams may not have an open water zone. A stream originates at an elevated source, such as a spring or lake, and flows downward at a rate relative to slope or gradient and the volume of surface runoff or discharge. At lower elevations, water velocity declines and the volume of water increases until the stream becomes sluggish and transitions into a river. Riverine land covers are associated with many terrestrial habitats (e.g., riparian forest and woodland) and may also be contiguous with lacustrine and freshwater wetland habitats.

Within the biological study area, riverine land cover is associated with the streams and rivers identified in Section 4.3.2.2, Watersheds and Hydrology. Within the infrastructure study area, riverine land cover is present at the City/SqCWD/CWD intertie site where the Soquel Village pipeline site crosses Soquel Creek, and at the Felton Diversion site and the Tait Diversion/Coast Pump Station, which are along the San Lorenzo River.

Urban

The urban land cover type includes areas that have been constructed on or otherwise physically altered to the point where natural vegetation is no longer present. Urban areas are characterized by permanent or semi-permanent structures, hardscapes, and landscaped areas that require irrigation. According to CWHR System classification scheme, the urban mapping unit can have five types of vegetative structure: tree grove, street strip, shade tree/lawn, lawn, and shrub cover (CDFW 2014). Tree groves are common to city parks, green belts, and cemeteries. Tree grove species vary in height, tree spacing, crown shape, and understory conditions, depending upon the species planted and the planting design. Ground cover in tree groves can range from full to absent. Street tree strips show variation in spacing of trees, depending upon species and design considerations. Both continuous and discontinuous canopies are observed. Street tree strips are typically planted with drought tolerant ground covers in this area. Shade trees and lawns are typical of residential areas and reminiscent of natural savannas. Structural variation in the shade tree/lawn type is typical when many species are incorporated in the landscape. Lawns are structurally the most uniform vegetative units of the California urban land cover type. A variety of grass species are employed, which are maintained at a uniform height and continuous ground cover. Shrub cover is more limited in distribution than the other structural types. Hedges represent a variation of the urban shrub cover type. Species, planting design, and maintenance control the structural characteristics of this types. Species composition in urban habitats varies with planting design and climate. Monoculture is commonly observed in tree groves and street tree strips. The juxtaposition of urban vegetation types within cities produces a rich mosaic with considerable edge areas. The overall mosaic may be more valuable as wildlife habitat than the individual units in that mosaic. A distinguishing feature of the urban wildlife habitat is the mixture of native and exotic species. Both native and exotic species are valuable, with exotic species providing a good source of additional food in the form of fruits and berries (Mayer and Laudenslayer 1988).

Within the biological study area, urban land covers comprise a total of 16,433 acres. Within the infrastructure study area, urban land covers occur at the Beltz 8 ASR site (27 acres); Beltz 9 ASR site (23 acres); Beltz 10 ASR site (24 acres); Beltz 12 ASR site (26 acres); City/SVWD intertie (128 acres); City/SqCWD/CWD intertie site (183 acres); Tait Diversion and Coast Pump Station site (21 acres); and Felton Diversion site (14 acres) (CAL FIRE 2020).

Summary of Infrastructure Study Area

This section provides a summary of the vegetation communities in the infrastructure study area where the project and programmatic infrastructure component sites are located.

Aquifer Storage and Recovery Sites

The Proposed Project includes the City installing and operating ASR facilities within the Santa Cruz Mid-County Groundwater Basin inside or outside the areas served by the City, and in the Santa Margarita Groundwater Basin outside the areas served by the City. As indicated previously, ASR would include new ASR facilities at unidentified locations (referred to as “new ASR facilities”) and Beltz ASR facilities at the existing Beltz well facilities (referred to as “Beltz ASR facilities”).

As no definitive sites have been identified to date for new ASR facilities, the settings of such future facilities are unknown. While these new ASR facilities are likely to be located within a developed, urban setting, given the need for proximity to urban services, the analysis considers that these facilities could be located on sites that support special-status biological resources.

The Proposed Project would utilize existing Beltz 8, 9, 10, and 12 wells and would include the installation of upgrades to the existing Beltz system to allow for injection of treated water from the City's Graham Hill Water Treatment Plant (GHWTP) and subsequent recovery, also called extraction. All four of the Beltz sites are located in urban settings in the middle of residential neighborhoods or commercial areas and are entirely paved or planted with ornamental trees or shrubs. No natural vegetation communities are present.

Water Transfers and Exchanges and Intertie Improvement Sites

The Proposed Project could result in future water transfers and exchanges with neighboring water agencies, including SVWD, SqCWD, and CWD. New or improved interties facilities between the water systems of the City and of the neighboring water agencies may be needed to allow for such transfers and exchanges, as described in Chapter 3, Project Description. Brief descriptions of the overall setting for each existing or potential intertie facility site are provided below.

City/SVWD Intertie Site

The alignment for the potential intertie pipeline between the City and SVWD water supply systems is located on La Madrona Drive between Sims Road on the south to an undeveloped lot approximately 225 feet southeast of Altenitas Road in the City of Scotts Valley (Figure 4.3-3b). This lot is composed of annual grassland and is where a new pump station would be constructed. Large rural residential lots interspersed with stands of native forest or woodland occur on both sides of this road segment. There are also many nonnative trees or shrubs planted for ornamental landscaping (e.g., acacia [*Acacia* spp.]), particularly to the south between La Madrona Drive and Highway 17. The alignment crosses two unnamed intermittent stream channels that support disturbed redwood forest; both were dry during the May 6, 2020 field reconnaissance.

City/SqCWD/CWD Intertie Site

The Park Avenue pipeline site between SqCWD's McGregor Drive pump station and Park Avenue at Soquel Drive is entirely urban except for disturbed riparian woodland along the entrance to New Brighton Beach State Park to the south (Figure 4.3-3c). Two large eucalyptus stands are the only other sizeable stands of trees at this location; the remaining vegetation consists of ornamental trees and shrubs associated with commercial buildings along Park Avenue. The Soquel Village pipeline site from South Main Street to Daubenbiss Avenue in Soquel is entirely urban except for where it crosses Soquel Creek at Porter Street (Figure 4.3-3d). The riparian corridor along Soquel Creek is the primary biological resource in the infrastructure study area at this location.

The Freedom Boulevard pump station site at the intersection of Soquel Drive and Freedom Boulevard is primarily urban except for a remnant stand of riparian woodland between Sabina Way and Soquel Drive (Figure 4.3-3e). In contrast, the Valencia Road pump station site at the intersection of Huntington Drive and Valencia Road is more rural and supports dense coastal oak woodland west of Valencia Road (Figure 4.3-3f).

Surface Water Diversion Improvement Sites

Felton Diversion Fish Passage Improvements Site

The Felton Diversion fish passage improvements site is a surface water diversion/intake on the San Lorenzo River. It is located at the southern edge of Felton, east of Highway 9 and approximately 500 feet north of North Big Trees Park Road (Figure 4.3-3g). It is bordered by rural residential development to the north and west and mature riparian forest composed of arroyo willow (*Salix lasiolepis*), box elder (*Acer negundo*), red alder (*Alnus rubra*), Fremont cottonwood (*Populus fremontii*), and California sycamore (*Platanus racemosa*) to the south and east. The riparian forest and river are located inside Henry Cowell Redwoods State Park. Developed areas to the north and west support a mix of remnant native trees such as valley oak (*Quercus lobata*) and nonnative ornamentals such as acacia.

Tait Diversion and Coast Pump Station Improvements Site

The Tait Diversion and Coast Pump Station improvements site is located on a low-gradient segment of the San Lorenzo River approximately 2.4 miles upstream of the mouth of the river (Figure 4.3-3h). The associated Coast Pump Station is located on a terrace between and west of the river and State Highway 9 (also referred to as River Street). Several native coast live oaks (*Quercus agrifolia*), most of which were likely planted, grow around the facility perimeter. Riparian woodland composed of arroyo willow, box elder, and Fremont cottonwood grows along the river and adjacent to the eastern edge of the pump station. This woodland and the river itself are the primary biological resources at this location.

4.3.2.4 Wildlife

The biological study area supports habitat for many native wildlife species. Inland portions of the biological study area (including upper watersheds) are located in the Santa Cruz Mountains ecoregion, while coastal areas are located in the Monterey Bay Plains and Terraces ecoregion (Griffith et al. 2016). Wildlife species expected to occur in these regions reflect characteristic vegetation types, with species adapted to forests and woodland more likely in the former and those adapted to coastal scrub, grassland, and sand dunes in the latter. This section provides a general summary of common species assemblages known or expected to occur in the biological study area. See Section 4.3.2.5, Special-Status Biological Resources, for identification of special-status plant and wildlife species determined to potentially occur in or near the biological study area.

Fish

The biological study area provides diverse habitats that support a variety of native fish species. The North Coast area has coastal streams with relatively undeveloped watersheds that support resident species including rainbow trout (*Oncorhynchus mykiss*), prickly sculpin (*Cottus asper*), and coast range sculpin (*Cottus aleuticus*). Several anadromous species that are considered special-status species, such as Central California Coast steelhead (steelhead) (*O. mykiss*), Central California coast coho (coho) (*O. kisutch*), and Pacific lamprey (*Entosphenus tridentata*), also occur in reach of these coastal streams and are further described in Section 4.3.2.5, Special-Status Biological Resources. The seasonal lagoon at Laguna Creek supports threespine stickleback (*Gasterosteus aculeatus*), prickly sculpin, tidewater goby (*Eucyclogobius newberryi*), and occasional marine visitors such as starry flounder (*Platichthys stellatus*), and staghorn sculpin (*Leptocottus armatus*).

The San Lorenzo River and its tributaries support a more diverse fish assemblage than the smaller North Coast streams. Freshwater streams in the San Lorenzo watershed support Sacramento sucker (*Catostomus occidentalis*), California roach (*Lavinia symmetricus*), and speckled dace (*Rhinichthys osculus*), all native species. The San Lorenzo River mouth provides a relatively large estuarine environment where over 30 species of fish have been observed, including freshwater and marine sculpin, topsmelt (*Atherinops affinis*), Pacific herring (*Clupea pallasii*), starry flounder, staghorn sculpin, several species of surfperch (family Embiotocidae), rockfish (*Sebastes* sp.), striped bass (*Morone saxatilis*), bay pipefish (*Syngnathus leptorhynchus*), and unusual marine visitors such as striped mullet (*Mugil cephalus*) and bonefish (*Albula vulpes*), as well as others.

Lakes and ponds are rare in the biological study area but, notably, include Loch Lomond Reservoir. The reservoir supports rainbow trout (stocked by CDFW), and non-native game species such as largemouth bass (*Micropterus salmoides*) and bluegill (*Lepomis macrochirus*).

Amphibians and Reptiles

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

Many reptile species adapted to a variety of vegetation communities or land cover types are expected to occur in the biological study area. Western fence lizard (*Sceloporus occidentalis*) and common garter snake (*Thamnophis sirtalis*) are common species in both developed and natural land cover types as long as hard surfaces for basking (e.g., fence posts, rocks, logs, sides of buildings) are present for the former and water is nearby for the latter. Other species have narrower habitat requirements and only occur in natural land cover types, occasionally venturing onto rural residential lots within or adjacent to natural land cover. Species in this category include southern alligator lizard (*Elgaria multicarinata*), northern rubber boa (*Charina bottae*), California kingsnake (*Lampropeltis californiae*), gopher snake (*Pituophis catenifer*), striped racer (*Coluber lateralis*), forest sharp-tailed snake (*Contia longicauda*), ring-necked snake (*Diadophis punctatus*), and western rattlesnake (*Crotalus oreganus*).

Birds

A total of 450 bird species have been observed in Santa Cruz County (eBird 2020). Recognizing that most of these species could occur in the biological study area during all or certain times of the year, the following discussion provides a general summary of terrestrial birds likely to nest in the region.

The diversity of terrestrial birds likely to nest in the biological study area reflects the diversity of its vegetation, topography, and land uses. Many tree- or shrub-nesting species, including Anna's hummingbird (*Calypte anna*), downy woodpecker (*Picoides pubescens*), California scrub-jay (*Aphelocoma californica*), oak titmouse (*Baeolophus inornatus*), bushtit (*Psaltriparus minimus*), and California towhee (*Melozone crissalis*), are just as likely to nest in developed areas as in natural woodland or scrub. Others, such as American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), and house finch (*Haemorhous mexicanus*), are more strongly associated with

human development. Common tree-nesting raptors in the region include red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), Cooper's hawk (*Accipiter cooperi*), and great horned owl (*Bubo virginianus*), all of which are capable of nesting in urban, rural, and natural landscapes as long as suitable trees are present. Species that nest in, on, or under human structures (e.g., bridges, highway overpasses, culverts, crevices in buildings) in the area include white-throated swift (*Aeronautes saxatalis*), black phoebe (*Sayornis nigricans*), cliff swallow (*Petrochelidon pyrrhonota*), and barn swallow (*Hirundo rustica*). Open-cup- and cavity-nesting species with strong affinities for natural oak woodland include Nuttall's woodpecker (*Picoides nuttallii*), Hutton's vireo (*Vireo huttoni*), white-breasted nuthatch (*Sitta carolinensis*), orange-crowned warbler (*Oreothlypis celata*), and spotted towhee (*Pipilo maculatus*). Stands of emergent wetland vegetation in and adjacent to ponds, irrigation ditches, and natural wetlands provide nesting habitat for marsh wren (*Cistothorus palustris*), song sparrow (*Melospiza melodia*), osprey (*Pandion haliaetus*), and red-winged blackbird (*Agelaius phoeniceus*).

Terrestrial songbird species that breed in riparian vegetation have received increased conservation attention in recent decades due to the limited distribution and decline of riparian plant communities. Riparian-breeding songbirds expected to nest in the biological study area include Pacific-slope flycatcher (*Empidonax difficilis*), warbling vireo (*Vireo gilvus*), black-headed grosbeak (*Pheucticus melanocephalus*), common yellowthroat (*Geothlypis trichas*), song sparrow, and spotted towhee. Other special-status species known to occur within the biological study area include the state fully protected golden eagle (*Aquila chrysaetos*) and bald eagle (*Haliaeetus leucocephalus*).

Mammals

A variety of terrestrial mammals occur in the biological study area. Common burrowing or ground-dwelling rodents expected to occur in urban areas, woodland, scrub, and/or grassland include California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), house mouse (*Mus musculus*), California deer mouse (*Peromyscus californicus*), and California vole (*Microtus californicus*). Small to large-sized generalist species adapted to both urban and natural areas include striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*), northern raccoon (*Procyon lotor*), and mule deer (*Odocoileus hemionus*). Several carnivore species, including bobcat (*Lynx rufus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), and mountain lion (*Puma concolor*), occasionally venture into and move through developed areas but spend most of their time in undeveloped areas away from human activity. Other species that primarily occur in natural woodland, scrub, or grassland include American badger (*Taxidea taxus*), western gray squirrel (*Sciurus griseus*), and Merriam's chipmunk (*Tamias merriami*).

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

Invertebrates

The total number and diversity of arthropods, including crustaceans, insects, centipedes, millipedes, and arachnids and gastropods (snails and slugs) in the biological study area is unknown and impossible to estimate because many groups of arthropods and gastropods have not been studied. The following summary focuses on a few well-known species and a very broad overview of taxonomic groups. The banana slug (*Ariolimax* spp.), a common mollusk of moist forest floors, is perhaps the most well-known invertebrate to the public. Monarch butterfly (*Danaus plexippus*) is another well-known species that roosts by the thousands during the winter in tree groves along the central coast; several such overwintering sites occur in the biological study area near the coast. Other common butterflies include western tiger swallowtail (*Papilo rutulus*), cabbage white (*Pieris rapae*), acmon blue (*Plebejus acmon*), gulf fritillary (*Agraulis vanillae*), and California tortoiseshell (*Nymphalis californica*), among many others. Native aquatic invertebrate species richness is high or moderately high in all but the urbanized Baldwin/Wilder watershed (CDFW 2018). Aquatic invertebrates include five groups (orders) of insects that reproduce in water and transform into flying insects as adults; these include caddisflies (Trichopetera), mayflies (Ephemeroptera), stoneflies (Plecoptera), dobsonflies (Neuroptera), and dragonflies (Odonata). True flies (Diptera), true bugs (Hemiptera), and beetles (Coleoptera) are very common in terrestrial habitats but are also important components of many aquatic communities. Grasshoppers, crickets, and katydids (Orthoptera) primarily occur in terrestrial habitats.

4.3.2.5 Special-Status Biological Resources

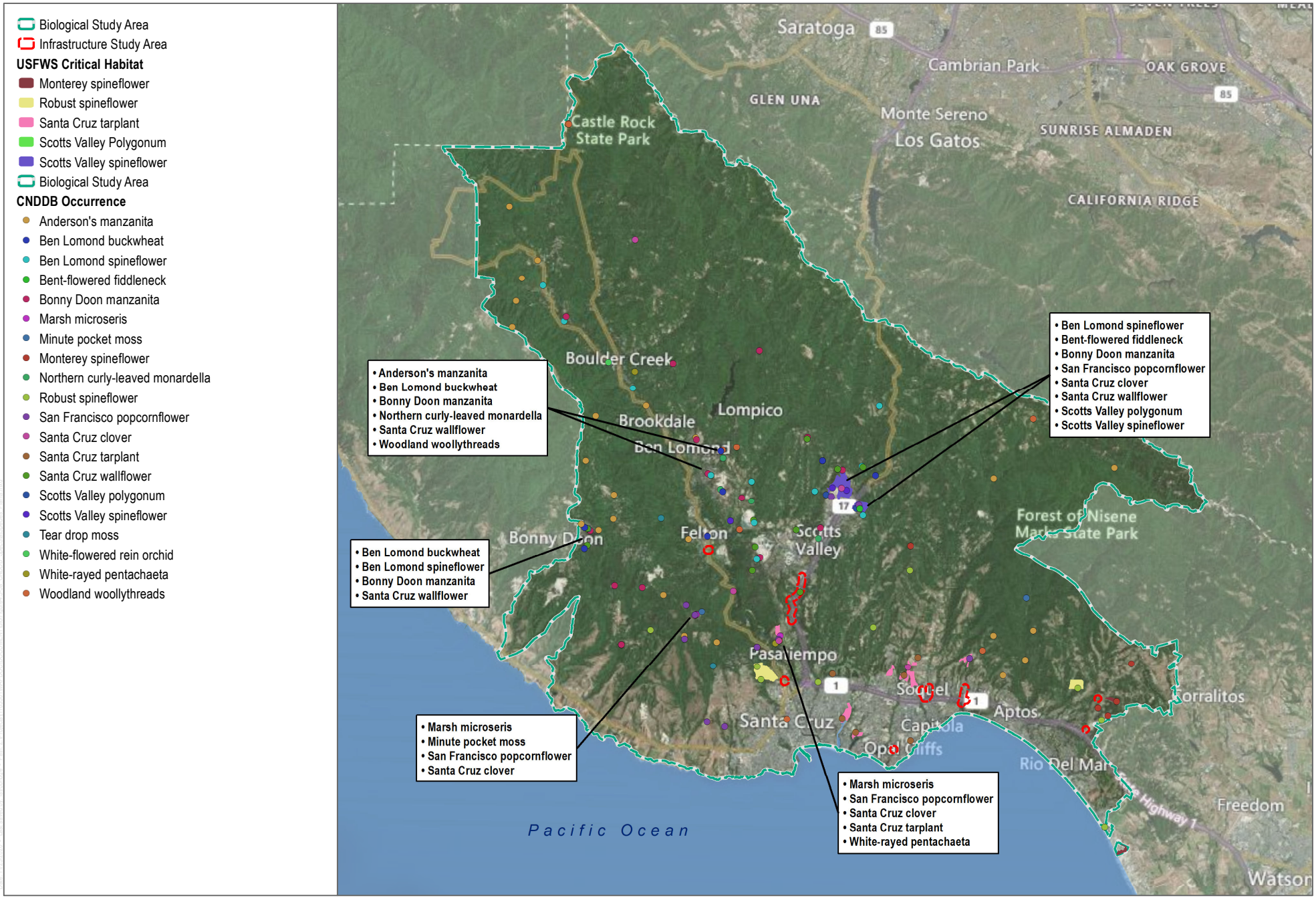
Special-status plant and wildlife species determined to potentially occur in or near the biological study area and/or the infrastructure study area, based on the preliminary review discussed above, on the suitability of habitat to support the species, and on the results of the field assessment, are discussed below. Figures 4.3-4a and 4.3-4b illustrate the location of previous documented occurrences of special-status species from the CNDDB and location of USFWS-designated critical habitat for listed species within the biological study area. The figures are limited to CNDDB point occurrence data and do not include other known occurrences that are documented elsewhere. Tables summarizing the potential occurrence of special-status plant and wildlife species are included in Appendix F.

Special-Status Plants

Based on the results of the CNDDB, CNPS, and IPaC database searches, a total of 68 special-status plant species occur in the entire biological study area (Appendix F). Of these, 31 were eliminated from consideration due to the lack of appropriate habitats (e.g., coastal dunes, coastal bluff scrub, freshwater/brackish marshes, etc.), absence of suitable edaphic conditions (e.g., alkaline or serpentine soils), extent of habitat degradation, or location of the biological study area outside of the species' known range.

The remaining 37 special-status plant species have at least a moderate potential to occur within natural vegetation communities of the biological study area including the following: Anderson's manzanita, arcuate bush-mallow, Ben Lomond buckwheat, Ben Lomond spineflower, bent-flowered fiddleneck, Blasdale's bent grass, Bonny Doon manzanita, bristly sedge, Choris' popcornflower, deceiving sedge, Kellman's bristle moss, Kellogg's horkelia, marsh microseris, marsh sandwort, minute pocket moss, Monterey pine, Monterey spineflower, northern curly-leaved monardella, Pacific Grove clover, perennial goldfields, Point Reyes horkelia, robust spineflower, San Francisco popcornflower, Santa Cruz clover, Santa Cruz cypress, Santa Cruz Mountains beardtongue, Santa Cruz Mountains pussypaws, Santa Cruz tarplant, Santa Cruz wallflower, Scotts Valley polygonum, Scotts Valley spineflower, swamp harebell, tear drop moss, Toren's grimmia, vaginulate grimmia, white-flowered rein orchid, and woodland woolythreads.

Within the infrastructure study area, several of these special-status species are considered to have a low potential or are not expected to occur. The remaining species considered to have at least a moderate potential to occur in the infrastructure study area are described in more detail below.



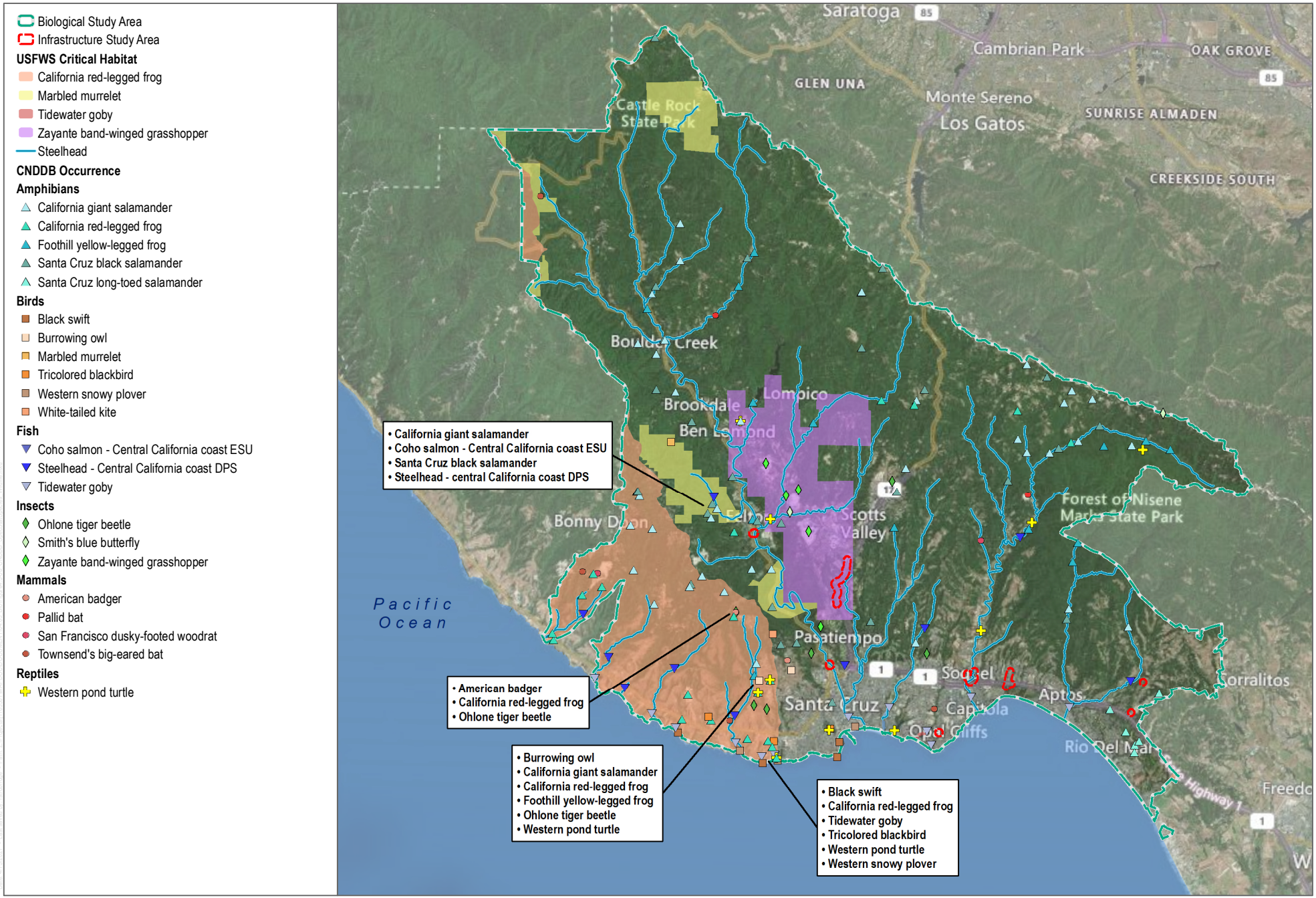
SOURCE: Bing Hybrid Basemap 2020, County of Santa Cruz 2020, CDFW CNDDB 2020, USFWS 2020

DUDEK

FIGURE 4.3-4A

Special-Status Species Locations and USFWS Critical Habitat - Plants

Santa Cruz Water Rights Project



SOURCE: Bing Hybrid Basemap 2020, County of Santa Cruz 2020, CDFW CNDDB 2020, USFWS 2020

FIGURE 4.3-4B

Special-Status Species Locations and USFWS Critical Habitat - Wildlife

Santa Cruz Water Rights Project

DUDEK

Aquifer Storage and Recovery Sites

New ASR Facility Sites

As described above in Section 4.3.2.3, Vegetation Communities and Land Cover Types, no definitive sites have been identified to date for the new ASR facility sites and therefore site conditions for these new ASR facility sites are unknown. While these new ASR facilities are likely to be located within a developed, urban setting, given the need for proximity to urban services, the analysis considers that these facilities could be located on sites that support some portion of a natural vegetation community and have the potential for special-status plants to occur.

Several special-status plant species have at least a moderate potential to occur within natural vegetation communities assumed to be potentially present at one or more of the new ASR facility sites (annual grassland, coastal oak woodland, coastal scrub, montane hardwood conifer, and redwood) including the following 10 species: Monterey spineflower, Scotts Valley spineflower, robust spineflower, Santa Cruz wallflower, Santa Cruz tarplant, marsh microseris, woodland woolythreads, white-flowered rein orchid, Scotts Valley polygonum, and Santa Cruz clover. Four additional species associated with sandhills habitat (see Section 4.3.2.5, Special-Status Biological Resources, for definition) have at least a moderate potential to occur including: Bonny Doon manzanita, Ben Lomond spineflower, Ben Lomond buckwheat, and northern curly-leaved monardella.

Beltz ASR Facility Sites

No special-status plant species are expected to occur at the Beltz ASR facility sites. All of the sites have been developed and are surrounded by residential or commercial uses. Natural vegetation communities that could provide habitat for special-status plants are entirely absent from the Beltz ASR facility sites.

Intertie Improvement Sites

City/SVWD Intertie Site

Several special-status plant species have at least a moderate potential to occur within the natural vegetation communities along the proposed City/SVWD intertie site (annual grassland, coastal oak woodland, coastal scrub, montane hardwood conifer, and redwood) including the following 10 species: Monterey spineflower, Scotts Valley spineflower, robust spineflower, Santa Cruz wallflower, Santa Cruz tarplant, marsh microseris, woodland woolythreads, white-flowered rein orchid, Scotts Valley polygonum, and Santa Cruz clover. Four additional species associated with sandhills habitat have at least a moderate potential to occur including: Bonny Doon manzanita, Ben Lomond spineflower, Ben Lomond buckwheat, and northern curly-leaved monardella.

City/SqCWD/CWD Intertie Site

Several special-status plant species have at least a moderate potential to occur within the natural vegetation communities along the proposed City/SqCWD/CWD intertie site (coastal oak woodland, and valley foothill riparian) including the following 7 species: Monterey spineflower, robust spineflower, Santa Cruz tarplant, marsh microseris, woodland woolythreads, white-flowered rein orchid, and Santa Cruz clover.

Surface Water Diversion Improvement Sites

Felton Diversion Fish Passage Improvements Site

No special-status plant species were determined to have at least a moderate potential to occur within natural riparian vegetation communities of the Felton Diversion site vicinity.

Tait Diversion and Coast Pump Station Improvements Site

Since the Tait Diversion and Coast Pump Station improvement site supports similar vegetation communities and land covers along the San Lorenzo River as the Felton Diversion fish passage improvements site, no special-status plant species were determined to have at least a moderate potential to occur within the natural riparian vegetation communities of the Tait Diversion and Coast Pump Station site vicinity.

Special-Status Wildlife

Results of the CNDDB and IPaC database searches indicate that 48 special-status wildlife species occur in the biological study area (see Appendix F). Of these, 18 species were eliminated from consideration due to the absence of suitable habitat (e.g., native grassland, coastal scrub, estuarine conditions, etc.) or because the biological study area is outside of the known range of the species and are not discussed any further.

The remaining 30 special-status wildlife species have at least a moderate potential to occur within natural vegetation communities of the entire biological study area including the following: five fish (coho, Monterey roach, Pacific lamprey, steelhead, and tidewater goby), three amphibians (California giant salamander, California red-legged frog, and Santa Cruz black salamander), 13 birds (American peregrine falcon, bald eagle, black swift, golden eagle, grasshopper sparrow, long-eared owl, marbled murrelet, olive-sided flycatcher, purple martin, tricolored blackbird, white-tailed kite, yellow warbler, and yellow-breasted chat), four invertebrates (Mount Hermon June beetle, Ohlone tiger beetle, Smith's blue butterfly, and Zayante band-winged grasshopper), three mammals (pallid bat, San Francisco dusky-footed woodrat, and Townsend's big-eared bat), and two reptiles (northern California legless lizard and western pond turtle).

Laguna Creek, Liddell Creek, and Majors Creek provide habitat for steelhead and Laguna Creek, Liddell Creek and Majors Creek provide habitat for coho in at least some years (City of Santa Cruz 2021b; Berry, C. et al. 2019). According to watershed characterization protocols developed in the National Marine Fisheries Service's (NMFS) Recovery Plan for Central California Coastal coho (NMFS 2012), the steelhead populations in Majors, Laguna, and Liddell creeks are described as Dependent Populations. The term Dependent Populations refers to steelhead populations whose dynamics and extinction risk are substantially affected by neighboring populations. In general, under current conditions Majors Creek and Liddell Creek likely do not maintain suitable spawning and rearing conditions for coho. Long-term persistence in Laguna Creek is likely tenuous due to the relatively small quantity of accessible habitat coupled with the significant amount of water diverted from the upper watershed (NMFS 2012). The mouths of these streams may provide seasonal estuarine environments that are well developed (Laguna Creek) or more transient (Majors Creek). The seasonal lagoon at Laguna Creek supports rearing steelhead and tidewater goby, breeding habitat for California red-legged frog, and suitable habitat for western pond turtle. The San Lorenzo River and its tributaries support steelhead and Pacific lamprey; however, coho are considered extirpated from the San Lorenzo River. The San Lorenzo River mouth provides a relatively large estuarine environment that also supports habitat for tidewater goby.

Within the infrastructure study area, several of these special-status species are considered to have a low potential to occur or are not expected to occur. The remaining species observed or considered to have at least a moderate potential to occur in the infrastructure study area are described in more detail below.

Aquifer Storage and Recovery Sites

New ASR Facility Sites

As described above in Section 4.3.2.3, Vegetation Communities and Land Cover Types, no definitive sites have been identified to date for the new ASR sites. While these new ASR facilities are likely to be located within a developed, urban setting, given the need for proximity to urban services, the analysis considers that these facilities could be located on sites that support some portion of a natural vegetation community and have the potential for special-status wildlife to occur.

Several special-status wildlife species have at least a moderate potential to occur within the natural vegetation communities assumed to be potentially present at one or more of the new ASR sites (annual grassland, coastal oak woodland, coastal scrub, montane hardwood conifer, and redwood) including the following species: four amphibians (California giant salamander, California red-legged frog, Santa Cruz black salamander, and Santa Cruz long-toed salamander), three birds (white-tailed kite, yellow warbler, and yellow-breasted chat), two mammals (pallid bat and San Francisco dusky-footed woodrat), and one reptile (western pond turtle). Additionally, three species associated with sandhills habitat have a potential to occur including: Mount Hermon June beetle, Ohlone tiger beetle, and the Zayante band-winged grasshopper.

Beltz ASR Facility Sites

No special-status wildlife species are expected to occur at the Beltz ASR facility sites. All of the sites have been developed and are surrounded by residential or commercial uses. Natural vegetation communities that could provide habitat for special-status wildlife are entirely absent.

Intertie Improvement Sites

City/SVWD Intertie Site

Several special-status wildlife species have at least a moderate potential to occur within the natural vegetation communities along the proposed City/SVWD intertie site (annual grassland, coastal oak woodland, coastal scrub, montane hardwood conifer, and redwood) including the following species: four amphibians (California giant salamander, California red-legged frog, Santa Cruz black salamander, and Santa Cruz long-toed salamander), three birds (white-tailed kite, yellow warbler, and yellow-breasted chat), two mammals (pallid bat and San Francisco dusky-footed woodrat), and one reptile (western pond turtle). Additionally, three species associated with the sandhills habitat have a potential to occur within this intertie site: Mount Hermon June beetle, Ohlone tiger beetle, and the Zayante band-winged grasshopper.

City/SqCWD/CWD Intertie Site

Several special-status wildlife species have at least a moderate potential to occur within the natural vegetation communities along the proposed City/SqCWD/CWD intertie site (coastal oak woodland, eucalyptus, and valley foothill riparian) including the following species: four amphibians (California giant salamander, California red-legged frog, Santa Cruz black salamander, and Santa Cruz long-toed salamander), three birds (white-tailed kite,

yellow warbler, and yellow-breasted chat), two mammals (pallid bat and San Francisco dusky-footed woodrat), and one reptile (western pond turtle).

Surface Water Diversion Improvement Sites

Felton Diversion Fish Passage Improvements Site

A number of special-status wildlife species have at least a moderate potential to occur within natural riparian vegetation communities of the Felton Diversion fish passage improvements site (riverine and valley foothill riparian forest) including the following: four fish (coho, Monterey roach, Pacific lamprey, and steelhead), four amphibians (California giant salamander and Santa Cruz black salamander), six birds (long-eared owl, olive-sided flycatcher, purple martin, white-tailed kite, yellow warbler, and yellow-breasted chat), three mammals (pallid bat, San Francisco dusky-footed woodrat, and Townsend's big-eared bat), and two reptiles (northern California legless lizard and western pond turtle).

Tait Diversion and Coast Pump Station Improvements Site

Since the Tait Diversion and Coast Pump Station improvement site supports similar vegetation communities and land covers along the San Lorenzo River as the Felton Diversion fish passage improvements site, the same special-status wildlife species as listed above have at least a moderate potential to occur at this site.

Riparian and Sensitive Vegetation Communities

For the purposes of this EIR, *sensitive vegetation communities* include the following: (1) those designated as sensitive by CDFW (2019a) (CDFW sensitive natural communities), which includes riparian vegetation communities; and (2) those designated as sensitive habitats by the County of Santa Cruz within Chapter 5 of the General Plan and County Code Title 16, some of which overlap with the CDFW designations. Each of these are briefly discussed below.

CDFW Sensitive Natural Communities

CDFW sensitive natural communities are 'natural communities' (of vegetation) or 'vegetation types' that have been evaluated by CDFW, using NatureServe's Heritage Methodology (Faber-Langendon et al. 2012) and vegetation community classifications from *A Manual of California Vegetation* (MCV) (Sawyer et al. 2009), and are ranked by rarity and threat. Evaluation is done at both the global (i.e., full natural range within and outside of California), and State (i.e., within California) levels resulting in a single 'G' (global) and 'S' (state) rank ranging from 1 (i.e., very rare and threatened) to 5 (i.e., demonstrably secure). The five levels of S-ranks are defined as follows:

- **S1 = Critically Imperiled**. Critically imperiled in California because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation.
- **S2 = Imperiled**. Imperiled in California because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation.
- **S3 = Vulnerable.** Vulnerable in California due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
- **S4 = Apparently Secure.** Uncommon but not rare in California; some cause for long-term concern due to declines or other factors.
- **S5 = Secure.** Common, widespread, and abundant in the state.

Additional threat ranks are defined as follows:

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

Natural communities with an S rank of S1, S2, or S3 are considered "sensitive" by CDFW (2019a) and typically addressed in the CEQA environmental review process.

Dudek biologists reviewed the web version of the MCV (CNPS 2020b) for sensitive natural vegetation communities (alliances) in the Central California Coast ecoregion that have the potential to occur within the biological study area. A total of 80 sensitive vegetation communities were initially identified as occurring within the ecoregion. This list was evaluated against the vegetation communities mapped within the FRAP dataset used for this analysis. Because the FRAP dataset (CAL FIRE 2020) is based on a different vegetation classification standard (CWHR habitat types) and larger mapping scale from the CDFW sensitive natural communities (MCV alliances and associations), a translation between the systems that allowed for a "crosswalk" (side-by-side comparison) was compiled by Dudek. The crosswalk was used to extrapolate potential sensitive natural communities that could occur within the biological study area. Table 4.3-4 summarizes the 41 sensitive natural vegetation communities (alliances) that were identified as potentially occurring in the biological study area based on the generic natural vegetation communities included within the FRAP dataset.

Table 4.3-4. Potentially Occurring Sensitive Natural Vegetation Communities within the Biological Study Area

Sensitive Vegetation Community (MCV Vegetation Alliance)	Vegetation Community (FRAP/CWHR)	State Rarity
Forest and Woodlands Alliances and Stands		
Bigleaf maple forest and woodland	Montane hardwood-conifer	S3
Bishop pine - Monterey pine forest and woodland	Closed-cone pine-cypress	S3.2
Black cottonwood forest and woodland	Valley foothill riparian	S3
California bay forest and woodland	Coastal oak woodland	S3
California sycamore woodlands	Valley foothill riparian	S3
Fremont cottonwood forest and woodland	Valley foothill riparian	S3.2
Goodding's willow - red willow riparian woodland and forest	Valley foothill riparian	S3
Madrone forest	Coastal oak woodland	S3.2
Monterey pygmy cypress stands	Closed-cone pine-cypress	S1
Redwood forest and woodland	Redwood	S3.2
Santa Cruz cypress groves	Closed-cone pine-cypress	S1
Shining willow groves	Valley foothill riparian	S3.2
Shreve oak forests	Coastal oak woodland	S2

Table 4.3-4. Potentially Occurring Sensitive Natural Vegetation Communities within the Biological Study Area (continued)

Sensitive Vegetation Community (MCV Vegetation Alliance)	Vegetation Community (FRAP/CWHR)	State Rarity
Shrubland Alliances and Stands		
Brittle leaf - woolly leaf manzanita chaparral	Mixed chaparral	S3
California coffee berry - western azalea scrub - Brewer's willow	Valley foothill riparian	S3
Canyon live oak - Interior live oak chaparral	Mixed chaparral	S3
Glossy leaf manzanita chaparral	Mixed chaparral	S2
Golden chinquapin thickets	Mixed chaparral	S2
Hairy leaf - woolly leaf ceanothus chaparral	Mixed chaparral	S3
Hazelnut scrub	Coastal scrub	S2?
Hoary, common, and Stanford manzanita chaparral	Mixed chaparral	S3
Hooker's manzanita chaparral	Mixed chaparral	S2
Monterey manzanita chaparral	Mixed chaparral	S1
Pajaro manzanita chaparral	Mixed chaparral	S1
Silver dune lupine - mock heather scrub	Coastal scrub	S3
Silverleaf manzanita chaparral	Mixed chaparral	S1.2
Wax myrtle scrub	Coastal scrub	S3
Herbaceous Alliances and Stands		
Ashy ryegrass - creeping ryegrass turfs	Perennial grassland	S3
Coastal tufted hair grass - Meadow barley - California oatgrass wet meadow	Perennial grassland, Wet meadow	S3
Dune mat	Coastal scrub	S3
Fountain thistle seeps	Wet meadow	S1
Gum plant patches	Perennial grassland	S2
Idaho fescue - California oatgrass grassland	Perennial grassland	S3
Iris-leaf rush seeps	Wet meadow	S2?
Needle grass - Melic grass grassland	Perennial grassland	S3
Pacific reed grass meadows	Perennial grassland	S2
Salt rush swales	Coastal scrub	S2?
Sand dune sedge swaths	Coastal scrub, Wet meadow	S3?
Sea lyme grass patches	Perennial grassland	S2
Seaside woolly-sunflower - seaside daisy - buckwheat patches	Coastal scrub	S3
Torrent sedge patches	Valley foothill riparian	S3

Notes: CWHR = California Department of Fish and Wildlife's Wildlife Habitat Relationship; FRAP = Fire and Resource Assessment Program; MCV = Manual of California Vegetation.
State Rarity Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; the "?" modifier indicates best estimate of rank based on insufficient samples over the full expected range of the vegetation community. Threat ranks: 0.1 = very threatened; 0.2 = threatened; 0.3 = no current threat known.

Riparian

Riparian vegetation communities occur along streams, ponds, rivers, and lakes and are considered sensitive because of their high habitat value for native wildlife. Riparian vegetation in the biological study area includes areas mapped as valley foothill riparian (box-elder forest and woodland, California sycamore woodland, Fremont cottonwood forest and woodland, Goodding's willow-red willow riparian woodland, and torrent sedge patches), but unmapped stands may also occur wherever water is available.

County of Santa Cruz Sensitive Habitats

Two additional sensitive habitat types as mapped by Santa Cruz County and protected under County Code 16.32 occur within the biological study area: special forests and sandhills habitat. Both habitat types were defined in the County General Plan adopted May 24, 1994. Special forests are forests that are (1) unique natural communities, (2) limited in supply and distribution, (3) threatened by substantial disturbance from human activities, and (4) habitat for rare, endangered and/or locally unique species of plants and animals. Examples of special forests include San Andreas oak woodlands, woodland/maritime chaparral, indigenous Ponderosa pine, and indigenous Monterey pine forests. Sandhills habitat occurs in the Scotts Valley, San Lorenzo Valley, and Bonny Doon area. In these locations, Zayante sands soils provide habitat for several special-status species endemic to (i.e., found only in) this area, such as the Mount Hermon June beetle, the Zayante band-winged grasshopper, Scotts Valley spineflower, Ben Lomond wallflower, and silver-leaved manzanita. Special forests and sandhills habitat in the biological study area are depicted in Figure 4.3-5.

Within the infrastructure study area, the potential for riparian and sensitive vegetation communities is described in more detail below.

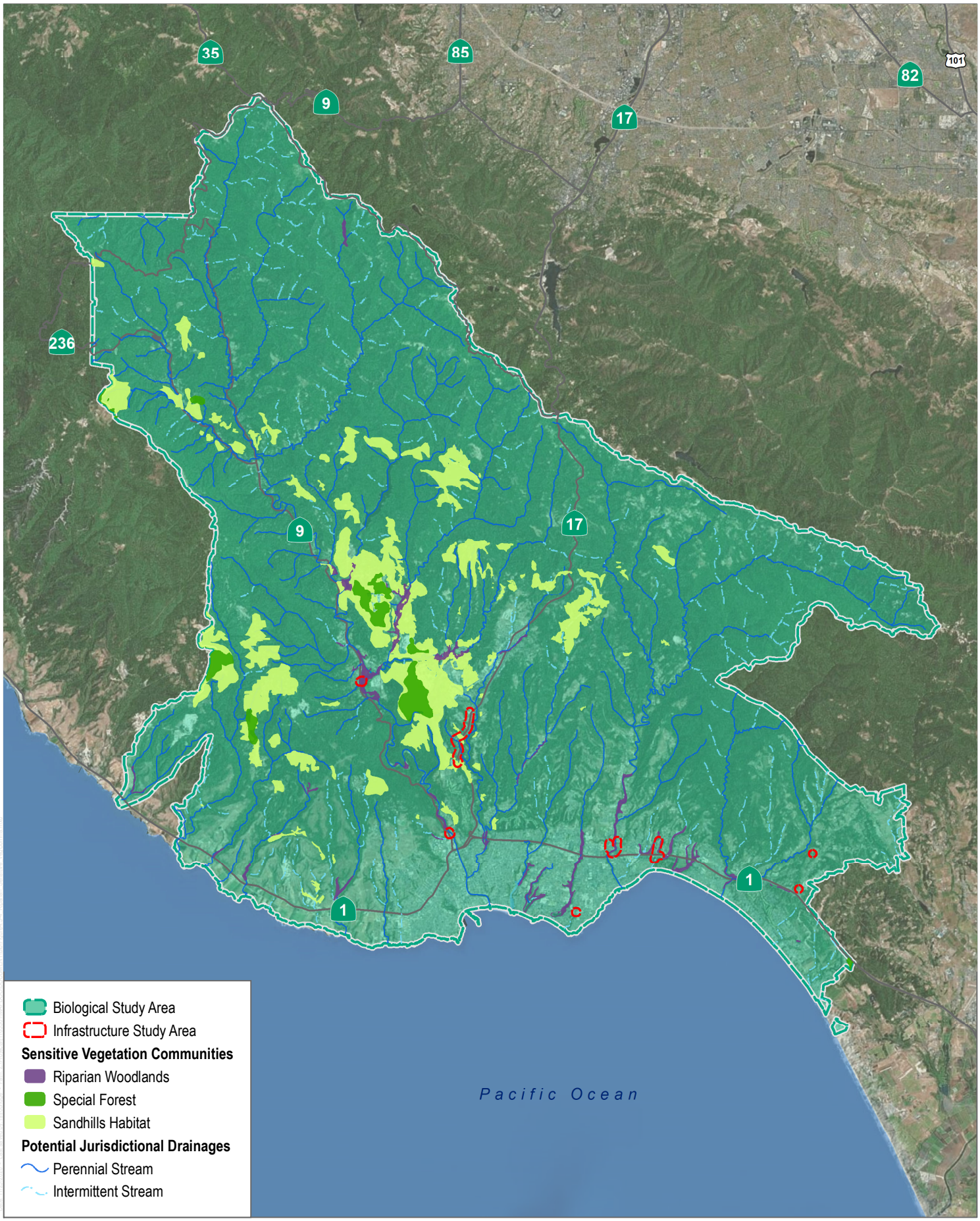
Aquifer Storage and Recovery Sites

New ASR Facility Sites

As described above in Section 4.3.2.3, Vegetation Communities and Land Cover Types, no definitive sites have been identified to date for the new ASR facility sites. While these new ASR facilities are likely to be located within a developed, urban setting, given the need for proximity to urban services, the analysis considers that these facilities could be located on sites that have the potential for some amount of natural vegetation and therefore potential for sensitive habitats. The natural vegetation communities that could potentially occur at one or more of the new ASR facilities sites include annual grassland, coastal oak woodland, coastal scrub, montane hardwood-conifer, and redwood. Collectively, these vegetation communities have the potential to support 12 sensitive vegetation communities: bigleaf maple forest and woodland, California bay forest and woodland, dune mat, hazelnut scrub, madrone forest, redwood forest and woodland, salt rush swales, sand dune sedge swaths, seaside woolly-sunflower - seaside daisy - buckwheat patches, Shreve oak forests, silver dune lupine - mock heather scrub, and wax myrtle scrub. Additionally, new ASR facility sites could occur on areas mapped as sandhills habitat (Figure 4.3-3b). However, new ASR facility sites would not be sited within riparian or special forests, as mapped by the County.

Beltz ASR Facility Sites

The Beltz 8, 9, 10, and 12 ASR facility sites are located in the middle of residential and commercial uses and are entirely paved or planted with ornamental trees or shrubs. As a result, no sensitive vegetation communities are potentially present within the Beltz ASR facility sites.



SOURCE: Bing Hybrid Basemap 2020, County of Santa Cruz 2020

DUDEK

0 1.5 3 Miles

FIGURE 4.3-5

Riparian and Sensitive Vegetation Communities

Santa Cruz Water Rights Project

Intertie Improvement Sites

City/SVWD Intertie Site

As described above in Section 4.3.2.3, Vegetation Communities and Land Cover Types, the natural vegetation communities at this programmatic component site include annual grassland, coastal oak woodland, coastal scrub, montane hardwood-conifer, and redwood. Collectively, these vegetation communities have the potential to support 12 sensitive vegetation communities: bigleaf maple forest and woodland, California bay forest and woodland, dune mat, hazelnut scrub, madrone forest, redwood forest and woodland, salt rush swales, sand dune sedge swaths, seaside woolly-sunflower - seaside daisy - buckwheat patches, Shreve oak forests, silver dune lupine - mock heather scrub, and wax myrtle scrub. No special forests, as mapped by the County, occur within this programmatic component site. However, the central and southern portions of the intertie site are mapped as sandhills habitat (Figure 4.3-3b). Specifically, approximately 720 linear feet along La Madrona Drive, between Chelsey Place and Oak Acres, and approximately 110 linear feet along Sims Road have been mapped with this designation.

City/SqCWD/CWD Intertie Site

As described above in Section 4.3.2.3, Vegetation Communities and Land Cover Types, the natural vegetation communities at this programmatic component site include disturbed valley foothill riparian woodland along the Park Avenue and Soquel Village pipeline segments, and the Freedom Boulevard pump station site; riverine at the Soquel Village pipeline segment; and coastal oak woodland at the Valencia Road pump station site. Collectively, these vegetation communities have the potential to support 10 sensitive vegetation communities: black cottonwood forest and woodland, California bay forest and woodland, California coffee berry - western azalea scrub - Brewer's willow, California sycamore woodlands, Fremont cottonwood forest and woodland, Goodding's willow - red willow riparian woodland and forest, madrone forest, shining willow groves, Shreve oak forests, and torrent sedge patches. No special forests or sandhills habitat, as mapped by the County, occur within this programmatic component site.

Surface Water Diversion Improvement Sites

Felton Diversion Fish Passage Improvements Site

As described above in Section 4.3.2.3, Vegetation Communities and Land Cover Types, the natural vegetation communities at this programmatic component site include mature valley foothill riparian forest associated with San Lorenzo River. This vegetation community has the potential to support seven sensitive vegetation communities: black cottonwood forest and woodland, California coffee berry - western azalea scrub - Brewer's willow, California sycamore woodlands, Fremont cottonwood forest and woodland, Goodding's willow - red willow riparian woodland and forest, shining willow groves, and torrent sedge patches. No special forests or sandhills habitat, as mapped by the County, occur within this programmatic component site.

Tait Diversion and Coast Pump Station Improvements Site

As described above in Section 4.3.2.3, Vegetation Communities and Land Cover Types, this programmatic component site includes valley foothill riparian woodland associated with San Lorenzo River. This vegetation community has the potential to support seven sensitive vegetation communities: black cottonwood forest and woodland, California coffee berry - western azalea scrub - Brewer's willow, California sycamore woodlands, Fremont cottonwood forest and woodland, Goodding's willow - red willow riparian woodland and forest, shining willow groves, and torrent sedge patches. No special forests or sandhills habitat, as mapped by the County, occur within this programmatic component site.

Potential Jurisdictional Aquatic Resources

Potentially jurisdictional aquatic resources, including federal and state jurisdictional wetlands and non-wetland waters, occur throughout the biological study area. Federal and state jurisdictional aquatic resources are regulated under the Clean Water Act, CFGC, Porter-Cologne Water Quality Act, and the California Coastal Act (see Section 4.3.3, Regulatory Framework, for additional information about the related laws and regulations). For the purposes of this EIR, the riparian vegetation communities (i.e., areas mapped as valley foothill riparian) listed above in Table 4.3-3 are assumed to be wetlands potentially under state and/or federal jurisdiction. Refer to descriptions in the section above for the occurrence of riparian habitat within each infrastructure component site. It should be noted that unmapped stands of potentially jurisdictional riparian vegetation may also occur wherever water is available.

Potentially jurisdictional aquatic resources were identified at a high level using the County's GIS Web Portal (County of Santa Cruz 2020b), which includes perennial and intermittent streams as well as swales. Figure 4.3-5 illustrates the locations of potentially jurisdictional drainages identified within the biological study area based on the County's GIS data. There are 76 named, perennial streams totaling approximately 1,609,402 linear feet mapped within the biological study area. Of that total, there are 31 perennial streams and one reservoir determined to be major drainages or surface water bodies, see Section 4.3.2.2, Watersheds and Hydrology, for how a major drainages or surface water bodies were defined. The presence of major surface water bodies within each infrastructure component site is summarized below.

Aquifer Storage and Recovery Sites

New ASR Facility Sites

As described above in Section 4.3.2.3, Vegetation Communities and Land Cover Types, no definitive sites have been identified to date for the new ASR sites. While these new ASR facilities are likely to be located within a developed, urban setting, given the need for proximity to urban services, the analysis considers that these facilities could be located on sites that have the potential for some amount of natural vegetation and therefore potential to support jurisdictional aquatic resources. Although implementation of Standard Construction Practice #10 would avoid the active (i.e., flowing) portion of streams and drainages, new ASR facilities could occur within the jurisdictional limits of adjacent wetlands and riparian areas associated with nearby streams and drainages (see further information below on standard construction practices).

Beltz ASR Facility Sites

There are no potentially jurisdictional aquatic resources within the Beltz 8, 10, and 12 ASR facility sites. One unnamed, intermittent stream, potentially under USACE, RWQCB, and CDFW jurisdiction, occurs outside the Beltz 9 ASR facility site but within the 500-foot buffer. In addition, Rodeo Creek, a perennial stream and potentially under USACE, RWQCB, and CDFW jurisdiction, occurs immediately outside the 500-foot buffer surrounding the Beltz ASR facility sites. There are no mapped wetlands occurring within the Beltz ASR facility sites.

Intertie Improvement Sites

City/SVWD Intertie Site

The City/SVWD intertie site crosses an unnamed perennial stream, which is a tributary to Carbonera Creek and is potentially under USACE, RWQCB, and CDFW jurisdiction. Carbonera Creek occurs immediately outside the 500-foot buffer surrounding the City/SVWD intertie site. There are no mapped wetlands occurring within this infrastructure site.

City/SqCWD/CWD Intertie Site

The Soquel Village pipeline site occurs near Soquel Creek, a perennial stream potentially under USACE, RWQCB, and CDFW jurisdiction. For a description of the potentially jurisdictional wetlands occurring within the Soquel Village pipeline site, refer to the vegetation community description in the section above.

The Park Avenue pipeline site, which includes the McGregor Pump station upgrade site, contains a portion of Tannery Gulch, a perennial stream potentially under USACE, RWQCB, and CDFW jurisdiction. For a description of the potentially jurisdictional wetlands occurring within the Park Avenue pipeline site, refer to the vegetation community description in the section above.

There are no mapped jurisdictional waters within the Freedom Boulevard pump station site or the Valencia Road pump station site. However, riparian vegetation occurs within the 500-foot buffer surrounding the Freedom Boulevard pump station site that is potentially under USACE, RWQCB, and CDFW jurisdiction.

Surface Water Diversion Improvement Sites

Felton Diversion Fish Passage Improvements Site

The Felton Diversion fish passage improvements site occurs along the San Lorenzo River, which is potentially under USACE, RWQCB, and CDFW jurisdiction. For a description of the potentially jurisdictional aquatic resources occurring within this infrastructure site, refer to the vegetation community description in the section above.

Tait Diversion and Coast Pump Station Improvements Site

The Tait Diversion and Coast Pump Station site occurs along the San Lorenzo River, which is potentially under USACE, RWQCB, and CDFW jurisdiction. For a description of the potentially jurisdictional wetlands occurring within this infrastructure site, refer to the vegetation community description in the section above.

Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that facilitate the movement of animals over time between two or more patches of otherwise disjunct habitat and provide avenues for the immigration and emigration of animals. Wildlife corridors contribute to population viability in several ways: they allow the continual exchange of genes between populations, which helps maintain genetic diversity; they provide access to adjacent habitat areas, representing additional territory for foraging and mating; they allow for a greater carrying capacity of wildlife populations by including "live-in" habitat; and they provide routes for recolonization of habitat lands following local population extinctions or habitat recovery from ecological catastrophes (e.g., fires). Depending on the size and extent, wildlife corridors can be used during animal migration, foraging events, and juvenile dispersal, and ultimately serve to facilitate genetic exchange between core populations, provide avenues for plant seed dispersal, enable increased biodiversity and maintenance of ecosystem integrity within habitat patches, and help offset the negative impacts of habitat fragmentation (Hilty et al. 2006).

Habitat linkages are patches of native habitat that function to join two substantially larger patches of habitat. They serve as connections between distinct habitat patches and help reduce the adverse effects of habitat fragmentation. Although individual animals may or may not live in a habitat linkage, the linkage does represent a potential route for gene flow and long-term dispersal. Habitat linkages may serve both as habitat and as avenues of gene flow for small animals, such as reptiles and amphibians. Habitat linkages may be represented by continuous patches of habitat or

by nearby habitat "islands" that function as "stepping-stones" for dispersal. Linkages can be small and even man made (e.g., highway underpasses, culverts, bridges), narrow linear habitat areas (e.g., riparian strips, hedgerows), or wider landscape-level extensions of habitat that ultimately connect even larger core habitat areas.

The biological study area includes a combination of both core habitat blocks and distinct wildlife corridors or linkages. Within blocks of habitat, wildlife move up and down slopes and use existing trails, ridges, and valleys throughout to satisfy life history needs. Within corridor and linkage areas, they may use linear features such as creeks and ridges. The distinction between habitat block and corridor or linkage is largely based on the size and modal method of the species of interest. Large carnivores, for example, will have much larger home ranges than smaller herbivores and these species will have larger home ranges than smaller and less mobile amphibians and reptiles such as salamanders and fence lizards. Birds, due to mobility, are typically less constrained than land-based species.

The North Coast streams and lands above Aptos Creek are in the "Santa Cruz Mountains" large landscape block mapped by Penrod et al. (2013). This area was deemed important for mountain lion, mule deer, bobcat, American badger, ringtail, and avian species. As discussed in Penrod (2013), large landscape blocks are areas of high ecological integrity that "build upon the existing conservation network in the region" upon which critical linkages were delineated by Penrod et al. (2013). While no such critical linkages occur in the biological study area, they do occur just north of it (Penrod et al 2013).

All streams with adjacent riparian vegetation are expected to serve as local movement corridors for resident wildlife traveling up and down the various watersheds within the biological study area. Within the infrastructure study area, this habitat is provided at the Felton Diversion fish passage improvements site and Tait Diversion and Coast Pump Station improvements site.

Steelhead and coho adults migrate from the ocean to upstream spawning habitat during the winter (December through April) and juveniles migrate between riverine habitat and rearing habitat in downstream reaches or lagoons. Adult steelhead that survive after spawning eventually return downstream to re-enter the ocean. Rearing juveniles may migrate between rearing habitat in the lagoon and upstream areas during the rearing period. Smolts migrate downstream and enter the ocean, primarily during late winter and spring. Pacific lamprey also migrate from the ocean to upstream spawning habitat as adults and, after hatching, larvae drift downstream to low-velocity rearing areas. Larvae eventually transform to juveniles and migrate downstream to enter the ocean. Although other species such as Sacramento sucker, tidewater goby and Monterey roach may have seasonal movements within the river related to different habitat needs during their life-history, such as spawning, these species are not considered migratory species.

4.3.3 Regulatory Framework

4.3.3.1 Federal

Clean Water Act

The Federal Water Pollution Control Act of 1972 (Clean Water Act) (33 USC 1251 et seq.), as amended by the Water Quality Act of 1987 (PL 100-4), is the major federal legislation governing water quality. The purpose of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Discharges into waters of the United States are regulated under Section 404. The "Navigable Waters Protection Rule," issued by the EPA and USACE in January 2020, defines "waters of the United States" to include the following four categories: (1) the territorial seas and traditional navigable waters; (2) tributaries of such waters;

(3) certain lakes, ponds, and impoundments of jurisdictional waters; and (4) wetlands adjacent to other jurisdictional waters (other than waters that are themselves wetlands). The term "wetlands" (a subset of waters) is defined in 33 CFR Section 328.3(b) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

In California, the SWRCB and the RWQCBs are responsible for implementing the Clean Water Act and related elements of the California Water Code (see Section 4.3.3.2, State [Porter-Cologne Water Quality Act]).

Important applicable sections of the Clean Water Act are as follows:

- Section 401 requires an applicant for any federal permit for an activity that may result in a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the Clean Water Act. Certification is provided by the RWQCB.
- Section 402 establishes the National Pollutant Discharge Elimination System, a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the United States. The National Pollutant Discharge Elimination System program is administered by the RWQCB. Conformance with Section 402 is typically addressed in conjunction with water quality certification under Section 401.
- Section 404 provides for issuance of dredge/fill permits by USACE. Permits typically include conditions to minimize impacts on water quality. Common conditions include (1) USACE review and approval of sediment quality analysis before dredging, (2) a detailed pre- and post-construction monitoring plan that includes disposal site monitoring, and (3) required compensation for loss of waters of the United States.

Federal Endangered Species Act

The FESA of 1973 (16 U.S.C. 1531 et seq.), as amended, is administered by the USFWS for most plant and animal species and by the National Oceanic and Atmospheric Administration National Marine Fisheries Service for certain marine species. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and to provide programs for the conservation of those species, thus preventing the extinction of plants and wildlife. Federal ESA defines an endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under federal ESA, it is unlawful to take any listed species; "take" is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." As part of this regulatory act, federal ESA provides for designation of critical habitat, defined in federal ESA Section 3(5)(A) as specific areas within the geographical range occupied by a species where physical or biological features "essential to the conservation of the species" are found and that "may require special management considerations or protection." Critical habitat may also include areas outside the current geographical area occupied by the species that are nonetheless "essential for the conservation of the species." Critical habitat designations identify, with the best available knowledge, those biological and physical features (primary constituent elements) which provide for the life history processes essential to the conservation of the species.

Federal ESA allows for the issuance of incidental take permits for listed species under Section 7, which is generally available for projects that also require other federal agency permits or other approvals, and under Section 10, which provides for the approval of habitat conservation plans (HCPs)[6] on private property without any other federal agency involvement. Since 2001, the City has been developing two HCPs, one pertaining to anadromous salmonids with the NMFS that is still in process and one pertaining to other listed species with the USFWS that is now approved. Additionally, the City has developed and implemented a HCP for the construction and operation of the GHWTP. These City-related HCPs are described below.

City-Wide Operations and Maintenance Habitat Conservation Plan

City staff developed a HCP with USFWS for City-wide operations and maintenance activities (i.e., the OMHCP), improvements or projects with the potential to "take" species listed under the federal ESA and other non-listed species. The OMHCP covers six wildlife and four plant species including: Ohlone tiger beetle (federally endangered), Mount Hermon June beetle (federally endangered), tidewater goby (federally endangered), Pacific lamprey (state species of concern not listed under FESA), California red-legged frog (federally threatened), western pond turtle (state species of concern not listed under FESA), Ben Lomond spineflower (federally endangered), robust spineflower (federally endangered), Santa Cruz tarplant (federally threatened), and San Francisco popcorn flower (state endangered). The biological goals and objectives and conservation measures include restoring habitat temporarily disturbed, contributing to protected and managed lands that support covered populations, implementing bypass flows consistent with the ASHCP, pursuing other conservation actions that will result in conservation benefits, and implementing general and species-specific minimization and best management practices. The OMHCP addresses upgrades to the North Coast Pipeline and rehabilitation of diversion structures, operation of existing City facilities, and operations and maintenance of existing water diversions and transmission lines and their associated features. The OMHCP was recently finalized and the incidental take permit was issued by the USFWS in January 2021 (City of Santa Cruz 2021a).

Anadromous Salmonid Habitat Conservation Plan

City staff have been developing the ASHCP with NMFS and the California Department of Fish and Wildlife (CDFW) for FESA and CESA compliance for City water-system operation and maintenance activities that may adversely affect special-status anadromous salmonids. The anadromous salmonids covered by the ASHCP include coho (*Oncorhynchus kisutch*), a state- and federally listed endangered species, and steelhead (*O. mykiss*), a federally listed threatened species. This process has been lengthy due to the nature of the data required for long-term permitting, the inherent challenges of balancing water supply with anadromous instream flows, agency staff changes, the drought of 2012 through 2015, and other related factors.

The ASHCP conservation strategy is designed to avoid, minimize, and fully mitigate the effects of the City's activities on steelhead and coho and their habitat in support of the long-term viability of these populations within streams affected by the City's activities. The ASHCP addresses water diversion and operation, rehabilitation, replacement, repair, and maintenance of conveyance facilities and other existing infrastructure, and also include municipal facility operations and maintenance (including flood control channel operation and maintenance), land management, monitoring, and habitat restoration. The ultimate fate of these populations depends on the actions of many other entities and natural processes both within and beyond areas under the City's control. The

[6] A HCP is prepared under Section 10 of the Federal Endangered Species Act by nonfederal parties seeking to obtain a permit for incidental take of federally listed fish and wildlife species. A HCP can also form the basis for an application for incidental take of state-listed species under Section 2081 of the California Endangered Species Act. A HCP includes descriptions of likely impacts to the subject species and the steps an applicant will take to avoid, minimize, and mitigate such impacts.

conservation strategy recognizes that the City's efforts will support and coordinate with overarching efforts to preserve these species within Santa Cruz County and the larger habitat boundaries for these species. The ASHCP biological goals and objectives address key limiting conditions in the Santa Cruz Mountains diversity stratum, particularly effects of surface water diversions, as identified in the recovery plans for steelhead and coho. Additional information about these local anadromous salmonid species, development of bypass flows and the status of the ASHCP are further discussed in Chapter 3, Project Description and Appendix C.

The ASHCP was submitted for agency review in spring of 2021 (City of Santa Cruz 2021b). Initiation of environmental review for the ASHCP and associated permit applications is expected to commence in fiscal year 2022 with the goal of completing the permit process by late 2022 or early 2023.

Graham Hill Water Treatment Plant Habitat Conservation Plan

City staff developed a HCP with USFWS for the operations, maintenance, and construction activities associated with the GHWTP (the GHWTPHCP; City of Santa Cruz 2013). This low-effect HCP covers incidental take of the federally endangered Mount Hermon June beetle (*Polyphylla barbata*), the federally endangered Zayante bandwinged grasshopper (*Trimerotropis infantilis*), and the federally endangered Ben Lomond spineflower (*Chorizanthe pungens* var. *hartwegiana*) as a result of all current and future operations, maintenance, and construction activities at the GHWTP. The low-effect HCP covers the entire 12.71 acres of the GHWTP property, and includes 5.7 acres of suitable habitat, and 0.88 acres of occupied habitat for these species. The conservation strategy emphasizes protection of habitat through impact avoidance and implementation of measures designed to minimize impacts to Mount Hermon June beetle. To mitigate for unavoidable impacts to Mount Hermon June beetle, the City has protected suitable and occupied sandhills habitat at its Bonny Doon property and has the ability to purchase credits from the USFWS-approved Zayante Sandhills Conservation Bank.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) was originally passed in 1918 as four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The primary motivation for the international negotiations was to stop the "indiscriminate slaughter" of migratory birds by market hunters and others. The MBTA protects over 800 species of birds (including their parts, eggs, and nests) from killing, hunting, pursuing, capturing, selling, and shipping unless expressly authorized or permitted.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BAGEPA) is the primary law protecting both bald and golden eagles. Specifically, BAGEPA prohibits "take" of eagles without a permit and defines take to include "pursue, destroy, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" and prohibits take of individuals, active nests, or eggs. The term "disturb" is further defined by regulation as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, injury to an eagle, a decrease in productivity, or nest abandonment" (50 CFR 22.3).

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. Sections 1801–1884) of 1976, as amended in 1996 and reauthorized in 2007, is intended to protect fisheries resources and fishing activities within 200 miles of shore. The amended law, also known as the Sustainable Fisheries Act (Public Law 104-297), requires all federal agencies to consult with the Secretary of Commerce on proposed projects authorized, funded, or

undertaken by that agency that may adversely affect Essential Fish Habitat (EFH). The main purpose of the EFH provisions is to avoid loss of fisheries due to disturbance and degradation of the fisheries habitat.

4.3.3.2 State

California Environmental Quality Act

CEQA requires identification of a project's potentially significant impacts on biological resources and ways that such impacts can be avoided, minimized, or mitigated. The act also provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts.

CEQA Guidelines Section 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 California Code of Regulations [CCR] 15380(b)(1). A rare animal or plant is defined in Section 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened under CEQA if it meets the criteria for listing, as defined further in CEQA Guidelines Section 15380(c).

CDFW has developed a list of "Special Species" as "a general term that refers to all of the taxa the California Natural Diversity Database (CNDDB) is interested in tracking, regardless of their legal or protection status." This is a broader list than those species that are protected under FESA, the CESA, and other CFGC provisions, and includes lists developed by other organizations, such as the Audubon Watch List Species. Guidance documents prepared by other agencies, including the Bureau of Land Management Sensitive Species and USFWS Birds of Special Concern, are also included on this CDFW Special Species list. Additionally, CDFW has concluded that plant species included on the CNPS's California Rare Plant Rank (CRPR) List 1 and 2 are covered by CEQA Guidelines Section 15380.

CEQA Guidelines Section IV, Appendix G (Environmental Checklist Form), requires an evaluation of impacts to "any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service" (14 CCR 15000 et seq.).

CEQA Guidelines Section 15065, subdivision (a) (as reflected in the portion of the CEQA Guidelines Appendix G Environmental Checklist form devoted to Mandatory Findings of Significance), requires lead agencies to find significant environmental effects where a proposed project would substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce the number or restrict the range of an endangered, rare or threatened species.

California Endangered Species Act

CESA (CFGC Section 2050 et seq.) provides protection and prohibits the take of plant, fish, and wildlife species listed by the State of California. Unlike FESA, state-listed plants have the same degree of protection as wildlife, but insects and other invertebrates may not be listed. Under CESA, take is prohibited for both listed and candidate species, but take is more narrowly defined than it is under FESA as it does not include "harm and harass", which includes significant habitat modification or degradation, as included in the FESA definition. CESA prohibits the take

(hunt, pursue, catch, capture, kill, or attempt to hunt, pursue, catch, capture, or kill) of listed species except as otherwise provided in state law. Unlike its federal counterpart, the CESA applies the take prohibitions to species petitioned for listing (state candidates). Take authorization may be obtained by project applicants from the CDFW under CESA Sections 2080.1 or 2081. Under Section 2080.1, the CDFW can issue a consistency determination that concludes the findings of a FESA biological opinion is consistent with state law. Alternatively, the CDFW can issue a Section 2081 incidental take permit, which allows take of a state listed species for educational, scientific, or management purposes or where the take is incidental to an otherwise lawful activity. In this case, project applicants consult with CDFW to develop a set of measures and standards for managing the listed species, including the minimization and full mitigation for impacts, funding of implementation, and monitoring of mitigation measures.

California Fish and Game Code

Fully Protected Species

The classification of "fully protected" was the state's initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians and reptiles and birds. Fully protected species may not be taken or possessed at any time, except through natural community conservation plans (see CDFG Code Section 2801 et seq.), and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the species for the protection of livestock. "Take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Lake and Stream Resources

Under CFGC Section 1602, CDFW has authority to regulate work that will substantially divert or obstruct the natural flow of or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake. CDFW also has authority to regulate work that will deposit or dispose of debris, water, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. This regulation takes the form of a requirement for a Lake or Streambed Alteration Agreement and is applicable to any person, state, or local governmental agency or public utility (CFGC Section 1601). CDFW jurisdiction includes ephemeral, intermittent, and perennial watercourses (including dry washes) and lakes characterized by the presence of (1) definable bed and banks and (2) existing fish or wildlife resources. Because riparian habitats do not always support wetland hydrology or hydric soils, wetland boundaries (as defined by Clean Water Act Section 404) sometimes include only portions of the riparian habitat adjacent to a river, stream, or lake. Therefore, jurisdictional boundaries under CFGC Section 1602 may encompass a greater area than those regulated under Clean Water Act Section 404; CDFW does not have jurisdiction over ocean or shoreline resources.

Fish and Game Code Sections 3503, 3503.5, 3511, 3513, and 4150

CFGC Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. CFGC Section 3503.5 protects all birds-of-prey (raptors) and their eggs and nests. Section 3511 states fully protected birds or parts thereof may not be taken or possessed at any time. Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA. All nongame mammals, including bats, are protected by CFGC Section 4150.

California Coastal Act

In 1976, the State Legislature enacted the California Coastal Act (Public Resources Code [PRC] Section 30000 et seq.) to provide long-term protection of the state's 1,100-mile coastline for the benefit of current and future generations. The Coastal Act provides for the management of lands within California's coastal zone boundary, as established by the Legislature and defined in Coastal Act (Section 30103). The boundary of the coastal zones varies across the state. It extends generally 1,000 yards from the mean high tide line of the sea; however, in significant coastal estuarine, habitat, and recreational areas it extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less, and in developed urban areas the zone generally extends inland less than 1,000 yards. The coastal boundary extends approximately 3 miles offshore. The goals of the Coastal Act, per PRC Section 30001.5 are:

a. Protect, maintain, and, where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources.
b. Assure orderly, balanced utilization and conservation of coastal zone resources taking into account the social and economic needs of the people of the state.
c. Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners.
d. Assure priority for coastal-dependent and coastal-related development over other development on the coast.
e. Encourage state and local initiative and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

Furthermore, the Coastal Act includes specific policies to achieve these goals within the coastal zone (see PRC Division 20). These policies include the legal standards applied to coastal planning and regulatory decisions made by the California Coastal Commission (CCC) pursuant to the Coastal Act. The Coastal Act requires that individual jurisdictions adopt a Local Coastal Program (LCP) to implement the Coastal Act at the local level. After the CCC certifies the LCP, and the local government becomes the coastal development permit (CDP) authority for coastal zone areas within its certified LCP, subject to appeals to the CCC for certain permits. However, the CCC retains original permit jurisdiction over certain specified lands, including tidelands and public trust lands. See Section 4.3.3.3, Local, for information about the County's LCP.

California Native Plant Protection Act

The Native Plant Protection Act of 1977 directed CDFW to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The Native Plant Protection Act gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protect endangered and rare plants from take. CESA expanded on the original Native Plant Protection Act and enhanced legal protection for plants, but the Native Plant Protection Act remains part of the CFGC. To align with federal regulations, CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into the act as threatened species but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. Because rare plants are not included in CESA, appropriate compensatory mitigation measures for significant impacts to rare plants are typically negotiated with the CDFW.

Natural Community Conservation Planning Act of 1991

The Natural Community Conservation Planning (NCCP) Act is designed to conserve natural communities at the ecosystem scale while accommodating compatible land use. CDFW is the principal state agency implementing the NCCP program. Natural community conservation plans developed in accordance with the NCCP Act provide for comprehensive management and conservation of multiple wildlife species, and identify and provide for the regional or area-wide protection and perpetuation of natural wildlife diversity while allowing compatible and appropriate development and growth.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code Division 7, Section 13000 et seq.) established the SWRCB and RWQCBs as the principal state agencies responsible for the protection of water quality in California. The Central Coast Regional Water Quality Control Board (CCRWQCB) has regulatory authority over the biological study area. The Porter-Cologne Water Quality Control Act provides that "All discharges of waste into the waters of the State are privileges, not rights." Waters of the State are defined in Section 13050(e) of the Porter-Cologne Water Quality Control Act as "…any surface water or groundwater, including saline waters, within the boundaries of the state." All dischargers are subject to regulation under the Porter-Cologne Water Quality Control Act, including both point and nonpoint source dischargers. The CCRWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within its jurisdiction. On April 2, 2019, the SWRCB adopted by Resolution 2019-0015 the "State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State" ("Procedures") for inclusion in the Water Quality Control Plans for Inland Surface Waters, Enclosed Bays, and Estuaries of California. The Procedures became effective on May 28, 2020; however, the Procedures have been the subject of a legal judgement by the California Superior Court.[7]

In adopting the Procedures, the SWRCB noted that under the Porter-Cologne Water Quality Control Act discharges of dredged or fill material to waters of the state are subject to waste discharge requirements or waivers. The SWRCB further explained that "although the state has historically relied primarily on requirements in the Clean Water Act to protect wetlands, U.S. Supreme Court rulings reducing the jurisdiction of the Clean Water Act over wetland areas by limiting the definition of 'waters of the United States' have necessitated the use of California's independent authorities under the Porter-Cologne Act to protect these vital resources."

By adopting the Procedures, the SWRCB mandated and standardized the evaluation of impacts and protection of waters of the state from impacts due to dredge and fill activities. The Procedures include: (1) a wetland definition; (2) a jurisdictional framework for determining if a feature that meets the wetland definition is a water of the state; (3) wetland delineation procedures; and 4) procedures for application submittal, and the review and approval of dredge or fill activities.

The Procedures define an area as a wetland if it meets three criteria: wetland hydrology, wetland soils, and (if vegetated) wetland plants. An area is a wetland if: (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient

[7] On January 26, 2021, the Superior Court in *San Joaquin Tributaries Authority v. California State Water Resources Control Board* issued a judgment and writ enjoining the SWRCB from applying, via the Water Quality Control Plan for Inland Surface Waters and Enclosed Bays [and Estuaries], the Procedures to waters other than those for which water quality standards are required by the Federal Clean Water Act. The SWRCB subsequently adopted another resolution on April 2, 2021 confirming that the Board's April 2, 2019 action relied, in part, on Water Code Section 13140, that allows the SWRCB to formulate and adopt state policy for water quality control and that the Procedures are therefore effective for all waters of the state as state policy for water quality control.

to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation. This modified three-parameter definition is similar to the federal definition in that it identifies three wetland characteristics that determine the presence of a wetland: wetland hydrology, hydric soils, and hydrophytic vegetation. However, unlike the federal definition, the Procedures' wetland definition allows for the presence of hydric substrates as a criterion for wetland identification (not just wetland soils) and wetland hydrology for an area devoid of vegetation (less than 5% cover) to be considered a wetland.

Waters of the State includes more aquatic features than Waters of the U.S. In addition, the federal definition of a wetland requires a prevalence of wetland vegetation under normal circumstances. To account for wetlands in arid portions of the state, the SWRCB's definition differs from the federal definition in that an area may be a wetland even if it does not support vegetation. If vegetation is present, however, the SWRCB's definition requires that the vegetation be wetland vegetation. The SWRCB's definition clarifies that vegetated and unvegetated wetlands will be regulated in the same manner.

The Procedures also include a jurisdictional framework that applies to aquatic features that meet the wetland definition. The jurisdictional framework will guide applicants and staff in determining whether an aquatic feature that meets the wetland definition will be regulated as a water of the state. The jurisdictional framework is intended to exclude from regulation any artificially-created, temporary features, such as tire ruts or other transient depressions caused by human activity, while still capturing small, naturally-occurring features, such as seasonal wetlands and small vernal pools that may be outside of federal jurisdiction. The Procedures do not expand the SWRCB's jurisdiction beyond areas already under SWRCB's jurisdiction.

Sustainable Groundwater Management Act

In 2014, California enacted the "Sustainable Groundwater Management Act" (California Water Code Sections 10720-10737.8 et seq.) to bring the state's groundwater basins into a more sustainable regime of pumping and recharge. The legislation provides for the sustainable management of groundwater through the formation of local groundwater sustainability agencies (GSAs) and the development and implementation of groundwater sustainability plans (GSPs). GSPs are required to be submitted to the DWR by January 31, 2020 for all basins designated as high- or medium-priority basins and as basins that are subject to critical conditions of overdraft. GSPs are required to be submitted to the DWR by January 31, 2022 for all other high- or medium-priority basins. GSPs are also encouraged for basins designated as low- and very low priority basins by the SWRCB. The approved and pending GSPs in the study area are summarized below, as relevant to biological resources. See Section 4.8, Hydrology and Water Quality, for additional information about SGMA and requirements for GSPs.

Santa Cruz Mid-County Groundwater Sustainability Plan

The Santa Cruz Mid-County Groundwater Agency (MGA) oversaw the preparation of a cooperative groundwater sustainability plan (GSP) for the now redefined Santa Cruz Mid-County Groundwater Basin, which covers the mid-Santa Cruz County region and is generally bounded by Branciforte Creek on the west, the unincorporated communities of Aptos and La Selva Beach on the east, the Zayante fault (somewhat below Summit Road) on the north, and the Pacific Ocean on the south (see Figure 3-3). The Santa Cruz Mid-County Groundwater Basin includes the former Soquel Valley Basin and portions of three adjacent basins—the West Santa Cruz Terrace Basin, the former Santa Cruz Purisima Formation Basin, and the original Pajaro Valley Basin. The Soquel Valley Basin was identified by the state as a groundwater basin subject to critical conditions of overdraft.

The Santa Cruz Mid-County Groundwater Basin GSP was released for public review in July 2019. The GSP was completed and adopted by the MGA in November 2019 and submitted to DWR on January 30, 2020 (MGA 2020). DWR approved the GSP on June 3, 2021 as being found to satisfy the requirements of SGMA (DWR 2021). The GSP will guide ongoing management of the groundwater basin with a goal to achieve and maintain the basin's sustainability goal within 20 years and over a 50-year planning and implementation horizon (MGA 2019). The GSP sets sustainability management criteria for each of the five sustainability indicators applicable to the Santa Cruz Mid-County Groundwater Basin and identifies projects and management actions to achieve and maintain basin sustainability. One of the sustainable management criteria involves depletion of interconnected surface water and indicates that in interconnected streams supporting priority species, ensure there is no more surface water depletion due to groundwater extraction than prior to 2015. Significant and unreasonable depletion of surface water due to groundwater extraction, in interconnected streams supporting priority species, would be undesirable if there is more depletion than experienced since the start of shallow groundwater level monitoring through 2015.

As part of the GSP, groundwater-dependent ecosystems (GDEs) were assessed and identified where interconnected surface and groundwater exist within the Santa Cruz Mid-County Groundwater Basin. Where data were available surface water and groundwater elevations were compared to determine interconnections between surface water and groundwater. Where groundwater level data were unavailable, the surface water-groundwater model developed for the Santa Cruz Mid-County Groundwater Basin was used to identify where surface water and groundwater are connected. Available information from the California Natural Diversity Database and The Nature Conservancy were used to identify important species present in areas where groundwater and surface water are interconnected. The only areas within the Santa Cruz Mid-County Groundwater Basin where surface water and groundwater connections were identified were in riparian zones. No interconnected lakes or ponds were identified and no areas of shallow groundwater away from streams were noted within the Santa Cruz Mid-County Groundwater Basin. Groundwater-dependent species and habitats identified for priority management include steelhead, coho, California giant salamander, foothill yellow-legged frog, western pond turtle and riparian forest.

Santa Margarita Groundwater Sustainability Plan

The Santa Margarita Groundwater Agency (SMGWA) is overseeing the preparation of the Santa Margarita GSP, which must be completed and submitted to the California Department of Water Resources (DWR) by 2022 given that the groundwater basin is in the medium to high priority category, but is not subject to critical conditions of overdraft. The SMGWA has drafted three key basin management goals: (1) ensure water supply reliability for current and future beneficial uses, (2) maintain water quality to meet current and future beneficial uses, and (3) prevent adverse environmental impacts. These goals will be re-evaluated as the SMGWA develops its GSP.

California Government Code – Local Exemptions

California Government Code Section 53091 (d) and (e) provides that facilities for the production, generation, storage, treatment, and transmissions of water supplies are exempt from local (i.e., county and city) building and zoning ordinances. The Proposed Project evaluated in this EIR relates to operation, utilization, and storage of water resources, therefore, the Proposed Project is legally exempt from local building and zoning ordinances.

California Public Resources Code – Timberland

California Public Resources Code 4526 defines "Timberland" to mean "land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including

Christmas trees." While the biological study area is not used for growing timber for commercial purposes, the definition of timber under PRC Section 4526 is broad enough to include areas where commercial species of trees such as coast redwoods, are growing.

4.3.3.3 Local

As indicated above, the project and programmatic infrastructure components relate to operation, utilization, and storage of water resources and therefore, these facilities are legally exempt under California Government Code Section 53091 (d) and (e) from the County of Santa Cruz, City of Scotts Valley, City of Santa Cruz, and City of Capitola building and zoning ordinances. However, it is nevertheless assumed that City-owned facilities (i.e., ASR facilities, and the Felton Diversion and Tait Diversion and Coast Pump Station improvements) would be constructed consistent with the City policies and ordinances, as applicable. Additionally, Beltz 8, 9, and 10 ASR facilities and any new ASR facilities that are located in the coastal zone of unincorporated Santa Cruz County, would have to comply with relevant County LCP policies and implementing ordinances, as water infrastructure is not exempt from the California Coastal Act or the relevant LCP. Lastly, the portion of the City/SqCWD/CWD intertie in the coastal zone (i.e., the McGregor Drive pump station upgrade, and part of the Park Avenue pipeline south of State Highway 1), would have to comply with the City of Capitola's LCP and implementing ordinances. All other programmatic infrastructure components located outside of the coastal zone (i.e., City/SVWD intertie and the portion of the City/SqCWD/CWD intertie located north of State Highway 1) would be exempt from all local building and zoning ordinances.

Based on the above, this section provides local programs, policies and regulations related to biological resources that are applicable to the Proposed Project. See also Section 4.9, Land Use, Agriculture and Forestry, and Mineral Resources, for a more detailed description and analysis of applicable policies and ordinances.

County of Santa Cruz General Plan, Local Coastal Program, and Ordinances

County General Plan and Local Coastal Program

The Santa Cruz County General Plan and LCP is a comprehensive, long-term planning document for the unincorporated areas of the County and includes the County's LCP, which was certified by the CCC in 1994 (County of Santa Cruz 1994). The County General Plan and LCP provides policies and programs to establish guidelines for future growth and all types of physical developments. The County General Plan and LCP are part of the regulatory framework for the Proposed Project's ASR components because some of those components will require coastal development permits from the County to the extent that they are located in the coastal zone. The County's General Plan and LCP, Chapter 5 (Conservation and Open Space), Objective 5.2 (Riparian Corridors and Wetlands), establishes definitions for riparian corridors and wetlands to ensure their protection. Policies 5.2.1 through 5.2.5 identify and define riparian corridors and wetlands, determine the uses which are allowed in and adjacent to these habitats, and specify required buffer setbacks and performance standards for land in and adjacent to these areas. As indicated in Section 4.3.2.5, Special-Status Biological Resources, the Beltz ASR facility sites do not contain riparian habitat and therefore these policies do not apply to Beltz ASR facility sites. However, these policies would apply to new ASR facilities sites located in the coastal zone of unincorporated Santa Cruz County where riparian or wetlands are present.

The County's General Plan and LCP, Chapter 5 (Conservation and Open Space), Objective 5.1 (Biological Diversity), establishes definitions for sensitive habitats to ensure their protection. Policies 5.1.1 through 5.1.11 identify and define sensitive habitats, determine the uses which are allowed in and adjacent to these habitats, and specify performance standards for land in and adjacent to these areas. As indicated in Section 4.3.2.5, Special-Status Biological Resources, the Beltz ASR sites do not contain sensitive habitat and therefore these policies do not apply

to Beltz ASR sites. However, these policies would apply to new ASR sites located in the coastal zone of unincorporated Santa Cruz County where sensitive habitats are present.

The County's General Plan and LCP, Chapter 5 (Conservation and Open Space), Objective 5.6 (Maintaining Adequate Streamflows), indicates that in-stream flows should be protected and restored to ensure a full range of beneficial uses including fish and wildlife habitat. Policies 5.6.1 through 5.6.3 call for maintaining instream flows necessary to maintain fish runs and riparian vegetation; designating critical water supply streams including the City's surface water sources; prohibiting new riparian or off-stream development, or increases in the intensity of use, which require an increase in water diversions; opposing or prohibiting new or expanded diversion from such streams; and adequately conditioning new major water supply projects to protect beneficial instream uses and riparian habitat. These policies are provided in detail and evaluated in Section 4.9, Land Use, Agriculture and Forestry, and Mineral Resources (see Table 4.9-3).

County Code

The County's certified LCP is administered by the County Planning Department, pursuant to the California Coastal Act, and includes specific plans and ordinances for activities within the coastal zone. The LCP implementing ordinances in the County Code that are particularly relevant in the evaluation of biological resources of the Proposed Project include the following:

- County Grading Ordinance (Chapter 16.20)
- Erosion Control Ordinance (Chapter 16.22)
- Riparian Corridor and Wetlands Protection (Chapter 16.30)
- Sensitive Habitat Protection (Chapter 16.32)
- Significant Trees Protection (Chapter 16.34)

As Beltz 8, 9, 10 ASR facility sites are located within the coastal zone of unincorporated Santa Cruz County and are not exempt from the LCP, they would require compliance with the LCP and the standards contained in the above LCP implementing ordinances, where relevant, through the issuance of CDPs from the County of Santa Cruz. Any new ASR facilities located within the coastal zone of unincorporated Santa Cruz County would also have to comply. No riparian corridor or wetlands, sensitive habitat, or significant trees, as defined in Chapters 16.30, 16.32, and 16.34, respectively, occur within the Beltz ASR facility sites, but could potentially occur at new ASR facility sites. The relevant LCP policies and ordinances are addressed through the CDP findings made by the County and not through separate approvals (e.g., Riparian Exception). The SCCC requires the following CDP findings for approval of a CDP in accordance with Chapter 18.10:

(A) That the project is a use allowed in one of the basic zone districts that are listed in LCP Section 13.10.170(D) as consistent with the LCP Land Use Plan designation of the site.

(B) That the project does not conflict with any existing easement or development restrictions such as public access, utility, or open space easements.

(C) That the project is consistent with the design criteria and special use standards and conditions of this chapter pursuant to SCCC 13.20.130 and 13.20.140 et seq.

(D) That the project conforms with the public access, recreation, and visitor-serving policies, standards and maps of the LCP Land Use Plan, including Chapter 2: Section 2.5 and Chapter 7.

(E) That the project conforms to all other applicable standards of the certified LCP.

(F) If the project is located between the nearest through public road and the sea or the shoreline of any body of water located within the coastal zone, that the project conforms to the public access and public recreation policies of Chapter 3 of the California Coastal Act.

(G) In the event of any conflicts between or among the required findings, required findings in subsections (E) and (F) of this section shall prevail. [Ord. 5182 § 1, 2014; Ord. 4346 §§ 54, 55, 1994; Ord. 3435 § 1, 1983].

Section 4.9, Land Use, Agriculture and Forestry, and Mineral Resources, provides a comprehensive listing and review of all relevant coastal ordinances.

City of Santa Cruz General Plan, Local Coastal Program, and Ordinances

Local Coastal Program

Pursuant to the California Coastal Act, the City has a LCP that was certified by the CCC in 1985 with approved amendments since that time. The Coastal Act defines an "environmentally sensitive area" as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (Coastal Act section 30107.5). The City's existing certified LCP identifies the following sensitive habitats: wetlands, riparian habitat, grasslands, mima mounds[8] and habitats that support Ohlone tiger beetle, tidewater goby, burrowing owl, California brown pelican, Monarch butterfly, pigeon guillemot, black swift, Santa Cruz tarplant or American peregrine falcon (City of Santa Cruz, 1994-Map EQ-9), and LCP policies and programs reference and seek to protect habitats and species identified on this map. Specifically, existing LCP policies seek to preserve the habitat of and minimize disturbance to seabird rookeries and roosting areas along the coastline (EQ 4.1.2), preserve and enhance the character and quality of riparian and wetland habitats (EQ 4.2), and protect rare, endangered, sensitive and limited species and the habitats supporting them as shown in Map EQ-9 or as identified through the planning process or as designated as part of the environmental review process (EQ 4.5). A separate *City-Wide Creeks and Wetlands Management Plan* and policies related to the San Lorenzo River also are part of the LCP as further described below.

General Plan 2030

Four habitat types found within the City of Santa Cruz are recognized as sensitive habitat types: freshwater wetland, salt marsh, riparian forest and scrub, and coastal prairie portions of grassland habitats. Except for freshwater wetland, these habitat types correspond to habitat types that the CNDDB has designated as "high priority." In addition, coastal bird habitat is considered sensitive habitat because of high biological diversity. Additionally, any area supporting a special status species would also be considered a sensitive habitat. The General Plan sets forth protocols for evaluation of sensitive habitat and sensitive species. For riparian areas, this includes compliance with the *City-Wide Creeks and Wetlands Management Plan.*

Management Plans

Resource management and park plans have been adopted by the City for management of creek/riparian resources and City-owned open space areas. Two plans are pertinent to the project area. The *City-Wide Creeks and Wetlands Management Plan* was adopted by the City in 2007 and approved by the CCC as a Local Coastal Plan amendment in October 2007. The *San Lorenzo River Urban Management Plan* (SLURP) was adopted in 2003 for the portion of

[8] Mima mounds are a land form of small, distinct raised hummocks amidst shallow depressions, usually supporting native grasslands (City of Santa Cruz 1994).

the river south of Highway 1. Policies developed from recommendations in this plan were included in the LCP as a Coastal Commission-approved LCP amendment in 2004.

The *City-Wide Creeks and Wetlands Management Plan* was adopted by the City Council to provide a comprehensive approach to managing all creeks and wetlands within the City. Long-term goals to manage these resources include reduction and/or elimination of pollutants; improvement of water quality; improvement and restoration of natural habitat; and increased public awareness of the value of watershed quality. The Management Plan recommends development setbacks along each watercourse in the City based on biological, hydrological, and land use characteristics for various watercourse types. The recommended setbacks within a designated management area include a riparian corridor, a development setback area, and an additional area that extends from the outward edge of the development area. All distances are measured from the centerline of the watercourse outward as shown on the above schematic.

The Creeks Management Plan establishes the requirements for obtaining a Watercourse Development Permit, and specifies uses permitted within the designated management area, development setback area and riparian corridor. The Tait Diversion and Coast Pump Station site is along the San Lorenzo River Upper West Branch reach. The northern half of the pump station is located outside of the management area, but the diversion is located within the riparian area and within an area identified as having "Current Restrictions." Allowable uses in the riparian setback include improvements to existing intake and outfall lines, when special studies prepared by qualified professionals demonstrate that there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects. Repair, maintenance, or minor alteration of existing public utility, drainage, flood control, and water storage and provision facilities, including pumps and other appurtenant structures where there is no or negligible expansion of use, are exempt from obtaining a Watercourse Development Permit. In addition, projects that concurrently are reviewed and approved by the USACE, CDFW, NOAA, or USFWS for maintenance, flood protection, restoration or enhancement of a natural resource are exempt from obtaining a Watercourse Development Permit.

The SLURP is the product of a planning process initiated by City Council in 1999 to update previous plans for the San Lorenzo River that guided flood control, vegetation restoration and public access improvements along the San Lorenzo River. Only the lower portion of the river is within the coastal zone. The SLURP contains recommendations for habitat enhancement, as well as public access and ideas to promote river-oriented development. One of the key goals of the plan is to enhance and restore biotic values of the river, creek and marsh fish and wildlife habitat.

The SLURP includes the Lower *San Lorenzo River and Lagoon Management Plan* as an appendix, which provides resource management and restoration recommendations within the constraints of providing flood protection. Management and restoration recommendations address: annual vegetation management; summer lagoon water level management; enhancement of the aquatic, shoreline and riparian habitats; and marsh restoration.

Municipal Code Regulations

Section 24.14.080 of the City's Municipal Code includes provisions to protect wildlife habitat and protected species for areas specified in the City's existing General Plan (Maps EQ-8 and EQ-9). Section 24.08.21 also regulates development adjacent to city watercourses, consistent with provisions of the adopted *City-Wide Creeks and Wetlands Management Plan*, including requirements for issuance of a "watercourse development permit."

Chapter 9.56 of the City Municipal Code defines heritage trees, establishes permit requirements for the removal of a heritage tree, and sets forth mitigation requirements as adopted by resolution by the City Council. Heritage trees

are defined by size, historical significance, and/or horticultural significance, including but not limited to those which are: (1) unusually beautiful or distinctive; (2) old (determined by comparing the age of the tree or shrub in question with other trees or shrubs of its species within the city); (3) distinctive specimen in size or structure for its species (determined by comparing the tree or shrub to average trees and shrubs of its species within the city); (4) a rare or unusual species for the Santa Cruz area (to be determined by the number of similar trees of the same species within the city); or (5) providing a valuable habitat. Resolution NS-23,710, which was rescinded by Resolution No. NS-28-706 and then reinstated by Resolution No NS-29,092, establishes criteria and standards for the circumstances under which a heritage tree may be removed. City regulations require tree replacement for approved to include replanting three 15-gallon or one 24-inch size specimen or the current retail value which shall be determined by the Director of Parks and Recreation. Removal would be permitted if found in accordance with the criteria and requirements previously outlined.

City of Capitola Local Coastal Program

Development and resource management in Capitola's coastal areas are regulated by Capitola's LCP (City of Capitola 2005), which was originally certified by the CCC in 1981 and amended in 2001 and 2005. Capitola's Local Coastal Land Use Plan is a comprehensive long-term plan for land use and physical development within the City's coastal zone. Prior to the issuance of any permit for development within the coastal zone, the City of Capitola is required to prepare necessary findings that the development meets the standards set forth in all applicable land use policies. Policy III-4 requires protection of existing trees by allowing for removal only in accordance with the City's Tree Ordinance and indicates the new development be designed to preserve significant vegetation. Additionally, Policy VI-2 requires all developments approved by the City within or adjacent to environmentally sensitive and locally unique habitats within its coastal zone must be found to be protective of the long-term maintenances of these habitats.

4.3.4 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to biological resources. The section identifies the standards of significance used in evaluating the impacts, describes the methods used in conducting the analysis, and evaluates the Proposed Project's impacts and contribution to significant cumulative impacts, if any are identified.

4.3.4.1 Standards of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to biological resources are based on Appendix G of the CEQA Guidelines and the City of Santa Cruz CEQA Guidelines, as listed below. A significant impact would occur if the Proposed Project would:

A. Result in a substantial adverse effect, either directly or through habitat modification, on any 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.

B. Result in 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

C. Result in a substantial adverse effect on state or federally protected wetlands, (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

D. 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.
E. Result in conflicts with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance.
F. Result in conflicts with the provision of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Additionally, CEQA Guidelines Section 15065(a)(1) sets forth three mandatory findings of significance related to degradation of biological resources. Therefore, a significant impact to biological resources related to these mandatory findings would occur if the Proposed Project would:

G. Substantially reduce the habitat of a fish or wildlife species.
H. Cause a fish or wildlife population to drop below self-sustaining levels.
I. Threaten to eliminate a plant or animal community.
J. Substantially reduce the number or restrict the range of a rare or endangered plant or animal.

4.3.4.2 Analytical Methods

This section describes the analytical methods used in the evaluation of biological resources related to the Proposed Project and introduces the definitions for the types of biological resources impacts considered in the analysis. The analysis of potential impacts is organized by the various project and programmatic components listed in Table 4.3-5, which are described in detail in Chapter 3, Project Description.

Table 4.3-5. Project and Programmatic Components

Proposed Project Components	Project Components	Programmatic Components
WATER RIGHTS MODIFICATIONS		
Place of Use	✓	
Points of Diversion	✓	
Underground Storage and Purpose of Use	✓	
Method of Diversion	✓	
Extension of Time	✓	
Bypass Requirement (Agreed Flows)	✓	
INFRASTRUCTURE COMPONENTS		
Water Supply Augmentation		
Aquifer Storage and Recovery (ASR)		✓
New ASR Facilities at Unidentified Locations		✓
Beltz ASR Facilities at Existing Beltz Well Facilities	✓	
Water Transfers and Exchanges and Intertie Improvements		✓
Surface Water Diversion Improvements		
Felton Diversion Fish Passage Improvements		✓
Tait Diversion and Coast Pump Station Improvements		✓

The evaluation of the Proposed Project's impacts using the standards of significance presented above is organized by the resource potentially affected: special-status species, riparian and sensitive vegetation communities, jurisdictional waters and wetlands, wildlife movement, local ordinances, and habitat conservation plans. The analysis evaluates the impacts of the project and programmatic components (water rights modifications and infrastructure components [ASR facilities, water transfers and exchanges and intertie improvements, Felton Diversion fish passage improvements, and Tait Diversion and Coast Pump Station improvements]). The analysis assesses the combined operational impacts of the above components, where relevant, as well as the site-specific construction impacts of the various infrastructure components. The approach to analyzing the potential biological resource impacts of the Proposed Project is further described below. Additionally, Section 4.0, Introduction to Analyses, provides the EIR's overarching analysis approach for the Proposed Project.

Water Rights Modifications

This project component would be limited to making modifications to the City's pre-1914 and post-1914 water rights, permits, and licenses. Modifications include expansion of the place of use, modifications related to method and points of diversion and rediversion, addition of underground storage, extension of time to reach full beneficial use under the City's Felton permits, and bypass requirements (referred to as Agreed Flows), but do not include increases in the face value of any of the City's water-right permits or licenses or increases in use authorized under the City's pre-1914 rights. In particular, the Proposed Project would modify the City's water rights to expand the authorized place of use to include the Santa Margarita and Santa Cruz Mid-County Groundwater Basins, and the service areas of neighboring water agencies including the SqCWD, SVWD, SLVWD, and CWD.

The proposed changes would not directly involve constructing, improving, or eliminating any facilities. However, the water rights modifications would result in operational changes that could have impacts on biological resources and these operational changes are the focus of the impact analysis for this project component. Given that the water rights modifications, once approved, could result in the implementation of the various infrastructure components of the Proposed Project, the analysis of the water rights modifications includes the combined operational impacts of these infrastructure components, where relevant. The subsections below present the methods used to evaluate the operational impacts of the water rights modifications.

Fisheries Habitat Effects Modeling

As indicated in Chapter 3, Project Description and Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Effects Modeling, the City used three distinct but interrelated models to develop and evaluate the Proposed Project:

- **Hydrologic Model (Appendix D-1)** - A hydrologic model that develops the available daily flows in the North Coast streams (specifically Laguna, Liddell and Majors Creeks), the San Lorenzo River, and Newell Creek available for supply once the Agreed Flows are met.
- **Water Supply Model (Appendix D-2)** - The *Confluence*® water supply model, which utilizes available streamflows (generated by the Hydrologic Model) in a particular scenario (e.g., the Agreed Flows with the Proposed Project) and with many other system operating assumptions, to evaluate potential operations of the City's water system and the resulting water supply reliability and to calculate the resulting flow left instream for fish habitat, which is called residual streamflow or residual flow.[9]

[9] The *residual flow* is either the Agreed Flow for that time period, the Agreed Flow plus whatever amount is not needed for City supply, or the natural streamflow if the *available flow* is below the Agreed Flow and diversion is precluded.

- **Fisheries Habitat Effects Model (Appendix D-3)** - A model that evaluates the fisheries habitat effects of the residual streamflows left instream after municipal supply demands are met in the water supply model, consistent with the required streamflows, to develop flow-based metrics of habitat effects.

As discussed in Appendix D-3, the fisheries habitat effects model was developed by Hagar Environmental Science to evaluate habitat conditions in City drinking water source streams under a variety of instream flow conditions. The effects analysis included in Appendix D-3 was based on use of flow/habitat relationships developed for the City's pending ASHCP in streams from which the City diverts water. The flow/habitat relationships were developed using several standard methods. Flow/habitat relationships were used to evaluate potential habitat effects across a wide variety of hydrologic conditions to better understand the City's past, present, and future effects on coho and steelhead. The effects analysis was primarily focused on the influence of the City's water system operations on instream flows and the related habitat effects.

The fisheries habitat effects modeling was conducted for both baseline and Proposed Project conditions, using the historic hydrologic conditions of the region from 1936 to 2015. Alternatives were also evaluated (see Chapter 8, Alternatives). Baseline conditions are those that existed when the 2018 Notice of Preparation was released for the Proposed Project and include the interim bypass flow requirements agreed to as part of an April 2018 agreement between CDFW and the City. Proposed Project conditions consider the implementation of the Agreed Flows, the applicable standards of which would be incorporated into each of the City's water rights. The Agreed Flows were developed over years of coordination with CDFW and NMFS to improve conditions for federally listed coho and steelhead in all watersheds from which the City diverts water. The Agreed Flows are presented by month, life stage (i.e., adult migration, spawning, incubation, rearing, and smolt migration) and hydrologic condition. See Chapter 3 and Appendix C for additional details about the Agreed Flows.

Because approval of the proposed water rights modifications would result in changed conditions that extend into the future and to provide for a comprehensive analysis, City modeling assumed implementation of all upgrades to existing infrastructure currently being planned as part of the Proposed Project. These upgrades include ASR, water transfers, and the surface water diversion improvements at the Felton Diversion and Tait Diversion/Coast Pump Station. Additionally, other planned infrastructure upgrades that are not part of the Proposed Project are included in the project modeling, as those planned upgrades are being pursued independently of the Proposed Project, but would be a component of the future conditions that would exist with the Proposed Project. Together, these modeled infrastructure upgrades allow for analysis of impacts to anadromous fisheries resulting from long-term implementation of the Proposed Project and these other contemplated upgrades. Lastly, the modeling includes standard operational practices that the City would implement to avoid or minimize effects to special-status fish species, including: (1) no diversions to provide water for ASR injections will occur in months classified as Hydrologic Condition 5 (driest) as defined in the Agreed Flows (Standard Operational Practice #3); and (2) no diversions from surface streams to transfer to neighboring agencies pursuant to the Proposed Project in months classified as Hydrologic Condition 4 (dry) or Hydrologic Condition 5 (driest) as defined in the Agreed Flows (Standard Operational Practice #4) (see Section 3.4.5.1, Standard Operational Practices, and below for additional information about these practices).

There are many components of an aquatic system that potentially influence the suitability of habitat for each life stage of steelhead and coho. During the freshwater portion of their life history, these species are dependent on flowing waters and they are uniquely adapted to the Mediterranean seasonal hydrologic pattern and dynamic annual precipitation variability influencing streams flowing from the Central California coast. The major factor linking the City's water supply activity and the suitability of habitat for salmonids is alteration of the magnitude and timing of instream flows. Therefore, development and evaluation of bypass flows focused on physical habitat parameters related to flows and was supported by existing analytical tools including the Physical Habitat Simulation Model (PHABSIM) component of the Instream Flow Incremental Methodology (Bovee et al. 1998), the Critical Riffle or Thompson Method (Bjornn

and Reiser 1991; Thompson 1972; CDFW 2013), the Powers and Orsborn method (Powers and Orsborn 1985), and R2 (Berry 2016). These methods are summarized in Appendix D-3. Other habitat components such as temperature, benthic macro-invertebrate food sources, substrate characteristics, channel features, riparian vegetation, human disturbance, predation, disease, etc. are potentially important but were not incorporated directly in the analytic structure because either there is not an apparent, quantifiable direct linkage between the Proposed Project and a given habitat component, or there is not sufficient knowledge to evaluate or quantify linkages.

The habitat effects modeling methodology takes its structure from the salmonid life cycle and is focused on quantifiable relationships between important aspects of the life cycle that are influenced by streamflow. The habitat models address the effect of flow modification on four key life-history elements: migration of adults from river mouth to upstream spawning areas; spawning, (i.e., deposition and incubation of eggs in the streambed; incubation of eggs until emergence); rearing of juveniles to smolt stage; and downstream migration of smolts to the stream mouth. These elements were selected because they represent key aspects of the species' life history that are potentially influenced by alteration of streamflows by the City. Models were developed for each of these four, key life-history elements.

The Confluence model output of daily average residual flows at each diversion point is used in the habitat effects modeling to determine the habitat index value for each life stage. The habitat index may be either the weighted usable area (WUA) value for spawning or rearing, or the number of days with suitable conditions for migration of adult or smolt life stages. Figure 1 in Appendix D-3 shows how spawning habitat changes with flow in each of the stream reaches affected by City diversions. As flow increases, habitat value for spawning increases rapidly from very low levels at zero flow to a peak and then declines more gradually at higher flows. For example, in Laguna Creek the spawning habitat index peaks at a flow of about 16 cubic feet per second (cfs) for steelhead and about 12 cfs for coho. Figure 2 in Appendix D-3 shows how rearing habitat changes with flow. In general, the rearing habitat index for steelhead increases from low levels at zero flow and then increases more slowly, remains constant, or declines slightly at higher flows, depending on the stream reach. For coho, the rearing habitat index is higher at zero flow,[10] reaches a peak at relatively low flows and declines at higher flows. Index values for baseline and Proposed Project conditions are summarized in Impact BIO-1.

Habitat conditions for steelhead and coho are also influenced by water temperature. Effects of the Proposed Project on water temperature are limited to operation of Loch Lomond Reservoir, as described in Appendix D-3. Modeling of water temperature was not conducted but City records for reservoir water temperature profiles and reservoir spill were evaluated to assess potential effects. Additionally, to evaluate the potential for water temperature effects, modeling results for the baseline and Proposed Project were reviewed to assess potential changes in Loch Lomond Reservoir spill frequency, as reported on in Section 4.8, Hydrology and Water Quality. The results of the temperature analysis are reported on in Impact BIO-1A and described in more detail in Appendix D-3.

Analysis of Other Species and Sensitive Habitats

The potential for special-status plant and other wildlife species to occur within the Proposed Project was analyzed using vegetation community and land cover mapping, species habitat preferences, elevation range, and known species occurrences. Appendix F include tables identifying special-status plant and wildlife species, respectively, that have low, moderate, and high potential to occur in the biological study area and in the infrastructure study area. This list includes several species with a moderate to high potential to occur that may be impacted by the Proposed Project.

[10] Juvenile coho prefer lower velocities such as occur in pools. Suitable habitat can occur in residual pools with little or no surface flow.

To evaluate the operational effects of the proposed water rights modifications and associated Agreed Flows on other special-status species and sensitive habitat, the lake levels at Loch Lomond Reservoir and residual flows below the City's diversions on the North Coast streams (Laguna Creek/Reggiardo Creek, Liddell Spring, and Majors Creek), San Lorenzo River (Felton Diversion and Tait Diversion) and Newell Creek at Loch Lomond Reservoir with the modifications were compared to the lake levels and residual flows under baseline conditions. As for the fisheries analysis, the analysis of lake levels and residual flows was based on the water supply modeling performed for the Proposed Project (see above and Appendix D-2). Based on this modeling, Section 4.8, Hydrology and Water Quality, and specifically Figures 4.8-10 and 4.8-11 provide the average monthly residual flows below each of the City's diversions based on an average of all years and an average of critically dry years in the historical record (1936 to 2015). As indicated in Figures 4.8-10 and 4.8-11, the difference in residual flows below the City's diversions with the Proposed Project would be minimal relative to 2018 baseline conditions, with the exception of critical year residual flows in Newell Creek. In that case, the Proposed Project would result in an increase in residual flows of approximately 1 cfs relative to the baseline.[11] Additionally, Appendix D-2, Attachment 1, Residual Flow Exceedance Curves, provides more detailed month-by-month information, which indicates that Proposed Project residual stream flows would result in some incremental differences (both higher and lower) than under 2018 baseline conditions, including during critically dry years. Section 4.8, Hydrology and Water Quality, also indicates that the Proposed Project would increase Loch Lomond Reservoir levels, which would cause the reservoir to spill more frequently, based on an average of all years in the historical record (see Table 4.8-6). However, increases in lake levels under both existing and Proposed Project conditions are limited given the presence of the spillway, which releases water above a certain height.

The determination that no substantial alteration in residual flows below the City's diversions was used in the evaluation of the effects of the proposed water rights modifications and associated Agreed Flows on other special-status species, riparian and sensitive vegetation communities, and jurisdictional aquatic resources, presented in Impacts BIO-1B, BIO-1C, BIO-2 and BIO-3. Changes in Loch Lomond Reservoir levels are also considered in these impact analyses, where there could be potential adverse environmental impacts.

Infrastructure Components

Aquifer Storage and Recovery

ASR could potentially have both construction and operational impacts. As described in Chapter 3, Project Description, ASR includes new ASR facilities and Beltz ASR facilities in the Santa Cruz Mid-County Groundwater Basin (including potentially inside or outside the areas served by the City), and in the Santa Margarita Groundwater Basin outside the areas served by the City.

While new ASR facilities are likely to be located within a developed, urban setting, given the need for proximity to urban services, potential construction impacts include those that could occur if these facilities are located on sites with special-status biological resources, including sensitive vegetation communities, special-status species and their habitats, and jurisdictional aquatic resources. However, with the implementation of Standard Construction Practice #10, new ASR facilities would not be sited in streams or drainages and therefore would avoid such resources (see further information below on Application of Relevant Practices). Potential construction impacts related to the Beltz

[11] Under baseline conditions and the associated interim bypass flow requirements (see Chapter 3, Project Description), the minimum bypass flow downstream of the Tait Diversion could go as low as 2 cfs during extreme water supply shortage conditions. Under Proposed Project conditions, minimum bypass flows downstream of the Tait Diversion would never be less than 8 cfs. This difference between the baseline and Proposed Project conditions is not reflected in the hydrologic modeling results due to an inability to define the circumstances when it would come into play. Nevertheless, the Proposed Project has the potential to result in significantly better conditions during extreme water supply shortages compared to the baseline.

ASR facilities would be limited due to the existing urban setting at these sites and the documented conditions at these sites described in Section 4.3.2, Existing Conditions. See Definition of Impact Types below for additional information about the evaluation of construction impacts associated with all proposed infrastructure components.

Potential operational impacts could include both surface water and groundwater-related effects. Surface-water-related operational impacts associated with ASR are addressed in the analysis of the proposed water rights modifications, as that analysis includes the diversion of surface water to support ASR. Groundwater-related operational impacts associated with these components could result if the components cause negative effects on stream baseflows and related groundwater dependent habitats (e.g., riparian vegetation communities). The conclusions presented in Section 4.8, Hydrology and Water Quality, are used in this section to evaluate the impacts of ASR on groundwater dependent habitats. In summary, the amount of water extracted on a long-term average basis with the Proposed Project would not exceed the amount of water injected with ASR facilities on a long-term average basis, and therefore would not be expected to affect nearby stream baseflows and related habitats. The nearest streams to the existing Beltz ASR wells consist of an unnamed intermittent stream ("Stream 472") located upstream of Moran Lake, and Rodeo Creek Gulch located upstream of Corcoran Lagoon. Although there is uncertainty associated with the precise relationship between current groundwater pumping at Beltz ASR facility sites and streamflow within overlying creeks based on the Santa Cruz Mid-County Groundwater Sustainability Plan (GSP) (MGA 2019), the proposed Beltz ASR facilities would not have an appreciable impact on riparian vegetation communities or special-status species that depend on these localized areas, based on the analysis included in Section 4.8, Hydrology and Water Quality.

Water Transfers and Exchanges and Intertie Improvements

Water transfers and exchanges and associated intertie improvements (e.g., City/SVWD intertie and City/SqCWD/CWD intertie) could potentially have both operational and construction impacts. Potential construction impacts related to the intertie improvements would include the possible installation of new intertie piping, replacement of existing pipelines, upgrade to an existing pump station, and construction of new pump stations. It is assumed that pipeline construction would involve trenching within paved rights-of-way. The pipelines would also be located either above or below all existing creek and drainage culverts depending on clearances. If pipelines must be installed under existing culverts, construction would involve tunneling if necessary, to protect the culverts. In addition, it is assumed that no work would be conducted in any streams, drainages, riparian areas, wetlands, or other aquatic features. See Definition of Impact Types below for additional information about the evaluation of construction impacts associated with all proposed infrastructure components.

Surface water-related operational impacts associated with water transfers are addressed in the analysis of the proposed water rights modifications, as that analysis includes the water transfers that would be allowed with the proposed expansion of place of use included in the water rights modifications. Only transfers to neighboring water agencies were modeled and not exchanges from such agencies. This modeling approach provides a worst-case analysis of fisheries impacts, as greater volumes of surface water would be required compared to a scenario that includes exchanges because exchanges in which the City would receive water from neighboring agencies would reduce the City's diversions. Additionally, there is currently no way to estimate or model the amount of water the City could expect to receive back from neighboring agencies through exchanges. Exchanges could be pursued in the future under the provisions of the Mid-County Groundwater Basin GSP, which indicate that if water transfers benefit groundwater levels, and are sustainable over time, and the Basin's performance consistently reaches sustainability targets, then the City potentially could recover some of the increase in groundwater in storage as a supplemental supply during dry periods.

Groundwater-related operational impacts associated with these components could result if the components cause negative effects on stream baseflows and related groundwater dependent habitats. Again, the conclusions presented in Section 4.8, Hydrology and Water Quality, are used in this section to evaluate the impacts of water transfers on groundwater dependent habitats.

Surface Water Diversion Improvements

The surface water diversion improvements could potentially have both construction and operational impacts. The surface water diversion improvements include the Felton Diversion fish passage improvements and the Tait Diversion and Coast Pump Station improvements. Minor modifications to the existing Felton Diversion are needed to comply with the latest fish passage and screening criteria, which would improve passage for coho and steelhead. Proposed improvements at the Tait Diversion and Coast Pump Station could include: (1) a new or modified intake design, (2) upstream and/or downstream hydraulic modifications, (3) improvements to the check dam, (4) any required fish passage upgrades, and (5) various improvements at the pump station to increase the capacity for surface water flows to accommodate the proposed water right modifications.

These improvements would be constructed on the west side of the Felton Diversion entirely within the existing diversion facility structure. Construction of the Felton Diversion fish passage improvements would not require any construction activities or disturbance in the riverbed and therefore these improvements would avoid direct impacts to sensitive vegetation communities. The existing bypass channel and fish ladder would be dewatered, if needed, and closed during construction. Once construction is completed, any construction debris would be removed from the bypass channel and fish ladder prior to reopening them.

In contrast, the Tait Diversion improvements would likely require construction activities and disturbance and dewatering in the riverbed. Direct impacts to sensitive vegetation communities, and special-status species and their potential habitat may result. The Coast Pump Station improvements would be limited to installation of new infrastructure and upgrades to existing infrastructure within the existing already developed pump station. See Definition of Impact Types below for additional information about the evaluation of construction impacts associated with all proposed infrastructure components.

Surface water-related operational impacts associated with the surface water diversion improvements are addressed in the analysis for the proposed water rights modifications, as that analysis includes the diversion of surface water at the Felton Diversion and Tait Diversion under Proposed Project conditions.

Definition of Impact Types

This section defines the types of impacts that could occur as a result of the Proposed Project's implementation, including direct permanent impacts, direct temporary impacts, and indirect impacts.

Direct permanent impacts refer to the absolute and permanent physical loss of a biological resource due to clearing and grading associated with implementation of the Proposed Project. Direct permanent impacts are analyzed in four ways: (1) permanent loss of vegetation communities and land covers, and general wildlife and their habitat; (2) permanent loss of or harm to individuals of special-status plant and wildlife species; (3) permanent loss of suitable habitat for special-status species; and (4) permanent loss of wildlife movement and habitat connectivity in the Proposed Project.

Direct temporary impacts refer to a temporal loss of vegetation communities and land covers resulting from vegetation and land cover clearing and grading associated with implementation of the Proposed Project. The main criterion for direct temporary impacts is that impacts would occur for a short period of time and would be reversible.

Indirect impacts are reasonably foreseeable effects caused by project implementation on remaining or adjacent biological resources outside the direct disturbance zone that may occur during grading or maintenance activities (i.e., short-term construction related indirect impacts) or later in time as a result of the Proposed Project (i.e., long-term, or operational, indirect impacts). Short-term indirect impacts can include dust, human activity, pollutants (including potential erosion), and noise that extend beyond the identified construction area. Long-term indirect impacts can include changes in streamflows and associated habitat values to instream resources. Other long-term indirect impacts can include changes to hydrology, introduction of invasive species, dust, and noise that are operations-related or occur over the long term.

For each of the following impact sections, direct and indirect impacts for biological resources are identified and a significance determination is made for each impact. This analysis considers the inclusion of standard operational and construction practices presented in Section 3.4.5, Standard Operational and Construction Practices, which are included in the Proposed Project to avoid and minimize impacts to biological and other resources (see below for relevant practices). For each significant impact, mitigation measures that would reduce the impact to less than significant are proposed.

Application of Relevant Standard Practices

The Proposed Project also includes standard operational and construction practices (see Section 3.4.5, Standard Operational and Construction Practices), that the City or its contractors would implement to avoid and minimize effects to special-status species and their habitats, sensitive vegetation communities and state and federally protected wetlands. These practices and their effectiveness in avoiding and minimizing effects are described below.

Standard Operational Practices

The operational practices include the following: implementation of ramping rates that gradually alter diversions from a stream channel (Standard Operational Practice #1); operation of ASR injections and extractions consistent with the sustainable management criteria of the applicable GSP (Standard Operational Practice #2); operation of ASR facilities in accordance with all requirements of the SWRCB Water Quality Order 2012-0010, General Waste Discharge Requirements for Aquifer Storage and Recovery Projects that Inject Drinking Water into Groundwater (Standard Operational Practice #3); no diversions to provide water for ASR injections in months classified as Hydrologic Condition 5 (driest) as defined in the Agreed Flows (Standard Operational Practice #4); no diversions from surface streams to transfer to neighboring agencies in months classified as Hydrologic Condition 4 (dry) or Hydrologic Condition 5 (driest) as defined in the Agreed Flows (Standard Operational Practice #5); and when Loch Lomond Reservoir is spilling during late spring and summer the City will release additional cooler flow through the fish release below the dam when needed to offset the potential warming effects of reservoir spills below Newell Creek Dam at that time of the year (Standard Operational Practice #6).

Standard Operational Practice #2 and #3 would avoid or minimize groundwater effects related to groundwater dependent habitats by providing for compliance with the applicable GSP and state regulations related to ASR projects. Standard Operational Practices #4 and #5 would avoid or minimize fisheries effects by prohibiting surface water diversions from the City's sources for ASR injections during months categorized as driest and prohibiting such diversions for transfer to neighboring agencies during months categorized as both dry and driest, which will avoid

diversions for these purposes during such dry conditions when streamflows are already low. Without these measures, diversions have the potential to remove flows that are of benefit to protected species at certain times during these dry periods. Additionally, Standard Operational Practice #6 would offset the potential warming effects of reservoir spills below Newell Creek Dam during the late spring and summer to avoid potential effects to steelhead and coho due to potential temperature increases.

Standard Construction Practices

The construction practices that address indirect impacts on biological resources resulting from uncontrolled erosion and fugitive dust, uncontrolled runoff and sedimentation in waterway, and unintended spills of hazardous materials or deposition of trash include the following: installation of erosion control best management practices (Standard Construction Practice #1), providing stockpile containment and exposed soil stabilizing structures (Standard Construction Practice #2), providing runoff control devices (Standard Construction Practice #3), providing wind erosion controls (Standard Construction Practice #4), locating and stabilizing spoil disposal sites (Standard Construction Practice #5), storing equipment at least 65 feet from active channel to minimize potential hazardous spills (Standard Construction Practices #6 and #7), preventing equipment leaks through regular maintenance (Standard Construction Practice #8), implementing proper waste/trash management (Standard Construction Practice #9). These practices would minimize the potential for indirect effects on biological resources during construction caused by uncontrolled erosion and fugitive dust by installation of erosion best management practices (e.g., silt fences, fiber roles, covering stockpiles) and wind erosion controls (e.g., watering active construction areas, use of soil binders on exposed areas, covering haul trucks). Uncontrolled runoff and sedimentation in waterways would be minimized by providing runoff control devices along with the installation of erosion best management practices. Unintended spills of hazardous materials or deposition of trash would be minimized by storing equipment at a distance from active channels, preventing equipment leaks, and implementing proper waste and trash management.

The construction practices that address direct and indirect impacts on biological resources due to construction activities include the following: avoiding activities in active channels whenever possible and siting new ASR facilities outside of streams and drainages (Standard Construction Practice #10), isolating activities in active channels (Standard Construction Practice #11), implementing appropriate measures during dewatering activities (Standard Construction Practices #17 through #22), using appropriate equipment to minimize disturbance to channels (Standard Construction Practice #12), avoiding retained riparian vegetation (Standard Construction Practice #13), restoring temporarily disturbed natural communities/areas by replanting with natives (Standard Construction Practice #14), and conducting a training-education session for project construction personnel (Standard Construction Practice #16). These practices would minimize the potential for direct and indirect effects on biological resources during construction in or near streams by avoiding activities in active channels when possible and when avoidance is not possible activities would be isolated in the active channel through dewatering and appropriate equipment would be used to minimize disturbance. Additionally, riparian vegetation to be retained would be avoided during construction and removed natural vegetation communities would be restored by replanting native vegetation using a vegetation mix appropriate to the site. Lastly, to minimize impacts on special-status species the practices require that qualified biologist conducts a training session with construction personnel prior to any mobilization-construction activities within the project sites to inform personnel about species that may be present on site and the necessity for adhering to the provision of relevant federal and state regulations (i.e., Migratory Bird Treaty Act, CFGC, FESA, and CESA).

4.3.4.3 Proposed Project Impacts Analyses

Areas of No Impact

The Proposed Project would not have impacts with respect to the following standards of significance as described below:

- **Local Policies and Ordinances (Significance Standard E).** As indicated in Section 4.3.3.3, Local, the project and programmatic infrastructure components relate to operation, utilization, and storage of water resources and therefore, these facilities are legally exempt under California Government Code Section 53091 (d) and (e) from the County of Santa Cruz, City of Scotts Valley, City of Santa Cruz, and City of Capitola building and zoning ordinances. Beltz 8, 9, and 10 ASR facilities and any new ASR facilities located in the coastal zone in the unincorporated County would have to comply with relevant County LCP policies and implementing ordinances. Lastly, the portion of the City/SqCWD/CWD intertie in the coastal zone (i.e., the McGregor Drive pump station upgrade, and part of the Park Avenue pipeline south of State Highway 1), would have to comply with the City of Capitola's LCP and implementing ordinances. All other programmatic infrastructure components located outside of the coastal zone (i.e., new ASR facilities, Beltz 12 ASR facilities, City/SVWD intertie, the portion of the City/SqCWD/CWD intertie located north of State Highway 1, the Tait Diversion and Coast Pump Station improvements, and the Felton Diversion improvements) would be exempt from all local building and zoning ordinances. As indicated in Section 4.9, Land Use, Agriculture and Forestry, and Mineral Resources, the Proposed Project would not conflict with relevant policies and ordinances, including those related to biological resources.

  While the Tait Diversion is located in the San Lorenzo River Upper West Branch reach within the riparian area and within an area identified as having "Current Restrictions" as identified in the *City-Wide Creeks and Wetlands Management Plan*, improvements to the diversion would require approval of a Watercourse Development Permit unless the conditions below are met. Allowable uses in the riparian setback include improvements to existing intake and outfall lines, when special studies prepared by qualified professionals demonstrate that there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects. Project components could include fish passage upgrades to meet current state and federal fisheries protection criteria. Projects that concurrently are reviewed and approved by the USACE, CDFW, NOAA, or USFWS for maintenance, flood protection, restoration or enhancement of a natural resource are exempt from obtaining a Watercourse Development Permit, as are repair, maintenance and minor alteration of existing public utility or water provision facilities. The proposed in-water improvements associated with the water diversion improvement would require a Watercourse Development Permit unless the City determines at the time the improvements are pursued that the activities fall under the broad exemption of minor alteration of existing facilities and/or the activities require a permit from USACE or CDFW, thus exempting the improvements from a City permit. Therefore, improvements to the Tait Diversion would comply with the *City-Wide Creeks and Wetlands Management Plan* and there would be no impacts related to conflicts with this plan. See Impact BIO-2 for additional information about riparian habitat.
- **Conflicts with Habitat Conservation Plans (Standard of Significance F).** The Proposed Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Three Habitat Conservation Plans have been adopted within the biological study area: the County of Santa Cruz's Interim Programmatic Habitat Conservation Plan (IPHCP), City of Santa Cruz's City-Wide Operations and Maintenance Habitat Conservation Plan (OMHCP), and the City of Santa Cruz's Graham Hill Water Treatment Plant Habitat Conservation Plan (GHWTPHCP).

- **IPHCP.** The USFWS approved the IPHCP for the County and City to issue incidental take permits (ITPs) under the ESA for the incidental take of the Mount Hermon June beetle and Ben Lomond spineflower from activities covered by the IPHCP and ITPs. The City/SVWD intertie would be located within areas identified by the County as having potential sandhills habitat that could support these species. However, this plan is intended to be used for small residential development projects only, and does not include take coverage for the Zayante band-winged grasshopper or other listed sandhills habitat plants that may result from implementing region-wide projects such as the Proposed Project. Regardless, the impacts and compensatory mitigation associated with the Proposed Project would be consistent with the provisions, and minimization and mitigation measures contained in the IPHCP. Therefore, the Proposed Project would not conflict with the IPHCP. See Impact BIO-1 and BIO-2 for additional information about sandhills habitat species.
- **OMHCP.** The USFWS approved the OMHCP for the City to implement facility improvements or projects with the potential to "take" species listed under the federal ESA. The OMHCP covers six wildlife species (Ohlone tiger beetle, Mount Hermon June beetle, tidewater goby, Pacific lamprey, California red-legged frog, and western pond turtle) and four plant species (Ben Lomond spineflower, robust spineflower, Santa Cruz tarplant, and San Francisco popcorn flower). The OMHCP addresses upgrades to the North Coast Pipeline and rehabilitation of diversion structures, operation of existing City facilities, and operations and maintenance of existing water diversions and transmission lines and their associated features. Some of the Proposed Project infrastructure components would be considered activities covered by the OMHCP (e.g., Felton Diversion improvements, Tait Diversion and Coast Pump Station improvements) and the City has developed the Proposed Project to ensure that the conservation strategies and objectives of the OHMCP are met. like the OMHCP, the Proposed Project includes the Agreed Flows, which are consistent with the ASHCP. Therefore, the Proposed Project would not conflict with the OMHCP.
- **GHWTPHCP.** The USFWS approved the GHWTPHCP for the City to implement operations, maintenance, and construction of facilities with the potential to "take" Mount Hermon June beetle, Zayante bandwinged grasshopper, and Ben Lomond spineflower. This low-effect HCP addresses the specific activities and upgrades at the GHWTP. Although the biological study area encompasses the GHWTPHCP plan area, the Proposed Project would not affect these species within the plan area and, therefore, would not conflict with the GHWTPHCP.

Additionally, the USFWS has approved 15 other individual Low Effect HCPs for the Mount Hermon June beetle, Zayante band-winged grasshopper, California red-legged frog, Ben Lomond wallflower, and/or Ben Lomond spineflower. One other HCP for a local project (Santa Cruz Gardens) that provided take coverage for the Ohlone tiger beetle, Santa Cruz tarplant, and Gairdner's yampah was previously approved by the USFWS within the biological study area. However, these HCPs were executed in the early 2000s, have exceeded their term limits, and are no longer in effect. The City is also developing the ASHCP with NMFS and the CDFW for City water-system operation and maintenance activities that may affect special-status anadromous salmonids (see Section 4.3.3.1, Federal). There are no other approved local, regional, or state habitat conservation plans in the Proposed Project vicinity. Therefore, the Proposed Project would have no impact related to conflicts with any such plans.

Project Impacts

This section provides a detailed evaluation of biological resources impacts associated with the Proposed Project.

Impact BIO-1A: Special-Status Species – Fish (Significance Standards A, D, G, H, and I). Construction of the Proposed Project could have a substantial adverse effect on special-status fish, but would not interfere with the movement of special-status fish, reduce the habitat, cause a population to drop below self-sustaining levels, or substantially reduce the number or restrict the range of any special-status fish species. ***(Less than Significant with Mitigation)*** Operation of the Proposed Project would not have such substantial adverse effects. ***(Less than Significant)***

Water Rights Modifications

This project component would involve making modifications within the City's pre-1914 and post-1914 water rights, permits, and licenses. Modifications include expansion of the place of use, modifications related to method and points of diversion and rediversion, addition of underground storage, extension of time to reach full beneficial use under the City's Felton permits, and Agreed Flows. The proposed water rights modifications would not directly involve constructing, improving, or eliminating any facilities and therefore no direct impacts to special-status fish species typically associated with construction-related ground disturbance would occur from the modifications. While no changes to the face value of any of the City's water-right permits or licenses or increases in the amounts of the City's pre-1914 rights would occur, the water rights modifications would result in operational changes that could have indirect impacts on special-status fish species and these operational changes are the focus of the impact analysis for this project component. The potential operational impacts to fish species are limited to surface water-related changes. Additionally, given that the water rights modifications, once approved, could result in the implementation of the various infrastructure components of the Proposed Project (i.e., ASR, water transfers/intertie improvements, surface water diversion improvements), the analysis of the water rights modifications includes the combined surface water-related operational impacts of these infrastructure components, where relevant.

Several special-status fish species have at least a moderate potential to occur within the biological study area including the following species: tidewater goby, Pacific lamprey, Monterey roach, steelhead, and coho. These species are evaluated below.

Tidewater Goby. Tidewater goby have populations in Laguna Creek lagoon and the San Lorenzo River lagoon. The proposed water rights modifications could have an effect on this species if operations result in different conditions in these lagoons, such as could occur if inflow to the lagoons is altered by this project component. Alteration of lagoon inflow may influence the timing and duration of lagoon closure, water depth, development of aquatic vegetation, and water quality parameters including salinity, dissolved oxygen, temperature, and pH. Hydrologic modeling results for residual flow below the Tait Diversion (see Appendix D) indicate that the water rights modifications would result in some reduction in inflows to the San Lorenzo River lagoon with the greatest effect in wet and normal years when inflows are relatively high. The largest changes are a 8% reduction in average lagoon inflows in spring (April through June) of normal years, and a 5.9% reduction in average inflows in summer (July through September) of wet years (Table 4.3-6). Changes in dry and critical years range from an increase in average lagoon inflow of 1.1% in spring of critically dry years to a 1.5% decrease in spring of dry years. The lagoon is generally open in the winter (October through March) with relatively high inflow so changes during this period have little influence on habitat for gobies. Generally, the San Lorenzo River lagoon does not close for any extended period (more than a few days) until inflows drop to between 18 cfs and 24 cfs or less (HES 2010 - 2019). Reduced inflow to the San Lorenzo River lagoon in spring of wet, normal, and dry years does not bring flows into the range where the mouth is likely to close so there would not likely be effects on gobies due to changes in lagoon closure timing or extent. The magnitude of the reduction at these times is likely too small to affect goby habitat. Average flow reductions in summer of all year types and increase in spring of critical years are also small and not likely to

substantially affect habitat conditions or lagoon closure timing. Changes in inflow to the San Lorenzo River lagoon are not of sufficient magnitude to result in a substantial adverse effect on tidewater goby in this lagoon.

Hydrologic model output indicates that inflow to Laguna Creek lagoon would increase slightly with the Proposed Project in spring of dry, normal, and wet years and would be unchanged in summer and in spring of critically dry years. Increase in average inflow during spring ranges from 3.9% in dry years to 10.7% in wet years. Much of this change is related to the provision of bypass flows for adult migration in April, as part of the Agreed Flows. The increase in lagoon inflow may result in later closure of the lagoon in spring of wetter years; however, this condition is closer to the natural streamflow pattern that would occur with no City diversion. Change in inflow to the Laguna Creek lagoon under the Proposed Project would not result in a substantial adverse effect on tidewater goby in this lagoon.

Given the above, the water rights modification component of the Proposed Project would not result in a substantial adverse effect on tidewater goby, would not cause goby population to drop below self-sustaining levels, or threaten to eliminate or substantially reduce the number or restrict the range of goby. Therefore, the water rights modification component would have a less-than-significant impact on tidewater goby.

Table 4.3-6. Average Inflow to the San Lorenzo River and Laguna Creek Lagoons (cfs)

Season	Year Type	San Lorenzo River Lagoon		Laguna Creek Lagoon	
		Baseline	*Proposed Project*	*Baseline*	*Proposed Project*
Spring	Wet	195.8	187.8	9.5	10.5
	Normal	70.3	64.6	3.5	3.9
	Dry	38.9	38.3	2.4	2.5
	Critical	15.1	15.3	1.2	1.2
Summer	Wet	25.6	24.1	1.9	1.9
	Normal	14.0	13.5	1.3	1.3
	Dry	9.2	9.1	0.8	0.8
	Critical	8.4	8.4	0.5	0.5

Pacific Lamprey. Pacific lamprey are known to occur in the San Lorenzo River but have not been reported from the North Coast streams (Liddell, Laguna, and Majors Creeks). City water supply operations under the baseline are regulated by the interim bypass flows under the 2018 agreement between the City and CDFW. Operations under the Proposed Project are regulated by the Agreed Flows developed in coordination with CDFW and NMFS as part of the City's pending ASHCP. The major differences between the interim bypass flows and the Agreed Flows are that the Agreed Flows have provisions not included in the interim bypass flows including: migration flows in December in North Coast streams and April of normal, wet, and very wet years in the North Coast streams and the San Lorenzo River; and minimum flow of 40 cfs in the San Lorenzo River between the Felton Diversion and the Tait Diversion during steelhead and coho migration and spawning season (Table 4.3-6). The Agreed Flows also impose a minimum release flow of 0.25 cfs in Newell Creek during low Loch Lomond storage levels and 1 cfs release at other times while the interim bypass flows have a uniform 1 cfs release flow.

In the reach between the Felton Diversion and the Tait Diversion, the effect of Agreed Flows under the Proposed Project is to slightly increase (3% or less) the frequency of flows in the range of 20 cfs to 40 cfs and to slightly decrease (3% or less) the frequency of flows in the range of 40 cfs to 50 cfs (see Appendix D-2). Flow changes of this magnitude in the reach between the Felton Diversion and the Tait Diversion would not be likely to significantly affect lamprey migration, spawning, or rearing.

In the reach of the San Lorenzo River downstream of the Tait Diversion, the water rights modification component would result in a small reduction in flow from September through May[12] (see Appendix D-2). Lamprey migration and rearing can occur in this reach. Lamprey rearing is not likely to be affected by these flow changes since they are sedentary in the streambed and prefer silty substrate that accumulates in areas with lower flow velocity. Adult lamprey migrate upstream in winter during the same period that steelhead migrate. Adult lamprey migration may be hindered at low flows by shallow riffle depth, similar to steelhead and coho, but lamprey can likely negotiate somewhat more shallow depths than salmonids since their body depth is not as great. Analysis of migration for steelhead and coho indicates that the water rights modification component would not result in significant effects on migration of either salmonid species downstream of the Tait Diversion (see footnote #13) and a similar conclusion can be made for lamprey. Given that, the water rights modification component would not likely have a substantial adverse effect on Pacific lamprey, would not cause lamprey population to drop below self-sustaining levels, or threaten to eliminate or substantially reduce the number or restrict the range of lamprey. Therefore, the water rights modification component would have a less-than-significant impact on Pacific lamprey.

Monterey Roach. Monterey roach are present in the San Lorenzo River watershed but have not been reported from the North Coast streams. California roach are widely distributed in California, both geographically and in terms of habitat conditions. They are found in small, warm streams, coldwater "trout" streams, in heavily modified habitats, and main channels of rivers. Their relatively short lifespan (maturity in 2 to 3 years and maximum life span of 6 years) and fecundity (250-2000 eggs per female) can produce abundant populations in the right conditions. The effects of the Proposed Project are limited to relatively small flow changes downstream of the Felton Diversion, the Tait Diversion and Newell Creek Dam. Roach have not been observed in seining surveys in the San Lorenzo lagoon and may not be abundant downstream of the Tait Diversion (HES 2010 – 2019). Roach have been consistently reported in electrofishing surveys between 1994 and 2019 at 25% to 75% of all sampled locations upstream of the Tait Diversion (SCCWRP 2021). They have been observed most commonly in the mainstem San Lorenzo River between Felton and Boulder Creek and are less common, even infrequent in the tributaries and upper mainstem. They have been captured occasionally or rare at sites downstream of Felton (SCCWRP 2021). Roach are tolerant of a range of environmental conditions. The relatively small flow changes under the Proposed Project would not likely have a substantial adverse effect on Monterey roach, would not cause roach population to drop below self-sustaining levels, or threaten to eliminate or substantially reduce the number or restrict the range of roach. Therefore, the water rights modification component would have a less-than-significant impact on Monterey roach.

Steelhead and Coho. The fisheries effects habitat modeling included in Appendix D-3 evaluates the Proposed Project impacts on two listed, special-status fish species, steelhead and coho, as compared to baseline conditions, as described in Section 4.3.4.2, Analytical Methods. The modeling includes all upgrades to existing infrastructure being planned as part of the Proposed Project, other planned infrastructure upgrades, and relevant standard operational practices that would be implemented as part of the Proposed Project to avoid or minimize effects to special-status fish species, including Standard Operational Practices #4 and #5 that limit diversions for ASR or transfers during certain dry conditions (see Section 4.3.4.2 for details about the modeling and effectiveness of the operational practices). The effects of the Proposed Project related to changes in steelhead and coho habitat and

[12] This is because flows under the baseline conditions can, at times, be somewhat greater than the required bypass flow. Increased diversion capacity at the Tait Diversion under Proposed Project conditions can result in diversion of this "extra" flow even though the bypass requirements are still met. On the other hand, the minimum bypass flow downstream of the Tait Diversion could go as low as 2 cfs during extreme water supply shortage conditions (Exception Flows) under baseline conditions. Under Proposed Project conditions, minimum bypass flows downstream of the Tait Diversion would never be less than 8 cfs. This difference between the baseline and Proposed Project conditions is not reflected in the hydrologic modeling results due to an inability to define the circumstances when it would come into play. Nevertheless, the Proposed Project has the potential to result in significantly better conditions during extreme water supply shortages compared to the baseline.

changes in water temperature due to Loch Lomond spill conditions and associated impacts on steelhead and coho are provided below based on Appendix D-3.

1. Habitat Effects of Proposed Project

   Table 4.3-7 provides a summary of the habitat effects of the Proposed Project for steelhead and coho life stages in each of the stream reaches influenced by City diversions, based on the historic hydrologic conditions of the region. Changes in habitat indices of less than 2% are well within the inherent statistical error in the habitat models and are not considered biologically significant or "substantial" under CEQA standards of significance. Changes greater than 2% may also be biologically insignificant or not significant under CEQA standards of significance but changes at this level are discussed in more detail. Results of the analysis for steelhead and coho offer a surrogate for other special-status fish species, as described above.

   The majority of effects of the Proposed Project involve an improvement in habitat conditions for steelhead and coho, as well as other special-status fish species, compared to the baseline condition (see Table 4.3-7). The only negative effect is a 2.7% decline in the rearing habitat index in wet years for coho in Laguna Creek (see Table 4.3-7 and Appendix D-3, Figure 9). This decline is actually a result of higher flows in April provided for steelhead adult migration under the Agreed Flows because, in this case, higher flows marginally reduce coho rearing habitat. Coho rearing habitat is at optimum levels at lower flows than those provided for adult migration. Even with this effect, the wet year coho rearing index remains at 90% of the peak level in Laguna Creek. This minor effect on rearing habitat is not likely to be biologically meaningful and would not be considered "substantial" under CEQA standards of significance. Specifically, a change of this magnitude in the rearing index would not substantially reduce the habitat of coho, interfere substantially with the movement or migration of coho, cause the coho population to drop below self-sustaining levels, threaten to eliminate coho in Laguna Creek or, substantially reduce the number or restrict the range of coho.

   Habitat improvements for adult migration and spawning in normal and wet years in Laguna Creek and Liddell Creek (see Table 4.3-7 and Appendix D-3, Figures 3 and 4) are consistent with the fact that bypass flows are provided for migration in April in 0-60% hydrologic exceedance conditions and for spawning in December under the Agreed Flows with the Proposed Project (see Appendix C), whereas they were not included in the interim bypass flow requirements in place in 2018 for the baseline. Although April migration flows are also included in Majors Creek, the same benefits as in Laguna and Liddell Creeks are not shown in Majors Creek. Winter diversions at Majors Creek are limited by pipeline capacity, particularly in wetter conditions, and are therefore relatively high under both the baseline and Proposed Project.

   Habitat indices are improved with the Proposed Project for steelhead and coho adult migration and steelhead spawning in the San Lorenzo River between the Felton Diversion and the Tait Diversion, with the largest increases in dry and critical years (see Table 4.3-7, and Appendix D-3, Figures 3, 4, and 7). It is a direct result of the 40 cfs bypass flow for adult migration and spawning provided in the Agreed Flows with the Proposed Project. The interim bypass flow requirements under the baseline do not have this provision. [13] Spawning suitability data for coho in the San Lorenzo River downstream of the Felton Diversion were not collected as part of the instream flow study (Ricker and Butler 1979), mainly because potential habitat for coho is mostly in the tributaries. However,

[13] Under the baseline, the Felton Diversion water right allows diversion at a maximum rate of 20 cfs with a 20 cfs bypass from October 1 to May 31. If the Felton Diversion were used at full capacity, it has the potential to impact migration and spawning habitat in the reach downstream by reducing flows to 20 cfs (the minimum bypass requirement) with greater frequency. The Proposed Project removes this potential by increasing the minimum bypass requirement to 40 cfs. This benefit of the Proposed Project is not reflected in the hydrologic modeling since historical operations do not reflect the pumping capacity allowed by the existing water right.

evaluation of change in flow shows a small increase (0.1%) or small decreases (-0.3% or less) during the coho spawning period, indicating that any effect on coho spawning that may occur there would likely be insignificant.

Table 4.3-7. Listed Fish Habitat Effects of the Proposed Project Compared to Baseline (Historic Hydrology)

Laguna Anadromous	Wet	8.5%	5.9%	○	○	○	+	−2.7%	○
	Normal	○	3.3%	○	○	○	+	–	○
	Dry	○	+	○	○	○	+	–	○
	Critically dry	○	+	○	○	○	+	○	○
Liddell Anadromous	Wet	4.1%	3.4%	○	○				
	Normal	5.0%	3.4%	○	○				
	Dry	○	–	–	○				
	Critically dry	○	–	–	○				
Majors Anadromous	Wet	○	+	○	○				
	Normal	○	+	○	○				
	Dry	○	–	–	○				
	Critically dry	○	○	○	○				
San Lorenzo below Tait St	Wet	○		–	○	○			○
	Normal	○		–	○	○			○
	Dry	○		–	○	○			○
	Critically dry	○		–	○	○			○
San Lorenzo below Felton	Wet	+	+	–	○	4.9%	–	–	○
	Normal	+	+	–	○	4.6%	–	–	○
	Dry	8.0%	2.6%	○	○	15.8%	+	o	○
	Critically dry	22.0%	6.4%	○	○	15.3%	–	o	○
Newell Anadromous	Wet	6.3%	4.5%	+	3.4%	15.9%	5.1%	–	3.4%
	Normal	19.9%	10.1%	○	14.0%	19.8%	9.2%	–	14.0%
	Dry	50.5%	27.1%	+	44.5%	○	29.6%	+	44.5%
	Critically dry	○	26.3%	8.6%	○	○	50.0%	2.0%	○

Notes: – = <2% decrease in habitat index; + = <2% increase in habitat index; ○ = no change in habitat index, or change of 1 day or less in migration periods.
Values for coho spawning and rearing below Felton ***(bold italic)*** based on change in flow rather than habitat indices.

Differences in habitat index values in Newell Creek downstream of Newell Creek Dam/Loch Lomond Reservoir are the result of differing reservoir operations between the baseline and Proposed Project. Bypass requirements for habitat are the same under the baseline and Proposed Project in this location, but habitat provided by reservoir spill is altered by operation of the Proposed Project. The effect is most pronounced in dry and critical year types, although, while the differences are large in percentage terms, they are not necessarily large in overall magnitude (see Table 4.3-7 and Appendix D-3, Figures 3, 4, 6, 7, 8, and 10). For example, the 50.5% increase in the steelhead adult migration index in dry years amounts to only 3 additional days (from 7 days to 10 days) and therefore the improvement may not be biologically significant (Appendix D-3, Figures 3). Habitat index values are low in dry and critical years even with no City diversion (i.e., Loch Lomond Reservoir operations and diversion not present, Appendix D-3, Figures 3, 4, 6, 7, 8, and 10).

Habitat modeling indicates that, although there are isolated instances of minor effects to some life stages in some reaches relative to the baseline, the Proposed Project would result in a net beneficial effect on both species (see Table 4.3-7). Based on historic hydrology, the habitat modeling indicates that the Proposed Project would not have a substantial adverse effect on habitat indices for steelhead or coho, would not interfere substantially with migration of steelhead or coho, and would not cause steelhead or coho population to drop below self-sustaining levels, threaten to eliminate steelhead or coho or, substantially reduce the number or restrict the range of steelhead or coho. Therefore, the water rights modification component is expected to have a less-than-significant impact on steelhead and coho habitat.

2. Water Temperature Effects of Proposed Project

As described in Appendix D-3, steelhead are generally expected to survive and grow well at temperature up to about 19°C to 21°C if food is abundant, but at temperature in excess of 21°C, mortality is expected to increase. Temperatures of 25°C to 26°C are generally considered lethal for steelhead. Coho require cooler temperature than steelhead.

The North Coast streams (Liddell, Laguna, and Majors Creeks) have water temperature conditions which are relatively cool due to marine influence and relatively dense, intact riparian canopies. Temperature monitoring data collected by the City indicates good water temperature conditions for rearing salmonids in these streams. Temperature conditions in these streams are within the range of tolerance for both steelhead and coho rearing juveniles and near optimal in many cases. The City diversions on the North Coast do not create conditions that influence water temperature (i.e., large storage facilities, removal of riparian shading vegetation, or alteration of subsurface flows).

The San Lorenzo River and its tributaries extend further inland than the North Coast streams and water temperature is warmer. Water temperature is suitable for steelhead at all City monitoring locations but increases with distance downstream from Newell Creek and is near the upper range of suitability during the seasonal thermal maximum period and in the lower San Lorenzo River from above Tait Street Diversion to the lagoon. Coho require cooler temperature than steelhead and temperature is relatively warm for coho except in the tributaries and upper mainstem and in Newell Creek downstream of Loch Lomond Reservoir. Coho do not presently maintain viable populations in the San Lorenzo River and its tributaries in the southern part of Santa Cruz County where the City has its water supply operations.

The existing required release of 1 cfs from Newell Creek Dam is from the lower levels of the Loch Lomond Reservoir and is colder than ambient stream temperatures during the summer and warmer than ambient during the winter. The fish release is typically between 11°C and 14°C. As a result, temperature in Lower Newell Creek

below the dam is warmer than Upper Newell Creek, above the dam, during winter and spring and cooler in the summer by up to 4°C on average. Warmer water in winter and spring can enhance salmonid growth rates if food resources are sufficient. The cooling influence in summer may maintain temperature in a more suitable range during excessively warm conditions but may depress growth rates at other times. The effect would be strongest closest to the dam. The cooling influence in summer can extend downstream as far as the San Lorenzo River and at these times the flow from Newell Creek can reduce temperature in the main stem by about 1°C.

Operation of the reservoir (required 1 cfs release and reservoir spill) is the only City activity associated with the Proposed Project that has the potential to influence water temperature. The effect of the 1 cfs release is generally beneficial, particularly during the late summer and during dry years, when stream temperature is highest and may limit habitat suitability for steelhead, and particularly for coho.

During periods when the reservoir spills, water from the surface of the reservoir mixes with the fish release downstream of the dam. Since spill is from the reservoir surface, it can be warmer than the fish release during the warmer parts of the year. However, the majority of spill occurs during or after precipitation events in the winter when Loch Lomond Reservoir temperature is cool. The period when temperature effects are most likely is during the spring and early summer (May through July) when the lake surface is warming and there is still a potential for spill, at least in wetter years when storage is high.

Temperature monitoring data collected by the City indicates that surface water temperatures in Loch Lomond Reservoir closest to the spillway can reach levels that are potentially harmful to steelhead and coho. Sub-optimal temperatures (21°C or greater) have occurred 98% of the time in July, 85% of the time in June, 19% of the time in May, and only 1% of the time in April. Potentially lethal levels have also been recorded (25°C or higher) in June and July, although the frequency of such occurrence is low in June (less than 1% of readings) and higher in July (11% of readings). At times when the spill is warmest later in the spring, the amount of spill tends to be declining under the baseline and Proposed Project conditions and it is diluted to a greater degree by the colder fish release.

The Proposed Project results in slightly higher reservoir elevations at Loch Lomond Reservoir and more frequent spill conditions as compared to the baseline. Hydrologic modeling indicates that the Proposed Project would result in increased spill mostly in the winter and spring and infrequently during the warmer months of July and August (less than 4% of the time) (see Section 4.8, Hydrology and Water Quality). Spill in June would occur 38% of the time with the Proposed Project compared to 19% under the baseline. Increased spill during the winter could benefit steelhead and coho during the adult migration, spawning, and smolt migration life-stages. Increased frequency of spill in April and May with associated warmer temperatures may actually be beneficial for rearing steelhead (and coho if present) as long as the temperature is still within the suitable range. Increased spill in June may also be beneficial as long as it does not result in temperature above the suitable level.

At times when the reservoir is spilling and the 1 cfs fish release is not sufficient to maintain temperature in Newell Creek below 21°C, Operational Practice #6 requires the City to release additional flow through the fish release to achieve a maximum instantaneous temperature of less than 21°C as measured in the anadromous reach of Newell Creek and verified at the City stream gage in Newell Creek below the dam. With the implementation of this operational practice, potential adverse temperature effects in Newell Creek and the San Lorenzo River due to an increase in spill frequency with the Proposed Project would be avoided. Therefore, the Proposed Project would not substantially reduce the habitat of coho and steelhead, or otherwise substantially reduce the number or restrict the range of these species. As such, the water rights modification component is expected to have a less-than-significant impact on steelhead and coho habitat related to changes in water temperature.

The remainder of the impact analysis evaluates the potential direct and indirect impacts to special-status fish as a result of the proposed water rights modifications, that once approved could result in the implementation of the project and programmatic infrastructure components of the Proposed Project.

Infrastructure Components

Surface water-related operational impacts associated with the infrastructure components (ASR facilities; water transfers and exchanges and intertie improvements; and surface water diversions) are addressed in the analysis of the proposed water rights modifications above, which includes the diversion of surface water to support ASR and water transfers, as well as Standard Operational Practice #4, which limits diversions to provide water for ASR injections in months classified as driest as defined in the Agreed Flows, and Standard Operational Practice #5, which limits diversions to provide water for transfers to neighboring agencies in months classified as dry or driest in the Agreed Flows (see Section 4.3.4.2, Analytical Methods). Therefore, the operational impacts of infrastructure components on special-status fish would also be less than significant, as described above for the water rights modifications. Additionally, once the fish passage facilities are improved and operational at the Felton Diversion and Tait Diversion, there would be a net benefit to fish migration in the San Lorenzo River.

Groundwater-related operational impacts associated with the ASR facilities and water transfers and intertie improvements would not result in negative effects on stream baseflows and related GDEs (see description of GDEs in Section 4.3.3.2, State, Sustainable Groundwater Management Act). Groundwater dependent fish species identified for priority management in the Santa Cruz Mid-County Groundwater Basin include steelhead and coho. As indicated in Chapter 3, Project Description, and Section 4.8, Hydrology and Water Quality, it is anticipated that in aggregate less water would be extracted than injected at ASR facilities, which could contribute sustainability benefits to the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin. Additionally, to the extent that water transfers occur on a regular basis and allow neighboring water agencies to rest their groundwater wells, such transfers could have a beneficial impact on groundwater conditions in either or both basins. The net recharge of the Santa Cruz Mid-County Groundwater Basin and in the Santa Margarita Groundwater Basin with the implementation of the GSPs of both basins also is intended to have beneficial effects on stream baseflows and related habitats. For example, as described in Section 4.8, Hydrology and Water Quality, sustainable management criteria established in the Santa Cruz Mid-County GSP for groundwater level decline and seawater intrusion (i.e., maintaining a seaward groundwater gradient) would contribute to maintaining shallow groundwater levels and protecting streamflow. New shallow monitoring wells to evaluate the effects of groundwater extractions on streamflow in interconnected surface waters will be installed prior to October 2022, the earliest time that the Beltz ASR facilities could become operational. Data obtained from future groundwater monitoring locations would inform the validity of using groundwater levels as a proxy for depletion of interconnected surface water, and better inform if changes are needed to minimum thresholds to avoid undesirable results[14] (MGA 2019). As a result, with compliance with the applicable GSP, potential indirect impacts to special-status fish species at nearby streams are not expected to occur and the impact of these project and programmatic components would be less than significant.

The following analysis addresses construction impacts of the infrastructure components.

[14] Significant and unreasonable depletion of surface water due to groundwater extraction, in interconnected streams supporting priority species, would be undesirable if there is more depletion than experienced since the start of shallow groundwater level monitoring through 2015 (MGA 2019).

Aquifer Storage and Recovery Facilities

The Proposed Project includes ASR (i.e., new ASR facilities and Beltz ASR facilities). As described in Section 4.3.4.2, Analytical Methods, construction impacts for new ASR facilities would be limited to installing new facilities outside of streams and drainages, per Standard Construction Practice #10. Construction impacts for Beltz ASR facilities would be limited to the existing urban and developed settings of these existing facilities, which do not include any aquatic resources. Additionally, construction of these project and programmatic infrastructure components would follow all of the relevant standard construction practices listed above in Section 4.3.4.2. As a result, construction-related ground disturbance from these components would not result in a substantial adverse effect on special-status fish, and would not interfere substantially with migration of special-status fish, cause a special-status fish population to drop below self-sustaining levels, threaten to eliminate special-status fish or, substantially reduce the number or restrict the range of special-status fish. Therefore, the construction impacts of ASR improvements on special-status fish would be less than significant.

Water Transfers and Exchanges and Intertie Improvements

The Proposed Project includes water transfers and exchanges and intertie improvements (City/SVWD intertie and City/SqCWD/CWD intertie). As described in Section 4.3.4.2, Analytical Methods, construction impacts for the intertie improvements assume that no work would be conducted in any streams or drainages. Additionally, construction of these programmatic components would follow all of the relevant standard construction practices listed above in Section 4.3.4.2. As a result, construction-related ground disturbance from these components would not result in a substantial adverse effect on special-status fish, and would not interfere substantially with migration of special-status fish, cause a special-status fish population to drop below self-sustaining levels, threaten to eliminate special-status fish or, substantially reduce the number or restrict the range of special-status fish. Therefore, the construction impacts of water transfers and exchanges and intertie improvements on special-status fish would be less than significant.

Felton Diversion Fish Passage Improvements

Improvements at the existing Felton Diversion facility would occur on the west side on the diversion structure, which is a developed setting and would not require any construction activities or disturbance within the bed of the San Lorenzo River. Construction activities would be limited to disturbed and developed land covers and would avoid aquatic habitat that could support special-status fish species. The existing sluiceway bypass channel and fish ladder in the diversion facility structure would be dewatered, if needed, and closed during construction. Additionally, construction of this programmatic infrastructure component would follow the relevant standard construction practices listed above in Section 4.3.4.2, Analytical Methods. As a result, construction-related ground disturbance from this component would not result in a substantial adverse effect on special-status fish, and would not interfere substantially with migration of special-status fish, cause a special-status fish population to drop below self-sustaining levels, threaten to eliminate special-status fish or, substantially reduce the number or restrict the range of special-status fish. Therefore, the construction impacts of the Felton Diversion improvements on special-status fish would be less than significant.

Tait Diversion and Coast Pump Station Improvements

Improvements at the existing Tait Diversion and Coast Pump Station facilities could include ground disturbance associated with construction of a new or modified intake design, check dam modifications/notching, Coanda intake screen, and other required fish passage upgrades. Other improvements could include a new upstream river intake with horizontal plate screen and series of low-head stone weirs (natural fishway) downstream of the diversion dam. The River Pumps at the Coast Pump Station facility would also require improvements, which could include new

pumps and motors, power upgrades, new or modified concrete wet well, and solids handling system. The Tait Diversion improvements would likely require construction activities and disturbance within the San Lorenzo River streambed. A portion of the San Lorenzo River would be dewatered and diverted during construction. If special-status fish species are present, these activities could require rescue and relocation of individuals. While unlikely, individual fish could be injured or killed during the rescue and relocation process.

Construction activities within the San Lorenzo River during diversion improvements could also result in indirect impacts to downstream water quality and habitat. Project construction activities that involve disturbance to the San Lorenzo River could result in potential adverse water quality effects downstream (e.g., elevated turbidity levels, discharges of fine sediments, etc.). Grading adjacent to the river could also result in erosion and sedimentation into the creek if standard construction practices are not implemented. Such water quality effects could result in indirect adverse impacts to special-status fish species or degradation of suitable spawning and rearing habitat for these species in the lower reaches of the San Lorenzo River. However, with the implementation of Standard Construction Practices #1 through #4, the Tait Diversion and Coast Pump Station Improvements would avoid such negative effects.

While these direct and indirect construction impacts to special-status fish species would not interfere substantially with migration of special-status fish, cause a special-status fish population to drop below self-sustaining levels, threaten to eliminate special-status fish or, substantially reduce the number or restrict the range of special-status fish, they could cause a substantial adverse effect to special-status fish species that would be considered a potentially significant impact, even with the implementation of the relevant standard construction practices listed above in Section 4.3.4.2, Analytical Methods.

Implementation of Mitigation Measure (MM) BIO-1 (Project Siting), MM BIO-2 (Instream Construction), and MM BIO-3 (Aquatic Vertebrate Rescue and Relocation Plan) would limit construction staging and parking areas to already paved areas and maintained rights-of-way, would limit instream construction activities to the low-flow period, and would require an aquatic vertebrate rescue and relocation plan approved by CDFW and NMFS and that reflects and builds upon the City's standard construction practices, as relevant. These mitigation measures would avoid substantial adverse effects on special-status fish species by limiting construction disturbance, allowing construction during the low-flow period when the aquatic vertebrate rescues and relocation plan can be effectively implemented, as approved by CDFW and NMFS, to protect fish during construction. Therefore, implementation of the above mitigation measures would reduce the impact on special-status fish to a less-than-significant level.

Mitigation Measures

Implementation of the following mitigation measures would reduce the potentially significant impact related to special-status fish to a less-than-significant level, as described above. It should be noted that some of these mitigation measures apply to additional infrastructure components over those identified above, as indicated in subsequent impact analyses.

MM BIO-1: Project Siting (Applies to New Aquifer Storage and Recovery Facilities, Intertie Improvements and Tait Diversion and Coast Pump Station Improvements). The City shall locate construction activities, including staging, on and adjacent to current development to the maximum extent feasible. All worker parking, equipment storage, and laydown areas should occur within developed areas and maintained rights-of-way, to the extent possible. Dirt or gravel pull-offs to the side of existing roads shall not be used except for temporary staging areas. To minimize temporary disturbances, the City shall restrict all vehicle traffic to established roads, construction areas, and other designated area.

If ground disturbing activities associated with staging and work areas will occur outside existing developed areas and maintained rights-of-way, avoidance and minimization of impacts to special-

status species and their habitats, sensitive vegetation communities, and jurisdictional aquatic resources shall be prioritized during the site selection process. Other Proposed Project mitigation measures will provide for compensatory mitigation to address potentially significant impacts to special-status species and their habitats (MM BIO-4 through MM-BIO-10), sensitive vegetation communities (MM BIO-11), and jurisdictional aquatic resources (MM BIO-12 through MM BIO-14).

MM BIO-2: **Instream Construction (Applies to Tait Diversion and Coast Pump Station Improvements).** All instream construction activities shall be limited to the low-flow period between June 15 through November 1, except by extension approved by the California Department of Fish and Wildlife (CDFW) and National Marine Fisheries Service (NMFS). If an extension of instream construction activities is determined necessary beyond the low-flow period, then the City shall provide the CDFW and NMFS with a rationale and method that ensures protection of fish species.

MM BIO-3: **Aquatic Vertebrate Rescue and Relocation Plan (Applies to Tait Diversion and Coast Pump Station Improvements).** If native fish or native aquatic vertebrates are present during construction of a new or modified intake design, check dam modifications/notching, Coanda intake screen, and other required fish passage upgrades at the Tait Diversion facility, a native fish and aquatic vertebrate rescue and relocation plan shall be prepared. The plan shall be implemented by a qualified biologist during dewatering to ensure that significant numbers of native fish and aquatic vertebrates are not stranded.

Impact BIO-1B: **Special-Status Species – Other Wildlife (Significance Standards A, D, G, H, and I).** Construction of the Proposed Project could have a substantial adverse effect on other special-status wildlife, but would not interfere substantially with the movement of special-status wildlife, and would not reduce habitat, cause a population to drop below self-sustaining levels, or substantially reduce the number or restrict the range of any special-status wildlife species. ***(Less than Significant with Mitigation)*** Operation of the Proposed Project would not have such substantial adverse effects. ***(Less than Significant)***

Water Rights Modifications

As described in Impact BIO-1A, the proposed water rights modifications, including expansion of the place of use, modifications related to method and points of diversion and rediversion, addition of underground storage, extension of time to reach full beneficial use under the City's Felton permits, and Agreed Flows, would not directly involve constructing, improving, or eliminating any facilities. Therefore, no direct impacts to special-status wildlife species typically associated with construction-related ground disturbance would occur from the modifications.

Operational impacts of the water rights modifications to habitat for riparian-dependent special-status wildlife species could potentially result if there are substantial alterations in residual flows and associated water levels in the San Lorenzo River, Newell Creek, and the North Coast streams. Several special-status wildlife species have at least a moderate potential to occur within riparian vegetation communities of the biological study area including the following species: three amphibians (California giant salamander, California red-legged frog, and Santa Cruz black salamander), six birds (long-eared owl, olive-sided flycatcher, purple martin, white-tailed kite, yellow warbler, and yellow-breasted chat), three mammals (pallid bat, San Francisco dusky-footed woodrat, and Townsend's big-eared bat), and two reptiles (northern California legless lizard and western pond turtle).

The water supply modeling included in Appendix D-2 calculates the residual flows under baseline and Proposed Project conditions, as described in Section 4.3.4.2, Analytical Methods. The water supply modeling includes the same elements as the fisheries effects modeling described in Impact BIO-1A, including the water rights

modifications and the various infrastructure components of the Proposed Project (i.e., ASR, water transfers/intertie improvements, surface water diversion improvements), where relevant. Based on this modeling, Section 4.8, Hydrology and Water Quality, and specifically Figures 4.8-10 and 4.8-11 provide the average monthly residual flows below each of the City's diversions based on an average of all years and an average of critically dry years in the historical record (1936 to 2015). As indicated in Section 4.8, Hydrology and Water Quality, the difference in residual flows below the City's diversions with the water rights modifications and other elements of the Proposed Project would be minimal relative to 2018 baseline conditions, with the exception of critical year residual flows in Newell Creek. In that case, the Proposed Project would result in an increase in residual flows of approximately 1 cfs relative to the baseline. Additionally, Appendix D-2, Attachment 1, Residual Flow Exceedance Curves, provides more detailed month-by-month information, which indicates that Proposed Project residual stream flows would result in some incremental differences (both higher and lower) than under 2018 baseline conditions, including during critically dry years. As residual flows would not be substantially altered, operational impacts to potential habitat for riparian-dependent special-status wildlife species would be less than significant.

The remainder of the impact analysis evaluates the potential direct and indirect impacts to special-status wildlife as a result of the proposed water rights modifications, that once approved could result in the implementation of the project and programmatic infrastructure components of the Proposed Project.

Infrastructure Components

Surface water-related operational impacts associated with the infrastructure components (ASR facilities; water transfers and exchanges and intertie improvements; and surface water diversions) are addressed in the analysis of the proposed water rights modifications above, which includes the diversion of surface water to support ASR and water transfers, as well as Standard Operational Practice #4, which limits diversions to provide water for ASR injections in months classified as driest as defined in the Agreed Flows, and Standard Operational Practice #5, which limits diversions to provide water for transfers to neighboring agencies in months classified as dry or driest in the Agreed Flows (see Section 4.3.4.2, Analytical Methods). As indicated above for the water rights modifications, residual flows would not be substantially altered with the Proposed Project and therefore indirect impacts to potential habitat for riparian-dependent special-status wildlife species from these project and programmatic components would also be less than significant.

Groundwater-related operational impacts associated with the ASR facilities and water transfers and intertie improvements would not result in negative effects on stream baseflows and related GDEs (see description of GDEs in Section 4.3.3.2, State [Sustainable Groundwater Management Act]). Groundwater-dependent wildlife species identified for priority management in the Santa Cruz Mid-County Groundwater Basin include California giant salamander, foothill yellow-legged frog, and western pond turtle. As indicated in Chapter 3, Project Description and Section 4.8, Hydrology and Water Quality, it is anticipated that in aggregate less water would be extracted than injected at ASR facilities, which could contribute sustainability benefits to the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin. Additionally, to the extent that water transfers occur on a regular basis and allow neighboring water agencies to rest their groundwater wells, such transfers could have a beneficial impact on groundwater conditions in either or both basins. The net recharge of the Santa Cruz Mid-County Groundwater Basin and in the Santa Margarita Groundwater Basin with the implementation of the GSPs of both basins also is intended to have beneficial effects on stream baseflows and related habitats. For example, as described in Section 4.8, Hydrology and Water Quality, sustainable management criteria established in the Santa Cruz Mid-County GSP for groundwater level decline and seawater intrusion (i.e., maintaining a seaward groundwater gradient) would contribute to maintaining shallow groundwater levels and protecting streamflow. New shallow monitoring wells to evaluate the effects of groundwater extractions on streamflow in interconnected surface waters

will be installed prior to October 2022, the earliest time that the Beltz ASR facilities could become operational. Data obtained from future groundwater monitoring locations would inform the validity of using groundwater levels as a proxy for depletion of interconnected surface water, and better inform if changes are needed to minimum thresholds to avoid undesirable results (MGA 2019). As a result, with compliance with the applicable GSP, potential indirect impacts to special-status wildlife species at nearby streams are not expected to occur and the impact of these project and programmatic components would be less than significant.

Construction impacts associated with fugitive dust and introduction of non-native plant species could occur at most infrastructure component sites. Fugitive dust can impact vegetation (and potential wildlife habitat) surrounding the limits of grading, resulting in changes in the community structure and function over time. These changes could result in impacts to suitable habitat for special-status wildlife species. Additionally, ground disturbance resulting from construction and maintenance activities often promotes invasion from invasive weedy annual and perennial vegetation that can outcompete native species. Introduction of non-native plant species could displace native plant species and reduce local diversity. However, these disturbances would not result in significant impacts with implementation of standard construction practices during construction, listed above in Section 4.3.4.2, Analytical Methods. Therefore, these indirect impacts would be considered less than significant.

The following analysis addresses other construction impacts of the infrastructure components.

Aquifer Storage and Recovery Facilities

New ASR Facilities. While new ASR facilities are likely to be located within a developed, urban setting, given the need for proximity to urban services, these facilities could be located within undisturbed, natural vegetation communities. Therefore, the new ASR sites could potentially support potential habitat for special-status wildlife species.

Potential construction impacts would be associated with installing new ASR facilities. As described in Section 4.3.4.2, Analytical Methods, construction impacts for new ASR facilities would be limited to installing new facilities outside of streams and drainages, per Standard Construction Practice #10. Additionally, construction of this programmatic component would follow all of the relevant standard construction practices listed above in Section 4.3.4.2. However, construction of new ASR facilities could result in direct impacts to special-status wildlife species typically associated with construction-related ground disturbance if such species are present on one or more of these sites. Several special-status wildlife species have at least a moderate potential to occur within the natural vegetation communities that could potentially occur at these new ASR facility sites (annual grassland, coastal scrub, coastal oak woodland, montane hardwood-conifer, and redwood) including the following 10 species: four amphibians (California giant salamander, California red-legged frog, Santa Cruz black salamander, and Santa Cruz long-toed salamander), three birds (white-tailed kite, yellow warbler, and yellow-breasted chat), two mammals (pallid bat and San Francisco dusky-footed woodrat), and one reptile (western pond turtle). Additionally, three species associated with the sandhills habitat have a potential to occur within one or more of the new ASR facility sites: Mount Hermon June beetle, Ohlone tiger beetle, and the Zayante band-winged grasshopper.

Direct permanent and temporary impacts associated with construction of new ASR facilities could result in crushing of individuals (if present) and direct loss of habitat for special-status wildlife species within staging and work areas. The extent of impacts to the special-status species listed above would vary depending on the ultimate location of the new ASR facility sites and the natural resources present. As indicated in Section 4.3.4.2, Analytical Methods, it is assumed that no work would be conducted in any streams, drainages, riparian areas, wetlands, or other aquatic features. Although loss of individuals or the habitats of potentially occurring special-status wildlife species would not threaten their regional populations as a result of this programmatic component, the impact would be potentially

significant if avoidance is not possible, even with the implementation of the standard construction practices listed above in Section 4.3.4.2.

Implementation of MM BIO-1 (Project Siting), MM BIO-4 (Preconstruction Nesting Bird Survey), MM BIO-5 (Preconstruction Wildlife Surveys), MM BIO-6 (Exclusionary Fencing), MM BIO-7 (Biological Construction Monitoring), MM BIO-8 (Species Relocation), and MM BIO-9 (Entrapment Avoidance) would limit construction staging and parking areas to already paved areas and maintained rights-of-way, provide for preconstruction nesting bird and wildlife surveys and protection of identified nests or special-status species with exclusionary fencing, require construction monitoring, relocate special-status species observed within construction areas, and cover construction-related holes in the ground overnight to prevent entrapment. These mitigation measures would avoid substantial adverse effects on special-status species by limiting construction disturbance and protecting species identified during pre-construction and construction monitoring through the use of exclusionary fencing, relocation of observed species and avoidance of entrapment. Therefore, with the implementation of these mitigation measures, the direct impact of this programmatic component on special-status wildlife would be reduced to a less-than-significant level.

Additionally, construction of new ASR facilities could result in indirect impacts to native birds and raptors, if construction activities occur during the nesting season. Ground disturbance that would result in destruction of active bird nests or disruption of breeding/nesting activity could be a violation of the MBTA and/or CFGC. Although the direct or indirect loss of individuals would not threaten the regional populations of wildlife, including native birds, as a result of new ASR facilities, the impact would be potentially significant if avoidance is not possible, even with the implementation of the relevant standard construction practices listed above in Section 4.3.4.2, Analytical Methods.

Implementation of MM BIO-4 (Preconstruction Nesting Bird Survey), requiring a nesting bird survey prior to ground disturbing activities and establishment of a suitable avoidance buffer for identified nests until the chicks have fledged, would avoid substantial adverse effects to native birds and raptors by protecting identified nests during construction. Therefore, with the implementation of this mitigation measure, the indirect impact on native birds and raptors would be reduced to a less-than-significant level.

Beltz ASR Facilities. The Beltz ASR project component includes upgrades to the existing Beltz 8, 9, 10, and 12 facilities, which are located within urban areas and characterized by paved and landscaped landcovers. Therefore, the Beltz ASR facility sites do not support potential habitat for special-status wildlife species and no special-status species are expected to occur.

Potential construction impacts would be limited to upgrading existing facilities at the Beltz ASR within urban settings. As a result, construction of upgrades for Beltz ASR facilities would not result in direct impacts to special-status wildlife, given that the sites are or would be developed and paved under existing conditions. However, construction of Beltz ASR facilities could result in indirect impacts to native birds and raptors, if construction activities occur during the nesting season. Ground disturbance that would result in destruction of active bird nests or disruption of breeding/nesting activity could be a violation of the MBTA and/or CFGC. Although the direct or indirect loss of individuals would not threaten the regional populations of wildlife, including native birds, as a result of ASR, the impact would be potentially significant if avoidance is not possible, even with the implementation of the relevant standard construction practices listed above in Section 4.3.4.2, Analytical Methods.

Implementation of MM BIO-4 (Preconstruction Nesting Bird Survey), requiring a nesting bird survey prior to ground disturbing activities and establishment of a suitable avoidance buffer for identified nests until the chicks have fledged, would avoid substantial adverse effects to native birds and raptors by protecting identified nests during

construction. Therefore, with the implementation of this mitigation measure, the indirect impact on native birds and raptors would be reduced to a less-than-significant level.

Water Transfers and Exchanges and Intertie Improvements

City/SVWD Intertie. This programmatic component would involve connecting the City's water supply system with the SVWD's system through installation of approximately 8,000 linear feet of intertie piping along La Madrona Drive and construction of a new pump station. This programmatic component could potentially have construction-related impacts to special-status wildlife, if present.

Several special-status wildlife species have at least a moderate potential to occur within the natural vegetation communities along the proposed City/SVWD intertie site (annual grassland, coastal scrub, coastal oak woodland, montane hardwood-conifer, and redwood) including the following 10 species: four amphibians (California giant salamander, California red-legged frog, Santa Cruz black salamander, and Santa Cruz long-toed salamander), three birds (white-tailed kite, yellow warbler, and yellow-breasted chat), two mammals (pallid bat and San Francisco dusky-footed woodrat), and one reptile (western pond turtle). Additionally, three species associated with the sandhills habitat have a potential to occur within this intertie site: Mount Hermon June beetle, Ohlone tiger beetle, and the Zayante band-winged grasshopper.

Direct permanent and temporary impacts associated with installation of new intertie piping and construction of a new pump station could result in crushing of individuals (if present) and direct loss of habitat for special-status species within staging and work areas. The extent of impacts to the special-status wildlife species listed above would vary depending on the exact location of the intertie facilities and natural resources present. As indicated in Section 4.3.4.2, Analytical Methods, it is assumed that no work would be conducted in any streams, drainages, riparian areas, wetlands, or other aquatic features. Although loss of individuals or the habitats of potentially occurring special-status species would not threaten their regional populations as a result of this programmatic component, the impact would be potentially significant if avoidance is not possible, even with the implementation of the standard construction practices listed above in Section 4.3.4.2.

Implementation of MM BIO-1 (Project Siting), MM BIO-4 (Preconstruction Nesting Bird Survey), MM BIO-5 (Preconstruction Wildlife Surveys), MM BIO-6 (Exclusionary Fencing), MM BIO-7 (Biological Construction Monitoring), MM BIO-8 (Species Relocation), and MM BIO-9 (Entrapment Avoidance) would limit construction staging and parking areas to already paved areas and maintained rights-of-way, provide for preconstruction nesting bird and wildlife surveys and protection of identified nests or special-status species with exclusionary fencing, require construction monitoring, relocate special-status species observed within construction areas, and cover construction-related holes in the ground overnight to prevent entrapment. These mitigation measures would avoid substantial adverse effects on special-status species by limiting construction disturbance and protecting species identified during pre-construction and construction monitoring through the use of exclusionary fencing, relocation of observed species and avoidance of entrapment. Therefore, with the implementation of these mitigation measures, the direct impact of this programmatic component on special-status wildlife would be reduced to a less-than-significant level.

City/SqCWD/CWD Intertie. This programmatic component would involve installation of additional pipeline replacements to the existing interties between the City's and SqCWD's water systems, upgrades to the SqCWD's McGregor pump station, and construction of two new pump stations on two existing interties between the SqCWD's and CWD's water systems. This programmatic component could potentially have construction-related impacts to special-status wildlife, if present.

Several special-status wildlife species have at least a moderate potential to occur within the natural vegetation communities along the proposed City/SqCWD/CWD intertie site (disturbed valley foothill riparian woodland along the Park Avenue and Soquel Village pipeline segments, and the Freedom Boulevard pump station site; riverine at the Soquel Village pipeline segment; and coastal oak woodland at the Valencia Road pump station site) including the following 10 species: four amphibians (California giant salamander, California red-legged frog, Santa Cruz black salamander, and Santa Cruz long-toed salamander), three birds (white-tailed kite, yellow warbler, and yellow-breasted chat), two mammals (pallid bat and San Francisco dusky-footed woodrat), and one reptile (western pond turtle).

Direct permanent and temporary impacts associated with replacement of intertie piping and construction of two new pump stations could result in crushing of individuals and direct loss of habitat for special-status species within staging and work areas. The extent of impacts to special-status wildlife species would vary depending on the exact location of the intertie facilities and the natural resources present. Similar to the City/SVWD intertie, it is assumed that no work would be conducted in any streams, drainages, riparian areas, wetlands, or other aquatic features, as described in Section 4.3.4.2, Analytical Methods. Although loss of individuals or the habitats of potentially occurring special-status species would not threaten their regional populations as a result of this programmatic component, the impact would be potentially significant if avoidance is not possible, even with the implementation of the standard construction practices listed above in Section 4.3.4.2.

Implementation of MM BIO-1 (Project Siting), MM BIO-4 (Preconstruction Nesting Bird Survey), MM BIO-5 (Preconstruction Wildlife Surveys), MM BIO-6 (Exclusionary Fencing), MM BIO-7 (Biological Construction Monitoring), MM BIO-8 (Species Relocation), and MM BIO-9 (Entrapment Avoidance), would avoid substantial adverse effects on special-status wildlife by limiting construction disturbance and protecting species identified during pre-construction and construction monitoring through the use of exclusionary fencing, relocation of observed species and avoidance of entrapment, as described above for the City/SVWD intertie. Therefore, with the implementation of these mitigation measures, the direct impact of this programmatic component on special-status wildlife would be reduced to a less-than-significant level.

Felton Diversion Fish Passage Improvements

This programmatic component would include future improvements at the existing Felton Diversion facility to address fish passage concerns previously raised by CDFW and NMFS. These improvements at the existing Felton Diversion facility would occur on the west side of the diversion structure, which is a developed setting and would not require any construction activities or disturbance within the bed of the San Lorenzo River, as described in Section 4.3.4.2, Analytical Methods. Construction activities would be limited to disturbed land covers and would avoid undeveloped, natural vegetation communities that could support special-status wildlife species. The existing sluiceway bypass channel and fish ladder would be dewatered, if needed, and closed during construction.

A number of special-status wildlife species have at least a moderate potential to occur within natural riparian vegetation communities of the Felton Diversion fish passage improvements site (riverine and valley foothill riparian forest) including the following: two amphibians (California giant salamander and Santa Cruz black salamander), six birds (long-eared owl, olive-sided flycatcher, purple martin, white-tailed kite, yellow warbler, and yellow-breasted chat), three mammals (pallid bat, San Francisco dusky-footed woodrat, and Townsend's big-eared bat), and two reptiles (northern California legless lizard and western pond turtle).

No direct construction-related impacts to special-status wildlife species would result from implementing this programmatic component. However, indirect impacts could occur to native birds and raptors, if construction activities occur during the nesting season. Ground disturbance that would result in destruction of active bird nests or disruption

of breeding/nesting activity could be a violation of the MBTA and/or CFGC, as well as a potentially significant impact under CEQA. Although the loss of individuals would not threaten the regional populations of native birds as a result of this project component, the impact would be potentially significant if avoidance is not possible, even with the implementation of the standard construction practices listed above in Section 4.3.4.2, Analytical Methods.

Implementation of MM BIO-4 (Preconstruction Nesting Bird Surveys) would avoid substantial adverse effects to native birds and raptors by protecting identified nests during construction, as described above for new ASR facilities. Therefore, with the implementation of this mitigation measure, the indirect impact of this programmatic component on native birds and raptors would be reduced to a less-than-significant level.

Tait Diversion and Coast Pump Station Improvements

This programmatic component would include future improvements at the existing Tait Diversion facility to address fish passage concerns previously raised by CDFW and NMFS. These improvements would be designed to improve in-stream fish habitat and include construction of a new or modified intake design, check dam modifications/notching, Coanda intake screen, and other required fish passage upgrades. Other improvements could include a new upstream river intake with horizontal plate screen and series of low-head stone weirs (natural fishway) downstream of the diversion dam. The River Pumps at the Coast Pump Station facility would also require improvements, which could include new pumps and motors, power upgrades, new or modified concrete wet well, and solids handling system.

Since the Tait Diversion and Coast Pump Station improvement site supports similar vegetation communities and land covers along the San Lorenzo River as the Felton Diversion fish passage improvements site, the same special-status wildlife species as listed above have at least a moderate potential to occur at this site. Direct permanent and temporary impacts associated with the improvements at the Tait Diversion facility could result in loss of potential habitat for riparian-dependent species within staging and work areas. A portion of the San Lorenzo River would be dewatered and diverted during construction. The extent of impacts would vary depending on the exact location of the improvements and the natural resources present. If special-status wildlife species are present, these activities could require rescue and relocation of individuals. Although impacts would not cause a population to drop below self-sustaining levels, or substantially reduce the number or restrict the range of any special-status wildlife species, the impact would be potentially significant if avoidance is not possible, even with the implementation of the standard construction practices listed above in Section 4.3.4.2, Analytical Methods.

Implementation of MM BIO-1 (Project Siting), MM BIO-2 (Instream Construction), MM BIO-3 (Aquatic Vertebrate Rescue and Relocation Plan), MM BIO-4 (Preconstruction Nesting Bird Surveys), MM BIO-5 (Preconstruction Wildlife Surveys), MM BIO-6 (Exclusionary Fencing), MM BIO-7 (Biological Construction Monitoring), MM BIO-8 (Species Relocation), and MM BIO-9 (Entrapment Avoidance), would avoid substantial adverse effects on special-status wildlife and native birds by limiting construction disturbance and protecting species identified during pre-construction and construction monitoring through the use of exclusionary fencing, relocation of observed species and avoidance of entrapment. Therefore, with the implementation of these mitigation measures, the direct and indirect impacts of this programmatic component on special-status wildlife and native birds would be reduced to a less-than-significant level.

Mitigation Measures

Implementation of the following mitigation measures would reduce the potentially significant impact related to special-status wildlife to a less-than-significant level, as described above. It should be noted that some of these mitigation measures apply to additional infrastructure components over those identified above, as indicated in subsequent impact analyses.

See Impact BIO-1A for MM BIO-1, MM BIO-2, and MM-BIO-3, which also apply to this impact.

MM BIO-4: **Preconstruction Nesting Bird Survey (Applies to New Aquifer Storage and Recovery [ASR] Facilities and Beltz ASR Facilities, Intertie Improvements, Felton Diversion Improvements, and Tait Diversion and Coast Pump Station Improvements).** During the nesting season (February 1 – August 31), no more than two weeks prior to any ground disturbing activities, including removal of vegetation and clearing and grubbing activities, a nesting bird survey shall be completed by a qualified biologist to determine if any native birds are nesting in or adjacent to the study area (including within a 50-foot buffer for passerine species and a 250-foot buffer for raptors). If any active nests of native birds are observed during surveys, an avoidance buffer around the nests shall be established in the field to ensure compliance with California Fish and Game Code Section 3503. The avoidance buffer shall be determined by a qualified biologist in coordination with City staff, based on species, location, and extent and type of planned construction activity. Impacts to active nests shall be avoided until the chicks have fledged and the nests are no longer active, as determined by the qualified biologist.

MM BIO-5: **Preconstruction Wildlife Surveys (Applies to New Aquifer Storage and Recovery Facilities, Intertie Improvements, and Tait Diversion and Coast Pump Station Improvements).** A qualified biologist shall conduct preconstruction surveys of all ground disturbance areas within off-pavement project footprint areas to determine if special-status wildlife species are present prior to the start of construction. The biologist will conduct these surveys no more than 2 weeks prior to the beginning of construction.

MM BIO-6: **Exclusionary Fencing (Applies to New Aquifer Storage and Recovery Facilities, Intertie Improvements, and Tait Diversion and Coast Pump Station Improvements).** High-visibility fencing for Environmentally Sensitive Areas shall be installed around all adjacent special-status species identified during the preconstruction surveys, which shall be retained and not disturbed by the Project, to preclude encroachment within the root-zone of these plants by construction crews or vehicles. A biological monitor shall also accompany the work crew during excavation and installation of exclusion fencing to prevent harm to species that may be active present and moving along the fence route. Buffers that are established around active bird nests and special-status species (including potentially active woodrat nests) to be avoided shall be delineated with flagging. Buffers and fencing for nesting birds shall be maintained until the biological monitor verifies that the birds have fledged. All other fencing shall be maintained in good repair throughout the entire construction period.

MM BIO-7: **Biological Construction Monitoring (Applies to New Aquifer Storage and Recovery Facilities, Intertie Improvements, and Tait Diversion and Coast Pump Station Improvements).** A qualified biologist shall monitor vegetation removal and ground disturbing activities during all work hours for off-pavement work or once a week for all other construction activities. The monitor shall check the exclusion fencing and buffers for active nesting birds once a week, and shall verify when birds have fledged if found present before construction. The biologist shall have stop-work authority in the event that a protected species is found within the active construction footprint. During construction, the biological monitor shall keep a daily observation log and a photo log to describe monitoring activities, remedial actions, non-compliance, and other issues and actions taken. These logs shall be kept on-site and made available for inspection by agency personnel.

MM BIO-8: **Species Relocation (Applies to New Aquifer Storage and Recovery Facilities, Intertie Improvements, and Tait Diversion and Coast Pump Station Improvements).** If special-status wildlife species are observed within the construction area prior to or during construction activities, the biologist shall capture and relocate such individuals out of the area affected by construction activities to nearby habitat that has equivalent value to support the species. The biologist shall identify suitable habitats as potential release sites prior to start of construction activities. If the special-status species is a federally- or state-listed as threatened or endangered, the biologist shall notify the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and/or National Marine Fisheries Service, as appropriate, prior to capture and relocation to obtain approval.

MM BIO-9: **Entrapment Avoidance (Applies to New Aquifer Storage and Recovery Facilities, Intertie Improvements, and Tait Diversion and Coast Pump Station Improvements).** The construction contractor shall cover all construction-related holes in the ground overnight to prevent entrapment of any native wildlife species. The monitoring biologist shall inspect all construction pipes, culverts, or similar structures that are stored at the work area for one or more nights before the pipe is used or moved. If wildlife species are present, they shall be allowed to exit on their own or a qualified biologist shall move them out of the construction area to nearby habitat that has equivalent value to support the species. If special-status species are present and are federally or state-listed as threatened or endangered, the biologist shall notify the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and/or National Marine Fisheries Service, as appropriate, prior to capture and relocation to obtain approval.

Impact BIO-1C: **Special-Status Species – Plants (Significance Standards A and I).** Construction of the Proposed Project could have a substantial adverse effect on special-status plants, but would not threaten to eliminate a plant community or restrict the range of any special-status plant species. ***(Less than Significant with Mitigation)*** Operation of the Proposed Project would not have such substantial adverse effects. ***(Less than Significant)***

Water Rights Modifications

As described in Impact BIO-1A, the proposed water rights modifications, including expansion of the place of use, modifications related to method and points of diversion and rediversion, addition of underground storage, extension of time to reach full beneficial use under the City's Felton permits, and Agreed Flows, would not directly involve constructing, improving, or eliminating any facilities. Therefore, no direct impacts to special-status plant species typically associated with construction-related ground disturbance would occur from the modifications.

Operational impacts of the water rights modifications to riparian-dependent special-status plant species and their habitat could potentially result if there are substantial alterations in residual flows and associated water levels below the City's diversions in the San Lorenzo River, Newell Creek and the North Coast streams. Several special-status plant species have at least a moderate potential to occur within natural riparian vegetation communities of the biological study area including the following plants: marsh sandwort, swamp harebell, bristly sedge, and deceiving sedge.

The water supply modeling included in Appendix D-2 calculated the residual flows under baseline and Proposed Project conditions, which are summarized in Section 4.3.4.2, Analytical Methods. The water supply modeling includes the same elements as the fisheries effects modeling described in Impact BIO-1A, including the water rights modifications and the various infrastructure components of the Proposed Project (i.e., ASR, water transfers/intertie

improvements, surface water diversion improvements), where relevant. Based on this modeling, Section 4.8, Hydrology and Water Quality, and specifically Figures 4.8-10 and 4.8-11 provide the average monthly residual flows below each of the City's diversions based on an average of all years and an average of critically dry years in the historical record (1936 to 2015). As indicated in Section 4.8, Hydrology and Water Quality, the difference in residual flows below the City's diversions with the water rights modifications and other elements of the Proposed Project would be minimal relative to 2018 baseline conditions, with the exception of critical year residual flows in Newell Creek. In that case, the Proposed Project would result in an increase in residual flows of approximately 1 cfs relative to the baseline. Additionally, Appendix D-2, Attachment 1, Residual Flow Exceedance Curves, provides more detailed month-by-month information, which indicates that Proposed Project residual stream flows would result in some incremental differences (both higher and lower) than under 2018 baseline conditions, including during critically dry years. As residual flows would not be substantially altered, operational impacts to potential habitat for riparian-dependent special-status plant species would be less than significant.

The remainder of the impact analysis evaluates the potential direct and indirect impacts to special-status plants as a result of the proposed water rights modifications, that once approved could result in the implementation of the project and programmatic infrastructure components of the Proposed Project.

Infrastructure Components

Surface water-related operational impacts associated with the infrastructure components (ASR facilities; water transfers and exchanges and intertie improvements; and surface water diversions) are addressed in the analysis of the proposed water rights modifications above, which includes the diversion of surface water to support ASR and water transfers, as well as Standard Operational Practice #4, which limits diversions to provide water for ASR injections in months classified as driest as defined in the Agreed Flows, and Standard Operational Practice #5, which limits diversions to provide water for transfers to neighboring agencies in months classified as dry or driest in the Agreed Flows (see Section 4.3.4.2, Analytical Methods). As indicated above for the water rights modifications, residual flows would not be substantially altered with the Proposed Project and therefore indirect impacts to potential habitat for riparian-dependent special-status plant species from these project and programmatic components would also be less than significant.

Groundwater-related operational impacts associated with the ASR facilities and water transfers and intertie improvements would not result in negative effects on stream baseflows and related GDEs (see description of GDEs in Section 4.3.3.2, State [Sustainable Groundwater Management Act]). Groundwater dependent habitats identified for priority management in the Santa Cruz Mid-County Groundwater Basin include riparian forest, which could support riparian-dependent special-status plant species. As indicated in Chapter 3, Project Description and Section 4.8, Hydrology and Water Quality, it is anticipated that in aggregate less water would be extracted than injected at ASR facilities, which could contribute sustainability benefits to the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin. Additionally, to the extent that water transfers occur on a regular basis and allow neighboring water agencies to rest their groundwater wells, such transfers could have a beneficial impact on groundwater conditions in either or both basins. The net recharge of the Santa Cruz Mid-County Groundwater Basin and in the Santa Margarita Groundwater Basin with the implementation of the GSPs of both basins also is intended to have beneficial effects on stream baseflows and related habitats. For example, as described in Section 4.8, Hydrology and Water Quality, sustainable management criteria established in the Santa Cruz Mid-County GSP for groundwater level decline and seawater intrusion (i.e., maintaining a seaward groundwater gradient) would contribute to maintaining shallow groundwater levels and protecting streamflow. New shallow monitoring wells to evaluate the effects of groundwater extractions on streamflow in interconnected surface waters will be installed prior to October 2022, the earliest time that the Beltz ASR facilities could become operational. Data

obtained from future groundwater monitoring locations would inform the validity of using groundwater levels as a proxy for depletion of interconnected surface water, and better inform if changes are needed to minimum thresholds to avoid undesirable results (MGA 2019). As a result, with compliance with the applicable GSP, potential indirect impacts to riparian-dependent special-status plant species at nearby streams are not expected to occur and the impact of these project and programmatic components would be less than significant.

Construction impacts associated with fugitive dust and introduction of non-native plant species could occur at most infrastructure component sites. Fugitive dust can impact vegetation (and potential wildlife habitat) surrounding the limits of grading, resulting in changes in the community structure and function over time. These changes could result in impacts to suitable habitat for special-status plant species. Additionally, ground disturbance resulting from construction and maintenance activities often promotes invasion from invasive weedy annual and perennial vegetation that can outcompete native species. Introduction of non-native plant species could displace native plant species and reduce local diversity. However, these disturbances would not result in significant impacts with implementation of standard construction practices during construction, listed above in Section 4.3.4.2. Therefore, these indirect impacts would be considered less than significant.

The following analysis addresses other construction impacts of the infrastructure components.

Aquifer Storage and Recovery Facilities

New ASR Facilities. While new ASR facilities are likely to be located within a developed, urban setting, given the need for proximity to urban services, these facilities could be located on sites with special-status species and their habitats. Several special-status plant species have at least a moderate potential to occur within natural vegetation communities that could potentially occur on one or more of the new ASR facility sites depending on their ultimate location (annual grassland, coastal scrub, coastal oak woodland, montane hardwood-conifer, and redwood) including the following 10 species: Monterey spineflower, Scotts Valley spineflower, robust spineflower, Santa Cruz wallflower, Santa Cruz tarplant, marsh microseris, woodland woolythreads, white-flowered rein orchid, Scotts Valley polygonum, and Santa Cruz clover. Four additional species associated with sandhills habitat (see Section 4.3.2.5, Special-Status Biological Resources, for definition) have at least a moderate potential to occur including: Bonny Doon manzanita, Ben Lomond spineflower, Ben Lomond buckwheat, and northern curly-leaved monardella.

Direct permanent and temporary impacts associated with installation of new ASR facilities could result in crushing of individuals and direct loss of habitat for special-status species within staging and work areas. The extent of impacts to special-status species would vary depending on the exact location of the new ASR facilities and the natural resources present. As described in Section 4.3.4.2, Analytical Methods, construction impacts for new ASR facilities would include installing new facilities outside of streams and drainages, per Standard Construction Practice #10. Additionally, construction of this programmatic component would follow all of the relevant standard construction practices listed above in Section 4.3.4.2. Although loss of individuals or the habitats of potentially occurring special-status plant species would not threaten their regional populations as a result of this programmatic component, the impact would be potentially significant if avoidance is not possible, even with the implementation of the standard construction practices listed above in Section 4.3.4.2.

Implementation of MM BIO-1 (Project Siting), described in Impact BIO-1B, and MM BIO-10 (Preconstruction Special-Status Plant Surveys and Compensation), would avoid substantial adverse effect on special-status plants by limiting construction disturbance, requiring focused botanical surveys for special-status plants and the mapping and implementation of a mitigation plan if individuals or populations are detected during these surveys. Therefore, with

the implementation of these mitigation measures, the direct impacts on special-status plants would be reduced to a less-than-significant level.

Beltz ASR Facilities. The Beltz ASR project component includes upgrades to the existing Beltz 8, 9, 10, and 12 facilities, which are located within urban areas and characterized by paved and landscaped landcovers. Therefore, the Beltz ASR facility sites do not support potential habitat for special-status plant species and no special-status plant species are expected. Construction of this project component would follow all of the relevant standard construction practices listed above in Section 4.3.4.2, Analytical Methods. As a result, construction of upgrades for Beltz ASR facilities would not result in direct impacts to special-status plants, given that the sites are developed and paved under existing conditions.

Water Transfers and Exchanges and Intertie Improvements

City/SVWD Intertie. This programmatic component would involve connecting the City's water supply system with the SVWD's system through installation of approximately 8,000 linear feet of intertie piping along La Madrona Drive and construction of a new pump station. This programmatic component could potentially have construction-related impacts to special-status plants, if present.

Several special-status plant species have at least a moderate potential to occur within the natural vegetation communities along the proposed City/SVWD intertie site (annual grassland, coastal scrub, coastal oak woodland, montane hardwood-conifer, and redwood) including the following 10 species: Monterey spineflower, Scotts Valley spineflower, robust spineflower, Santa Cruz wallflower, Santa Cruz tarplant, marsh microseris, woodland woolythreads, white-flowered rein orchid, Scotts Valley polygonum, and Santa Cruz clover. Additionally, four species associated with the sandhills habitat could occur including: Bonny Doon manzanita, Ben Lomond spineflower, Ben Lomond buckwheat, and northern curly-leaved monardella.

Direct permanent and temporary impacts associated with installation of new intertie piping and construction of a new pump station could result in crushing of individuals and direct loss of habitat for special-status species within staging and work areas. The extent of impacts to special-status plant species would vary depending on the exact location of the intertie facilities and the natural resources present. It is assumed that no work would be conducted in any streams, drainages, riparian areas, wetlands, or other aquatic features, as described in Section 4.3.4.2, Analytical Methods. Although loss of individuals or the habitats of potentially occurring special-status plant species would not threaten their regional populations as a result of this programmatic component, the impact would be potentially significant if avoidance is not possible, even with the implementation of the standard construction practices listed above in Section 4.3.4.2.

Implementation of MM BIO-1 (Project Siting), described in Impact BIO-1B, and MM BIO-10 (Preconstruction Special-Status Plant Surveys and Compensation), would avoid substantial adverse effect on special-status plants by limiting construction disturbance, requiring focused botanical surveys for special-status plants and the mapping and implementation of a mitigation plan if individuals or populations are detected during these surveys. Therefore, with the implementation of these mitigation measures, the direct impacts on special-status plants would be reduced to a less-than-significant level.

City/SqCWD/CWD Intertie Site. This programmatic component would involve installation of additional pipeline replacements to the existing interties between the City's and SqCWD's water systems, upgrades to the SqCWD's McGregor pump station, and construction of two new pump stations on two existing interties between the SqCWD's

and CWD's water systems. This programmatic component could potentially have construction-related impacts to special-status plants, if present.

Several special-status plant species have at least a moderate potential to occur within the natural vegetation communities along the proposed City/SqCWD/CWD intertie site (disturbed valley foothill riparian woodland along the Park Avenue and Soquel Village pipeline segments, and the Freedom Boulevard pump station site; riverine at the Soquel Village pipeline segment; and coastal oak woodland at the Valencia Road pump station site) including the following seven species: Monterey spineflower, robust spineflower, Santa Cruz tarplant, marsh microseris, woodland woolythreads, white-flowered rein orchid, and Santa Cruz clover.

Direct permanent and temporary impacts associated with construction activities could result in crushing of individuals and direct loss of habitat for special-status plants within staging and work areas, if present. The extent of impacts to special-status plant species would vary depending on the exact location of the intertie facilities and the natural resources present. Similar to the City/SVWD intertie sites, it is assumed that no work would be conducted in any streams, drainages, riparian areas, wetlands, or other aquatic features, as described in Section 4.3.4.2, Analytical Methods. Although loss of individuals or the habitats of potentially occurring special-status species would not threaten their regional populations as a result of this programmatic component, the impact would be potentially significant if avoidance is not possible, even with the implementation of the standard construction practices listed above in Section 4.3.4.2.

Implementation of MM BIO-1 (Project Siting), described in Impact BIO-1B, and MM BIO-10 (Preconstruction Special-Status Plant Surveys and Compensation), would avoid substantial adverse effect on special-status plants by limiting construction disturbance, requiring focused botanical surveys for special-status plants and the mapping and implementation of a mitigation plan if individuals or populations are detected during these surveys. Therefore, with the implementation of these mitigation measures, the direct impacts on special-status plants would be reduced to a less-than-significant level.

Felton Diversion Fish Passage Improvements

This programmatic component would include future improvements at the existing Felton Diversion facility to address fish passage concerns previously raised by CDFW and NMFS. These improvements would occur on the west side of the diversion structure, which is a developed setting and would not require any construction activities or disturbance within the bed of the San Lorenzo River. Construction activities would be limited to disturbed land covers and would avoid undeveloped, natural vegetation communities that could support special-status species. No special-status plant species were determined to have at least a moderate potential to occur within natural riparian vegetation communities of this component. As a result, no direct or indirect construction-related impacts to special-status plant species would result from implementing this programmatic component.

Tait Diversion and Coast Pump Station Improvements

This programmatic component would include future improvements at the existing Tait Diversion facility to address fish passage concerns. These improvements would be designed to improve in-stream fish habitat and include construction of a new or modified intake design, check dam modifications/notching, Coanda intake screen, and other required fish passage upgrades. Other improvements could include a new upstream river intake with horizontal plate screen and series of low-head stone weirs (natural fishway) downstream of the diversion dam. The River Pumps at the Coast Pump Station facility would also require improvements, which could include new pumps and motors, power upgrades, new or modified concrete wet well, and solids handling system.

No special-status plant species were determined to have at least a moderate potential to occur within natural riparian vegetation communities of this component. As a result, no special-status plant species were determined to have at least a moderate potential to occur within natural riparian vegetation communities of this infrastructure study area component. As a result, no direct or indirect construction-related impacts to special-status plant species would result from implementing this programmatic component.

Mitigation Measures

Implementation of the following mitigation measures would reduce the potentially significant impact related to special-status plants to a less-than-significant level, as described above.

See Impact BIO-1A for MM BIO-1, which also applies to this impact.

MM BIO-10: Preconstruction Special-Status Plant Surveys and Compensation (Applies to New Aquifer Storage and Recovery Facilities and Intertie Improvements). If ground disturbing activities associated with staging and work areas occur outside existing developed areas and maintained rights-of-way, a qualified biologist shall conduct a focused botanical survey for special-status plants during the appropriate bloom period for each species. If special-status species are not detected, no further surveys or mitigation would be necessary. If any individuals or populations are detected, the location(s) shall be mapped, and a plan focused on compensating for impacts to special-status plants shall be developed and include the following elements and criteria. This plan shall be a component of the project's Habitat Mitigation and Monitoring Plan described in MM BIO-11:

a. A description of any areas of habitat occupied by special-status plants to be preserved and/or removed by the project;
b. Identification and evaluation of the suitability of on-site or off-site areas for preservation, restoration, enhancement or translocation;
c. Analysis of species-specific requirements and considerations and specific criteria for success relative to the project's impact on this species and restoration, enhancement or translocation;
d. A description of proposed methods of preservation, restoration, enhancement, and/or translocation;
e. A description of specific performance standards, including a required replacement ratio and minimum success standard of 1:1 for impacted individuals or populations;
f. A monitoring and reporting program to ensure mitigation success; and
g. A description of adaptive management and associated remedial measures to be implemented in the event that performance standards are not achieved.

Impact BIO-2: Riparian and Sensitive Vegetation Communities (Significance Standards B, G, and I). Construction of the Proposed Project could have a substantial adverse effect on riparian and sensitive vegetation communities, but would not threaten to eliminate a plant community. ***(Less than Significant with Mitigation)*** Operation of the Proposed Project would not have such substantial adverse effects. ***(Less than Significant)***

Water Rights Modifications

As described in Impact BIO-1A, the proposed water rights modifications, including expansion of the place of use, modifications related to method and points of diversion and rediversion, addition of underground storage, extension

of time to reach full beneficial use under the City's Felton permits, and Agreed Flows, would not directly involve constructing, improving, or eliminating any facilities. Therefore, no direct impacts to riparian and sensitive vegetation communities typically associated with construction-related ground disturbance would occur from the modifications.

Operational impacts of the water rights modifications to riparian and sensitive vegetation communities could potentially result if there are substantial alterations in residual flows and associated water levels below the City's diversions in the San Lorenzo River, Newell Creek, and the North Coast streams. Several sensitive vegetation communities identified by the CDFW are potentially present in the areas mapped as valley foothill riparian within the biological study area: box-elder forest and woodland, California sycamore woodland, Fremont cottonwood forest and woodland, Goodding's willow-red willow riparian woodland, and torrent sedge patches. Other unmapped stands of riparian vegetation communities may also occur.

The water supply modeling included in Appendix D-2 calculates the residual flows under baseline and Proposed Project conditions, which are summarized in Section 4.3.4.2, Analytical Methods. The water supply modeling includes the same elements as the fisheries effects modeling described in Impact BIO-1A, including the water rights modifications and the various infrastructure components of the Proposed Project (i.e., ASR, water transfers/intertie improvements, surface water diversion improvements), where relevant. Based on this modeling, Section 4.8, Hydrology and Water Quality, and specifically Figures 4.8-10 and 4.8-11 provide the average monthly residual flows below each of the City's diversions based on an average of all years and an average of critically dry years in the historical record (1936 to 2015). As indicated in Section 4.8, Hydrology and Water Quality, the difference in residual flows below the City's diversions with the water rights modifications and other elements of the Proposed Project would be minimal relative to 2018 baseline conditions, with the exception of critical year residual flows in Newell Creek. In that case, the Proposed Project would result in an increase in residual flows of approximately 1 cfs relative to the baseline. Additionally, Appendix D-2, Attachment 1, Residual Flow Exceedance Curves, provides more detailed month-by-month information, which indicates that Proposed Project residual stream flows would result in some incremental differences (both higher and lower) than under 2018 baseline conditions, including during critically dry years. As residual flows would not be substantially altered, operational impacts resulting from the proposed water rights modifications to riparian and sensitive vegetation communities would be less than significant.

The remainder of the impact analysis evaluates the potential direct and indirect impacts to riparian and sensitive vegetation communities as a result of the proposed water rights modifications, that once approved could result in the implementation of the project and programmatic infrastructure components of the Proposed Project

Infrastructure Components

Surface water-related operational impacts associated with the infrastructure components (ASR facilities; water transfers and exchanges and intertie improvements; and surface water diversions) are addressed in the analysis of the proposed water rights modifications above, which includes the diversion of surface water to support ASR and water transfers, as well as Standard Operational Practice #4, which limits diversions to provide water for ASR injections in months classified as driest as defined in the Agreed Flows, and Standard Operational Practice #5, which limits diversions to provide water for transfers to neighboring agencies in months classified as dry or driest in the Agreed Flows (see Section 4.3.4.2, Analytical Methods). As indicated above for the water rights modifications, residual flows would not be substantially altered with the Proposed Project and therefore indirect impacts to riparian or sensitive vegetation communities from these project and programmatic components would also be less than significant.

Groundwater-related operational impacts associated with the ASR facilities and water transfers and intertie improvements would not result in negative effects on stream baseflows and related GDEs (see description of GDEs

in Section 4.3.3.2, State [Sustainable Groundwater Management Act]). Groundwater dependent habitats identified for priority management in the Santa Cruz Mid-County Groundwater Basin include riparian forest. As indicated in Chapter 3, Project Description and Section 4.8, Hydrology and Water Quality, it is anticipated that in aggregate less water would be extracted than injected at ASR facilities, which could contribute sustainability benefits to the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin. Additionally, to the extent that water transfers occur on a regular basis and allow neighboring water agencies to rest their groundwater wells, such transfers could have a beneficial impact on groundwater conditions in either or both basins. The net recharge of the Santa Cruz Mid-County Groundwater Basin and in the Santa Margarita Groundwater Basin with the implementation of the GSPs of both basins also is intended to have beneficial effects on stream baseflows and related habitats. For example, as described in Section 4.8, Hydrology and Water Quality, sustainable management criteria established in the Santa Cruz Mid-County GSP for groundwater level decline and seawater intrusion (i.e., maintaining a seaward groundwater gradient) would contribute to maintaining shallow groundwater levels and protecting streamflow. New shallow monitoring wells to evaluate the effects of groundwater extractions on streamflow in interconnected surface waters will be installed prior to October 2022, the earliest time that the Beltz ASR facilities could become operational. Data obtained from future groundwater monitoring locations would inform the validity of using groundwater levels as a proxy for depletion of interconnected surface water, and better inform if changes are needed to minimum thresholds to avoid undesirable results (MGA 2019). As a result, with compliance with the applicable GSP, potential indirect impacts riparian habitat at nearby streams are not expected to occur and the impact of these project and programmatic components would be less than significant.

Construction impacts associated with fugitive dust and introduction of non-native plant species could occur at most infrastructure component sites. Fugitive dust can impact vegetation (and potential wildlife habitat) surrounding the limits of grading, resulting in changes in the community structure and function over time. These changes could result in impacts to riparian and or sensitive vegetation communities. Additionally, ground disturbance resulting from construction and maintenance activities often promotes invasion from invasive weedy annual and perennial vegetation that can outcompete native species. Introduction of non-native plant species could displace native plant species and reduce local diversity. However, these disturbances would not result in significant impacts with implementation of standard construction practices during construction, listed above in Section 4.3.4.2, Analytical Methods. Therefore, these indirect impacts would be considered less than significant.

The following analysis addresses other construction impacts of the infrastructure components.

Aquifer Storage and Recovery Facilities

New ASR Facilities. While new ASR facilities are likely to be located within a developed, urban setting, given the need for proximity to urban services, one or more of the new ASR facilities could be located on sites that support natural vegetation communities, including annual grassland, coastal scrub, coastal oak woodland, montane hardwood-conifer, and redwood. Collectively, these vegetation communities have the potential to support 12 sensitive vegetation communities: bigleaf maple forest and woodland, California bay forest and woodland, dune mat, hazelnut scrub, madrone forest, redwood forest and woodland, salt rush swales, sand dune sedge swaths, seaside woolly-sunflower - seaside daisy - buckwheat patches, Shreve oak forests, silver dune lupine - mock heather scrub, and wax myrtle scrub. Additionally, new ASR facilities could occur within areas supporting sandhills habitat.

Direct permanent and temporary impacts associated with installation of new ASR facilities could result in direct loss of sensitive vegetation communities within staging and work areas depending upon the ultimate sites selected. The extent of impacts would vary depending on the exact location of the new ASR facilities and the natural resources present. As described in Section 4.3.4.2, Analytical Methods, construction impacts for new ASR facilities would

include installing new facilities outside of streams and drainages, per Standard Construction Practice #10. Additionally, construction of this programmatic component would follow all of the relevant standard construction practices listed above in Section 4.3.4.2. Although impacts would not threaten to eliminate a sensitive vegetation community as a result of this programmatic component, the impact would be potentially significant if avoidance is not possible, even with the implementation of the standard construction practices listed above in Section 4.2.4.2.

Implementation of MM BIO-1 (Project Siting), described in Impact BIO-1B, and MM BIO-11 (Compensation for Impacts to Sensitive Vegetation Communities), would avoid substantial adverse effects on sensitive vegetation communities by limiting construction disturbance and providing for rehabilitation and revegetation of impacted areas at a 1:1 mitigation ratio using native plants and monitoring and invasive weed removal for a minimum of 3 years. Therefore, with the implementation of these mitigation measures, the impact of this programmatic component on sensitive vegetation communities would be reduced to a less-than-significant level.

Beltz ASR Facilities. As indicated in Impact BIO-1C, due to the lack of natural vegetation communities at existing Beltz ASR facility sites, riparian and other sensitive vegetation communities do not occur. Potential construction impacts would be limited to upgrading Beltz facilities within an urban setting on already paved and developed sites. As a result, no direct or indirect impacts to riparian or other sensitive vegetation communities typically associated with construction-related ground disturbance would occur from their construction.

Water Transfers and Exchanges and Intertie Improvements

City/SVWD Intertie. This programmatic component could potentially have construction-related impacts to riparian and other sensitive vegetation communities, if present. Several natural vegetation communities occur along the proposed City/SVWD intertie site including annual grassland, coastal scrub, coastal oak woodland, montane hardwood-conifer, and redwood. Collectively, these vegetation communities have the potential to support 12 sensitive vegetation communities bigleaf maple forest and woodland, California bay forest and woodland, dune mat, hazelnut scrub, madrone forest, redwood forest and woodland, salt rush swales, sand dune sedge swaths, seaside woolly-sunflower – seaside daisy – buckwheat patches, Shreve oak forests, silver dune lupine – mock heather scrub, and wax myrtle scrub. Additionally, approximately 830 linear feet of the alignment has been mapped as supporting sandhills habitat.

Direct permanent and temporary impacts associated with installation of new intertie piping and construction of a new pump station could result in direct loss of sensitive vegetation communities within staging and work areas. The extent of impacts would vary depending on the exact location of the intertie facilities and the natural resources present. Construction of this programmatic component would avoid streams and drainages and follow all of the relevant standard construction practices listed above in Section 4.3.4.2, Analytical Methods. Although impacts would not threaten to eliminate a sensitive vegetation community as a result of this programmatic component, the impact would be potentially significant if avoidance is not possible, even with the implementation of the standard construction practices listed above in Section 4.3.4.2.

Implementation of MM BIO-1 (Project Siting), described in Impact BIO-1B, and MM BIO-11 (Compensation for Impacts to Sensitive Vegetation Communities), would avoid substantial adverse effects on sensitive vegetation communities by limiting construction disturbance and providing for rehabilitation and revegetation of impacted areas at a 1:1 mitigation ratio using native plants and monitoring and invasive weed removal for a minimum of 3 years. Therefore, with the implementation of these mitigation measures, the impact of this programmatic component on sensitive vegetation communities would be reduced to a less-than-significant level.

City/SqCWD/CWD Intertie. This programmatic component could potentially have construction-related impacts to riparian and other sensitive vegetation communities, if present. Several natural vegetation communities occur along the proposed City/SqCWD/CWD intertie site including disturbed valley foothill riparian woodland along the Park Avenue and Soquel Village pipeline segments, and the Freedom Boulevard pump station site; riverine at the Soquel Village pipeline segment; and coastal oak woodland at the Valencia Road pump station site. Collectively, these vegetation communities have the potential to support 10 sensitive vegetation communities: black cottonwood forest and woodland, California bay forest and woodland, California coffee berry – western azalea scrub – Brewer's willow, California sycamore woodlands, Fremont cottonwood forest and woodland, Goodding's willow – red willow riparian woodland and forest, madrone forest, shining willow groves, Shreve oak forests, and torrent sedge patches.

Direct permanent and temporary impacts associated with replacement of intertie piping and construction of two new pump stations could result in direct loss of sensitive vegetation communities within staging and work areas. The extent of impacts would vary depending on the exact location of the intertie facilities and the natural resources present. Similar to the City/SVWD intertie, it is assumed that no work would be conducted in any streams or drainages, and construction of this programmatic component would follow all of the relevant standard construction practices listed above in Section 4.3.4.2, Analytical Methods. Although impacts would not threaten to eliminate a sensitive vegetation community as a result of this programmatic component, the impact would be potentially significant if avoidance is not possible, even with the implementation of the standard construction practices listed above in Section 4.3.4.2.

Implementation of MM BIO-1 (Project Siting), described in Impact BIO-1B, and MM BIO-11 (Compensation for Impacts to Sensitive Vegetation Communities), described above for the City/SVWD intertie, would avoid substantial adverse effects on sensitive vegetation communities. Therefore, with the implementation of these mitigation measures the impact of this programmatic component on sensitive vegetation communities would be reduced to a less-than-significant level.

Felton Diversion Fish Passage Improvements

As indicated in Impact BIO-1C, construction activities for this programmatic component would be limited to disturbed land covers and would avoid undeveloped, natural vegetation communities including riparian and other sensitive vegetation communities. No direct or indirect construction-related impacts to riparian or other sensitive vegetation communities would result from implementing this programmatic component.

Tait Diversion and Coast Pump Station Improvements

As indicated in Impact BIO-1A, construction activities for this programmatic component would include active work in the San Lorenzo riverbed and adjacent riparian areas associated with the Tait Diversion improvements. Direct permanent and temporary impacts associated with the improvements at the Tait Diversion facility could result in direct loss of riparian vegetation communities within staging and work areas. Construction activities will likely result in disturbance to portions of the San Lorenzo streambed and require some dewatering. The extent of impacts would vary depending on the exact location and extent of the improvements and the natural resources present. Although impacts would not threaten to eliminate riparian or other sensitive vegetation community as a result of this programmatic component, the impact would be potentially significant if avoidance is not possible, even with the implementation of the standard construction practices listed above in Section 4.3.4.2, Analytical Methods.

Implementation of Mitigation Measure BIO-1 (Project Siting), described in Impact BIO-1B, and MM BIO-11 (Compensation for Impacts to Sensitive Vegetation Communities), described above for the City/SVWD intertie, would avoid substantial adverse effects on riparian and other sensitive vegetation communities. Therefore, with the implementation of these mitigation measures the impact of this programmatic component on riparian or other sensitive vegetation communities would be reduced to a less-than-significant level.

Mitigation Measures

Implementation of the following mitigation measures would reduce the potentially significant impact related to sensitive vegetation communities to a less-than-significant level, as described above.

See Impact BIO-1A for MM BIO-1, which also applies to this impact.

MM-BIO-11 Sensitive Vegetation Communities Compensation (Applies to New Aquifer Storage and Recovery Facilities, Intertie Improvements, and Tait Diversion and Coast Pump Station Improvements). Direct impacts to sensitive vegetation communities shall be mitigated via a combination of on-site and off-site measures. On-site measures shall include rehabilitation for areas temporarily impacted at a 1:1 mitigation ratio, and enhancement for areas permanently impacted at a 2:1 mitigation ratio. Areas temporarily impacted shall be returned to conditions similar to those that existed prior to grading and/or ground-disturbing activities. It is anticipated that a one-time restoration effort at the completion of the project followed by monitoring and invasive weed removal for a minimum of 3 years would adequately compensate for the direct temporary impacts to these vegetation communities. Areas permanently impacted shall be mitigated through on-site enhancement activities including removal of non-native and invasive species for a minimum of 3 years. If additional area is needed to compensate for permanent impacts at a 2:1 ratio, then an off-site location will be identified and evaluated. A Habitat Mitigation and Monitoring Plan shall be prepared and implemented to compensate for the loss of all sensitive vegetation communities (see below).

Rehabilitation and enhancement activities with Zayante soils, such as along the City/Scotts Valley Water District intertie, will be revegetated with plants native to the Zayante Sandhills, such as sticky monkeyflower (*Mimulus aurantiacus*), deer weed (*Lotus scoparius*), and silver bush lupine (*Lupinus albifrons* var. *albifrons*). These native plants will provide suitable habitat conditions for special-status species that might eventually colonize the temporarily impacted portion of the impact area. These revegetated areas will not include any landscape elements that degrade habitat for the special-status species, including mulch, bark, weed matting, rock, aggregate, or turf grass.

The Habitat Mitigation and Monitoring Plan shall detail the habitat restoration activities and shall specify the criteria and standards by which the revegetation and restoration actions will compensate for impacts of the Proposed Project on sensitive vegetation communities and shall at a minimum include discussion of the following:

a. The rehabilitation and enhancement objectives, type, and amount of revegetation to be implemented taking into account enhanced areas where non-native invasive vegetation is removed and replanting specifications that take into natural regeneration of native species when applicable.
b. The specific methods to be employed for revegetation.

c. Success criteria and monitoring requirements to ensure vegetation community restoration success.

d. Remedial measures to be implemented in the event that performance standards are not achieved.

Impact BIO-3: Jurisdictional Aquatic Resources. (Significance Standards B, C, and I). Construction of the Proposed Project could have a substantial adverse effect on state or federally protected wetlands through direct removal, filling, or hydrological interruption. ***(Less than Significant with Mitigation)*** Operation of the Proposed Project would not have such substantial adverse effects. ***(Less than Significant)***

Water Rights Modifications

As described in Impact BIO-1A, the proposed water rights modifications, including expansion of the place of use, modifications related to method and points of diversion and rediversion, addition of underground storage, extension of time to reach full beneficial use under the City's Felton permits, and Agreed Flows, would not directly involve constructing, improving, or eliminating any facilities. Therefore, no direct impacts to jurisdictional aquatic resources (state- or federally protected wetlands) typically associated with construction-related ground disturbance would occur from the modifications.

Operational impacts of the water rights modifications to jurisdictional aquatic resources could potentially result if there are changes in residual flows and associated water levels below the City's diversions in the San Lorenzo River, Newell Creek and the North Coast streams. Jurisdictional aquatic resources are present within the biological study area, including wetlands (e.g., areas mapped as valley foothill riparian) and non-wetland waters (e.g. perennial streams or other major surface water bodies). Other unmapped jurisdictional aquatic resources (state and federal wetlands and non-wetland waters) may also occur.

The water supply modeling included in Appendix D-2 calculated the residual flows under baseline and Proposed Project conditions, which are summarized in Section 4.3.4.2, Analytical Methods. The water supply modeling includes the same elements as the fisheries effects modeling described in Impact BIO-1A, including the water rights modifications and the various infrastructure components of the Proposed Project (i.e., ASR, water transfers/intertie improvements, surface water diversion improvements), where relevant. Based on this modeling, Section 4.8, Hydrology and Water Quality, and specifically Figures 4.8-10 and 4.8-11 provide the average monthly residual flows below each of the City's diversions based on an average of all years and an average of critically dry years in the historical record (1936 to 2015). As indicated in Section 4.8, Hydrology and Water Quality, the difference in residual flows below the City's diversions with the water rights modifications and other elements of the Proposed Project would be minimal relative to 2018 baseline conditions, with the exception of critical year residual flows in Newell Creek. In that case, the Proposed Project would result in an increase in residual flows of approximately 1 cfs relative to the baseline. Additionally, Appendix D-2, Attachment 1, Residual Flow Exceedance Curves, provides more detailed month-by-month information, which indicates that Proposed Project residual stream flows would result in some incremental differences (both higher and lower) than under 2018 baseline conditions, including during critically dry years. As residual flows would not be substantially altered, operational impacts resulting from the proposed water rights modifications to jurisdictional aquatic resources would be less than significant.

The remainder of the impact analysis evaluates the potential direct and indirect impacts to jurisdictional aquatic resources as a result of the proposed water rights modifications, that once approved could result in the implementation of the project and programmatic infrastructure components of the Proposed Project.

Infrastructure Components

Surface-water-related operational impacts associated with the infrastructure components (ASR facilities; water transfers and exchanges and intertie improvements; and surface water diversions) are addressed in the analysis of the proposed water rights modifications above, which includes the diversion of surface water to support ASR and water transfers, as well as Standard Operational Practice #4, which limits diversions to provide water for ASR injections in months classified as driest as defined in the Agreed Flows, and Standard Operational Practice #5, which limits diversions to provide water for transfers to neighboring agencies in months classified as dry or driest in the Agreed Flows (see Section 4.3.4.2, Analytical Methods). As indicated above for the water rights modifications, residual flows would not be substantially altered with the Proposed Project and therefore indirect impacts to jurisdictional aquatic resources from these project and programmatic components would also be less than significant.

Groundwater-related operational impacts associated with the ASR facilities and water transfers and intertie improvements would not result in negative effects on stream baseflows and related GDEs (see description of GDEs in Section 4.3.3.2, State [Sustainable Groundwater Management Act]). Groundwater-dependent habitats identified for priority management in the Santa Cruz Mid-County Groundwater Basin include riparian forest, which typically contain jurisdictional aquatic resources. As indicated in Chapter 3, Project Description, and Section 4.8, Hydrology and Water Quality, it is anticipated that in aggregate less water would be extracted than injected at ASR facilities, which could contribute sustainability benefits to the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin. Additionally, to the extent that water transfers occur on a regular basis and allow neighboring water agencies to rest their groundwater wells, such transfers could have a beneficial impact on groundwater conditions in either or both basins. The net recharge of the Santa Cruz Mid-County Groundwater Basin and in the Santa Margarita Groundwater Basin with the implementation of the GSPs of both basins also is intended to have beneficial effects on stream baseflows and related habitats. For example, as described in Section 4.8, Hydrology and Water Quality, sustainable management criteria established in the Santa Cruz Mid-County GSP for groundwater level decline and seawater intrusion (i.e., maintaining a seaward groundwater gradient) would contribute to maintaining shallow groundwater levels and protecting streamflow. New shallow monitoring wells to evaluate the effects of groundwater extractions on streamflow in interconnected surface waters will be installed prior to October 2022, the earliest time that the Beltz ASR facilities could become operational. Data obtained from future groundwater monitoring locations would inform the validity of using groundwater levels as a proxy for depletion of interconnected surface water, and better inform if changes are needed to minimum thresholds to avoid undesirable results (MGA 2019). As a result, with compliance with the applicable GSP, potential indirect impacts jurisdictional aquatic resources at nearby streams are not expected to occur and the impact of these project and programmatic components would be less than significant.

Construction impacts associated with fugitive dust, introduction of non-native plant species, and invasion from invasive weedy annual and perennial vegetation that can outcompete native species could occur at most infrastructure component sites. Fugitive dust can impact jurisdictional aquatic resources surrounding the limits of grading, resulting in changes in the community structure and function over time. These changes could result in impacts to riparian and or sensitive vegetation communities. Additionally, ground disturbance resulting from construction and maintenance activities often promotes invasion from invasive weedy annual and perennial vegetation that can outcompete native species. Introduction of non-native plant species could displace native plant species and reduce local diversity. However, these disturbances would not result in significant impacts with implementation of standard construction practices during construction, listed above in Section 4.3.4.2, Analytical Methods. Therefore, these indirect impacts would be considered less than significant.

The following analysis addresses other construction impacts of the infrastructure components.

Aquifer Storage and Recovery Facilities

New ASR Facilities. While new ASR facilities are likely to be located within a developed, urban setting, given the need for proximity to urban services, the new ASR facilities could be located on sites that support jurisdictional aquatic resources. As described in Section 4.3.4.2, Analytical Methods, construction impacts for new ASR facilities would include installing new facilities outside of streams and drainages, per Standard Construction Practice #10, but could be located on jurisdictional aquatic resources outside of streams and drainages. While construction of this programmatic component would follow all of the relevant standard construction practices listed above in Section 4.3.4.2, the impacts of this programmatic component on jurisdictional aquatic resources would be potentially significant.

Implementation of MM BIO-12 (Preconstruction Jurisdictional Delineation), MM BIO-13 (Jurisdictional Aquatic Resource Avoidance) and MM BIO-14 (Jurisdictional Resource Compensation) would avoid substantial adverse effects on jurisdictional aquatic resources by: requiring a jurisdictional delineation; avoiding jurisdictional resources where feasible; and if not feasible a mitigation plan will be developed, approved by the USACE, RWQCB, and/or CDFW, as appropriate, and implemented to compensate for the impacts. Therefore, with the implementation of these mitigation measures, the impact of this programmatic component to jurisdictional aquatic resources would be reduced to a less-than-significant level.

Beltz ASR Facilities. As indicated in Impact BIO-2, due to the lack of natural vegetation communities at existing Beltz ASR facility sites, jurisdictional aquatic resources do not occur at these sites. Potential construction impacts would be limited to upgrading Beltz facilities within an urban setting on already paved and developed sites. As a result, no direct or indirect impacts to jurisdictional aquatic resources typically associated with construction-related ground disturbance would occur from their construction. However, there is one unnamed, intermittent stream, potentially under USACE, RWQCB, and CDFW jurisdiction, within the 500-foot buffer surrounding the Beltz 9 ASR site. No direct impacts associated with construction-related ground disturbance to jurisdictional aquatic resources would occur from the modifications at the Beltz 9 ASR site.

Water Transfers and Exchanges and Intertie Improvements

City/SVWD Intertie. This programmatic component could potentially have construction-related impacts to jurisdictional aquatic resources, if present. One unnamed, perennial stream which is a tributary to Carbonera Creek and potentially under USACE, RWQCB, and CDFW jurisdiction crosses the proposed City/SVWD intertie site. Construction impacts for new facilities would occur outside of streams and drainages, and construction of this programmatic component would follow all of the relevant standard construction practices listed above in Section 4.3.4.2, Analytical Methods. As a result, no direct impacts to jurisdictional aquatic resources would occur.

City/SqCWD/CWD Intertie. This programmatic component could potentially have construction-related impacts to jurisdictional aquatic resources, if present. The proposed Soquel Village pipeline site crosses Soquel Creek, a perennial stream containing riverine and disturbed valley foothill riparian woodlands that may entirely or partially support jurisdictional wetlands regulated by the USACE, RWQCB, and CDFW. The Park Avenue pipeline site is located within 500 feet of Tannery Gulch, a perennial stream containing disturbed valley foothill riparian woodlands that may entirely or partially support potentially jurisdictional wetlands regulated by the USACE, RWQCB, and CDFW. There are no mapped jurisdictional wetlands within the Freedom Boulevard pump station site or the Valencia Road pump station site. However, the 500-foot buffer surrounding the Freedom Boulevard pump station site contains disturbed valley foothill riparian woodlands that may entirely or partially support potentially jurisdictional wetlands regulated by the USACE, RWQCB, and CDFW.

Potential impacts associated with establishing staging and work areas, replacement of intertie piping, and construction of two new pump stations could occur if jurisdictional aquatic resources are not avoided. The extent of impacts would vary depending on the exact location of the intertie facilities and the resources present. Similar to the City/SVWD intertie, it is assumed that no work would be conducted in any streams or drainages, and construction of this programmatic component would follow all of the relevant standard construction practices listed above in Section 4.3.4.2, Analytical Methods. As a result, no direct impacts to potential jurisdictional aquatic resources would occur.

Felton Diversion Fish Passage Improvements

As indicated in Impact BIO-2, construction activities for this programmatic component would be limited to disturbed land covers and would avoid undeveloped, natural vegetation communities including jurisdictional aquatic resources. No direct or indirect construction-related impacts to jurisdictional aquatic resources would result from implementing this programmatic component.

Tait Diversion and Coast Pump Station Improvements

As indicated in Impact BIO-2, construction activities for this programmatic component would include active work in the San Lorenzo riverbed and adjacent riparian areas associated with the Tait Diversion improvements. Direct permanent and temporary impacts associated with the improvements could result in direct loss of jurisdictional aquatic resources within staging and work areas. Construction activities will likely result in disturbance to portions of the San Lorenzo streambed and require some dewatering. The extent of impacts would vary depending on the exact location and extent of improvements and the natural resources present. The impact would be potentially significant if avoidance is not possible, even with the implementation of the standard construction practices listed above in Section 4.3.4.2, Analytical Methods.

Implementation of MM BIO-2 (Instream Construction), MM BIO-12 (Preconstruction Jurisdictional Delineation), MM BIO-13 (Jurisdictional Aquatic Resource Avoidance) and MM BIO-14 (Jurisdictional Resource Compensation) would avoid substantial adverse effects to jurisdictional aquatic resources by: limiting instream construction to the low-flow period; requiring a jurisdictional delineation; avoiding jurisdictional resources where feasible; and if not feasible a mitigation plan will be developed, approved by the USACE, RWQCB and/or CDFW, as appropriate, and implemented to compensate for the impacts. Therefore, with the implementation of these mitigation measures the impact of this programmatic component to jurisdictional aquatic resources would be reduced to a less-than-significant level.

Mitigation Measures

Implementation of the following mitigation measures would reduce the potentially significant impact related to jurisdictional aquatic resources to a less-than-significant level, as described above.

See Impact BIO-1A for MM BIO-2, which also applies to this impact.

MM BIO-12: Preconstruction Jurisdictional Delineation (Applies to New Aquifer Storage and Recovery Facilities and Tait Diversion and Coast Pump Station Improvements). If ground disturbing activities associated with staging and work areas will occur outside existing developed areas and maintained rights-of-way, a qualified biologist shall conduct a formal jurisdictional delineation to determine the extent of jurisdictional aquatic resources regulated by the U.S. Army Corps of Engineers, Regional Water Control Board, and/or California Department of Fish and Wildlife within the impact area.

MM BIO-13: **Jurisdictional Aquatic Resources Avoidance (Applies to New Aquifer Storage and Recovery Facilities and Tait Diversion and Coast Pump Station Improvements).** Future refinements to the Proposed Project shall endeavor to avoid jurisdictional aquatic resources regulated by the U.S. Army Corps of Engineers, Regional Water Control Board, and California Department of Fish and Wildlife, to the extent practicable, through design changes or implementation of alternative construction methodologies. Where feasible and appropriate, all jurisdictional aquatic resources not directly affected by construction activities will be avoided and protected by establishing staking, flagging or fencing between the identified construction areas and aquatic resources to be avoided/preserved.

MM BIO-14: **Jurisdictional Aquatic Resources Compensation (Applies to New Aquifer Storage and Recovery Facilities and Tait Diversion and Coast Pump Station Improvements)**. For unavoidable impacts to jurisdictional aquatic resources, a project-specific mitigation plan shall be developed, approved by the U.S. Army Corps of Engineers, Regional Water Control Board, and/or California Department of Fish and Wildlife, as appropriate, through their respective regulatory permitting processes, and implemented. The mitigation plan shall specify the criteria and standards by which the mitigation will compensate for impacts of the Proposed Project and include discussion of the following:

a. The mitigation objectives and type and amount of mitigation to be implemented (in-kind mitigation at a minimum mitigation ratio of 1:1);
b. The location of the proposed mitigation site(s) (within the San Lorenzo River watershed, if possible);
c. The methods to be employed for mitigation implementation (jurisdictional aquatic resource establishment, re-establishment, enhancement, and/or preservation);
d. Success criteria and a monitoring program to ensure mitigation success; and
e. Adaptive management and remedial measures in the event that performance stands are not achieved.

Impact BIO-4: **Wildlife Movement (Significance Standard D).** Construction of the Proposed Project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. ***(Less than Significant)*** Operation of the Proposed Project would have no adverse effects. ***(No Impact)***

Water Rights Modifications

As described in Impact BIO-1A, the proposed water rights modifications, including expansion of the place of use, modifications related to method and points of diversion and rediversion, addition of underground storage, extension of time to reach full beneficial use under the City's Felton permits, and Agreed Flows, would not directly involve constructing, improving, or eliminating any facilities. Therefore, no direct impacts to wildlife movement typically associated with construction-related ground disturbance would occur from the modifications. However, indirect impacts resulting from changes in residual flows and associated water levels in the San Lorenzo River, Newell Creek and the North Coast streams could affect the movement capability of smaller and less vagile species including amphibians and some reptiles. Birds, mammals, and most reptiles could still be expected to move through the area regardless of flow regimes.

The water supply modeling included in Appendix D-2 calculates the residual flows under baseline and Proposed Project conditions, which are summarized in Section 4.3.4.2, Analytical Methods. The water supply modeling includes the same elements as the fisheries effects modeling described in Impact BIO-1A, including the water rights modifications and the various infrastructure components of the Proposed Project (i.e., ASR, water transfers/intertie improvements, surface water diversion improvements), where relevant. Based on this modeling, Section 4.8, Hydrology and Water Quality, and specifically Figures 4.8-10 and 4.8-11 provide the average monthly residual flows below each of the City's diversions based on an average of all years and an average of critically dry years in the historical record (1936 to 2015). As indicated in Section 4.8, Hydrology and Water Quality, the difference in residual flows below the City's diversions with the water rights modifications and other elements of the Proposed Project would be minimal relative to 2018 baseline conditions, with the exception of critical year residual flows in Newell Creek. In that case, the Proposed Project would result in an increase in residual flows of approximately 1 cfs relative to the baseline. Additionally, Appendix D-2, Attachment 1, Residual Flow Exceedance Curves, provides more detailed month-by-month information, which indicates that Proposed Project residual stream flows would result in some incremental differences (both higher and lower) than under 2018 baseline conditions, including during critically dry years. As residual flows would not be substantially altered, operational impacts resulting from the proposed water rights modifications to potential habitat for riparian-dependent species including wildlife movement would be less than significant.

The remainder of the impact analysis evaluates the potential direct and indirect impacts to wildlife movement as a result of the proposed water rights modifications, that once approved could result in the implementation of the project and programmatic infrastructure components of the Proposed Project.

Infrastructure Components

Surface water-related operational impacts associated with the infrastructure components (ASR facilities; water transfers and exchanges and intertie improvements; and surface water diversions) are addressed in the analysis of the proposed water rights modifications above, which includes the diversion of surface water to support ASR and water transfers, as well as Standard Operational Practice #4, which limits diversions to provide water for ASR injections in months classified as driest as defined in the Agreed Flows, and Standard Operational Practice #5, which limits diversions to provide water for transfers to neighboring agencies in months classified as dry or driest in the Agreed Flows (see Section 4.3.4.2, Analytical Methods). As indicated above for the water rights modifications, residual flows would not be substantially altered with the Proposed Project and therefore indirect impacts to potential habitat for wildlife species along streams that function as wildlife corridors from these project and programmatic components would also be less than significant.

Groundwater-related operational impacts associated with the ASR facilities and water transfers and intertie improvements would not result in negative effects on stream baseflows and related GDEs, as described in Impacts BIO-1A through Impact BIO-3. As a result, with compliance with the applicable GSP, potential indirect impacts to potential habitat for wildlife species along streams that function as wildlife corridors are not expected to occur and the impact of these project and programmatic components would be less than significant.

The following analysis addresses construction impacts of the infrastructure components.

Aquifer Storage and Recovery Facilities

New ASR Facilities. While new ASR facilities are likely to be located within a developed, urban setting, given the need for proximity to urban services, these facilities could be located on sites with natural vegetation communities. Therefore, the new ASR sites could potentially support potential movement opportunities for wildlife species.

Potential construction impacts would be associated with installing new ASR facilities. As described in Section 4.3.4.2, Analytical Methods, construction impacts for new ASR facilities would be limited to installing new facilities outside of streams and drainages, per Standard Construction Practice #10. Additionally, construction of this programmatic component would follow all of the relevant standard construction practices listed above in Section 4.3.4.2. While construction noise would occur, this is not anticipated to deter wildlife movement within the immediate vicinity of work areas. As a result, no direct or indirect impacts to wildlife movement typically associated with construction-related ground disturbance would occur from their construction.

Beltz ASR Facilities. The Beltz ASR project component includes upgrades to the existing Beltz 8, 9, 10, and 12 facilities, which are located within urban areas and characterized by paved and landscaped landcovers. The Beltz ASR sites do not support potential wildlife movement opportunities. While construction noise would occur, this is not anticipated to deter wildlife movement within the immediate vicinity of work areas. As a result, construction of upgrades for Beltz ASR facilities would not result in direct or indirect impacts to wildlife movement, given that the sites are developed and paved under existing conditions. No direct or indirect impacts to wildlife movement are anticipated.

Water Transfers and Exchanges and Intertie Improvements

City/SVWD Intertie. This programmatic component could potentially have construction-related impacts to habitat which could support wildlife movement. Direct permanent and temporary impacts associated with installation of new intertie piping and construction of a new pump station could result in temporarily affecting localized movement of smaller terrestrial wildlife, but would be limited due to the small construction footprint within the existing rights-of-way and short-duration construction schedule. As described in Section 4.3.4.2, Analytical Methods, construction impacts for the intertie improvements assume that no work would be conducted in any streams or drainages. Additionally, construction of these programmatic components would follow all of the relevant standard construction practices listed above in Section 4.3.4.2Analytical Methods. As a result, direct impacts to wildlife movement would be considered less than significant. No indirect impacts to wildlife movement are anticipated.

City/SqCWD/CWD Intertie. The vicinity of this programmatic component is not considered to be an important wildlife movement area and is within a matrix of urban development. However, this programmatic component could potentially have construction-related impacts to adjacent local movement of small wildlife, if present. Direct permanent and temporary impacts associated with replacement of intertie piping and construction of two new pump stations could result in temporarily affecting localized movement of smaller terrestrial wildlife. However, similar to the City/SVWD intertie, these impacts would be limited due to the small construction footprint within the existing rights-of-way and short-duration construction schedule, and would avoid any streams or drainages. As a result, direct impacts to wildlife movement would be considered less than significant. No indirect impacts to wildlife movement are anticipated.

Felton Diversion Fish Passage Improvements

This programmatic component would include future improvements at the existing Felton Diversion facility to improve in-stream fish habitat and movement and comply with current fish passage and screening requirements. These improvements would occur on the west side of the existing Felton Diversion structure, which occurs in a developed setting, and would not require any construction activities or disturbance within the bed of the San Lorenzo River, as described in Section 4.3.4.2, Analytical Methods. Construction activities for this programmatic component would be limited to disturbed land covers and would avoid undeveloped, natural vegetation communities that could support terrestrial wildlife movement. However, the existing sluiceway bypass channel and fish ladder would be dewatered, if needed, and closed during construction. This could temporarily halt passage of fish within the immediate vicinity during construction activities, but would be considered a less than significant impact. No other direct construction-related impacts to wildlife movement would result from implementing this programmatic component. While construction noise would occur, this is not anticipated to deter terrestrial wildlife movement within and near the San Lorenzo River. Therefore, direct and indirect impacts to wildlife movement would be less than significant.

Tait Diversion and Coast Pump Station Improvements

Similar to the Felton Diversion improvements, this programmatic component would include future improvements at the existing Tait Diversion facility to address fish passage concerns previously raised by CDFW and NMFS. These improvements have been designed to improve in-stream fish habitat and movement. Construction activities for this programmatic component would include active work in the San Lorenzo riverbed and adjacent riparian areas associated with the Tait Diversion improvements. Direct permanent and temporary impacts associated with the improvements at the Tait Diversion facility could result in temporary loss of wildlife habitat and movement within staging and work areas. Construction activities will likely result in disturbance to portions of the San Lorenzo streambed and require some dewatering. The extent of impacts would vary depending on the exact location and extent of the improvements and the natural resources present. This could temporarily halt passage of fish within the immediate vicinity during construction activities. However, this would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. No other direct construction-related impacts to wildlife movement would result from implementing this programmatic component. While construction noise would occur, this is not anticipated to deter wildlife movement within and near the San Lorenzo River. Therefore, direct and indirect impacts to wildlife movement would be less than significant.

Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to wildlife movement, and therefore, no mitigation measures are required.

4.3.4.4 Cumulative Impacts Analysis

This section provides an evaluation of cumulative biological resources impacts associated with the Proposed Project and past, present, and reasonably foreseeable future projects, as identified in Table 4.0-2 in Section 4.0, Introduction to Analyses, and as relevant to this topic. The geographic scope for the cumulative impact analysis includes the infrastructure study area and cumulative development sites in the larger biological study area that are either in immediate proximity to the infrastructure component sites or that could otherwise affect conditions along the City's surface water or groundwater sources.

The Proposed Project would not contribute to cumulative impacts related to **conflicts with local policies and ordinances protecting biological resources (Standard of Significance E)** or **conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan (Significance Standard F)** because it would have no impact related to these standards, as described above. Therefore, these significance standards are not further evaluated.

Impact BIO-5: **Cumulative Biological Resources Impacts (Significance Standards A, B, C, D, G, H, and I).** Construction of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to biological resources, but the Proposed Project's contribution to this impact would not be cumulatively considerable. ***(Less than Significant)*** Operation of the Proposed Project would not result in a significant cumulative impact. ***(Less than Significant)***

As shown on Table 4.0-2 in Section 4.0, there are 15 capital improvement projects, 6 other infrastructure projects, and 13 residential, commercial, or mixed-use projects identified within the biological study area.

Operational Impacts

Within the San Lorenzo River watershed, cumulative projects in the City Water Department Capital Improvement Program (CIP) includes replacement of the entire Newell Creek Pipeline (NCP), which runs from Loch Lomond Reservoir to the GHWTP and improvements at the GHWTP.[15] These two projects were included in the project modeling as these planned upgrades are being pursued independently of the Proposed Project, but would be a component of the future conditions that would exist with the Proposed Project. Therefore, the modeling results and associated operational impact conclusions presented in Impacts BIO-1, BIO-2, BIO-3, and BIO-4 reflect the NCP and GHWTP projects. The only other known cumulative projects that could affect conditions in the San Lorenzo River are the Conjunctive Use Plan for the San Lorenzo River Watershed and the San Lorenzo River Culvert. The Conjunctive Use Plan to increase stream baseflow for fish and increase reliability of surface and ground water supplies for the SLVWD would include water rights changes, use of existing interties to move water between service areas, use of SLVWD's Loch Lomond Reservoir water rights, and injection of excess surface water during wet periods and extraction of groundwater during dry periods in the Olympia area. The San Lorenzo River Lagoon Culvert Project would install a water-level control structure—a passive, head-driven culvert (pipe drain) system—in the San Lorenzo River lagoon at the mouth of the San Lorenzo River, which would provide a stabilized water elevation determined to protect habitat for salmonids and tidewater goby and to lessen localized flooding. As the Proposed Project and these two cumulative projects are intended to improve long-term conditions in the San Lorenzo River for fish by improving or controlling river water levels or baseflows, they would result in less-than-significant cumulative impacts to special-status biological resources from operation of these projects in the San Lorenzo River watershed.

Construction Impacts

All of the 15 capital improvement projects, 6 other infrastructure projects, and 13 residential, commercial, or mixed-use projects identified above within the biological study area could result localized construction impacts to special-status biological resources. Capital improvement projects planned by the City include replacement of segments of the North Coast Pipeline, improvements at the City's existing Laguna Creek and Majors Creek diversions, rehabilitation and replacement of the University Tank No. 4, rehabilitation of Beltz 10 and 11 wells, and ongoing replacement of distribution system water mains. The Program Environmental Impact Report for the North Coast

[15] Two other City CIP projects include the Felton Diversion Pump Station Assessment and the River Bank Filtration Study; however, these were not included in the cumulative analysis given that they are studies and improvements have not yet been identified.

System Repair and Replacement Project (Entrix 2005) prepared for the North Coast Pipeline, and the Laguna Creek and Majors Creek diversions projects indicated that potential impacts would likely include the temporary disturbance of special-status species (i.e., steelhead and California red-legged frog), aquatic habitat at stream crossings and instream construction at the diversions, terrestrial wildlife habitat, and sensitive riparian habitat; but that these impacts could be reduced to less-than-significant levels with identified mitigation measures (Entrix 2005). The recent Laguna Creek Diversion Retrofit Project EIR (Dudek 2020) identified similar impacts and mitigation measures at that specific location and also determined that impacts could be reduced to less-than-significant levels with identified mitigation measures. The program EIR for the North Coast projects concluded that potential impacts to sensitive biological resources resulting from the projects in the North Coast area would require consultation with the responsible agencies and implementation of approved mitigation and avoidance and minimization measures. Such regulatory permitting and approvals are now underway for the Laguna Creek Diversion Retrofit Project.

The remaining capital improvement projects and 13 residential, commercial, or mixed-use development projects in Table 4.0-2 have not yet been evaluated under CEQA or the CEQA process is underway (e.g., the NCP Replacement Project). These cumulative projects could impact special-status biological resources if they involve converting natural land cover for human use (e.g., conversion of grassland to structures), temporary ground disturbance in sensitive vegetation communities or species habitat, or removal of vegetation potentially supporting special-status species (e.g., nesting birds). These projects should be required to assess impacts to biological resources as part of the discretionary approval process and should incorporate all feasible mitigation measures to reduce impacts. However, it is possible that these cumulative projects could have significant cumulative impacts on biological resources due to construction if these cumulative projects are not properly mitigated. The Proposed Project would result in potentially significant construction-related impacts to special-status biological resources but these impacts would be reduced to a less-than-significant level with the implementation mitigation measures MM BIO-1 through MM BIO-14, as described in Impacts BIO-1 through BIO-4. Therefore, with the implementation of these mitigation measures, the Proposed Project would not have a considerable contribution to the cumulative construction impact. As such, the Proposed Project would result in a less-than-significant cumulative construction impact related special-status biological resources.

It should also be noted that protection of threatened and endangered species associated with operation and maintenance of the City's water facilities would also be addressed through the implementation of the City's OMHCP and ASHCP that is under preparation, as described in Section 4.3.3, Regulatory Framework.

4.3.5 References

14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

16 USC 1531–1544. Endangered Species Act of 1973, as amended.

33 USC 1251–1387. Water Pollution Control Act Amendments of 1972 (Clean Water Act).

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