DRAFT ENVIRONMENTAL IMPACT REPORT

# Santa Cruz Water Rights Project

**Prepared for**

City of Santa Cruz Water Department
212 Locust Street, Suite C • Santa Cruz, CA 95060

**JUNE 2021**

CITY OF SANTA CRUZ Water Department

Our Water, Our Future



Prepared by
DUDEK
725 Front Street, Suite 400
Santa Cruz, CA 95060

SCH NO. 2018102039
Contact: Sarah Easley Perez

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G Cultural Resources Inventory, Evaluation, and Finding of Effect Report
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# Acronyms and Abbreviations

| Acronym/Abbreviation | Definition |
|---|---|
| µg/L | micrograms per liter |
| 1,2,3-TCP | 1,2,3-trichloropropane |
| 3CE | Central Coast Community Energy |
| AAQS | ambient air quality standards |
| AB | Assembly Bill |
| ACHP | Advisory Council on Historic Preservation |
| afy | acre-feet per year |
| Air Basin | North Central Coast Air Basin |
| AMBAG | Association of Monterey Bay Area Governments |
| amsl | above mean sea level |
| ANSI | American National Standards Institute |
| APE | area of potential effect |
| AQMP | air quality management plan |
| Aromas | Aromas Red Sands aquifer |
| ASHCP | Anadromous Salmonid Habitat Conservation Plan |
| ASR | aquifer storage and recovery |
| Basin Plan | *Water Quality Control Plan for the Central Coastal Basin* |
| Beltz | Beltz well system |
| BenMAP | EPA Benefits Mapping and Analysis Program |
| BenMAP-CE | BenMAP-Community Edition |
| bgs | below ground surface |
| BLM | Bureau of Land Management |
| BMPs | best management practices |
| bmsl | below mean sea level |
| CAAQS | California Ambient Air Quality Standards |
| CAL FIRE | California Department of Forestry and Fire Protection |
| Cal/OSHA | California Division of Occupational Safety and Health |
| CalEEMod | California Emissions Estimator Model |
| CalEPA | California Environmental Protection Agency |
| CalGEM | California Geologic Energy Management Division |
| CALGreen | California Green Building Standards Code |
| CalRecycle | California Department of Resources Recycling and Recovery |
| CAP | climate action plan |
| CARB | California Air Resources Board |
| CARE | California Alternate Rates for Energy |
| CAS | Climate Action Strategy |
| CCC | California Coastal Commission |
| CCE | Community Choice Energy |
| CCR | California Code of Regulations |
| CCRWQCB | Central Coast Regional Water Quality Control Board |
| CDFW | California Department of Fish and Wildlife |
| CDP | coastal development permit |
| CEC | California Energy Commission |

| Acronym/Abbreviation | Definition |
|---|---|
| CEQA | California Environmental Quality Act |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CESA | California Endangered Species Act |
| CFC | chlorofluorocarbon |
| CFGC | California Fish and Game Code |
| CFR | Code of Federal Regulations |
| cfs | cubic feet per second |
| CGS | California Geological Survey |
| $CH_4$ | methane |
| CHRIS | California Historical Resources Information System |
| CIP | Capital Improvement Program |
| City | City of Santa Cruz |
| cm | centimeters |
| CMAQ | Community Multiscale Air Quality model |
| CMU | concrete masonry unit |
| CNDDB | California Natural Diversity Database |
| CNEL | community noise equivalent level |
| CNPS | California Native Plant Society |
| CNRA | California Natural Resources Agency |
| CO | carbon monoxide |
| $CO_2$ | carbon dioxide |
| $CO_2e$ | $CO_2$ equivalent |
| coho | Central California Coast coho salmon |
| County | County of Santa Cruz |
| CPUC | California Public Utilities Commission |
| CRHR | California Register of Historical Resources |
| CRLF | California red-legged frog |
| CRPR | California Rare Plant Rank |
| CUPA | Certified Unified Program Agency |
| CWA | Clean Water Act |
| CWD | Central Water District |
| CWHR | California Department of Fish and Wildlife's Wildlife Habitat Relationship |
| CZMA | Coastal Zone Management Act |
| dB | decibels |
| dBA | A-weighted decibels |
| DPM | diesel particulate matter |
| DPS | Distinct Population Segment |
| DTSC | Department of Toxic Substances Control |
| DTSC-SL | DTSC-modified screening level |
| DWR | Department of Water Resources |
| EIA | U.S. Energy Information Administration |
| EIR | Environmental Impact Report |
| EISA | Energy Independence and Security Act |
| EO | Executive Order |
| EPA | U.S. Environmental Protection Agency |
| EPCRA | Emergency Planning and Community Right-To-Know Act |
| ESA | federal Endangered Species Act |

| Acronym/Abbreviation | Definition |
|---|---|
| ESL | environmental screening level |
| ESU | Evolutionarily Significant Unit |
| EV | electric vehicle |
| FEMA | Federal Emergency Management Agency |
| FESA | federal Endangered Species Act |
| FHSZ | fire hazard severity zone |
| FHWA | Federal Highway Administration |
| FR | Federal Register |
| FRAP | Fire and Resource Assessment Program |
| FTA | Federal Transit Administration |
| g | percent of gravity |
| GDE | groundwater-dependent ecosystem |
| GHG | greenhouse gas |
| GHWTP | Graham Hill Water Treatment Plant |
| GHWTPHCP | Graham Hill Water Treatment Plant Habitat Conservation Plan |
| GIS | geographic information system |
| gpcd | gallons per person per day |
| GPS | global positioning system |
| GSP | groundwater sustainability plan |
| GWL | groundwater level |
| GWP | global warming potential |
| HA | hydrologic area |
| HAP | hazardous air pollutant |
| HCFC | hydrochlorofluorocarbon |
| HCP | Habitat Conservation Plan |
| HERO | Human and Ecological Risk Office |
| HFC | hydrofluorocarbon |
| HIA | health impact assessment |
| HMBP | Hazardous Material Business Plan |
| HMCP | Hazardous Materials Contingency Plan |
| HMMP | Hazardous Materials Management Plan |
| HRI | Historic Resources Inventory |
| has | hydrologic subarea |
| HU | hydrologic unit |
| HUC | hydrologic unit code |
| Hz | Hertz |
| IFC | International Fire Code |
| in/sec | inches per second |
| IPaC | Inventory for Planning and Conservation |
| IPCC | Intergovernmental Panel on Climate Change |
| IPHCP | Interim Programmatic Habitat Conservation Plan |
| IS | Initial Study |
| ISTEA | Intermodal Surface Transportation Efficiency Act |
| IWP | Integrated Water Plan |
| kWh | kilowatt hours |
| LACM | Natural History Museum of Los Angeles County |
| LAFCO | Local Agency Formation Commission |

| Acronym/Abbreviation | Definition |
|---|---|
| LCP | Local Coastal Program |
| $L_{dn}$ | day-night average noise level |
| Legislature | California State Legislature |
| $L_{eq}$ | equivalent noise level |
| LESA | Land Evaluation and Site Assessment |
| LID | Low Impact Development |
| $L_{max}$ | maximum noise level |
| $L_{min}$ | minimum noise level |
| LOS | level of service |
| LUST | leaking underground storage tank |
| MBARD | Monterey Bay Air Resources District |
| MBCP | Monterey Bay Community Power |
| MCL | maximum contaminant level |
| MCV | Manual of California Vegetation |
| mg | million gallons |
| mg/L | milligrams per liter |
| MGA | Santa Cruz Mid-County Groundwater Agency |
| mgd | million gallons per day |
| mgy | million gallons per year |
| MHA | Mount Hermon Association |
| mL | milliliters |
| mm | millimeters |
| MM | Mitigation Measure |
| MMT | million metric tons |
| mpg | miles per gallon |
| mph | miles per hour |
| MPN | most probable number |
| MPO | metropolitan planning organization |
| MS4 | Municipal Separate Storm Sewer System |
| MT | metric ton |
| MTBE | methyl tert-butyl ether |
| Mw | moment magnitude |
| mya | million years ago |
| $N_2O$ | nitrous oxide |
| NAAQS | National Ambient Air Quality Standards |
| NHPA | National Historic Preservation Act |
| NHTSA | National Highway Traffic Safety Administration |
| NI | no impact |
| NMFS | National Marine Fisheries Service |
| $NO_2$ | nitrogen dioxide |
| NOI | Notice of Intent |
| NOP | Notice of Preparation |
| $NO_x$ | oxides of nitrogen |
| NPDES | National Pollutant Discharge Elimination System |
| NRHP | National Register of Historic Places |
| NTU | nephelometric turbidity units |
| $O_3$ | ozone |

| Acronym/Abbreviation | Definition |
|---|---|
| OMHCP | Operations and Maintenance Habitat Conservation Plan |
| OPR | Governor's Office of Planning and Research |
| OSHA | Occupational Safety and Health Administration |
| PCE | Passenger Car Equivalents |
| PFC | perfluorocarbon |
| PG&E | Pacific Gas and Electric Company |
| PGM | photochemical grid model |
| $PM_{2.5}$ | fine particulate matter |
| $PM_{10}$ | coarse particulate matter |
| POU | place of use |
| ppm | parts per million |
| PPV | peak particle velocity |
| PRIMP | Paleontological Resources Impact Mitigation Program |
| Proposed Project | Santa Cruz Water Rights Project |
| Purisima | Purisima Formation |
| PVC | polyvinyl chloride |
| R-M | Mountain Residential |
| R-R | Rural Residential |
| RA | Residential Agriculture |
| RAP | Remedial Action Plan |
| RCRA | Resource Conservation and Recovery Act |
| RFS | Renewable Fuel Standard |
| RMP | Representative Monitoring Point |
| RMPA | Cotoni-Coast Dairies California Coastal National Monument Resource Management Plan Amendments |
| RMS | root mean square |
| ROG | reactive organic gas |
| RPS | Renewables Portfolio Standard |
| RSL | regional screening level |
| RWQCB | Regional Water Quality Control Board |
| SAA | Streambed Alteration Agreement |
| SAFE | Safer Affordable Fuel-Efficient |
| Santa Cruz Metro | Santa Cruz Metropolitan Transit District |
| SARA | Superfund Amendments and Reauthorization Act |
| SB | Senate Bill |
| SCADA | supervisory control and data acquisition |
| SCAQMD | South Coast Air Quality Management District |
| SCCC | Santa Cruz County Code |
| SCCSD | Santa Cruz County Sanitation District |
| SCP | Standard Construction Practice |
| SCS | Sustainable Communities Strategy |
| $scwd^2$ | Santa Cruz Water Department and Soquel Creek Water District |
| $scwd^2$ DEIR | $scwd^2$ Regional Seawater Desalination Project Draft EIR |
| SEL | sound exposure level |
| $SF_6$ | sulfur hexafluoride |
| SGMA | Sustainable Groundwater Management Act |
| SJVAPCD | San Joaquin Valley Air Pollution Control District |

| Acronym/Abbreviation | Definition |
|---|---|
| SLCP | short-lived climate pollutant |
| SLOAPCD | San Luis Obispo Air Pollution Control District |
| SLURP | *San Lorenzo River Urban Management Plan* |
| SLVWD | San Lorenzo Valley Water District |
| SMGWA | Santa Margarita Groundwater Agency |
| $SO_2$ | sulfur dioxide |
| SqCWD | Soquel Creek Water District |
| SSC | species of special concern |
| steelhead | Central California Coast steelhead |
| STC | Sound Transmission Class |
| STLC | soluble threshold limit concentration |
| SU | Special Use |
| SVP | Society of Vertebrate Paleontology |
| SVWD | Scotts Valley Water District |
| SWIS | Solid Waste Information System |
| SWMP | Stormwater Management Plan |
| SWPPP | Stormwater Pollution Prevention Plan |
| SWRCB | State Water Resources Control Board |
| TAC | toxic air contaminant |
| TAZ | transportation analysis zone |
| TBA | tert-butyl alcohol |
| TDH | Total Dynamic Head |
| TDM | transportation demand management |
| TMDL | total maximum daily load |
| TP | Timber Production |
| TPHg | gasoline-range hydrocarbons |
| UCSC | University of California, Santa Cruz |
| UNFCCC | United Nations Framework Convention on Climate Change |
| USACE | U.S. Army Corps of Engineers |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |
| UWMP | Urban Water Management Plan |
| V/C | volume-to-capacity |
| VdB | vibration decibels |
| VMT | vehicle miles traveled |
| VOC | volatile organic compound |
| WDR | waste discharge requirement |
| WSA | water supply assessment |
| WSAC | Water Supply Advisory Committee |
| WWTF | wastewater treatment facility |

# 1 Summary

## 1.1 Introduction

This environmental impact report (EIR) evaluates the potential for significant environmental impacts from the Santa Cruz Water Rights Project (Proposed Project). This summary highlights the major areas of importance in the environmental analysis for the Proposed Project, as required by Section 15123 of the California Environmental Quality Act (CEQA) Guidelines. It also provides a brief description of the Proposed Project, alternatives to the Proposed Project, and areas of controversy known to the City of Santa Cruz (City). In addition, this chapter provides a table summarizing: (1) the potential environmental impacts that would occur as the result of the Proposed Project; (2) the level of impact significance before mitigation; (3) the proposed mitigation measures that would avoid or reduce significant environmental impacts; and (4) the level of impact significance after mitigation measures are implemented.

## 1.2 Project Overview

### 1.2.1 Project Location and Setting

The Proposed Project involves the water system and areas served by the City of Santa Cruz (City);[1] 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 remainder of the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin. The Proposed Project is located within Santa Cruz County and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south.

The City's water supply system draws water from surface water sources, including two diversions on the San Lorenzo River (the Felton Diversion in Felton and the Tait Diversion in the City) and four diversions on local North Coast streams (Laguna Creek, Reggiardo Creek, Liddell Spring, and Majors Creek), which make up approximately 95% of the annual supply. That amount is supplemented, primarily during the dry season, by limited production from groundwater wells in the Santa Cruz Mid-County Groundwater Basin in unincorporated Santa Cruz County. The City stores water in Loch Lomond Reservoir in Ben Lomond, which is formed by Newell Creek Dam to help meet dry-season water demand and provide back-up supply during winter storms that make river diversions problematic due to turbidity issues. The City, like other water suppliers in Santa Cruz County, has no imported water supply from outside the region. Due to limited water supply and storage, the City faces inadequate water supply during dry years and critical shortages during drought years. See Chapter 3, Project Description, for additional information about the setting and water supply planning background for other neighboring water agencies.

### 1.2.2 City Water Supply Planning Background

Due to limited water supply and storage, the City faces inadequate water supply during dry years and critical shortages during drought years. The City has been pursuing possible new water supplies for the past several decades to address these shortages. Most recently, the Water Supply Advisory Committee (WSAC) Final Report on

[1] The City owns and operates a water system that diverts and serves water both within the City limits and outside of those limits. References to the City's water system, rights and supplies therefore refer to areas both inside and outside of the City limits.

Agreements and Recommendations (October 2015) provides the Water Supply Augmentation Strategy portfolio elements to address the agreed upon worst-year gap of 1.2 billion gallons per year during modeled worst-year conditions identified during the WSAC planning process, including the following:

- **Element 0: Additional water conservation** with a goal of achieving an additional 200 to 250 million gallons per year (mgy) of demand reduction by 2035 by expanding water conservation programs.
- **Element 1: Passive recharge of regional aquifers** by working to develop agreements for delivering surface water to the SqCWD and/or the SVWD[2] so they can rest their groundwater wells, help the aquifers recover, and potentially store water for use by the City in drought years.
- **Element 2: Active recharge of regional aquifers** by using existing infrastructure and potential new infrastructure in the Santa Cruz Mid-County Groundwater Basin, the Santa Margarita Groundwater Basin, or in both to store water that can be available for use by the City in drought years.
- **Element 3: A potable water supply using advanced-treated recycled water** as its source as a supplemental or replacement supply in the event the groundwater storage strategies described above prove insufficient to meet the goals of cost-effectiveness, timeliness, or yield. In the event advanced-treated recycled water does not meet the City's needs, desalination would become Element 3.

Implementation of the Proposed Project would support Elements 1 and 2 above.

### 1.2.3 Project Purpose and Objectives

The underlying purpose of the Proposed Project is to improve flexibility in operation of the City's water system while enhancing stream flows for local anadromous fisheries. During the development of the City's pending Anadromous Fisheries Habitat Conservation Plan (ASHCP), the City negotiated with the California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Service (NMFS) to develop levels of stream flows that would better protect federally listed Central California Coast coho salmon (coho) and Central California Coast steelhead (steelhead) in all watersheds from which the City diverts water (Agreed Flows). Incorporating these Agreed Flows into all City water rights is necessary to benefit local fisheries, specifically for coho and steelhead, but would further constrain the City's limited surface water supply. Consequently, the City needs to improve operational flexibility of the water system within existing rights, permits, and licenses to allow better use of limited water resources. To do this, the City is proposing water rights modifications to its existing rights, permits, and licenses to expand the authorized place of use (POU), to better utilize existing diversions, and to extend the City's time to put water to full beneficial use. The objectives for the Project are as follows:

1. Improve the flexibility with which the City operates the water system to facilitate the City's ability to meet drinking water demand while providing flow conditions protective of coho and steelhead.
2. Provide flow conditions that are protective of coho and steelhead within all streams from which the City diverts water, as negotiated with CDFW and NMFS during the preparation of the pending ASHCP, which is the habitat conservation plan being developed under the federal ESA and CESA.
3. To improve the City's limited storage and support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers and exchanges) and Element 2 (active recharge of regional aquifers via ASR) in order to deliver a safe, adequate, reliable and environmentally sustainable water supply.

[2] While WSAC recommendations considered only delivering surface water to SqCWD and SVWD, current conceptual-level planning considers delivering surface water to SLVWD and CWD as well.

4. Facilitate opportunities within the City and regionally for conjunctive use[3] of the City's surface water rights in combination with groundwater, including by addressing significant barriers to implementing conjunctive use due to the place of use associated with the City's water-right permits and licenses to, among other things, assist in implementation of the "Water Transfers/In Lieu Groundwater Recharge" element of the Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan (GSP).
5. Provide more options for where and how the City can utilize its existing appropriative water rights.
6. Provide for the underground storage of surface water primarily to support more reliable and improved water supply by allowing the City to use such stored water during dry periods and also to contribute to the protection of groundwater quality from seawater intrusion per the Santa Cruz Mid-County Groundwater Basin GSP and to allow for the implementation of the "Aquifer Storage and Recovery" element of the Santa Cruz Mid-County Groundwater Basin GSP.
7. Remove potential operational constraints on City water rights that do not explicitly recognize direct diversion.
8. Allow additional time for the City to fully reach beneficial use under existing water-right permits at Felton.
9. Improve fish screening at the Felton Diversion and Tait Diversion and improve fish passage at the Felton Diversion. Consideration of fish passage improvements at Tait Diversion would be incorporated into future projects as required.
10. Address reliability and operational deficits at the Tait Diversion and Coast Pump Station to meet other project objectives.
11. Implement state policy favoring integrated regional water management by involving the City and other local agencies in "significantly improving" the "reliability of water supplies" by "diversifying water portfolios, taking advantage of local and regional opportunities, and considering a broad variety of water management strategies," specifically by making more extensive conjunctive use of the surface-water, groundwater and groundwater-storage resources available to the City and, when Agreed Flows and City demands are met, making excess surface water under the City's surface-water rights available to neighboring agencies who are dependent on overdrafted groundwater basins. (Water Code Section 10531(c).)
12. Consider other related actions or activities that would be foreseeable as a logical part in a chain of contemplated actions should the Proposed Project be approved, including facilities that would provide for ASR, water transfers, and water exchanges.

### 1.2.4 Project Characteristics

The Proposed Project includes proposed modifications to the City's existing water rights to improve flexibility in operation of the City's water system to better use limited water resources, while enhancing stream flows for local anadromous fisheries. The Proposed Project also includes water supply augmentation components and surface water diversion improvements that could be implemented after the water rights modifications are approved.

As shown in Table 1-1 and summarized below, the Proposed Project includes components that are considered in this EIR at a "project" level (project component) and components that are considered at a "programmatic" level (programmatic component), and therefore this EIR is both a project EIR and a programmatic EIR. The programmatic components of the Proposed Project would include potential future activities that may occur after the City water rights are modified. Because most of these activities are considered to be reasonably foreseeable as a logical part

[3] Conjunctive use refers to a range of actions and projects that provide for the coordinated management of surface water and groundwater supplies to increase total supplies and enhance water supply reliability. Conjunctive use actions and projects can also be used to sustainably manage groundwater supplies.

in a chain of contemplated actions, but the full physical extent and timing of these improvements are not known at this time, most of these activities are addressed in the EIR at a programmatic level. Some of these actions would be undertaken in conjunction with surrounding water districts and some would be undertaken solely by the City. If warranted, additional environmental analysis will be undertaken at the time these foreseeable future activities or actions are under active consideration. (See Chapter 2, Introduction, for a description of the process for determining the extent of any additional analysis that may be required.)

The project and programmatic components include the following:

- **Water rights modifications,** which are evaluated at a project level in this EIR, including modifications related to place of use, method of diversion, points of diversion and rediversion, underground storage and purpose of use, extension of time and stream bypass requirements for fish habitat (referred to in this EIR as Agreed Flows);
- **Water supply augmentation components**, which are evaluated at a project or programmatic level in this EIR, depending on what is known about the components, including:
    - Aquifer storage and recovery (ASR):
        - New ASR facilities at unidentified locations (referred to as "new ASR facilities" in this EIR), which are evaluated at a programmatic level.
        - Beltz ASR facilities at the existing Beltz well facilities (referred to as "Beltz ASR facilities" in this EIR), which are evaluated at a project level.
    - Water transfers and exchanges and associated intertie improvements, which are evaluated at a programmatic level in this EIR.
- **Surface water diversion improvements**, which are evaluated at a programmatic level in this EIR, including the Felton Diversion fish passage improvements and the Tait Diversion and Coast Pump Station improvements.

The subsections below further describe these project components and programmatic components.

## Table 1-1. 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)<br>New ASR Facilities at Unidentified Locations<br>Beltz ASR Facilities at Existing Beltz Well Facilities | <br><br>✓ | ✓<br>✓<br> |
| Water Transfers and Exchanges and Intertie Improvements | | ✓ |
| ***Surface Water Diversion Improvements*** | | |
| Felton Diversion Fish Passage Improvements | | ✓ |
| Tait Diversion and Coast Pump Station Improvements | | ✓ |

### 1.2.4.1 Water Rights Modifications

Project components of the Proposed Project include modifications to the City's existing pre-1914 and post-1914 appropriative water rights. The City will pursue changes to its pre-1914 water rights through action by the Santa Cruz City Council and changes to its post-1914 permits and licenses through the filing of change and extension petitions with the State Water Resources Control Board (SWRCB). No change to the authorized amounts of diversions under any of the City's appropriative water rights is proposed as part of the Proposed Project. Overall, implementation of these modifications would provide the City greater flexibility in the operation of the water system while enhancing stream flows for local anadromous fisheries. The water rights modifications include the following:

- **Expansion of POUs.** The Proposed Project would expand the authorized POUs of the City's pre-1914 and post-1914 appropriative water rights to include the areas served by the City, two local groundwater basins, and the service areas of neighboring water agencies. Expanded POUs are necessary for improving the potential for conjunctive use of the region's resources with adjoining water agencies and within the region's groundwater basins.
- **Method of Diversion.** The Proposed Project would result in explicit authorization of direct diversion as a method of diversion under the City's Newell Creek License and Felton Permits, which is not explicitly authorized under the current license and permits.
- **Points of Diversion.** To provide for the needed flexibility in the operation of the City's water system, the Proposed Project would add points of diversion and rediversion. Specifically, the Proposed Project would add the City's existing Beltz system as points of rediversion[4] into and out of groundwater storage to the City's Tait Licenses, Felton Permits and pre-1914 appropriative rights. This would provide flexibility for utilizing the City's San Lorenzo River surface water supplies for the Beltz ASR subcomponent of the Proposed Project (see below). The Proposed Project would also add the Tait Diversion as a new point of diversion on the Felton Permits, which would give the City the option of diverting water under the existing Felton Diversion water rights at either the Felton Diversion or downstream at the Tait Diversion. This would provide the ability to divert water under the Felton Permits with or without activation of the Felton Diversion inflatable dam and improve operational flexibility. Additionally, when water under the Felton Permits would be diverted at the Tait Diversion, water would remain in the San Lorenzo River longer, bypassing the Felton Diversion before being diverted at the Tait Diversion, thus providing fisheries benefits.
- **Underground Storage and Purpose of Use.** In addition to adding points of rediversion into and out of groundwater in the Beltz system, as described above, the Proposed Project would add underground storage supplements to the City's Tait Licenses and Felton Permits to allow for the proposed Beltz ASR facilities of the Proposed Project. An underground storage supplement is required to be filed with the SWRCB for post-1914 water right permits and licenses seeking to divert surface water to groundwater aquifers to artificially recharge these aquifers for further beneficial use. The underground storage supplements to allow for the Beltz ASR facilities are the only underground storage supplements being pursued now because these facilities are the only proposed ASR facilities whose locations and proposed capacities are currently known. The City would not be able to implement and operate other ASR facilities under its post-1914 permits and licenses without submitting additional underground storage supplements to those permits and licenses to the SWRCB and obtaining the SWRCB's approval. See Section 1.2.4.2, Water Supply Augmentation Components, for additional information about ASR. Protection of water quality would also be added as a new purpose of use to all City appropriative water rights to support the use of surface water for ASR as it contributes to the protection of groundwater quality from seawater intrusion per the Santa Cruz Mid-County GSP.

[4] A point of rediversion is a point, other than the point of initial diversion, where controlled water is diverted from a natural stream or another water source. In this case, water would be rediverted into and out of groundwater storage in the Beltz system.

- **Extension of Time.** The Proposed Project would extend the time under the Felton Permits to December 31, 2043 in which the City could make full beneficial use of the 3,000 afy of diversion authorized by the Felton Permits. Additional time is needed by the City as (1) total water use has declined due to an extensive and successful water conservation program among other factors; (2) full implementation of the Agreed Flows (see below) necessitates increased flexibility within the water system, requiring additional time to fully reach beneficial use; and (3) water supply options that may be necessary to meet City water supply needs, including projects such as ASR, require time to implement.
- **Bypass Requirements (Agreed Flows).** The Proposed Project would include modifying City water rights to incorporate the bypass requirements for each water right the City negotiated with CDFW and NMFS during development of the pending ASHCP to better protect federally listed coho and steelhead in all watersheds from which the City diverts water. The Agreed Flows would be incorporated into both pre-1914 rights on the North Coast streams and post-1914 permits and licenses on the San Lorenzo River and Newell Creek. While it is expected that Agreed Flows will become terms and conditions of permits and authorizations issued under the FESA, CESA, and Section 1600 et seq. of the Fish and Game Code, the Proposed Project would commit the City to these flows regardless of the outcomes of these processes.

### 1.2.4.2 Water Supply Augmentation Components

#### Aquifer Storage and Recovery

As indicated in Section 1.2.2, City Water Supply Planning Background, the City's Water Supply Augmentation Strategy includes active recharge of regional aquifers, referred to as aquifer storage and recovery or ASR. ASR involves using existing infrastructure and potential new infrastructure to inject surface water, treated to drinking water standards, and storage of this water during normal or wet periods in local groundwater basins, which would act as underground storage reservoirs. This stored water can then be available for use by the City in dry periods via extraction.

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. 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). Overall, ASR is a programmatic component of the Proposed Project; however, as a subcomponent of ASR, Beltz ASR facilities are a project component of the Proposed Project.

To the extent ASR facilities and operations would occur outside of the City's existing water-right place of use, they would be enabled by the Proposed Project's expansion of the POU of the City's appropriative water rights. As described in Section 1.2.4.1, Water Rights Modifications, the Proposed Project includes the addition of underground storage supplements to the City's post-1914 appropriative permits and licenses only for the Beltz ASR facilities because those are the only proposed ASR facilities whose locations and proposed capacities are currently known.

The total ASR capacity is intended to provide sufficient capacity to address the City's agreed-upon worst-year water supply gap of 1.2 billion gallons per year, described in Section 1.2.2, City Water Supply Planning Background. As a subcomponent of ASR, Beltz ASR would provide only a portion of the total ASR capacity at Beltz 8, 9, 10 and 12 groundwater well facilities and would include the installation of upgrades to the existing Beltz system to allow for injection of treated water from the City's GHWTP and subsequent extraction. The remainder of the total capacity would be provided at new ASR facilities. Further planning and analysis are required to determine locations for any potential

new ASR facilities. Actual capacity and operational characteristics for new ASR facilities and Beltz ASR facilities would be based on completion of ASR pilot programs, design-level groundwater modeling, and the ASR design process.

Standard operational practices for all ASR facilities would be implemented during development and operation of ASR facilities. Operation of ASR facilities would be consistent with applicable adopted existing or future GSPs and could contribute to groundwater sustainability of the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin, depending on the facilities' location. Contribution to groundwater sustainability of the Santa Cruz Mid-County Groundwater Basin would also contribute to the protection of groundwater quality from seawater intrusion per the Santa Cruz Mid-County GSP in support of the proposed water quality beneficial use, identified in Section 1.2.4.1, Water Rights Modifications.

#### Water Transfers and Exchanges and Intertie Improvements

As indicated in Section 1.2.2, City Water Supply Planning Background, the City's Water Supply Augmentation Strategy also includes passive recharge of regional aquifers by transferring treated drinking water to other water districts in the area so they can rest their groundwater wells, help the aquifers recover, and potentially store water for use by the City in dry periods.

Modification of the City's appropriative water rights would facilitate the opportunity for potential future water transfers and exchanges with neighboring water agencies, including SVWD, SLVWD, SqCWD and CWD. Water transfers and exchanges and associated interties are evaluated as a programmatic component of the Proposed Project. Such transfers and exchanges would likely be provided for via agreements with defined terms related to timing, volume of water, water year conditions, return of water, etc., that would be developed between the City and one or more of the neighboring agencies. New or improved interties between the water systems of the City and of neighboring water agencies may be needed to facilitate future water transfers and exchanges once City water rights are modified. The Proposed Project anticipates these potential water transfers and exchanges and new and improved interties, which include new or upgraded pipelines and new or upgraded pump stations needed to transfer water between and through the services areas of the referenced water agencies. Specifically, the Proposed Project anticipates a new pipeline and pump station to intertie the water systems of the City and SVWD (referred to in this EIR as the City/SVWD intertie). Additionally, two segments of replacement piping, an upgraded pump station and two new pump stations are needed to intertie the water systems of the City, SqCWD and CWD (referred to in this EIR as the City/SqCWD/CWD intertie).

### 1.2.4.3 Surface Water Diversion Improvement Components

Improvements at the Felton Diversion and Tait Diversion and Coast Pump Station are included as programmatic components of the Proposed Project.

#### Felton Diversion Fish Passage Improvements

The Felton Diversion is a surface water diversion/intake on the San Lorenzo River that pumps raw water from the river to the City's Loch Lomond Reservoir. Proposed fish passage improvements at the Felton Diversion would provide for compliance with current fish passage and screening requirements. The modifications would be designed to support use of City water rights while improving passage for coho and steelhead. These improvements may include fish screen replacement, installation of a traveling brush system to keep the fish screens operating at optimum efficiency, and construction of a continuous downstream outmigration bypass route within the existing bypass channel with downstream opening slide gate.

### Tait Diversion and Coast Pump Station Improvements

The Tait Diversion is located on a fairly straight, low-gradient section of the San Lorenzo River approximately 2.4 miles upstream of the mouth of the river and adjacent to the Coast Pump Station facility. Improvements at the Tait Diversion could include, but would not be limited to, (1) a new or modified intake design with increased capacity to allow the City the option of diverting water under the existing Felton Diversion water rights at either the Felton Diversion or at the Tait Diversion, (2) upstream and/or downstream hydraulic modifications, (3) improvements to the check dam, and (4) any required fish passage upgrades to meet current state and federal fisheries protection criteria. The River Pumps at the Coast Pump Station facility would also require improvements, which could include, but would not be limited to, (1) new pumps and motors, (2) primary and backup power upgrades, which could include upgrades to the Pacific Gas & Electric substation, (3) a new or modified concrete wet well, and (4) a solids handling system.

### 1.2.4.4 Standard Operational and Construction Practices

The Proposed Project includes standard operational practices to provide for the implementation of ramping rates at all City diversion facilities. Ramping rates are diversion rates that gradually alter diversions from a stream channel to limit the downstream rate of change to stream stage, which is the water level in a stream or river. The operation of all ASR injections and extractions will be consistent with the sustainable management criteria and will avoid any undesirable results as identified in the adopted Santa Cruz Mid-County Groundwater Basin GSP and in any future revisions to the GSP. ASR facilities and associated injections and extractions in the Santa Margarita Groundwater Basin will be planned to be installed and operated after the Santa Margarita Groundwater Basin GSP is prepared, adopted, and submitted to the Department of Water Resources in January 2022. The proposed timing will provide for ASR injections and extractions consistent with the sustainable management criteria, and will avoid any undesirable results identified in the pending Santa Margarita Groundwater Basin GSP and in any future revisions to the GSP. ASR facilities will also be permitted, constructed, and operated in accordance with the SWRCB Water Quality Order 2012-0010, General Waste Discharge Requirements for Aquifer Storage and Recovery Projects that Inject Drinking Water into Groundwater, which provides for compliance with applicable regulations and policies, including the RWQCB Basin Plans and State Water Board Resolution 68-18 (the Antidegradation Policy). Additionally, stream diversions for ASR injections and to support City water transfers and/or exchanges will be avoided during certain dry conditions.

The Proposed Project also includes standard construction practices to provide for erosion control, air quality control, water quality protection, in-channel work measures including those related to dewatering, general habitat protection, and other construction practices.

## 1.3 Impact Summary

Table 1-3 on page 1-12 below provides a complete list of the Proposed Project's environmental impacts, including the level of significance before and after mitigation, based on the analysis and conclusions presented in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures. Significant and unavoidable impacts have been identified in this EIR related to temporary construction noise associated with well drilling at new ASR facilities and at Beltz 9 ASR facility, as listed in Table 1-3 (see Impact NOI-2 and Impact UTL-1). For information regarding how the alternatives to the Proposed Project, as identified in Section 1.4, Alternatives to the Proposed Project, would address these same environmental impacts, see Table 8-6 in Chapter 8, Alternatives.

# 1.4 Alternatives to the Proposed Project

CEQA Guidelines Section 15126.6 requires that an EIR describe and evaluate alternatives to the Proposed Project that feasibly attain most of the basic objectives of the project and would avoid or substantially lessen any of the significant effects of the project. As most identified impacts of the Proposed Project relate to the actual construction of various project and programmatic infrastructure components, the alternatives selected consider no or reduced infrastructure components. The following alternatives are evaluated in Chapter 8, Alternatives, and summarized in Table 1-2:

- **No Project Alternative** – The No Project Alternative are the circumstances under which the Proposed Project does not proceed.
- **Alternative 1** – Agreed Flows only without other Proposed Project components.
- **Alternative 2** – Agreed Flows with all Proposed Project components except there is no place of use expansion, which means that there are no water transfers to neighboring water agencies, and that ASR is possible only within the areas served by the City.
- **Alternative 3** – Agreed Flows with all Proposed Project components except ASR.

### Table 1-2. Summary of Alternatives

| Proposed Project Components | Inclusion of Proposed Project Components in Alternatives | | | |
|---|---|---|---|---|
| | *No Project Alternative* | *Alternative 1* | *Alternative 2* | *Alternative 3* |
| Agreed Flows | No | Yes | Yes | Yes |
| Place of Use Expansion | No | No | No | Yes |
| Other Water Rights Modifications | No | No | Yes | Yes |
| Aquifer Storage and Recovery | No | No | Yes, but only in areas within City's existing place of use | No |
| Water Transfers and Intertie Improvements | No | No | No | Yes |
| Surface Water Diversion Improvements | No | No | Yes | Yes |
| Relevant Standard Operational and Construction Practices | No | Yes | Yes | Yes |

Table 8-6 in Chapter 8, Alternatives, presents a comparison of project impacts between the Proposed Project and the alternatives. The No Project Alternative would reduce or avoid impacts to some environmental resources, as would Alternatives 1, 2, and 3. Additionally, the significant unavoidable construction noise impact due to well drilling activities for the new ASR facilities and the Beltz 9 ASR facility (Impacts NOI-1 and UTL-1) would be avoided under the No Project Alternative, and Alternatives 1 and 3 as no well drilling for these facilities would be required under these alternatives. However, none of the alternatives would realize the same benefits of the Proposed Project to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2). Specifically, the beneficial impacts of the Proposed Project related to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2) would be potentially significant and unavoidable for the No Project Alternative and Alternative 1, and while this impact under Alternatives 2 and 3 would also be beneficial, the improvement of

conditions for boating under these alternatives would be less than for the Proposed Project. Additionally, the alternatives would not provide sufficient additional water supply to meet projected demand in the areas served by the City during currently constrained dry periods (see Impact UTL-2), and this impact would be potentially significant and unavoidable for all of the alternatives until an alternative source of water supply is developed. Given this, the No Project Alternative is not the environmentally superior alternative and therefore an environmentally superior alternative among the other alternatives does not need to be identified under CEQA Guidelines Section 15126.6(e)(2).

Regardless, the City has concluded that the Proposed Project is the environmentally superior alternative. Most importantly, because none of the alternatives includes the full panoply of the components of the Proposed Project (such as water transfers and ASR) intended to facilitate regional groundwater stabilization and conjunctive use, the Proposed Project has the greatest environmental benefit to regional groundwater conditions. In addition, the Proposed Project would avoid the potentially significant and unavoidable water supply impact of all of the alternatives and the potentially significant and unavoidable recreation impact of the No Project Alternative and Alternative 1 and would reduce all impacts to less-than-significant levels with identified mitigation measures, with the exception of temporary construction noise impacts from ASR well-drilling activities. In the City's judgment, the groundwater benefits of the Proposed Project outweigh in importance the limited significant and unavoidable noise impacts associated with temporary ASR well-drilling activities. Given the enormous importance of stabilizing groundwater basins in California, as the Legislature found in enacting the Sustainable Groundwater Management Act, the City is unable to conclude that the short-term noise impacts of the Proposed Project compel the conclusion that alternatives with fewer or no ASR facilities are environmentally superior to the Proposed Project. See Chapter 8 for a full discussion of project alternatives.

## 1.5 Known Areas of Controversy

### 1.5.1 Scoping Comments

A Notice of Preparation (NOP) and Initial Study (IS) for the Proposed Project was circulated for a 30-day comment period from October 15 to November 14, 2018 to determine the scope and extent of environmental issues to be addressed in this EIR. Two agency and public scoping meetings were held on November 7, 2018 and November 8, 2018 on the scope of the EIR's analyses. In response to the NOP, written comments were received from thirteen public agencies, organizations, and individuals. The City of Santa Cruz, as the Lead Agency, has identified areas of concern based on the response to the NOP/IS. The NOP/IS and public comments received in response to the NOP/IS are included in Appendix A.

The comments received during the NOP comment period indicate that the areas of controversy associated with the Proposed Project include: (1) whether the City's pending ASHCP should be completed before the Proposed Project moves forward; (2) whether the proposed Agreed Flows are sufficiently protective of fisheries; (3) whether the various water rights modifications would impact salmonids; (4) whether the water rights modifications would overdraft the Santa Margarita Groundwater Basin and affect SLVWD customers; and (5) whether the Proposed Project would somehow facilitate population growth.

All substantive environmental issues raised in the comment letters received in response to the NOP/IS have been addressed or otherwise considered during preparation of this Draft EIR.

### 1.5.2 Water Rights Petition Protests

In response to the City's pending water-right petitions submitted to the SWRCB in January 2021, two letters were received as a protest to these petitions including from the SLVWD and San Andreas Land Conservancy. SLVWD's protest expresses concerns about: (1) SLVWD's access to water from the City's Loch Lomond Reservoir water under the two agencies' contract; and (2) the effect of the City's proposed changes to minimum flows at the Big Trees gage below Felton. The San Andreas Land Conservancy protest expresses concern about: (1) the CEQA process; (2) the units of water volume and flow used in the petitions; (3) the City's request for extension of time for water-right Permits 16123 and 16601; (4) environmental issues, including fish, wildlife, and instream flows; (5) underground storage of surface water; (6) proposed bypass flows and involvement of CDFW and NMFS; (7) direct diversion from Newell Creek; (8) expansion of place of use; and (9) mitigation measures.

The City's pending water-rights petitions, the protest letters from the SLVWD and San Andreas Land Conservancy, and the City's responses to these letters that include a letter from CDFW to the SWRCB are included in Appendix B of this Draft EIR. All substantive environmental issues raised in the protest letters received in response to the City's water-right petitions have been addressed or otherwise considered during preparation of this Draft EIR.

## 1.6 Issues to be Resolved

CEQA Guidelines Section 15123 requires the EIR summary to identify "issues to be resolved including the choice among alternatives and whether or how to mitigate the significant effects." This EIR has presented mitigation measures and project alternatives, and the City Council will consider the Final EIR when considering the Proposed Project. In considering whether to approve the Proposed Project, the City Council will take into consideration the environmental consequences of the Proposed Project with mitigation measures and project alternatives, as well as other factors related to feasibility. The City Council will also consider the extent to which the project alternatives, would meet the underlying purposes of the Proposed Project and whether the alternatives would meet the City's specific project objectives.

Table 1-3. Summary of Project Impacts

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| *Air Quality* | | | |
| **Impact AIR-1: Conflict with an Applicable Air Quality Plan.** Construction and operation of the Proposed Project would result in emissions of criteria pollutants, but would not exceed adopted thresholds of significance and therefore would not conflict with the MBARD's AQMP. | Less than Significant | None | Less than Significant |
| **Impact AIR-2: Criteria Pollutant Emissions.** Construction and operation of the Proposed Project would result in emissions of criteria pollutants, but would not exceed adopted thresholds of significance, violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, the Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. | Less than Significant | None | Less than Significant |
| **Impact AIR-3: Exposure of Sensitive Receptors.** Construction and operation of the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations. | Less than Significant | None | Less than Significant |
| **Impact AIR-4: Result in Other Emissions Adversely Affecting a Substantial Number of People.** Construction and operation of the Proposed Project would not result in other emissions that would adversely affect a substantial number of people. | Less than Significant | None | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| **Impact AIR-5: Cumulative Air Quality Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to air quality, with the exception of substantial pollutant concentrations (Significance Standard C), but the Proposed Project's contribution to this impact would not cumulatively considerable. | Less than Significant | None | Less than Significant |
| *Biological Resources* | | | |
| **Impact BIO-1A: Special-Status Species – Fish.** 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. | Potentially Significant | **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.<br><br>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). | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | **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.<br><br>**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. | |
| Operation of the Proposed Project would not have such substantial adverse effects. | Less than Significant | None | Less than Significant |
| **Impact BIO-1B: Special-Status Species – Other Wildlife.** 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. | Potentially Significant | **MM BIO-1**, **MM BIO-2**, and **MM BIO-3** described above for Impact BIO-1A<br><br>**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 | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | 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.<br><br>**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 two weeks prior to the beginning of construction.<br><br>**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. | |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | **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.<br><br>**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.<br><br>**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 | |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | 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. | |
| Operation of the Proposed Project would not have such substantial adverse effects. | Less than Significant | None | Less than Significant |
| **Impact BIO-1C: Special-Status Species – Plants.** 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. | Potentially Significant | **MM BIO-1** described above for Impact BIO-1A<br><br>**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:<br><br>a. A description of any areas of habitat occupied by special-status plants to be preserved and/or removed by the project;<br><br>b. Identification and evaluation of the suitability of on-site or off-site areas for preservation, restoration, enhancement or translocation; | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | 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;<br>d. A description of proposed methods of preservation, restoration, enhancement, and/or translocation;<br>e. A description of specific performance standards, including a required replacement ratio and minimum success standard of 1:1 for impacted individuals or populations;<br>f. A monitoring and reporting program to ensure mitigation success; and<br>g. A description of adaptive management and associated remedial measures to be implemented in the event that performance standards are not achieved. | |
| Operation of the Proposed Project would not have such substantial adverse effects. | Less than Significant | None | Less than Significant |
| **Impact BIO-2: Riparian and Sensitive Vegetation Communities.** 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. | Potentially Significant | **MM BIO-1** described above for Impact BIO-1A<br>**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 | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | 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).<br><br>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.<br><br>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:<br><br>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.<br><br>b. The specific methods to be employed for revegetation.<br><br>c. Success criteria and monitoring requirements to ensure vegetation community restoration success.<br><br>d. Remedial measures to be implemented in the event that performance standards are not achieved. | |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| Operation of the Proposed Project would not have such substantial adverse effects. | Less than Significant | None | Less than Significant |
| **Impact BIO-3: Jurisdictional Aquatic Resources.** Construction of the Proposed Project could have a substantial adverse effect on state or federally protected wetlands through direct removal, filling, or hydrological interruption. | Potentially Significant | **MM BIO-2** described above for Impact BIO-1A<br><br>**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.<br><br>**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. | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | **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:<br>a. The mitigation objectives and type and amount of mitigation to be implemented (in-kind mitigation at a minimum mitigation ratio of 1:1);<br>b. The location of the proposed mitigation site(s) (within the San Lorenzo River watershed, if possible);<br>c. The methods to be employed for mitigation implementation (jurisdictional aquatic resource establishment, re-establishment, enhancement, and/or preservation);<br>d. Success criteria and a monitoring program to ensure mitigation success; and<br>e. Adaptive management and remedial measures in the event that performance stands are not achieved. | |
| Operation of the Proposed Project would not have such substantial adverse effects. | Less than Significant | None | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| **Impact BIO-4: Wildlife Movement.** 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 | None | Less than Significant |
| Operation of the Proposed Project would have no adverse effects. | No Impact | None | No Impact |
| **Impact BIO-5: Cumulative Biological Resources Impacts.** 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 | None | Less than Significant |
| Operation of the Proposed Project would not result in a significant cumulative impact. | Less than Significant | None | Less than Significant |
| *Cultural Resources and Tribal Cultural Resources* | | | |
| **Impact CUL-1: Historic Built Environment Resources.** Construction of some of the Proposed Project infrastructure components could cause a substantial adverse change in the significance of historical built environment resource. | Potentially Significant | **MM CUL-1: Historic-Era Built Environment Resources.** Potentially significant impacts to historic built environmental resources on the infrastructure component sites shall be addressed through the following measures: | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | a. **Identify Potential Historic Built Environment Resources (Applies to New Aquifer Storage and Recovery Facilities and the Felton Diversion).** When new or upgraded facilities move into project-level design and those developments are being pursued by the City of Santa Cruz (City), a qualified cultural resource specialist shall review the project site and conduct a California Historical Resources Information System (CHRIS) records search. If there are no previously recorded resources or historic era buildings or structures located on the site, no further action is warranted. If these project site review efforts indicate a potential for California Environmental Quality Act (CEQA) historical resources, all buildings and structures within the component site that are 45 years or older, shall be identified and measure b shall be implemented.<br>b. **Evaluate Potential Built Environment Resources (Applies to New ASR Facilities, City/Soquel Creek Water District/Central Water District Intertie – Soquel Village and Park Avenue Pipelines, and the Felton Diversion).** Should potential CEQA historical resources be identified within the above programmatic infrastructure component sites, prior to project implementation, the City or other lead agency overseeing the Proposed Project shall retain a qualified architectural historian, meeting the Secretary of the Interior's Professional Qualification Standards (36 Code of Federal Regulations Part 61), to record such potential resources based on professional standards, to formally assess their significance under CEQA Guidelines Section 15064.5. A Historic Resources Evaluation Report (HRER) shall be prepared by the architectural historian to evaluate properties over 45 years of age under all applicable significance criteria. In consideration of the historic context for the existing water management systems in the region there is a low-likelihood that water management structures that postdate the late 1800s or early 1900s (pioneering water system era) will be found historically significant. Therefore, for existing | |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | infrastructure component sites it is likely that the HRER will find that no properties meet the significance criteria and therefore, no CEQA historical resources are likely to be present. No further work shall be required for historic era-built environment properties, buildings, or structures 45 years old or older at these sites that are not found to meet the CEQA historical significance criteria as historical resources. If a property is found to be eligible for listing under the applicable significance criteria and therefore considered a CEQA historical resource, the resource shall be avoided or preserved in place. If avoidance or preservation in place is not feasible, and the historical resource will be modified through design such that it may not be able to convey its historic significance, the City will retain a qualified architectural historian to prepare a subsequent technical report. This required report will assess the proposed project design plans and/or schematics in conjunction with the subject CEQA historical resource and determine whether the Proposed Project conforms with the Secretary of the Interior's Standards for the Treatment of Historic Properties, specifically, the Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Structures). The City shall modify the Proposed Project, as needed, to ensure that the Secretary of the Interior's Standards are met such that the historical resource continues to convey its historical significance. | |
| **Impact CUL-2: Archaeological Resources and Human Remains.** Construction of Proposed Project infrastructure components could cause a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, and/or disturb human remains. | Potentially Significant | **MM CUL-2: Historic or Unique Archaeological Resources.** Unique Archaeological Resources, Historical Resources of Archaeological Nature, and Subsurface Tribal Cultural Resources. Potentially significant impacts to unique archaeological resources, historical resources of an archaeological nature, or subsurface tribal cultural resources on the infrastructure component sites shall be addressed through the following measures: | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | a. **Identify Potential Unique Archaeological Resources, Historical Resources of Archaeological Nature, and Subsurface Tribal Cultural Resources (Applies to New Aquifer Storage and Recovery [ASR] Facilities and Other Components where Five Years Have Elapsed).** When new ASR facilities sites are identified and those components are being pursued by the City of Santa Cruz (City), a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, shall conduct a California Historical Resources Information System (CHRIS) records search, a Native American Heritage Commission (NAHC) Sacred Lands File (SLF) search and perform an intensive surface reconnaissance within a specifically defined Area of Direct Impact (ADI). Based on the above, all archaeological sites within or near the component site or area of potential effect shall be identified. The sensitivity of the site for discovering unknown resources, shall also be identified. The qualified archaeologist will prepare a technical report with the results of the above. The qualified archaeologist shall attempt to ascertain whether the archaeological sites qualify as unique archaeological resources, historical resources of an archaeological nature, or subsurface tribal cultural resources. If known or identified resources of these kinds are present on the site, measure c shall be implemented.<br><br>This measure shall also be implemented for any other project or programmatic components that are implemented more than five years after the CHRIS records search and NAHC SLF search were conducted.<br><br>b. **Standard Sensitivity Training and Inadvertent Discovery Clauses (Applies to all Components).** The City or other lead agency shall include a standard clause in every construction contract for the Proposed Project, which requires cultural resource sensitivity training for workers prior to conducting earth disturbance in the | |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | vicinity of a documented cultural-resource-sensitive area, should one be identified in the future. Prior to site mobilization or construction activities on the project site, a qualified archaeologist with training and experience in California prehistory and historical period archaeology shall conduct the cultural resources awareness training for all project construction personnel. The training shall address the identification of buried cultural deposits, including Native American and historical period archaeological deposits and potential tribal cultural resources, and cover identification of typical prehistoric archaeological site components including midden soil, lithic debris, and dietary remains as well as typical historical period remains such as glass and ceramics. The training must also explain procedures for stopping work if suspected resources are encountered. Any personnel joining the work crew subsequent to the training shall also receive the same training before beginning work.<br><br>Consistent with Standard Construction Practice #24, standard inadvertent discovery clauses shall also be included in every construction contract for the Proposed Project by the City or other lead agency, which requires that in the event that an archaeological resource is discovered during construction (whether or not an archaeologist is present), all soil disturbing work within 100 feet of the find shall cease until a qualified archaeologist can evaluate the find and make a recommendation for how to proceed, as specified in measure c.<br><br>c. **Evaluate Potential Unique Archaeological Resources, Historical Resources of Archaeological Nature, and Subsurface Tribal Cultural Resources (Applies to all Components).** For an archaeological resource that is discovered during initial site review (measure a) or during construction (measure b), the City or other lead agency shall: | |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | • Retain a qualified archaeologist to determine whether the resource has potential to qualify as either a unique archaeological resource, a historical resource of an archaeological nature, or a subsurface tribal cultural resource under Public Resources Code section 21074, California Environmental Quality Act (CEQA) Guidelines Section 15064.5, or Section 106 of the National Historic Preservation Act.<br>• If the resource has potential to be a unique archaeological resource, a historical resource of an archaeological nature, or a subsurface tribal cultural resource, the qualified archaeologist, in consultation with the lead agency, shall prepare a research design and archaeological evaluation plan to assess whether the resource should be considered significant under CEQA criteria.<br>• If the resource is determined significant, the lead agency shall provide for preservation in place, if feasible. If preservation in place is not feasible, the qualified archaeologist, in consultation with the lead agency, will prepare a data recovery plan for retrieving data relevant to the site's significance. The data recovery plan shall be implemented prior to, or during site development (with a 100-foot buffer around the resource). The archaeologist shall also perform appropriate technical analyses, prepare a full written report and file it with the Northwest Information Center, and provide for the permanent curation of recovered materials. The written report will provide new recommendations, which could include, but would not be limited to, archaeological and Native American monitoring for the remaining duration of project construction. | |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| **Impact CUL-3: Tribal Cultural Resources.** Construction of Proposed Project infrastructure components could cause a substantial adverse change in the significance of a tribal cultural resource. | Potentially Significant | **MM CUL-2** described above for Impact CUL-2 | Less than Significant |
| **Impact CUL-4: Cumulative Cultural Resource and Tribal Cultural Resource Impacts.** Construction of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to cultural resources and tribal cultural resources, but the Proposed Project's contribution would not be cumulatively considerable. | Less than Significant | None | Less than Significant |
| *Geology and Soils* | | | |
| **Impact GEO-1: Seismic Hazards.** Construction and operation of the Proposed Project could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking, landslides, or seismic related ground failure, including liquefaction and associated lateral spreading. | Potentially Significant | **MM GEO-1: Operation of New Aquifer Storage and Recovery (ASR) Facilities in Liquefaction-Prone Areas (Applies to New ASR Facilities).** To avoid increasing the potential for liquefaction, ASR injections in new wells located in potential liquefaction zones, as depicted on Figure 4.5-3, shall be maintained and operated such that existing shallow groundwater (i.e., depth generally less than 100 feet) does not rise to within 40 feet of the ground surface. Similarly, ASR injections in potential liquefaction zones shall be maintained and operated such that existing groundwater within a depth of 40 feet or less does not rise closer to the ground surface. | Less than Significant |
| **Impact GEO-2: Unstable Geologic Unit or Soils.** Construction and operation of the Proposed Project would not cause adverse effects involving landslides or be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Proposed Project, and potentially result in on- or off-site landslide, slope failure/instability, subsidence, or collapse. | Less than Significant | None | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| **Impact GEO-3: Expansive Soil.** Construction of Proposed Project infrastructure components may be located on expansive soil, as defined by the 2019 California Building Code, but would not create substantial direct or indirect risks to life or property caused in whole or in part by the Proposed Project's exacerbation of the existing environmental conditions. | Less than Significant | None | Less than Significant |
| **Impact GEO-4: Paleontological Resources.** Construction of the Proposed Project could potentially directly or indirectly destroy a unique paleontological resource or site during construction. However, the Proposed Project would not directly or indirectly destroy a unique geological feature. | Potentially Significant | **MM GEO-2: Paleontological Resources Impact Mitigation Program and Paleontological Monitoring.** Potentially significant impacts to paleontological resources on the project and programmatic infrastructure component sites shall be addressed through the following measures:<br>a. **Identify Potential Paleontological Resources (Applies to New Aquifer Storage and Recovery [ASR] Facilities).** When new ASR facilities sites are identified and those components are being pursued by the City or other lead agency, a qualified a qualified paleontologist pursuant to the Society of Vertebrate Paleontology (SVP) 2010 guidelines, shall conduct a paleontological records search from the Natural History Museum of Los Angeles County (LACM) and conduct a desktop geological and paleontological research. Based on the above, all paleontological sites within or near the programmatic component site shall be identified. The sensitivity of the site for discovering unknown paleontological resources, shall also be identified. The qualified paleontologist will prepare a brief technical report with the results of the above. If known or identified resources are present on the site, or if the site has moderate to high sensitivity for paleontological resources, measures b and c shall be implemented.<br>b. **Develop Paleontological Resources Impact Mitigation Program (Applies to all Known Infrastructure Components and May Apply to New ASR Facilities).** Prior to commencement of any grading activity on infrastructure component sites with moderate to high | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | paleontological sensitivity or that may have such sensitivity at depth, the City or other lead agency shall retain a qualified paleontologist pursuant to the SVP (2010) guidelines. The paleontologist shall prepare a Paleontological Resources Impact Mitigation Program (PRIMP) for the Proposed Project. The PRIMP can be written to include all infrastructure components located in sites with moderate to high paleontological sensitivity. The PRIMP shall be consistent with the SVP (2010) guidelines and shall, at a minimum, contain the following elements:<br>• Introduction to the project, including project location, description of grading activities with the potential to impact paleontological resources, and underlying geologic units.<br>• Description of the relevant laws, ordinances, regulations, and standards pertinent to the project and potential paleontological resources.<br>• Requirements for preconstruction meeting attendance by the qualified paleontologist and/or their designee and worker environmental awareness training for grading contractors that outlines laws protecting paleontological resources and the types of resources that may be encountered on site.<br>• Identification of locations where full-time paleontological monitoring within geological units with high paleontological sensitivity is required within the project or programmatic sites based on construction plans and/or geotechnical reports. | |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | • Requirements and frequency of paleontological monitoring spot-checks below a depth of five feet below the ground surface in areas underlain by Holocene sedimentary deposits.<br>• The types of paleontological field equipment the paleontological monitor shall have on-hand during monitoring.<br>• Discoveries treatment protocols and paleontological methods (including sediment sampling for microinvertebrate and microvertebrate fossils).<br>• Requirements for adequate reporting and collections management, including daily logs, monthly reports, and a final paleontological monitoring report that details the monitoring program and includes analyses of recovered fossils and their significance and the stratigraphy exposed during construction.<br>• Requirements for collection and complete documentation of fossils identified within the project site prior to construction and during construction, including procedures for temporarily halting construction within a 50-foot radius of the find while documentation and salvage occurs and allowing construction to resume once collection and documentation of the find is completed. Prepared fossils along with copies of all pertinent field notes, photos, maps, and the final paleontological monitoring report shall be deposited in a scientific institution with paleontological collections. Any curation costs shall be paid for by the City. | |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | c. **Standard Paleontological Clauses in Construction Contracts (Applies to all Infrastructure Components).** The City or other lead agency shall include standard clauses in construction contracts for infrastructure components located in areas with moderate to high paleontological sensitivity. A standard clause shall be included that requires paleontological resource sensitivity training for workers prior to conducting earth disturbance activities. A standard inadvertent discovery clause shall also be included that indicates that in the event that paleontological resources (e.g., fossils) are unearthed during grading, the paleontological monitor will temporarily halt and/or divert grading activity to allow recovery of paleontological resources. The area of discovery will be roped off with a 50-foot-radius buffer. Once documentation and collection of the find is completed, the monitor will allow grading to recommence in the area of the find. | |
| **Impact GEO-5: Cumulative Geologic Hazards.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to geology and soils, but the Proposed Project's contribution to this impact would not be cumulatively considerable. | Less than Significant | None | Less than Significant |
| **Impact GEO-6: Cumulative Paleontological Resources Impacts.** Construction of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to paleontological resources, but the Proposed Project's contribution to this impact would not be cumulatively considerable. | Less than Significant | None | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| *Greenhouse Gas Emissions* | | | |
| **Impact GHG-1: Greenhouse Gas Emissions.** Construction and operation of the Proposed Project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. | Less than Significant | None | Less than Significant |
| **Impact GHG-2: Conflict with an Applicable Greenhouse Gas Reduction Plan.** Construction and operation of the Proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. | Less than Significant | None | Less than Significant |
| **Impact GHG-3: Cumulative Greenhouse Gas Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would result in a significant cumulative impact related to greenhouse gas emissions, but the Proposed Project's contribution to this impact would not be cumulatively considerable. | Less than Significant | None | Less than Significant |
| *Hazards, Hazardous Materials, and Wildfire* | | | |
| **Impact HAZ-1: Routine Transport, Use, Production, or Disposal of Hazardous Materials.** Construction and operation of the Proposed Project would require use and transportation of petroleum products and small quantities of hazardous materials but would not result in a significant hazard to the public or environment. | Less than Significant | None | Less than Significant |
| **Impact HAZ-2: Upset and Release of Hazardous Materials.** Construction of the Proposed Project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. | Potentially Significant | **MM HAZ-1: Review of Hazardous Materials Site Databases (Applies to New Aquifer Storage and Recovery Facilities).** Prior to construction where ground disturbance is required, a review of hazardous materials site databases will be conducted within 0.5 miles of the project site where the construction is proposed (project site). A search shall be conducted no | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | more than six months prior to construction. In addition to sites identified in this environmental impact report, each new site identified within 0.5 miles of the project site will be reviewed for environmental contamination that could impact the project site, including soil, soil vapor, and groundwater contamination. If soil, soil vapor, and/or groundwater contamination is identified in the review, MM HAZ-2 will be implemented.<br><br>**MM HAZ-2: Hazardous Materials Contingency Plan (Applies to New Aquifer Storage and Recovery Facilities and City of Santa Cruz/Soquel Creek Water District/Central Water District Intertie – Soquel Village Pipeline).** Prior to commencement of any construction activities, a Hazardous Materials Contingency Plan (HMCP) shall be developed that addresses known and suspected impacts in soil, soil vapor, and groundwater from releases on or near the project sites. The HMCP shall include training procedures for identification of contamination. The HMCP shall describe procedures for assessment, characterization, management, and disposal of hazardous constituents, materials, and wastes, in accordance with all applicable state and local regulations. Contaminated soils and/or groundwater shall be managed and disposed of in accordance with local and state regulations. These regulations, as further described in Section 4.7.2, Regulatory Framework (Section 4.7, Hazards, Hazardous Materials, and Wildfire), include hazardous material transportation (California Department of Transportation and Department of Toxic Substances Control [DTSC]), hazardous waste regulations (U.S. Environmental Protection Agency and DTSC), worker health and safety during excavation of contaminated materials (California Division of Occupational Safety and Health Administration), and local disposal requirements (DTSC and landfill-specific). The HMCP shall include health and safety measures, which may include but are not limited to periodic work breathing zone monitoring and monitoring for volatile organic compounds using a handheld organic vapor analyzer in the event impacted soils are encountered during excavation activities. | |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| **Impact HAZ-3: Hazardous Materials Near Schools.** Construction and operation of the Proposed Project could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. | Potentially Significant | **MM HAZ-1** and **MM HAZ-2** described above for Impact HAZ-2. | Less than Significant |
| **Impact HAZ-4: Impair Emergency Response.** Construction of the Proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. | Less than Significant | None | Less than Significant |
| **Impact HAZ-5: Wildfire Hazards.** Construction and operation of the Proposed Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires; however, some programmatic components may be located in or near state responsibility areas. | Less than Significant | None | Less than Significant |
| **Impact HAZ-6: Cumulative Hazardous Materials and Emergency Response Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to routine transport, use, disposal, or accidental release of hazardous materials, or related to interference with an adopted emergency response plan or emergency evacuation plan. | Less than Significant | None | Less than Significant |
| **Impact HAZ-7: Cumulative Wildfire Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to exposing people or structures to a significant risk of loss, injury, or death involving wildland fires, but the Proposed Project's contribution would be less than cumulatively considerable. | Less than Significant | None | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| *Hydrology and Water Quality* | | | |
| **Impact HYD-1: Surface Water Quality Standards and Waste Discharge Requirements.** Construction and operation of the Proposed Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality. In addition, the Proposed Project would not conflict with or obstruct implementation of a water quality control plan related to surface water. | Less than Significant | None | Less than Significant |
| **Impact HYD-2: Decrease Groundwater Supplies, Interfere with Groundwater Recharge, or Conflict with Groundwater Plan.** Construction and operation of the Proposed Project would not decrease groundwater supplies or interfere substantially with groundwater recharge such that sustainable groundwater management of the basin would be impeded. However, the Proposed Project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan by potentially affecting local groundwater quality or causing restrictive effects in nearby wells. | Potentially Significant | **MM HYD-1: Ammonia Monitoring (Applies to Beltz 12 Aquifer Storage and Recovery [ASR] Facility).** Consistent with groundwater monitoring completed for the Beltz 12 ASR Pilot Test Project (Pueblo Water Resources 2020), monitoring for ammonia shall be completed in the Beltz 12 well and the Soquel Creek Water District (SqCWD) O'Neill Ranch well during future Beltz 12 ASR pilot tests and ASR operations. The City shall establish ammonia concentrations beginning at least 12 months prior to commencement of Beltz 12 ASR operations, by conducting quarterly sampling, and obtaining similar sampling data for the SqCWD's O'Neill Ranch well, as provided by SqCWD. During the first year of Beltz 12 ASR injection and extraction operations, the City shall conduct monthly monitoring of ammonia concentrations in groundwater. Following the first year of operations, monitoring of ammonia shall be quarterly. In the event that over a two-year sampling period after initiation of Beltz 12 ASR operations, City ammonia monitoring data, in combination with ammonia monitoring data from the SqCWD O'Neill Ranch well, indicates Beltz 12 ASR operations are not resulting in changes to ammonia concentrations that could adversely affect operations at the SqCWD's O'Neill Ranch well, ammonia sampling shall be discontinued in the Beltz 12 ASR well.<br><br>The City ammonia monitoring data, in combination with ammonia monitoring data from the SqCWD O'Neill Ranch well, shall be evaluated to determine if Beltz 12 ASR operations are resulting in changes to ammonia | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | concentrations that could adversely affect operations at the SqCWD's O'Neill Ranch well. If ammonia levels increase above baseline, the City and SqCWD shall cooperatively develop, fund, and implement a hydrogeologic investigation to evaluate the source(s) and distribution of ammonia in the aquifer system and potential causes of the observed ammonia increases. The investigation shall include, if applicable, installation of a monitoring well cluster between the Beltz 12 ASR well and the O'Neill Ranch well to evaluate the gap in data between these two wells.<br><br>To the extent that the results of the hydrogeologic investigation indicate that Beltz 12 ASR operations are resulting in ammonia concentrations above baseline concentrations, ASR injection and/or extraction operations shall be modified until ammonia concentrations decrease to baseline (or lower) levels, as demonstrated with monthly (during the first year of operations) or quarterly monitoring data from the Beltz 12 ASR well, and the SqCWD's O'Neill Ranch well, as provided by SqCWD. The Beltz 12 ASR modifications shall be proportional to the degree of impact being caused by Beltz 12 ASR operations (versus O'Neill Ranch well operations). Quarterly monitoring reports shall be prepared to document monitoring results.<br><br>Additionally, during the next Mid-County Groundwater Sustainability Plan update process, the City shall work with other member agencies of the Mid-County Groundwater Sustainability Agency to address ammonia as a groundwater quality issue in the basin if warranted based on the outcome of monitoring and any hydrogeologic investigation performed, and incorporate the City's Beltz 12 ASR well and the SqCWD's O'Neill Ranch well into the plan update to allow for the ongoing assessment and monitoring of ammonia concentrations. | |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | **MM HYD-2: Groundwater Level Monitoring (Applies to Beltz 12 Aquifer Storage and Recovery [ASR] Facility).** Consistent with restrictive effects criteria established in private well baseline assessment reports (Hydro Metrics 2015a, 2015b, 2015c, 2015d, 2015e), the private well monitoring program currently in place under the April 2015 cooperative monitoring/adaptive groundwater management agreement (cooperative groundwater management agreement) and the April 2015 stream flow and well monitoring agreement, between the City of Santa Cruz (City) and Soquel Creek Water District (SqCWD), shall be continued with respect to groundwater levels, and the City will contact and enroll any additional residents with private domestic wells within a 3,300-foot radius of the City's Beltz 12 ASR facility who want to join the program. Consistent with the existing cooperative groundwater management agreement, the City and SqCWD shall share monitoring and mitigating for impacts to third parties, such as private wells found in the area of overlap of 3,300-foot radius around SqCWD's O'Neill Ranch Well and 3,300-foot radius around the City's Beltz 12 well. Monitoring expenses shall be shared equally while mitigation expenses shall be shared proportionately. If private well monitoring reveals impacts to private wells due to the presence of restrictive effects, pump tests shall be conducted to determine proportionality. Monitoring and mitigation of impacts to private wells within a 3,300-foot radius of either the O'Neill Ranch well or Beltz 12 well, but not located in the overlap area, shall be the sole responsibility of the agency whose 3,300-foot radius encompasses the private well.<br><br>If demonstrated restrictive effects to nearby private domestic wells occur during ASR pilot testing or operations, the City and SqCWD shall cooperatively develop, fund, and implement a hydrogeologic investigation to evaluate the potential causes of the observed restricted effects in private wells. To the extent that the results of the hydrogeologic investigation indicates that Beltz 12 ASR operations are resulting in restrictive effects, ASR injection and/or extraction operations shall be modified until the corresponding undesirable effects are eliminated, as | |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | demonstrated with quarterly monitoring data from the private wells. The Beltz 12 ASR modifications shall be proportional to the degree of impact being caused by Beltz 12 ASR operations (versus O'Neill Ranch well operations). Annual monitoring reports shall be prepared to document monitoring results. In the event that restrictive effects to nearby private domestic wells does not occur during ASR pilot testing or operations, for a period of five years after initiation of Beltz 12 ASR operations, the City's participation in the private well monitoring program will be discontinued.<br><br>Additionally, during the next Mid-County Groundwater Sustainability Plan (GSP) update process, the City shall work with other member agencies of the Mid-County Groundwater Sustainability Agency to update information in the GSP related to private wells and the ongoing assessment and monitoring of groundwater levels at these wells, if warranted based on the outcome of monitoring and any hydrogeologic investigation performed. | |
| **Impact HYD-3: Alteration to the Existing Drainage Pattern of the Site Area.** Construction and operation of the Proposed Project could not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (a) result in substantial erosion or siltation on or off site; (b) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; (c) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (d) impede or redirect flood flows. | Potentially Significant | **MM HYD-3: Drainage Improvements (Applies to City of Santa Cruz/Scotts Valley Water District Intertie Pump Station and City of Santa Cruz/Soquel Creek Water District/Center Water District New Intertie Pump Stations).** Final pump station designs shall include Low Impact Development features, which would: (1) reduce post-construction stormwater runoff rates to be less than or equal to existing conditions, for a 24-hour, 25-year storm event; and (2) minimize off-site runoff of stormwater pollutants through filtration features, such oil-water separators, vegetated swales, and bioretention basins. These features shall be inspected monthly to ensure functionality. | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| **Impact HYD-4: Flood, Tsunamis, and Seiche Zones.** Construction and operation of the Proposed Project in flood hazard, tsunami, or seiche zones would not risk release of pollutants due to project inundation. | Less than Significant | None | Less than Significant |
| **Impact HYD-5: Cumulative Hydrology and Water Quality Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to hydrology and water quality. | Less than Significant | None | Less than Significant |
| *Land Use, Agriculture and Forestry, and Mineral Resources* | | | |
| **Impact LU-1: Conflicts with Land Use Plans, Policies, or Regulations.** Construction and operation of the Proposed Project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. | Less than Significant | None | Less than Significant |
| **Impact LU-2: Conversion or Loss of Farmland or Forest Land and Conflicts with Zoning for Agricultural Land, Forest Land, or Timberland.** Construction of the Proposed Project could convert prime, unique, or important agricultural land to non-agricultural use, convert forest land to non-forest land, conflict with existing zoning for agricultural or timber production uses or conflict with a Williamson Act contract. | Potentially Significant | **MM LU-1: Avoidance of Agricultural and Forest Lands (Applies to New Aquifer Storage and Recovery [ASR] Facilities).** The following measures shall be implemented to avoid conversion of Farmland or forest/timberland, and/or conflicts with agricultural zoning in the coastal zone:<br>• Locate new ASR facilities on sites that do not contain Farmland (i.e., prime, unique, or important farmland under the State Farmland Mapping and Monitoring Program) unless site-specific application of the Land Evaluation and Site Assessment model determines that the site would not result in a significant impact to agricultural lands.<br>• Locate new ASR facilities on sites that do not contain forest/timber land.<br>• Locate new ASR facilities on sites that are not zoned for agricultural uses in the coastal zone. | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| **Impact LU-3: Loss of Mineral Resources.** Construction of the Proposed Project could potentially result in the location of infrastructure components on lands containing mineral resources in existing quarries; however, the Proposed Project would not result in the loss of availability of a mineral resource. | Less than Significant | None | Less than Significant |
| **Impact LU-4: Cumulative Land Use Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to conflicts with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. | Less than Significant | None | Less than Significant |
| **Impact LU-5: Cumulative Agriculture and Forestry Impacts.** Construction of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would result in a significant cumulative impact related to loss of Farmland and forest land, but the Proposed Project's contribution would not be cumulatively considerable. | Less than Significant | None | Less than Significant |
| **Impact LU-6: Cumulative Mineral Resource Impacts.** Construction of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to loss of availability of mineral resources. | Less than Significant | None | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| *Noise* | | | |
| **Impact NOI-1: Substantial Permanent Increase in Ambient Noise Levels.** Operation of the Proposed Project would result in generation of a substantial permanent increase in ambient noise levels during long-term operation in the vicinity of one of the programmatic infrastructure components. | Potentially Significant | **MM NOI-1: Operational Noise Levels (Applies to Coast Pump Station Improvements).** The Proposed Project shall implement the following measures to reduce the potential for exposure of nearby noise-sensitive receptors to excessive noise levels:<br>• Where feasible, a primary element for the selection of proposed noise-generating equipment (e.g., pumps, motors, transformers, etc.) shall be equipment that inherently does not generate an increase of +3 dB in the ambient noise levels where the existing ambient is below 60 dBA $L_{dn}$, or a +5 dB increase in the ambient noise levels where the existing ambient is above 65 dBA $L_{dn}$, as measured at the nearest sensitive receptor.<br>• Where this is not feasible, noise-generating equipment shall be located within a full or partial noise reduction enclosure. The effectiveness of the equipment enclosure to reduce noise level exposure to within the applicable noise level threshold shall be demonstrated through submittal of a focused acoustical assessment. | Less than Significant |
| **Impact NOI-2: Substantial Increase in Ambient Noise Levels in Excess of Standards.** Construction of the Proposed Project would result in generation of a substantial temporary increase in ambient noise levels in the vicinity of some project and programmatic infrastructure components in excess of applicable standards established in local general plans or noise ordinances. | Significant | **MM NOI-2: Construction Noise (Applies to all Infrastructure Components).** The Proposed Project shall implement the following measures related to construction noise:<br>• Restrict construction activities and use of equipment that have the potential to generate significant noise levels (e.g., use of concrete saw, mounted impact hammer, jackhammer, rock drill, etc.) to between the hours of 8:00 a.m. and 5:00 p.m., unless specifically identified work outside these hours is authorized by the City's Water Director as necessary to allow for safe access to a construction site, safe construction operations, efficient | Significant and Unavoidable |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| | | construction progress, and/or to account for prior construction delays outside of a contractor's control (e.g., weather delays).<br>• Construction activities requiring operations continuing outside of the standard work hours of 8:00 a.m. and 5:00 p.m. (e.g., borehole drilling operations) shall locate noise generating equipment as far as possible from noise-sensitive receptors, and/or within an acoustically rated enclosure (meeting or exceeding Sound Transmission Class [STC] 27), shroud or temporary barrier as needed to prevent the propagation of sound into the surrounding areas in excess of the 60 dBA nighttime (10:00 p.m. to 8:00 a.m.) and 75 dBA daytime (8:00 a.m. to 10:00 p.m.) criteria at the nearest sensitive receptor. Noisy construction equipment, such as temporary pumps that are not submerged, aboveground conveyor systems, and impact tools will likely require location within such an acoustically rated enclosure, shroud or barrier to meet these above criteria. Impact tools, in particular, shall have the working area/impact area shrouded or shielded whenever possible, with intake and exhaust ports on power equipment muffled or suppressed. Impact tools may necessitate the use of temporary or portable, application-specific noise shields or barriers to achieve compliance.<br>• Portable and stationary site support equipment (e.g., generators, compressors, and cement mixers) shall be located as far as possible from nearby noise-sensitive receptors.<br>• Construction equipment and vehicles shall be fitted with efficient, well-maintained mufflers that reduce equipment noise emission levels at the project site. Internal-combustion-powered equipment shall be equipped with properly operating noise suppression devices (e.g., mufflers, silencers, wraps) that meet or exceed the | |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| Operation of the Proposed Project would result in generation of a substantial permanent increase in ambient noise levels in the vicinity of one of the programmatic infrastructure components in excess of applicable standards. | Potentially Significant | manufacturer's specifications. Mufflers and noise suppressors shall be properly maintained and tuned to ensure proper fit, function, and minimization of noise.<br>• Construction equipment shall not be idled for extended periods of time (i.e., 5 minutes or longer) in the immediate vicinity of noise-sensitive receptors.<br>**MM NOI-1** described above | Less than Significant |
| **Impact NOI-3: Groundborne Vibration.** Construction of the Proposed Project would result in the potential generation of excessive groundborne vibration or groundborne noise levels. | Potentially Significant | **MM NOI-3: Construction Vibration (Applies to New Aquifer Storage and Recovery Facilities and all Intertie Improvements).** The Proposed Project shall implement the following measures to reduce the potential for structural damage from groundborne noise and vibration:<br>• Vibratory rollers or compactors shall not be used within 15 feet of sensitive receptors.<br>• Heavy equipment required to operate within 9 feet of sensitive receptors shall be limited to rubber-tired equipment. | Less than Significant |
| **Impact NOI-4: Cumulative Noise Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to noise and vibration. | Less than Significant | None | Less than Significant |
| *Recreation* | | | |
| **Impact REC-1: Conflicts with Existing Recreational Uses.** Operation of the Proposed Project would not change or conflict with existing recreational uses. | Beneficial | None | Beneficial |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| **Impact REC-2: Increased Use of Existing Parks or Recreational Facilities.** Operation of the Proposed Project would not increase the use of parks or recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. | Less than Significant | None | Less than Significant |
| **Impact REC-3: Cumulative Recreation Impacts.** Operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not change or conflict with existing recreational uses, but could increase the use of parks or recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. However, the Proposed Project's contribution would not be cumulative considerable. | Less than Significant | None | Less than Significant |
| *Transportation* | | | |
| **Impact TRA-1: Conflict with Program, Plan, Ordinance, or Policy Addressing the Circulation System.** Construction and operation of the Proposed Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. | Less than Significant | None | Less than Significant |
| **Impact TRA-2: Vehicle Miles Traveled.** Construction and operation of the Proposed Project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b) or cause an increase in VMT which is greater than 15% below the regional average VMT. | Less than Significant | None | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| **Impact TRA-3: Geometric Design Hazards.** Construction and operation of the Proposed Project would not substantially increase hazards due to a geometric design feature or incompatible use. | Less than Significant | None | Less than Significant |
| **Impact TRA-4: Emergency Access.** Construction of the Proposed Project would not result in inadequate emergency access. | Less than Significant | None | Less than Significant |
| **Impact TRA-5: Cumulative Transportation Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to transportation. | Less than Significant | None | Less than Significant |
| *Utilities and Energy* | | | |
| **Impact UTL-1: New or Expanded Facilities.** Construction and operation of the Proposed Project would result in new or expanded water facilities that would result in significant impacts, but would not require or result in new or expanded wastewater treatment, storm drainage, electric power, natural gas, or telecommunications facilities or a new sewer trunk line. | Significant | All mitigation measures described above | Significant and Unavoidable |
| **Impact UTL-2: Water Supplies.** Operation of the Proposed Project would provide sufficient water supplies to serve the Proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years. | Beneficial | None | Beneficial |
| **Impact UTL-3: Wastewater Treatment Capacity.** Operation of the Proposed Project would have adequate wastewater treatment capacity to serve project demand. | Less than Significant | None | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| **Impact UTL-4: Solid Waste Generation.** Construction and operation of the Proposed Project would not generate solid waste in excess or state or local standards, or of the capacity of local infrastructure, or impair attainment of solid waste reduction goals. | Less than Significant | None | Less than Significant |
| **Impact UTL-5: Compliance with Solid Waste Regulation.** Construction and operation of the Proposed Project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste. | Less than Significant | None | Less than Significant |
| **Impact UTL-6: Result in Wasteful, Inefficient or Unnecessary Consumption of Energy Resources.** Construction and operation of the Proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. | Less than Significant | None | Less than Significant |
| **Impact UTL-7: Conflict with an Applicable Renewable Energy or Energy Efficiency Plan.** Construction and operation of the Proposed Project would not result in conflicts with or otherwise obstruct a state or local plan for renewable energy or energy efficiency. | Less than Significant | None | Less than Significant |
| **Impact UTL-8: Cumulative Water and Wastewater Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to water and wastewater. | Less than Significant | None | Less than Significant |

Table 1-3. Summary of Project Impacts (continued)

| Impact | Level of Significance Prior to Mitigation | Mitigation Measures | Level of Significance After Mitigation |
|---|---|---|---|
| **Impact UTL-9: Cumulative Landfill Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to landfill capacity. | Less than Significant | None | Less than Significant |
| **Impact UTL-10: Cumulative Energy Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to energy. | Less than Significant | None | Less than Significant |

# 2 Introduction

## 2.1 Purpose of the EIR

This environmental impact report (EIR) has been prepared by the City of Santa Cruz (City), which is the lead agency for the Santa Cruz Water Rights Project (Proposed Project). This EIR has been prepared in accordance with the California Environmental Quality Act (CEQA), which is found in the California Public Resources Code, Division 13, and with the CEQA Guidelines, which are found in Title 14 of the California Code of Regulations, commencing with Section 15000. Under CEQA, the lead agency for a project is the public agency with primary responsibility for carrying out or approving the project, and for implementing the requirements of CEQA.

As stated in CEQA Guidelines Section 15002, the basic purposes of CEQA are to:

- Inform governmental decision makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- Disclose to the public the reasons a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

Pursuant to CEQA Guidelines Section 15121, an EIR is an informational document that is required to (1) identify the potentially significant environmental effects of a project on the environment, (2) indicate the manner in which those significant effects can be avoided or significantly lessened via the implementation of potentially feasible mitigation measures, (3) identify a reasonable range of potentially feasible alternatives to a project that would eliminate or substantially lessen any significant environmental effects, and (4) identify any significant and unavoidable adverse impacts that cannot be mitigated or otherwise reduced. When considering whether to approve a proposed project, the lead agency's decision-making body (e.g., the Santa Cruz City Council) must consider the information in the EIR along with other information which may be presented to that body. While the information in the EIR does not control the ultimate decision about a project, the decision-making body must consider the information in the EIR and respond to each significant effect identified in the EIR by making findings pursuant to Public Resources Code Section 21081.

Pursuant to Public Resources Code Section 21002, public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures which would substantially lessen the significant environmental effects of such projects. Furthermore, pursuant to CEQA Guidelines Section 15021, CEQA establishes a duty for public agencies to avoid or minimize environmental damage where feasible. In deciding whether changes in a project, such as mitigation measures or alternatives, are feasible, an agency may consider specific economic, environmental, legal, social, and technological factors. As defined in Section 15364 of the CEQA Guidelines, "feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. Under CEQA case law, "'"feasibility" … encompasses "desirability" to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors.'" (*California Native Plant Society v. City of Santa Cruz* [2009] 177 Cal.App.4th 957, 1001, quoting *City of Del Mar v. City of San Diego* [1982] 133 Cal.App.3d 410, 417.) In addition, in determining whether mitigation measures or alternatives are feasible, agencies may account for the extent to which

they meet project objectives. (*Sierra Club v. County of Napa* [2004] 121 Cal.App.4th 1490, 1506-1509; *Citizens for Open Government v. City of Lodi* [2012] 205 Cal.App.4th 296, 314-315; and *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* [2008] 43 Cal.4th 1143, 1165, 1166.)

CEQA Guidelines Section 15093 provides that, if an agency decides to approve a project that will cause one or more significant effects on the environment, the agency must prepare a "statement of overriding considerations" to reflect the ultimate balancing of competing public objectives. The environmental review process is further explained below in Section 2.5, Environmental Review and Approval Process.

## 2.2 Project Overview

The Proposed Project includes components that are considered in the EIR at a "project" level (project components) and components that are considered at a "programmatic" level (programmatic components), and therefore this EIR is both a project EIR and a program EIR. (See Section 2.3, Type of EIR, for information about the distinction between a project and program EIR.) The programmatic components of the Proposed Project would include potential future activities that may occur after the City water rights are modified. Because most of these activities are considered to be reasonably foreseeable as a logical part in a chain of contemplated actions, but the full physical extent and timing of these improvements are not known at this time, most of these activities are addressed in the EIR at a programmatic level. Some of these actions would be undertaken in conjunction with surrounding water districts and some would be undertaken solely by the City. If warranted, additional environmental analysis will be undertaken at the time these foreseeable future activities or actions are under active consideration. (See Section 2.3 below for a description of the process for determining the extent of any additional analysis.)

This EIR addresses the potential environmental effects of the Proposed Project, which consists of the following primary components:

- Water rights modifications, which are evaluated at a project level in this EIR, including modifications related to place of use, method of diversion, points of diversion and rediversion, underground storage and purpose of use, extension of time and stream bypass requirements for fish habitat (referred to in this EIR as Agreed Flows).
- Water supply augmentation components, which are evaluated at a project or programmatic level in this EIR, including:
    - Aquifer storage and recovery (ASR), which is evaluated at a programmatic level, unless otherwise specified:
        - New ASR facilities at unidentified locations (referred to as "new ASR facilities" in this EIR).
        - Beltz ASR facilities at the existing Beltz well facilities (referred to as "Beltz ASR facilities" in this EIR), which are evaluated at a project level.
    - Water transfers and exchanges and associated intertie improvements, which are evaluated at a programmatic level in this EIR.
- Surface water diversion improvements, which are evaluated at a programmatic level in this EIR, including the Felton Diversion fish passage improvements and the Tait Diversion and Coast Pump Station improvements.

A full description of the Proposed Project, including project and programmatic components, is provided in Chapter 3, Project Description.

# 2.3 Type of EIR

As indicated in Section 2.2, Project Overview, the Proposed Project includes components that will be considered in this EIR at a "project" level (per CEQA Guidelines Section 15161) and components that will be considered in the EIR at a "programmatic" level (per CEQA Guidelines 15168). Therefore, this EIR is both a project and program EIR. The distinctions between a "project" and "program" EIR and associated analyses are provided below:

- Project EIR: Under the CEQA Guidelines, this EIR is being prepared, in part, as a "project" EIR. A project EIR examines the environmental impacts of a specific project. This portion of the EIR will focus primarily on the changes in the environment that would result from each of the project components identified in Section 2.2. The EIR will examine these components at a site-specific level, including planning, construction, if any, and operation (CEQA Guidelines Section 15161).
- Program EIR: Under the CEQA Guidelines, this EIR is being prepared, in part, as a "program" EIR. A program EIR may be prepared for activities considered to be a logical part in a chain of contemplated actions (CEQA Guidelines Section 15168(a)(2)). The programmatic components identified in Section 2.2 are being evaluated at a programmatic level as the full physical extent and timing of these improvements is not yet known. Individual projects pursued in the future will be examined in light of the program analysis contained in this EIR to determine whether an additional environmental document must be prepared.
    - If it is determined, through a written checklist or similar device, that an individual project is within the scope of the program EIR, no new environmental document would be required (CEQA Guidelines Section 15168[c][2] and [c][4]).
    - If an individual project would have effects that were not examined in the program analysis of this EIR, a new initial study would need to be prepared leading to either an EIR or negative declaration, which may be tiered from the programmatic analysis in this EIR (CEQA Guidelines Section 15168[c][1]). "Tiering" refers to using the analysis of general matters contained in a broader EIR (such as one prepared for a general plan or policy statement) with later EIRs and negative declarations on narrower projects; incorporating by reference the general discussions from the broader EIR; and concentrating the later EIR or negative declaration solely on the issues specific to the later project (CEQA Guidelines Section 15152). An EIR, rather than a negative declaration, will be required when the individual project may cause significant effects on the environment that were not adequately addressed in the programmatic analysis of this EIR. Significant environmental effects will be considered to have been "adequately addressed" if (i) they have been mitigated or avoided as a result of mitigation measures or requirements that are set forth in the programmatic analysis of this EIR and are adopted by the City or a responsible agency or (ii) the effects have been examined at a sufficient level of detail in the programmatic analysis of this EIR to enable them to be mitigated or avoided by site specific revisions, the imposition of conditions, or by other means in connection with the approval of the individual project (CEQA Guidelines Section 15152[f]).

# 2.4 Scope of the EIR

A Notice of Preparation (NOP) and Initial Study (IS) was published for the Proposed Project to determine the scope and extent of environmental issues to be addressed in this EIR. The NOP/IS is included in Appendix A. Pursuant to CEQA Guidelines Section 15063(c), an IS was prepared to provide the basis for focusing the EIR on the potentially significant effects of the Proposed Project. Pursuant to CEQA Guidelines Section 15128, Section 4.1, Impacts Not Found to be

Significant, of this EIR provides additional information and further documents the reasons that various possible significant effects of a project were determined not to be significant and therefore were not discussed in detail in the EIR. Based on review of the Project Description (see Chapter 3) and public comments received in response to the NOP (see Section 2.4.1), the City has determined that certain environmental resource topics merit a detailed analysis while others were determined not to be significant and will not be discussed in detail in the EIR. The EIR also evaluates topics required by CEQA and the CEQA Guidelines, including growth inducement, alternatives, and cumulative impacts.

Section 4.1, Impacts Not Found to be Significant, includes analyses of the following resource topics: aesthetics, population and housing, and public services.

In the other sections of Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, the EIR provides a detailed evaluation of the following environmental resource topics:

- Air Quality
- Biological Resources
- Cultural Resources and Tribal Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards, Hazardous Materials, and Wildfire
- Hydrology and Water Quality
- Land Use, Agriculture and Forestry, and Mineral Resources
- Noise and Vibration
- Transportation
- Utilities and Energy

As indicated above, the environmental review focuses on the potentially significant environmental effects of the Proposed Project. As defined in CEQA Guidelines Section 15382, a "significant effect on the environment" is "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether a physical change is significant."

In evaluating the significance of the environmental effect of a project, the CEQA Guidelines require the lead agency to consider direct physical changes in the environment and reasonably foreseeable indirect physical changes in the environment which may be caused by the project (CEQA Guidelines Section 15064[d]). A direct physical change in the environment is a physical change in the environment which is caused by and immediately related to the project. An indirect physical change in the environment is a physical change in the environment, which is not immediately related to the project, but which is caused indirectly by the project. An indirect physical change is to be considered only if that change is a reasonably foreseeable impact which may be caused by the project.

CEQA Guidelines Section 15064(e) further indicates that economic and social changes resulting from a project shall not be treated as significant effects on the environment, although they may be used to determine that a physical change shall be regarded as a significant effect on the environment. In addition, where a reasonably foreseeable physical change is caused by economic or social effects of a project, the physical change may be regarded as a significant effect in the same manner as any other physical change resulting from the project.

# 2.5 Environmental Review and Approval Process

## 2.5.1 Scoping

CEQA Guidelines Section 15083 authorizes and encourages an early consultation or scoping process to help identify the range of actions, alternatives, mitigation measures, and significant effects to be analyzed and considered in an EIR, and to help resolve the concerns of affected regulatory agencies, organizations, and the public. Scoping is designed to explore issues for environmental evaluation, ensuring that important considerations are not overlooked and uncovering concerns that might otherwise go unrecognized.

The NOP for this EIR was circulated for a 30-day comment period from October 15, 2018 to November 14, 2018. The NOP was circulated to the State Clearinghouse and to local, regional, and federal agencies in accordance with the CEQA Guidelines. Two public scoping meetings regarding the scope of the analysis for the EIR were held on November 7, 2018 in the City of Santa Cruz, and on November 8, 2018 in the community of Ben Lomond.

Written comments were received from thirteen public agencies, organizations and individuals. These comments are included, along with the NOP/IS, in Appendix A. Table 2-1 at the end of this chapter provides a summary of these comments and indicates where they are addressed in the EIR or if they are beyond the scope of the EIR.

## 2.5.2 Public Review of Draft EIR

This Draft EIR has been published and circulated for review and comment by the public and other interested parties, agencies, and organizations for a 45-day public review period from June 10, 2021 through July 26, 2021. The Draft EIR will be available for public review during the comment period at the following locations:

- City of Santa Cruz Water Department Engineering Counter, located at 212 Locust Street, Suite C in Santa Cruz, by appointment only.[1]
- Online at http://www.cityofsantacruz.com/waterenvdocs.
- Online at the Santa Cruz Public Library at https://catalog.santacruzpl.org/polaris/.
- A hard copy of the Draft EIR is also available at the libraries below; check with https://www.santacruzpl.org/ or call 831.427.7713 for library hours and document access information:
    - Downtown, located at 224 Church Street, in Santa Cruz
    - Boulder Creek, located at 13390 W. Park Avenue, in Boulder Creek
    - Scotts Valley, located at 251 Kings Village Road, in Scotts Valley
    - Felton, located at 6121 Gushee Street, in Felton
    - Live Oak, located at 2380 Portola Drive, in Santa Cruz
    - Capitola, located at 2005 Wharf Road, in Capitola
    - Aptos, located at 7696 Soquel Drive, in Aptos
    - La Selva Beach, located at 316 Estrella Avenue, in La Selva Beach

[1] Due to the novel coronavirus disease (COVID-19) pandemic, in-person review of hard copies requires advance appointments, which can be made Monday through Thursday, 8:00 a.m. to 12:00 p.m. and 1:00 p.m. to 4:00 p.m. Please email waterengineering@cityofsantacruz.com or call (831) 420-5210 to schedule an appointment.

Written comments on this Draft EIR may be submitted to the City of Santa Cruz at the address below or by email to Sarah Easley Perez at seasleyperez@cityofsantacruz.com.

Sarah Easley Perez, Principal Planner
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060

The City encourages public agencies, organizations, community groups, and all other interested persons to provide written comments on the Draft EIR prior to the end of the 45-day public review period.

CEQA Guidelines Section 15204(a) provides guidance on the focus of review of EIRs, indicating that in reviewing draft EIRs, persons and public agencies "should focus on the sufficiency of the document in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the project might be avoided or mitigated," and that comments are most helpful when they suggest additional specific alternatives or mitigation measures that would provide better ways to avoid or mitigate the significant environmental effects. This section further states that "reviewers should be aware that the adequacy of an EIR is determined in terms of what is reasonably feasible, in light of factors such as the magnitude of the project at issue, the severity of its likely environmental impacts, and the geographic scope of the project. CEQA does not require a lead agency to conduct every test or perform all research, study, and experimentation recommended or demanded by commenters. When responding to comments, lead agencies need only respond to significant environmental issues and do not need to provide all information requested by reviewers, as long as a good faith effort at full disclosure is made in the EIR."

### 2.5.3 Final EIR/Project Approval

Following the close of the public comment period on this Draft EIR, responses will be prepared for all timely comments received that raise significant environmental issues regarding the Proposed Project. The Final EIR will include written responses to such comments in accordance with CEQA Guidelines Section 15088 and will also include any text changes to Draft EIR that become necessary after consideration of public comments.

The Final EIR will be presented to the Santa Cruz City Council for a final decision on the Proposed Project. Prior to making a decision to approve a project, the City Council must certify that it has reviewed and considered the information in the EIR, that the EIR has been completed in conformity with the requirements of CEQA, and that the document reflects the City's independent judgment.

Pursuant to Sections 21002, 21002.1, and 21081 of CEQA and Sections 15091 and 15093 of the CEQA Guidelines, no public agency shall approve or carry out a project for which an EIR has been certified which identifies one or more significant effects unless both of the following occur:

(a) The public agency makes one or more of the following findings with respect to each significant effect:

  (1) Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effects on the environment.

  (2) Those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by such other agency.

(3) Specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or alternative identified in the environmental impact report.

(b) With respect to significant effects which were subject to a finding under paragraph (3) of subdivision (a), the public agency finds that specific overriding economic, legal, social, technological, or other benefits of the project outweigh the significant effects on the environment.

Although the Draft EIR must provide information regarding the significant effects of the proposed project, must identify the potentially feasible mitigation measures, and must provide alternatives for consideration by the decision-making body as described in Section 2.1, Purpose of the EIR, above, the decision to approve a project must take into account the findings described above, especially regarding feasibility, based on the entirety of the agency's administrative record as it exists after completion of a Final EIR.

### 2.5.4 Adoption of Mitigation Monitoring and Reporting Program

CEQA requires that a program to monitor and report on mitigation measures be adopted by a lead agency as part of the project approval process. CEQA requires that such a program be adopted at the time the agency approves a project or determines to carry out a project for which an EIR has been prepared to ensure that mitigation measures identified in the EIR are implemented. The Mitigation Monitoring and Reporting Program will be included in the Final EIR.

## 2.6 Project Approvals and Use of EIR

This EIR is an informational document for agency decision-makers. The EIR includes "project" level and "programmatic" level analyses, meaning that no additional CEQA review should be required for the project components, whereas additional environmental review may be required for the programmatic components. (See Section 2.3, Type of EIR, above.)

The City of Santa Cruz is the lead agency and responsible for approving and implementing the Proposed Project. CEQA requires that decision makers review and consider the EIR in their consideration of this Proposed Project. All potential public agency approvals for the Proposed Project include the following:

**Project Components**

- State Water Resources Control Board (SWRCB): Approval of water rights modifications for post-1914 water rights.
- California Central Coast Regional Water Quality Control Board (RWQCB): Review of Notice of Intent (NOI) and Stormwater Pollution Prevention Plan (SWPPP) filed by the City for Beltz Aquifer Storage and Recovery (ASR) component.
- California Central Coast RWQCB: Review of NOI to inject and store treated drinking water in groundwater aquifers through ASR operations under SWRCB WQ Order 2012-0010 (General Waste Discharge Requirements For Aquifer Storage And Recovery Projects That Inject Drinking Water Into Groundwater).
- City of Santa Cruz: Approval of water rights modifications for pre-1914 water rights and approval of Beltz ASR facilities.
- County of Santa Cruz: Approval of a coastal development permit or permit amendment for Beltz ASR facilities located in the coastal zone (i.e., Beltz 8, 9, and 10 ASR facilities) and approval of encroachment permits for work in public roadways.

### Programmatic Components

- U.S. Army Corps of Engineers: Approval of Clean Water Act Section 404 Nationwide or Individual Permits for the Felton Diversion improvements and the Tait Diversion improvements, which involves related federal consultations, including with:
    - National Marine Fisheries Service and U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act.
    - State Office of Historic Preservation under the National Historic Preservation Act.
- SWRCB: Approval of underground storage supplements to the City's post-1914 appropriative permits and licenses for new ASR facilities. (The City will seek these additional approvals when it is determined how and where the new ASR facilities of the Proposed Project will be implemented.)
- California Central Coast RWQCB: Approval of Clean Water Act Section 401 Water Quality Certification Permit for the surface water diversion improvements at the Felton Diversion and the Tait Diversion.
- California Central Coast RWQCB: Review of NOI and SWPPP filed by City or neighboring water agencies for intertie improvements or new ASR facilities where components sites are greater than 1 acre.
- California Central Coast RWQCB: Review of NOI to inject and store treated drinking water in groundwater aquifers through ASR operations under SWRCB WQ Order 2012-0010 (General Waste Discharge Requirements For Aquifer Storage And Recovery Projects That Inject Drinking Water Into Groundwater).
- California Department of Fish and Wildlife: Approval of California Fish and Game Code Section 1602, Lake or Streambed Alteration Agreement for the Felton Diversion improvement and the Tait Diversion improvement.
- City of Santa Cruz: Approval of interties, Felton Diversion improvements, Tait Diversion and Coast Pump Station improvements, new ASR facilities, and encroachment permits for work in public roadways.
- County of Santa Cruz: Approval of coastal development permits for new ASR facilities in the coastal zone of unincorporated Santa Cruz County and encroachment permits for work in public roadways.
- City of Capitola: Approval of coastal development permits for the Park Avenue pipeline and McGregor Drive pump station upgrade in the coastal zone of the City of Capitola, and encroachment permits for work in public roadways.
- Soquel Creek Water District, Scotts Valley Water District, San Lorenzo Valley Water District and/or Central Water District: Approval of water transfer agreements and intertie facilities, as warranted.

It is noted that while portions of the project site are located within the unincorporated area of Santa Cruz County, the City is not required to obtain building or grading permits from the County pursuant to state law. California Government Code section 53091(d) and (e) provides that facilities for the production, generation, storage, treatment, or transmission of water supplies are exempt from local zoning and building ordinances. However, as noted above, the County of Santa Cruz would issue coastal development permits for components that are located in the coastal zone of unincorporated Santa Cruz County, as the City is not exempt from the Coastal Act and the County's California-Coastal-Commission-certified Local Coastal Program. Likewise, the City of Capitola would issue coastal development permits for components that are located in the coastal zone of the City of Capitola.

# 2.7 Organization of EIR

The content and format of this EIR are designed to meet the requirements of CEQA and the CEQA Guidelines (Sections 15122 through 15132). This EIR is organized into the following chapters:

- **Chapter 1, Summary**, presents an overview of the Proposed Project, provides a summary of the impacts of the Proposed Project and mitigation measures, provides a summary of the alternatives being considered, includes a discussion of known areas of controversy, and any issues to be resolved.
- **Chapter 2, Introduction**, explains the CEQA process, describes the scope and purpose of this EIR, provides information on the review and approval process, lists the likely approvals for the Proposed Project, and outlines the organization of this EIR.
- **Chapter 3, Project Description**, provides information about the location, setting, and background of the Proposed Project; identifies project-specific objectives; and provides a detailed description of the Proposed Project components.
- **Chapter 4, Environmental Setting, Impacts, and Mitigation Measures**, provides the environmental analysis for the Proposed Project. Section 4.0, Introduction to Analyses, includes a description of the cumulative condition, and Section 4.1, Impacts Not Found to Be Significant, describes the topics that do not warrant detailed analyses. For the subsequent sections pertaining to the environmental resource topics for which a detailed analysis is provided, each section presents information in three parts, including existing conditions, regulatory framework, and impacts and mitigation measures. See Section 4.0 for additional information about the organization and content of this chapter.
- **Chapter 5, Growth Inducement**, evaluates the growth-inducing impacts of the Proposed Project, if any.
- **Chapter 6, Other CEQA Considerations**, evaluates the other topics required to be included in an EIR, including significant and unavoidable impacts and significant irreversible environmental changes.
- **Chapter 7, Climate Change Considerations**, evaluates the potential effects of climate change on and/or related to the Proposed Project.
- **Chapter 8, Alternatives**, evaluates alternatives to the Proposed Project that would eliminate or substantially reduce any significant impacts identified in the EIR while feasibly attaining most of the project objectives. Alternatives that were reviewed but eliminated from further consideration in the EIR are also discussed.
- **Chapter 9, List of Preparers**, identifies individuals who were involved in preparing this EIR.
- **Appendices** contain additional information used in preparing this EIR, including:
    - Appendix A contains the NOP/IS and the public comments that were submitted in response to the NOP/IS.
    - Appendix B includes the water rights petitions submitted to the SWRCB for the Proposed Project and related correspondence.
    - Appendix C includes additional background on the minimum instream flow requirements (Agreed Flows), which are a component of the Proposed Project.
    - Appendix D provides the hydrologic, water supply, and fisheries habitat modeling for the Proposed Project.

- Appendix E provides a summary of construction phases, estimated workers and vehicle trips, and construction equipment, as well as the results of the air quality and greenhouse gas emissions modeling conducted for the Proposed Project.
- Appendix F contains the biological resources evaluation tables prepared for the Proposed Project.
- Appendix G contains the Cultural Resources Inventory, Evaluation, and Finding of Effect Report prepared for the Proposed Project
- Appendix H includes results of the noise modeling conducted for the Proposed Project.

## Table 2-1. Scoping Comment Summary

| Summary of Comment | EIR Section Considered |
|---|---|
| *State Water Resources Control Board* | |
| Requests scientific basis of, or studies completed to develop, Agreed Flows with California Department of Fish and Wildlife (CDFW) and National Marine Fisheries Service (NMFS) that shows they would be protective of steelhead, salmon and any other fish or wildlife species that may be affected. | Chapter 3, Project Description<br>Appendix C, Minimum Instream Flow Requirements<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| Requests that support from Fishery agencies (CDFW and NMFS) for Agreed Flows should be clarified in EIR. | Chapter 3, Project Description |
| Baseline instream conditions should be clearly described, and any reasonable alternative flow regimes should be analyzed. | Section 4.3, Biological Resources<br>Appendix C, Minimum Instream Flow Requirements<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| Identify impacts and constraints to the City's water supply reliability that would occur if changes to water rights are not approved, but the fish flows become a requirement. | Chapter 7, Alternatives<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| Describe the interrelationship of the HCP and the Proposed Project. | Chapter 3, Project Description |
| Not clear what level of evaluation will be conducted on Felton Diversion fish passage improvements. This improvement could be an important component for mitigation of the Proposed Project. | Chapter 3, Project Description |
| Evaluate the impacts of adding the Felton Diversion as a point of direct diversion. | Chapter 3, Project Description<br>Chapter 4, Environmental Setting, Impacts, and Mitigation Measures |
| EIR shall evaluate all special-status species that may potentially be affected by the Proposed Project. | Section 4.3, Biological Resources |
| EIR shall evaluate the potential for recreational impacts of the Proposed Project. | Section 4.11, Recreation |
| EIR shall evaluate all potential and foreseeable impacts that may be caused by the Proposed Project, including the time extension and change petitions. | Chapter 4, Environmental Setting, Impacts, and Mitigation Measures |
| Cumulative impacts of other foreseeable projects on the SLR must also be evaluated. | Chapter 4, Environmental Setting, Impacts, and Mitigation Measures |

Table 2-1. Scoping Comment Summary (continued)

| Summary of Comment | EIR Section Considered |
|---|---|
| *Native American Heritage Commission* | |
| The EIR should determine whether there are historical resources within the area of potential effect. Additionally, the letter indicates that AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed. Detailed requirements of AB 52 are also included in the letter. | Section 4.4, Cultural Resources and Tribal Cultural Resources |
| *Soquel Creek Water District* | |
| The EIR should provide quantified information on existing and proposed revisions to Agreed Flows in terms of seasonality of minimum stream flow requirements and resulting operational restrictions, quantification of proposed pre-1914 water rights changes and bypass requirements; and quantification of changes in water rights associated with places of use. | Chapter 3, Project Description<br>Chapter 4, Environmental Setting, Impacts, and Mitigation Measures<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| Without understanding the expected changes in water supply, it is unclear whether there would be an increase in available water supply that could support additional growth, and its related effects on population and housing, recreation facilities, public services, and utilities. | Chapter 4, Environmental Setting, Impacts, and Mitigation Measures<br>Chapter 5, Growth Inducement |
| Hydrology and water quality section indicates conjunctive use would be analyzed as part of the Proposed Project. However, conjunctive use is not described as part of the Proposed Project. A suggestion is provided that the EIR describe and analyze the beneficial uses and conjunctive uses and associated infrastructure improvements that could occur as a result of the Proposed Project and changes to places of use. | Chapter 3, Project Description |
| Given that no information on location, construction, or operational requirements of programmatic components is identified in the checklist, there is not sufficient information on environmental setting or programmatic components to be able to adequately assess whether substantial environmental impact could occur. | Chapter 3, Project Description<br>Chapter 4, Environmental Setting, Impacts, and Mitigation Measures |
| Suggest EIR include additional project description information about the type and scope of programmatic components and that EIR should include program-level analysis of all topics required by CEQA. | Chapter 3, Project Description<br>Chapter 4, Environmental Setting, Impacts, and Mitigation Measures |
| Include timing of implementation and cost estimates of each Water Supply Advisory Committee water supply option, as it is understood that if the water rights and water transfer project are more than 130% of the cost of recycled water or desalination, the City would pursue recycled water or desalination instead. Public will need to understand the timing of the cost study, if the City will use 130% threshold, and how it will inform the viability of related projects, such as water transfer option in the Soquel Creek Water District's Community Water Plan. | Beyond the scope of the EIR |
| The EIR should evaluate other regional water supply projects and planning efforts. The analysis should include all anticipated water supply projects within the Santa Cruz Mid-County Groundwater Agency planning area at a programmatic level and for future project-level EIR for the City's in-lieu and/or aquifer storage and recovery project. | Chapter 3, Project Description<br>Chapter 4, Environmental Setting, Impacts, and Mitigation Measures |

Table 2-1. Scoping Comment Summary (continued)

| Summary of Comment | EIR Section Considered |
|---|---|
| EIR should consider alternative means of meeting the Agreed Flows and fish enhancements proposed as part of the Proposed Project, such as Water Supply Advisory Committee recommendations related to recycled water. This could include, but not be limited to, the use of recycled water for irrigation, purified water for groundwater recharge or reservoir augmentation, and river/creek augmentation. | Chapter 7, Alternatives |
| *Valley Women's Club of San Lorenzo Valley* | |
| Indicates that the HCP should have been completed before continuing this EIR process. More information is requested about when the Agreed Flows were negotiated, whether the Agreed Flows will be sufficient during drought years, and whether they take into account the significant streambed changes in the River during large storms, such as is evident in the Rincon area of the San Lorenzo River. | Chapter 3, Project Description<br>Section 4.3, Biological Resources<br>Appendix C, Minimum Instream Flow Requirements<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| Concerned that allowing year-round diversion, increasing diversion at Felton during the summer would potentially reduce the crucial habitat between Felton and Santa Cruz. | Chapter 3, Project Description<br>Section 4.3, Biological Resources<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| The reasoning about level of impact for population and housing is a concern. Even if annual water extraction is not increased, the City will be able to extract more during dry and drought years. This will increase the available water during those years, with the potential to allowing greater population growth. | Chapter 5, Growth Inducement |
| The basis for Mandatory Findings conclusion in the Initial Study is not provided. | Chapter 4, Environmental Setting, Impacts, and Mitigation Measures |
| *Water for Santa Cruz County* | |
| The EIR should include a calculation of the amount of available water that will be reduced by implementing the proposed bypass flows on the North Coast streams Majors, Laguna and Liddell. This should be done for each month for each year for the 10-year 2009 to 2018 period. | Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| The EIR should include a calculation of the amount of available water that will be reduced by implementing the bypass flows below Tait Street. This should be done for each month of each year for the 10-year 2009 to 2018 period. | Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| The EIR should include a calculation of the amount of available water that will reduced by implementing the change of the cubic feet per second (cfs) requirement for minimum bypass flows at the Felton Diversion for adult and spawning fish flows from 20 to 40 cfs in the months of December through May. This calculation should be done for each month and year for the 10-year 2009 to 2018 period. | Chapter 3, Project Description<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| For all water flow changes, EIR should present results in a form at least as detailed as the following taken from the Annual Report of the Santa Cruz Water Department. | Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |

Table 2-1. Scoping Comment Summary (continued)

| Summary of Comment | EIR Section Considered |
|---|---|
| Once we know the amount of the proposed reduction, evaluate the effect on the river's system of increasing the daily cfs permitted to be taken to Loch Lomond from Felton Diversion to 40 cfs when conditions for fish flows downstream are being met. For example, increase the City's daily permissible take from 20 cfs to 40 cfs when the SLR flows exceed 65 cfs and are below 400 cfs. | Chapter 3, Project Description |
| Regarding the proposed actions by the City Council, please evaluate the risks to the City of committing to reduced flows in advance of having negotiated a long-sought HCP. | Chapter 3, Project Description |
| All scoping questions should be public information and available verbatim on demand by December 1, 2018. | Appendix A, Notice of Preparation, Initial Study, and Scoping Comments |
| All public comment on the Draft EIR should be public information and available verbatim on demand within 15 days of the close of the comment period. | Appendix A, Notice of Preparation, Initial Study, and Scoping Comments |
| *Rotary Club of San Lorenzo Valley* | |
| Letter noting receipt of NOP and indicating that some of their members will attend the meeting. An invite to speak to the Rotary was also extended. | No response needed |
| *Bruce Ashley* | |
| EIR cannot be undertaken until the HCP process is completed with citizen participation and environmental review. HCP process has been carried out behind closed doors. When will citizens be given the opportunity to provide input into the HCP process? | Chapter 3, Project Description |
| Input from public should have been requested by City before Agreed Flows were established. When were the Agreed Flows negotiated? The stream structure is dynamic and may change greatly after large stormflow events. Have the Agreed Flows taken into account the recent streambed changes in the Rincon area of the SLR? The wetted channel has split, dividing winter flows into multiple channels with shallower conditions than previously. Do the bypass flows need to be greater now to ensure adequate adult steelhead and coho salmon migration? | Chapter 3, Project Description<br>Section 4.3, Biological Resources<br>Appendix C, Minimum Instream Flow Requirements<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| The success of the fish migration and rearing are increased by "ideal" flow rates compared to just "minimal" survival volumes that are in the Agreed Flows. Wouldn't it be important to consider how flows might be decreased, especially in normal and dry water years at specific times and places by the modified diversions rates under this plan? A normal year March flow at the Big Trees gauge on the San Lorenzo might be 200 cfs, but with the proposed change in rights and increased maximum diversion rate, the Felton diversion infrastructure may be capable of reducing the bypass flow to the minimum for conjunctive use. How would this affect impact late season fish migration through the Rincon Gorge area below? | Chapter 3, Project Description<br>Section 4.3, Biological Resources<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| The fish need protected instream flows especially during dry and drought years. Yet this is when the City's water supply is most tested. Any project that will allow modified water diversion rate and greater total volume than is possible under the existing water rights and infrastructure will significantly increase the negative impact to steelhead and coho salmon. | Chapter 3, Project Description<br>Section 4.3, Biological Resources<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |

Table 2-1. Scoping Comment Summary (continued)

| Summary of Comment | EIR Section Considered |
|---|---|
| If you add the Tait Street point of diversion to the Felton diversion permit, then up to the Agreed Flow bypass at Felton may be diverted at Tait Street instead of the 6-cfs limit that presently is permitted at Tait Street. Increasing the number of diversion points will facilitate the City's ability to increase diversion rate compared to existing conditions. This may greatly impact adult salmonid passage to Tait Street during dry and drought years, as well as quicken sandbar closure during spring and early summer to curtail smolt outmigration. | Chapter 3, Project Description<br>Section 4.3, Biological Resources<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| If the Proposed Project adds the Felton diversion as a point of diversion for the Tait Street diversion permit, you expand the season of diversion at Felton by including it as a year round point of diversion under the Tait Street diversion permit. Then 6 cfs (or a different Agreed Flow bypass) intended for the reach downstream of Tait Street may be diverted at Felton in the summer, greatly reducing steelhead rearing habitat between Felton and Santa Cruz. The fish need all of the available streamflow during the dry season, downstream of Felton to maintain good habitat and growing conditions. Items 4a and 4d on page 18 in the environmental checklist should be checked as potentially significant issues, despite mitigation. | Chapter 3, Project Description<br>Section 4.3, Biological Resources<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| The Proposed Project will allow an increase in diversion rate above the current 20-cfs limit at Felton, which will allow diversion of a larger proportion of stormflows than under existing conditions during dry and drought years when adult salmonid passage conditions are already limited. This may have significant impact to adult salmonid fish passage during dry/drought years if the Agreed Flows are inadequate. On page 18, the NOP asserts that "changes in stream flows would result in impacts (likely beneficial) on aquatic special-status species." I believe that changes in streamflow, such as increasing the diversion rate at Felton during the winter and spring of a dry or drought year may impede adult salmonid passage. Without seeing the Agreed Flow bypasses that were negotiated and some modeling of how the system would function, it's hard for me to know how effective they would be. | Chapter 3, Project Description<br>Section 4.3, Biological Resources<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| Would it be possible to include in the EIR some graphic depictions of various scenarios that portrayed the comprehensive picture of the water flow rates that will be diverted from the San Lorenzo by location at different times of the year in different water years under the Proposed Project compared to existing conditions? There are many possible variations in water use and weather, and I believe this type of modeling has already been undertaken. The problem is making some significant scenarios comprehensible. A visual, graphic depiction of the river with the various diversions and bypass flows quantified could help us to understand the dynamics better. Perhaps a dozen of these graphics could let us see more exactly the how the Proposed Project will operate? | Chapter 3, Project Description<br>Section 4.3, Biological Resources<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |

## Table 2-1. Scoping Comment Summary (continued)

| Summary of Comment | EIR Section Considered |
|---|---|
| Suggest that as part of the Mitigations for Environmental Impacts, section 4d in the checklist regarding, movement of migratory fish, you include fiscal support for the Culvert (Level Control Device) at the San Lorenzo River Lagoon exit. And as the number of Adults adult salmonids in the San Lorenzo watershed is at a critically low point, as a mitigation measure, I strongly recommend that you consider providing financial support for our local fish hatchery, the Monterey Bay Salmon and Trout Project, to recover and restore our steelhead and salmon populations. | Chapter 3, Project Description<br>Section 4.3, Biological Resources<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| *Catherine Borrowman* | |
| Is the County of Santa Cruz required to approve or review the Santa Cruz Water Rights Project EIR? It was not listed in the NOP. | Chapter 2, Introduction |
| Please clarify in the EIR if the City of Santa Cruz will have the right to use water from the Felton and/or Tait diversion above the Agreed Flows when the base flows from the Santa Margarita Groundwater Basin into Bean Creek are higher after a conjunctive use project fills up the Basin. | Chapter 3, Project Description |
| Why is the City not requesting to increase the amount of water diverted in the wetter months when there will be more flow after storm events? The In-Lieu/ASR strategy relies on the practice of diverting it to areas relying on groundwater. If the City will not be allowed to divert more winter flow water, but instead would be diverting every day that there is more water than the Agreed Flows up to the monthly limit, please clarify if this is expected to meet the City's needs as a drought supply solution if climate change occurs. Please discuss how climate change hydrological models provide data that supports the reasonable and beneficial uses of water from surface water sources. | Chapter 3, Project Description<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| Will these change petitions cause the City to lose seniority with its water rights? Will increased flexibility with water rights enable the City to make cold water releases from Loch Lomond to improve the temperature instream for anadromous fish one day when the water supply project(s) provide the needed reliability and Loch Lomond is no longer our only insurance in drought conditions? | Chapter 3, Project Description<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| If Agreed Flows are included in water rights, will this limit the City's flexibility in managing the water system before the In Lieu/ASR project components (interties and new wells) are operational? In 2014, the City had to request a temporary reduction in flow releases for health and safety purposes during rationing. Please address in the EIR the short-term environmental impact of an extended drought from 2020 to 2025 and if the Proposed Project may affect them. | Chapter 3, Project Description<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| *Kevin Collins* | |
| To proceed with this water rights modification before the 17 years of delay in completing a City Habitat Conservation Plan is backwards public policy. Any EIR prepared in this reverse of priorities will be invalid. | Chapter 3, Project Description |

Table 2-1. Scoping Comment Summary (continued)

| Summary of Comment | EIR Section Considered |
|---|---|
| The establishment of base flows after diversions at Felton and Tate St. cannot avoid the impact on salmonids attempting to pass through the lower San Lorenzo Gorge and its rock cascades that are major impediments to fisheries migration during drought years. The same is true of critical riffles that change every year in response to sediment and cobble movement in the riverbed. The depth of these riffles is understood to be a point of contention between the City Water Department and NOAA/NMFS and the California Department of Fish and Wildlife. This is despite any recent attempt to avoid this long-standing dispute. | Chapter 3, Project Description<br>Section 4.3, Biological Resources<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| Sediment and other pollution loads in the San Lorenzo are not declining. I have seen no evidence that any improvement in water quality has occurred. | Section 4.8, Hydrology and Water Quality |
| *Lydia Hammack* | |
| Please study the methods of injection of water back into wells. What kind of pressure is planned? Sounds too much like fracking which can cause earthquakes. | Chapter 3, Project Description<br>Chapter 4, Environmental Setting, Impacts, and Mitigation Measures |
| *Mark D. Lee* | |
| NOP is woefully inadequate and not reflective of the true short- and long-term environmental impacts of the City's Proposed Project and how it will affect 20,000 water consumers in the SLVWD. The Proposed Project will have adverse long-term impacts on water consumption related to diversion from SLV and reselling to SqCWD and other POUs. We are very concerned that the Proposed Project will overdraft the Santa Margarita Groundwater Basin with the increased diversion allowed, which will affect SLVWD and SVWD. The EIR needs to explain how the Proposed Project would not cause water scarcity risks for SLVWD. Also concerns expressed about POUs outside of the Santa Margarita Groundwater Agency, including the City, which is a second-tier member. | Section 4.8, Hydrology and Water Quality<br>Section 4.13, Utilities and Energy |
| The City's proposed amendment to its water right permits cumulatively will long term dramatically affect our own Coho salmon, steelhead trout, other fish and reptiles living within the riparian eco-systems of the San Lorenzo River and eastern and northern tributary system above the Felton diversion dam and Newell Creek junction within the San Lorenzo Valley Water District and Santa Margarita Groundwater Basin. | Chapter 3, Project Description<br>Section 4.3, Biological Resources<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| Proposed scope lacks full and thorough understanding about how the Proposed Project will affect the physical environment; seismic risks; groundwater hydrological risks, and long-term growth-inducing population impacts requiring potentially further water permit amendments. There is absolutely no analysis of economic-financial impacts regionally from diverting surface water to the City without evaluating the long term impacts against a backdrop of erratic and inconsistent supply of surface and ground water resources originating in the SLVWD and SVWD as alluded to in "draft" Scope of Work findings and checklist selection of levels of impact (per CEQA 15082) concerns this reviewer. | Section 4.5, Geology and Soils<br>Section 4.8, Hydrology and Water Quality<br>Chapter 5, Growth Inducement |
| Provide detailed analysis of the Felton diversion project and the full impacts of amending the water rights permits, including on Newell Creek and Loch Lomond. | Chapter 4, Environmental Setting, Impacts, and Mitigation Measures<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |

Table 2-1. Scoping Comment Summary (continued)

| Summary of Comment | EIR Section Considered |
|---|---|
| Disagreement expressed about impact conclusions for Hydrology and Water Quality section of Initial Study. Should be identified as potentially significant. | Section 4.8, Hydrology and Water Quality |
| The effects of conjunctive use on recharge are conveniently side-stepped and not realistically evaluated because groundwater recharge has never been done successfully nor proven to actually work, especially with compressed sandstone along the coast. | Chapter 3, Project Description<br>Section 4.8, Hydrology and Water Quality |
| EIR must analyze how water redistribution (diverting/exporting) to the City of Santa Cruz and SqCWD will affect SLVWD and SVWD. Also note that SqCWD is outside of the Santa Margarita Groundwater Agency. | Section 4.8, Hydrology and Water Quality<br>Section 4.13, Utilities and Energy |
| Concern expressed about extending the Felton permit for 25 years without adequate economic and environmental impact analysis and understanding about how it will affect the sustainability of the SLVWD given drought cycles. | Chapter 4, Environmental Setting, Impacts, and Mitigation Measures<br>Economic analysis beyond the scope of the EIR |
| Disagreement expressed about less-than-significant conclusions for Section 13 Population and Housing Impacts (a) induce substantial population growth… This conclusion conflicts with Section 16 Transportation and completely ignores the sub regional growth inducement impacts from potentially sending water onto SqCWD under "Growth-Inducing Impacts of the Proposed Project" as required per CEQA 15126.2(d). | Section 4.1, Impacts Not Found to be Significant<br>Chapter 5, Growth Inducement |
| The City of Santa Cruz Water Advisory Committee has advised the City and made water usage policy recommendations to amend City's water right permits in a vacuum without including detailed analysis of permit amendment proposals without any participation by local ratepayers groups and the SLVWD Board of Directors that may have impacts on the District's own capital facilities projects and environmental impacts of the SLVWD. | Chapter 3, Project Description |
| *Monica McGuire* | |
| Regarding the maintenance of certain flow levels for fish: Include all calculations for the last 10 years (2009-2018) based on historical data, especially for dry years and compare how you would calculate water availability for City of Santa Cruz and compare how you would calculate water available for conjunctive use. | Chapter 3, Project Description<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| Evaluate risks of not having an HCP in place before the City Council takes action to dedicate minimum fish flows. | Chapter 3, Project Description |
| Explain all rationale and possibilities of consolidating all of our region's water districts, especially interested in consolidating SCWD and SqCWD, which have such complementary assets and needs (great excess water flow into the Monterey Bay and great water aquifer storage space). | Chapter 7, Alternatives |
| *Jerome Paul* | |
| Please include in all future reports related to the Proposed Project all public comments and questions verbatim. Please ensure that all public comment and questions related to the Proposed Project be made conveniently available verbatim on demand within 15 days of receipt. | Appendix A, Notice of Preparation, Initial Study, and Scoping Comments |

Table 2-1. Scoping Comment Summary (continued)

| Summary of Comment | EIR Section Considered |
|---|---|
| Since it is entirely possible that, presently and in the coming decades, the Proposed Project's measures listed on page 7, Table 3 (modification of City water rights, Places of Use ("POUs"), diversion methods & points, etc.) may be insufficient to provide 100% of the water needed by endangered and threatened species habitat in every month, worst case. Please estimate the shortfall in each respective month. | Chapter 3, Project Description<br>Section 4.3, Biological Resources<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| Seeing as how expansion of the list of Places of Use ("POU List") is key to providing the operational flexibility to substantially enhance a great many desirable environmental outcomes, please optimize the POU list with foresight, to include additional parties. | Chapter 3, Project Description |
| Please thoroughly evaluate the environmental merits of a regional "Universal POU" to include: aquifers, groundwater agencies, the County, public but independent pumpers (e.g., Cabrillo College, UCSC…), future entities as appropriate, private pumpers, and last but not least, environmentally threatened and/or endangered species habitat. A Universal POU would henceforth improve flexibility of operation, responsiveness to crises, a larger base to support threatened and endangered species, reduced consumption of energy, economic benefits, and a lot more. | Chapter 3, Project Description |
| Please thoroughly analyze the "energy chain" all of the way back to its sources, which are largely terrible environmentally. Monterey Bay utility gets sustainable energy, but takes it from a pool, which leaves the rest of the world using more coal, nuclear, hydroelectric, etc. | Section 4.13, Utilities and Energy |
| Once aquifers are filled using the new operational and places of use, storage can be used much more aggressively for habitat and for boosting endangered and threatened species populations. Please estimate how many extra gallons per year would become available once the two main aquifers of the region are recharged to optimal levels. | The assessment of basin recovery of the Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin is a long-term objective anticipated to take place during the 40-year implementation period for the Groundwater Sustainability Plans for both basins. Assessing available water supply and demand at that time is speculative and beyond the scope of this EIR. |
| Consider fire protection over wider region forest saved, assets saved, money saved. | Section 4.1, Impacts Not Found to be Significant<br>Section 4.7, Hazards, Hazardous Materials, and Wildfire |
| Shortening days of diversion at Felton should be compensated by more cfs per day when available. | Chapter 3, Project Description |
| Diversions: Trading tens or taking 80% of what remains until City reaches physical diversion capacity limit of some 70 cfs total in a flow which might be thousands of cfs. | Chapter 3, Project Description |
| Consider sea level rise. | Section 4.8, Hydrology and Water Quality |
| Deliver timed patterns of flow: e.g., Day 1, 2, 3, 4 may have cfs flow of 1, 0, 7, 3. | Chapter 3, Project Description |

Table 2-1. Scoping Comment Summary (continued)

| Summary of Comment | EIR Section Considered |
|---|---|
| The City of Santa Cruz Water Department now has a record of the level of the water in Loch Lomond over the past 50 years; please use it to develop a statistical model for predicting on each day of each rainy season the optimal amount of river water to harvest during that day to add to storage for habitat releases in later days of higher environmental need. | Chapter 3, Project Description<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| *Becky Steinbruner* | |
| Evaluate the HCP process, content and risks associated with City Council action to codify pre-1914 stream flows. | Chapter 3, Project Description |
| Include all NOP comments verbatim in the Draft EIR. | Appendix A, Notice of Preparation, Initial Study, and Scoping Comments |
| Address Proposed Project impacts to north coast customers and define "limited water service area along the coast north of the City." | Chapter 3, Project Description<br>Section 4.13, Utilities and Energy |
| Include quantifiable amounts of water available for transfer and in-lieu storage with neighboring water agencies in dry and very dry years, based on historic data. | Chapter 3, Project Description<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| Explain differences between post-1914 licensed (Newell Creek) vs permitted San Lorenzo River sources and describe any environmental impacts. | Chapter 3, Project Description |
| Identify required volumes in all surface water sources for fish populations and show historic data of these flow maintenance levels in very dry and dry years. | Chapter 3, Project Description<br>Appendix C, Minimum Instream Flow Requirements<br>Appendix D, Hydrologic, Water Supply, and Fisheries Habitat Modeling |
| Consider consolidation of City of Santa Cruz Water Department and SqCWD as an alternative and describe impacts on Place of Use if the two agencies were consolidated. | Chapter 7, Alternatives |
| Evaluate using neighboring inactive quarries for additional water storage and groundwater recharge. | Chapter 7, Alternatives |
| Evaluate necessary pipeline and increased intertie connection sized to accommodate maximum conjunctive use needs and environmental benefits for Santa Cruz City and neighboring water agencies. | Chapter 3, Project Description<br>Chapter 4, Environmental Setting, Impacts, and Mitigation Measures |
| Describe the proposed “traveling brush system” mentioned in the Initial Study related to the Felton Diversion Fish Passage Improvements. | Chapter 3, Project Description |
| Evaluate Ranney Collectors to augment surface water collection from the SLR during large storm events or post-wildland fire events when streamflow turbidity levels are high as a method of increase security of quality water supply. | Chapter 7, Alternatives |
| Discuss SLR fully dedicated rights vs. SqCWD adjudicated rights and the associated environmental implications. | Unclear how comment relates to Proposed Project |
| Evaluate Proposed Project design alternatives with a goal of minimal energy use to supply treatment plant and interties connections with water for City and regional conjunctive use security during emergencies with long-term power outages and relate them to City and County Emergency Response Plan and Disaster Preparedness Plans. | Chapter 7, Alternatives |

Table 2-1. Scoping Comment Summary (continued)

| Summary of Comment | EIR Section Considered |
|---|---|
| Evaluate environmental benefit of enhanced water supply availability for Santa Cruz and neighboring agencies with conjunctive use to provide increased fire protection supplies in Santa Cruz and neighboring agencies wildland/urban interface and watershed protection areas. | Section 4.1, Impacts Not Found to be Significant<br>Section 4.7, Hazards, Hazardous Materials, and Wildfire |
| Evaluate impact on groundwater levels and stream flows in Soquel Creek and Aptos Creek with indirect effects of in-lieu passive recharge. Incorporate known stream flow increases noted in Soquel Creek when SqCWD ceased pumping at Main Street Well. | Section 4.8, Hydrology and Water Quality |
| Evaluate possible increase in development of housing/urban growth in Mid-County areas due to project and programmatic components. | Chapter 5, Growth Inducement |
| Evaluate impacts of adding Mount Hermon, Trout Gulch Water Mutual and PureSource Water to programmatic intertie connections for enhanced conjunctive use and consider groundwater recharge collection projects in those areas were soils have been identified by Dr. Andy Fisher and the Recharge Initiative to be favorable for passive recharge projects. | Chapter 3, Project Description |
| Describe preliminary design concepts of the Felton Diversion fish passage improvements with a focus on long-term maintenance and environmentally sustainable security. | Chapter 3, Project Description |

**Notes:** AB = Assembly Bill; ASR = aquifer storage and recovery; CDFW = California Department of Fish and Wildlife; CEQA = California Environmental Quality Act; cfs = cubic feet per second; EIR = environmental impact report; HCP = habitat conservation plan; NMFS = National Marine Fisheries Service; NOAA = National Oceanic and Atmospheric Administration; NOP = Notice of Preparation; POU = place of use; SLR = San Lorenzo River; SLVWD = San Lorenzo Valley Water District; SqCWD = Soquel Creek Water District; SVWD = Scotts Valley Water District; WSAC = Water Supply Advisory Committee.

# 3 Project Description

This chapter provides a detailed description of the Proposed Santa Cruz Water Rights Project (Proposed Project) and includes information about project location and setting, project background, project objectives, and project characteristics.

## 3.1 Project Location and Setting

### 3.1.1 Project Location

The Proposed Project involves the water system and areas served by the City of Santa Cruz (City);[1] 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 remainder of the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin. The Proposed Project is located within Santa Cruz County and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Figure 3-1). Additional information about the project location and setting is presented below.

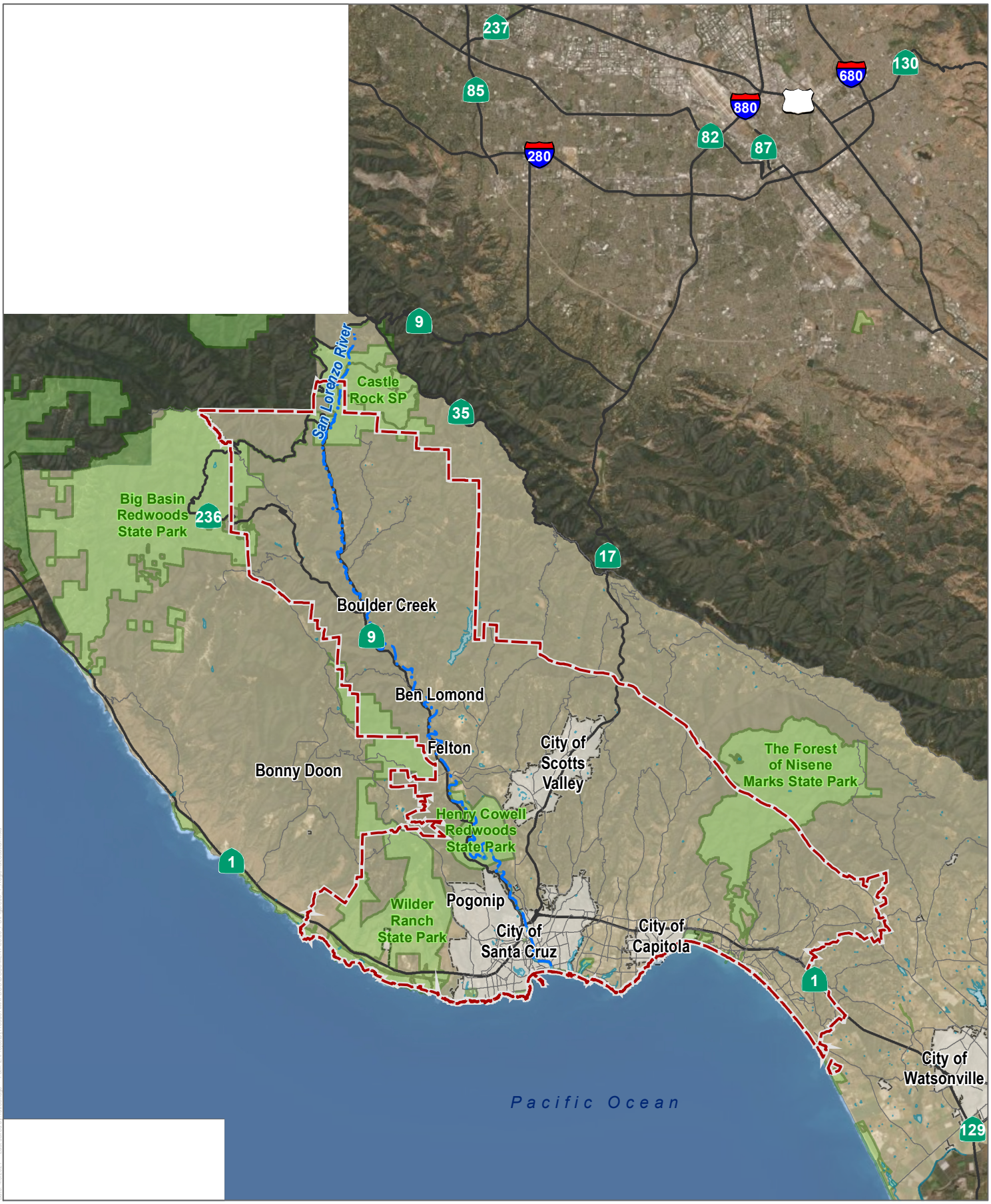
### 3.1.2 Existing Water Supply Systems

#### 3.1.2.1 City of Santa Cruz

The City of Santa Cruz Water Department (City) provides drinking water from a variety of sources to residents of the City and surrounding areas. The areas served by the City include the City of Santa Cruz, a portion of the City of Capitola, and portions of unincorporated Santa Cruz County in Live Oak, Soquel, and along Graham Hill Road. The City also has an area it serves with limited service only along the coast north of the City, primarily along State Highway 1 up towards Bonny Doon Road. Figure 3-2 shows the City's existing water supply facilities. The City's service on the coast north of the City consists of limited numbers of connections that primarily derive from the City's agreements with landowners along its water pipelines.

The City's water supply system draws water from surface water sources, including two diversions on the San Lorenzo River (the Felton Diversion in Felton and the Tait Diversion in the City) and four diversions on local North Coast streams (Laguna Creek, Reggiardo Creek, Liddell Spring, and Majors Creek), which make up approximately 95% of the annual supply. That amount is supplemented, primarily during the dry season, by limited production from groundwater wells in the Santa Cruz Mid-County Groundwater Basin in unincorporated Santa Cruz County (see Section 3.2.1, Water Supply Planning Background, for additional information on the Santa Cruz Mid-County Groundwater Basin). The City stores water in Loch Lomond Reservoir in Ben Lomond, which is formed by Newell Creek Dam (also referred to as Newell Creek Diversion) to help meet dry-season water demand and provide back-up supply during winter storms that make river diversions problematic due to turbidity issues. The City, like other water suppliers in Santa Cruz County, has no imported water supply from outside the region. Due to limited water supply and storage, the City faces inadequate water supply during dry years and critical shortages during drought years. See Section 3.2.1 for additional information about the City's water supply planning processes.

[1] The City owns and operates a water system that diverts and serves water both within the City limits and outside of those limits. References to the City's water system, rights and supplies therefore refer to areas both inside and outside of the City limits.




SOURCE: ESRI 2020, City of Santa Cruz 2020

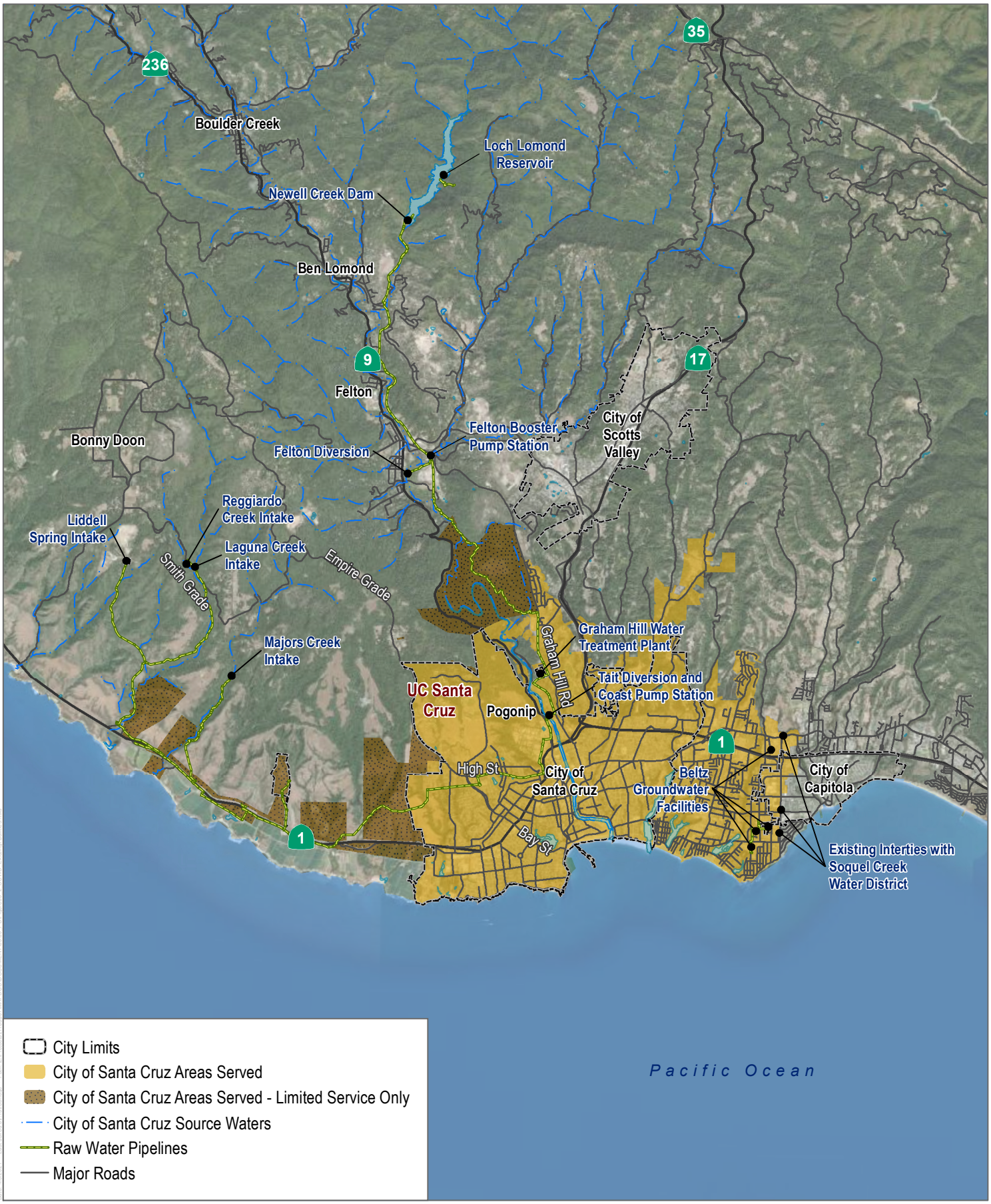
DUDEK

0 10,500 21,000 Feet

**FIGURE 3-1**

Project Location

Santa Cruz Water Rights Project




SOURCE: ESRI 2020, City of Santa Cruz 2020

DUDEK

0 1 2 Miles

**FIGURE 3-2**

Existing City of Santa Cruz Water System Facilities

Santa Cruz Water Rights Project

### 3.1.2.2 San Lorenzo Valley Water District

SLVWD serves several communities within the 136-square-mile San Lorenzo Watershed, shown on Figure 3-3. SLVWD owns, operates, and maintains three water systems that supply separate service areas from separate water sources, referred to as the North Service Area, the South Service Area, and the Felton Service Area. The North Service Area includes the unincorporated communities of Boulder Creek, Brookdale, and Ben Lomond and is served by the North System. The South Service Area encompasses portions of the City of Scotts Valley and adjacent unincorporated neighborhoods and is served by the South System. The Felton Service Area includes the unincorporated town of Felton and adjacent unincorporated areas and is served by the Felton System (WSC 2016a). The SLVWD's currently active water supplies consist of nine active stream diversions, eight active groundwater wells, and one active spring.[2] The SLVWD's groundwater wells draw from the overdrafted Santa Margarita Groundwater Basin. The SLVWD also has entitlement to a portion of the surface water storage in Loch Lomond Reservoir that has not been used since 1977.[3] Based on the water supply and demand analysis provided in SLVWD's Urban Water Management Plan (UWMP), and with continued proactive management of its water resources, SLVWD's water supply is adequate to meet both current and future water demands during average, single-dry-year, and multiple-dry-year conditions (WSC 2016a). The UWMP's finding that supplies would be adequate during multiple-dry-year conditions is based, however, on the assumption that continued local groundwater overdraft in the Santa Margarita Groundwater Basin is sustainable and that water can be supplied to the South System from the North System sources through the systems' existing interconnection (WSC 2016a).

SLVWD and the County of Santa Cruz are developing a Conjunctive Use Plan for the San Lorenzo River Watershed to increase stream baseflow for fish and increase reliability of surface and groundwater supplies for the SLVWD. This project would interconnect SLVWD's three independent water systems to allow for increased reliability and allow the distribution systems to utilize surplus surface water from each other, providing in-lieu recharge to the groundwater aquifers through conjunctive use. Project components identified to date that would allow for conjunctive use within the SLVWD's service areas, and in cooperation with the SVWD, 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 well area.[4]

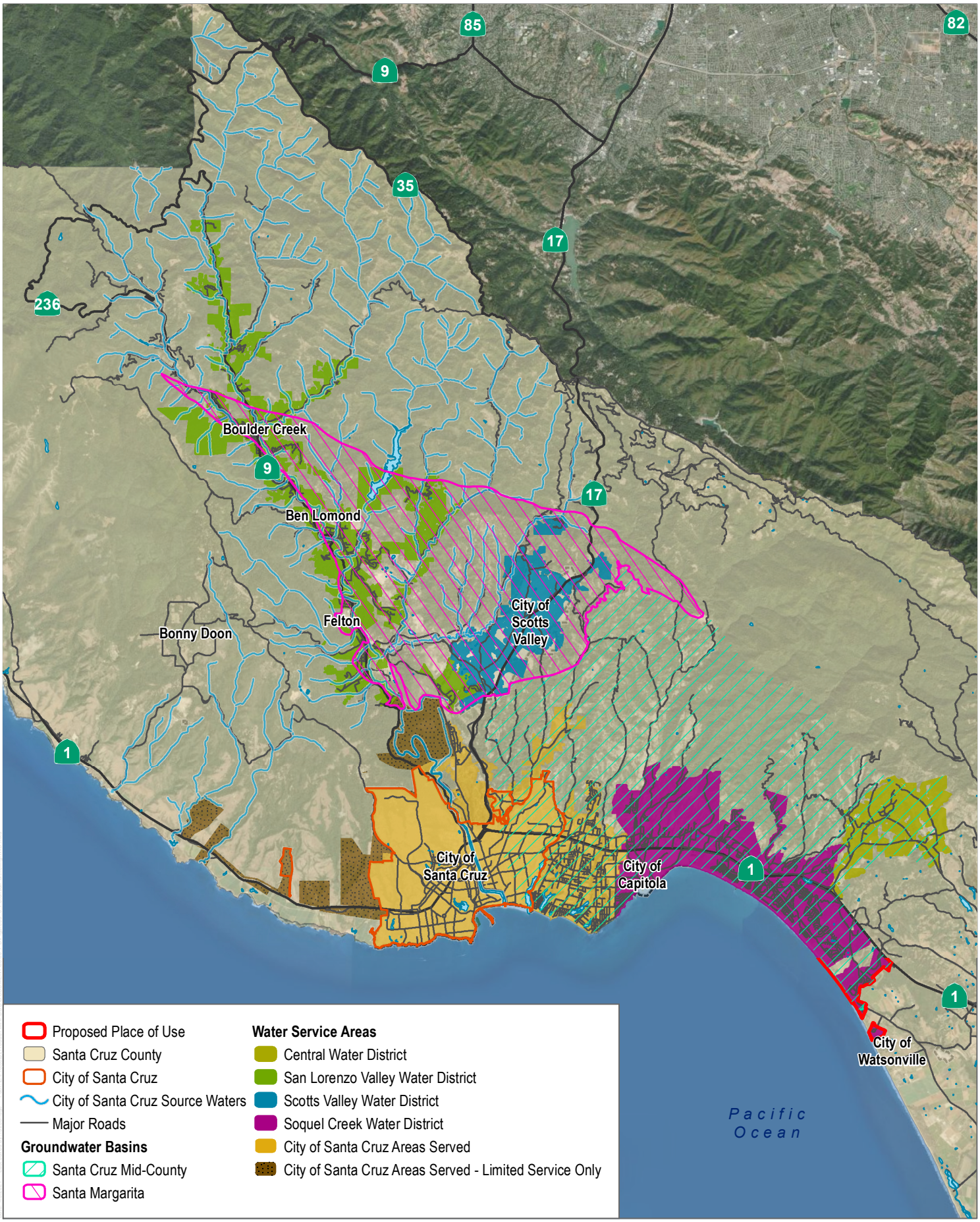
### 3.1.2.3 Scotts Valley Water District

SVWD provides potable and recycled water and serves most of the City of Scotts Valley and some unincorporated areas north of the City of Scotts Valley (see Figure 3-3). The SVWD lies in the Santa Cruz Mountains, 5 miles inland from Monterey Bay. Its service area is approximately 5 miles north to south and 1 mile east to west with an approximate area of 5.5 square miles. The only source of potable water for the SVWD is groundwater from the overdrafted Santa Margarita Groundwater Basin. SVWD shares the basin with neighboring SLVWD and Mount Hermon Association, other small water systems, and over 1,100 private well users. The recharge of the basin depends only on rainfall.

[2] SLVWD's diversions under its water-right Permit No. 20123 are contingent on the existence of certain minimum streamflows existing below the City's Felton Diversion Dam through the September-May period.

[3] SLVWD is entitled by agreement to purchase up to 313 acre-feet per year (102 million gallons per year) of Loch Lomond Reservoir water.

[4] The Olympia groundwater area is a hillslope area of partially exposed Santa Margarita Sandstone between the communities of Mount Hermon, Zayante, and Scotts Valley (WSC 2016a).




SOURCE: ESRI 2020, County of Santa Cruz 2020, City of Santa Cruz 2020

DUDEK

0 1.5 3 Miles

**FIGURE 3-3**

Potential Regional Partnering Water Districts

Santa Cruz Water Rights Project

Cooperation between SVWD and the City of Scotts Valley resulted in the development of a recycled water treatment and delivery system. The City of Scotts Valley is responsible for the collection and safe disposal of wastewater generated in the SVWD service area; a portion of the wastewater generated is treated at the Scotts Valley Water Reclamation Facility to Title 22 standards for tertiary disinfected recycled water, suitable for unrestricted non-potable use. SVWD is the recycled water purveyor and is responsible for the storage and delivery of recycled water to customers within its service area. Groundwater production has declined from 2002 through 2015 due to drought conditions, use of recycled water, and implementation of conservation programs (Kennedy/Jenks Consultants 2016). SVWD has adequate supplies available to meet projected demands should a multiple-dry-year period occur; however, overdraft of the Santa Margarita Groundwater Basin, especially in a time of drought, presents a concern for reliability over extended periods of time (Kennedy/Jenks Consultants 2016).

The decline of groundwater levels in many parts of the Santa Margarita Groundwater Basin occurred during 1985-2004, representing a loss in groundwater storage in the basin by an estimated 28,000 acre-feet. SVWD began actively managing groundwater in the area in the early 1980s, developed the Water Resources Management Plan in 1983 to monitor and manage water resources, and adopted a Groundwater Management Plan in 1994. Along with SLVWD and other agencies, SVWD also participated in the Santa Margarita Groundwater Basin Advisory Committee that was actively involved in the cooperative groundwater management of the basin until its dissolution and substitution with Santa Margarita Groundwater Agency (SMGWA) in 2017. With conservation and other management efforts by local water agencies, the total pumping from the basin has decreased by 45% since 1997 (SVWD 2021). See Section 3.2.1, Water Supply Planning Background, for additional information on the Santa Margarita Groundwater Basin.

#### 3.1.2.4 Soquel Creek Water District

SqCWD is a nonprofit, local government agency that provides potable water service and groundwater resource management. SqCWD provides water service within portions of the City of Capitola and unincorporated Santa Cruz County, including the communities of Aptos, La Selva Beach, Opal Cliffs, Rio Del Mar, Seascape, Seacliff Beach, and Soquel (see Figure 3-3). SqCWD relies entirely on the overdrafted groundwater aquifers in the Santa Cruz Mid-County Groundwater Basin. (See Section 3.2.1 for additional information on the Santa Cruz Mid-County Groundwater Basin.) These aquifers are located within two geologic formations. The Purisima Formation (Purisima) provides approximately 64% of SqCWD's annual production for Capitola, Soquel, Seacliff Beach, and Aptos, and the Aromas Red Sands (Aromas) aquifer typically provides the remaining supply (approximately 36%) for the communities of Seascape, Rio Del Mar, and La Selva Beach (WSC 2016b). The SqCWD water supply system consists of 18 production wells (15 of which are currently active), approximately 166 miles of pipeline, and 18 water storage tanks (ESA 2018).

SqCWD actively manages water resources using a combination of management tools that were first established in the 1996 Soquel-Aptos Area Groundwater Management Plan, which was updated and expanded in 2007 (WSC 2016b). As a result of SqCWD's ongoing groundwater monitoring program, signs of coastal overdraft were detected early, leading to development of SqCWD's first Integrated Resources Plan (IRP) in 2006. The IRP was updated in 2012 and ultimately replaced with the development of the Community Water Plan (CWP) in 2015 (WSC 2016b).

The CWP is based on the SqCWD's UWMP and community input and is the SqCWD's roadmap for meeting the goal of a sustainable groundwater basin by 2040 (SqCWD 2015). Components of the CWP include promoting water conservation and water neutral development to reduce groundwater extractions; being proactive with the groundwater management program to protect aquifers; and seeking supplemental water supplies to meet water

needs. The groundwater management program includes a monitoring well network with over 80 monitoring wells to track water quality and water levels, implementation of the Well Master Plan to redistribute groundwater pumping away from the coast to slow down seawater intrusion, development of a computer model to better understand the basin and determine sustainable yield, and other activities. The pursuit of supplemental supplies includes the Pure Water Soquel: Groundwater Replenishment and Seawater Intrusion Prevention Project (Pure Water Soquel) and surface water transfers, as the primary supplemental supplies being pursued. The SqCWD Board of Directors certified the EIR and approved the Pure Water Soquel Project in December 2018; that project is now under construction (SqCWD 2021).

In terms of surface water transfers, the City and SqCWD have been investigating the feasibility of transferring excess City surface water to SqCWD for the purpose of passively recharging the groundwater basin, also referred to as in lieu groundwater recharge. To this end, the City and SqCWD entered into a pilot agreement in 2016 to sell excess winter water supply from the City's Graham Hill Water Treatment Plant (GHWTP) (City of Santa Cruz and SqCWD 2016). Pilot transfers were provided to a limited portion of the SqCWD service area during the 2018/2019 and 2019/2020 winter and spring wet season. During this time, active water quality monitoring and operational constraints analyses were conducted to inform feasibility for future expanded water transfers and exchanges.[5] The pilot agreement expired at the end of 2020, but in February and March 2021, the City and SqCWD, respectively, approved extension of the program for another five-year term through the wet seasons of water years 2022 (October 1, 2021) through water year 2026 (May 1, 2026) and increased the price of the transferred water. No other modifications to the agreement were made.

#### 3.1.2.5 Central Water District

CWD covers a service area of approximately 5 square miles within the foothills of the Santa Cruz Mountains east of Aptos, between the SqCWD and City of Watsonville (see Figure 3-3). The water supply source is also drawn exclusively from the same two groundwater aquifers in the overdrafted Santa Cruz Mid-County Groundwater Basin, the Purisima and the Aromas. The CWD has monitored groundwater resources and is currently designated to manage the groundwater resources within its boundaries. The CWD distribution system consists of approximately 23.2 miles of 2- to 10-inch-diameter pipe. The distribution system is separated into five pressure zones, each supplied by pressure-reducing valves or by a combination of booster pumps and storage tanks. There are three wells that provide CWD's water supply and an additional three wells that are currently inactive (CWD 2020). Total production and associated groundwater pumping have declined since 2008 (CWD 2020).

### 3.1.3 Existing City Water Rights

There are generally two types of surface water appropriative water rights[6] recognized in California: pre-1914 and post-1914. The City currently holds both pre-1914 and post-1914 water rights. The year 1914 is significant because, effective December 9, 1914, the California Legislature enacted a requirement that a state agency

[5] Water transfers are reallocations of water between users through willing sellers and willing buyers; excess water available on a temporary basis when Agreed Flows and City demands are met would be sold by the City and purchased by a neighboring agency. Water exchanges are also reallocation of water between users through willing sellers and willing buyers; excess water would be provided or sold to a neighboring agency with agreement that water would be provided back to the City during drought or time of need. Water exchanges could occur either through future well extractions and/or through direct delivery via interties between neighboring agencies.

[6] Appropriative water rights are water rights that allow surface water to be diverted at one point and used (appropriated) at another point off the property encompassing the diversion. Appropriative water rights also can authorize storage from season to season and year to year.

authorize new appropriations of water from surface water sources in California. Before 1914, public agencies and private individuals and entities were able to initiate appropriative water rights through their own actions, which in some cases were provided by posting notices adjacent to diversions. Changes to post-1914 water rights now involve a more formalized approval process through the California State Water Resources Control Board (SWRCB), potentially including analysis under the California Environmental Quality Act (CEQA) and opportunities for public involvement. Changes to the City's pre-1914 water rights, provided the changes do not injure other legal users of water, can be made by City Council's adoption of a resolution amending those rights and generally are subject to CEQA review and therefore public comment.

### 3.1.3.1 Pre-1914 Water Rights

The City's pre-1914 water rights authorize diversions from several streams located north of the City, including Laguna Creek, Reggiardo Creek (a first order tributary to Laguna Creek), Liddell Spring (located within the East Branch Liddell Creek watershed), and Majors Creek (all collectively referred to as North Coast streams). These appropriations are reflected in the City's Statements of Water Diversion and Use Nos. S002042, S002043, S002044, and S008610, on file with the SWRCB. Table 3-1 summarizes the City's existing pre-1914 water rights.

**Table 3-1. Pre-1914 Water Rights Summary**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Liddell Spring:** Statement of Water Diversion and Use S002043 | 1913 | Liddell Spring (East Branch Liddell Creek watershed) | Liddell Spring Diversion | Municipal | Year-round | None |
| **Laguna Creek:** Statement of Water Diversion and Use S002042 | 1890 | Laguna Creek | Laguna Creek Diversion | Municipal | Year-round | None |
| **Majors Creek:** Statement of Water Diversion and Use S002044 | 1881 | Majors Creek | Majors Creek Diversion | Municipal | Year-round | None |
| **Reggiardo Creek:** Statement of Water Diversion and Use S008610 | 1912 | Reggiardo Creek | Reggiardo Creek Diversion | Municipal | Year-round | None |

**Notes:**

1 Since 2007, diversions by the City have been voluntarily subject to a series of interim bypass flow requirements established by ongoing agreements with the California Department of Fish and Wildlife. Those agreements' terms are not part of the water rights and not reflected in this column.

### 3.1.3.2 Post-1914 Water Rights

The City holds post-1914 appropriative water rights for Newell Creek and the San Lorenzo River under existing water-right licenses and permits,[7] respectively, issued by the SWRCB and predecessor state permitting agencies. Table 3-2 summarizes the City's existing post-1914 water rights).

[7] A water-right permit is an authorization to develop a water diversion and use project. Ultimately, the water right is based on beneficial use of water under a permit. If water is used beneficially in conformance with the permit, the SWRCB will confirm the water right by issuing a license, which is a vested right that confirms the actual use. The license will only confirm a water right that reflects the reasonable and beneficial use under the permit (SWRCB 2019).

Table 3-2. Post-1914 Water Rights Summary

| Location | Priority | Source | Place of Use | Method of Diversion | Points of Diversion | Purpose of Use | Annual Diversion Limit | Maximum Diversion Rate | Season of Diversion | Bypass Requirement[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| **Tait:** License 1553 (A004017) | 06/09/1924 | San Lorenzo River | See City of Santa Cruz Areas Served in Figure 3-2 and more detailed map with water rights petitions (Appendix B) | Direct Diversion | Tait Diversion | Municipal, Domestic | 4,492 afy[2] | 6.2 cfs[2] | 1/1 – 12/31 | None |
| **Tait:** License 7200 (A005215) | 09/20/1926 | | | | | | 4,347 afy[2] | 6 cfs[2] | | |
| **Felton:** Permit 16123[3] (A022313) | 10/20/1965 | San Lorenzo River | See City of Santa Cruz Areas Served in Figure 3-2 and more detailed map with water rights petitions (Appendix B) | Diversion to Storage | Felton Diversion Facility | Municipal | 3,000 afy (combined maximum diversion under both permits) | 9/1 – 9/30: 7.8 cfs (under Permit 16123 only)<br>10/1 – 5/31: 20 cfs (combined under both permits) | 9/1 – 6/1 | 9/1 – 9/30: 10 cfs<br>10/1 – 10/31: 25 cfs<br>11/1 – 5/31: 20 cfs |
| **Felton:** Permit 16601[3] (A023710) | 3/1/1971 | | | | | | | | 10/1 – 6/1 | |
| **Newell Creek:** License 9847 (A017913) | 12/12/1957 | Newell Creek | See City of Santa Cruz Areas Served in Figure 3-2 and more detailed map with water rights petitions (Appendix B) | Diversion to Storage[4] | Newell Creek Dam | Municipal, Domestic, Industrial, Recreational, Fire Protection | 5,600 afy diversion to storage<br>Maximum storage in Loch Lomond Reservoir 8,624 afy<br>Maximum withdrawal not to exceed 3,200 afy | none | 9/1 – 7/1 | 9/1 – 7/1: 1 cfs[5] |

**Notes**: afy= acre-feet per year; cfs= cubic feet per second; gpm= gallons per minute.

## Table 3-2. Post-1914 Water Rights Summary (continued)

**Notes (continued):**

1 Since 2007, diversions by the City have been voluntarily subject to a series of interim bypass flow requirements established by ongoing agreements with the California Department of Fish and Wildlife. Those agreements' terms are not part of the water rights and not reflected in this column.

2 The two Tait Licenses (Licenses 1553 and 7200) are operated jointly and, based on their combined maximum diversion rates of 12.2 cfs, have a total combined maximum use of 8,838 afy. These limits are not specified in the Tait Licenses. The maximum amounts were calculated using the maximum diversion rates and diversion seasons.

3 The two Felton Permits (Permit 16123 and Permit 16601) function together. The total quantity of water diverted under these two permits combined shall not exceed 3,000 afy. The combined maximum rate of diversion to storage shall not exceed 20 cfs.

4 While direct diversion is not explicitly authorized, that appears to be an oversight. City has determined that diversions authorized by the license could not occur without the ability to take water by direct diversion.

5 Between July 2 and August 31, 1 cfs or the natural flow is bypassed, whichever is higher.

Under California Water Code Sections 1701 through 1705, these permits and licenses can be modified with SWRCB approval if such modifications would not increase the appropriation's amount and season authorized under those permits and licenses and would not cause injury to other legal users of the water involved. The City is currently authorized to divert water from the San Lorenzo River at the Tait Diversion under Licenses 1553 and 7200 (Applications A004017 and A005215, respectively), which allow for the direct diversion of up to 4,347 acre-feet per year (afy) and 4,492 afy (the theoretical maximum), respectively, between January 1 and December 31.[8] Operationally, the two licenses function together. The City is also currently authorized to divert water from the San Lorenzo River at the Felton Diversion under Permits 16123 and 16601 (Applications A022313 and A023710, respectively). The Felton Permits allow for a combined maximum diversion of 3,000 afy between September 1 and June 1 (Permit 16123) and between October 1 and June 1 (Permit 16601). Operationally, the two permits function together.

Water diverted at Felton is transported by a large-diameter pipeline and a series of pump stations to Loch Lomond Reservoir for storage. The City also holds License 9847 (Application A017913) that allows for a maximum of 5,600 afy of water to be diverted from Newell Creek to storage in Loch Lomond Reservoir between September 1 and July 1. License 9847 states that the maximum storage capacity of Loch Lomond Reservoir is limited to 8,624 acre-feet. The maximum amount of withdrawal of water from storage in the Loch Lomond Reservoir under License 9847 is limited to 3,200 afy.

The City's Newell Creek License and Felton Permits involve the storage of water. The Newell Creek License authorizes the City to use up to 5,600 afy from Newell Creek "to be collected from September 1 of each year to July 1 of the succeeding year" and states that the "maximum withdrawal in any one year shall not exceed 3,200 acre-feet." That license also states that the City "shall have the right to hold in storage 8,624 acre-feet in Loch Lomond Reservoir." The City has determined that the amount of water use authorized by the Newell Creek License is only possible via both storage and direct diversion of water. Because a water-right license confirms prior usage of water, that license therefore implicitly incorporates direct diversions. The City's Felton Permits state that the amount appropriated under them from the San Lorenzo River collectively "shall not exceed 3,000 acre-feet per annum by storage" to be collected in Loch Lomond Reservoir. Felton Permit No. 16123 authorizes diversions to storage between "September 1 of each year to about June 1 of the succeeding year." Felton Permit No. 16601 authorizes diversions to storage between "October 1 of each year to June 1 of the succeeding year." See Section 3.4.2, Water Rights Modifications, for a description of the proposed change to the Newell Creek License to explicitly recognize direct diversions and changes to the Felton Permits to authorize direct diversions as part of the Proposed Project.

8 The Tait Licenses' total annual limits are calculated from their maximum instantaneous diversion rates because the licenses themselves do not state total annual limits.

The City's permits to divert water at Felton (as amended by earlier requests for time extensions in the mid-1980s and again in the mid-1990s) required the City to put all of its entitlement to full beneficial use by December 2006. While the City has been diligently using water from the Felton Diversion for beneficial use, to date, the City has used just over half the permitted amount on an annual basis, due largely to extensive water conservation efforts within the City. In the future, the City expects to need the full entitlement and, therefore, filed Petitions for Extension of Time for Permits 16123 and 16601 in 2006 with the SWRCB to request additional time in which to put the full 3,000 afy to beneficial use. The need for such time extensions is typical for municipal water rights, the use of which increases over time.

# 3.2 Project Background

## 3.2.1 Water Supply Planning Background

### 3.2.1.1 City of Santa Cruz

#### Integrated Water Plan

The City has been pursuing possible new water supplies for the past several decades. In 1997, the City initiated an integrated water planning approach to consider all practical options for balancing its water supply by decreasing demand and increasing supply. The City Council adopted the City's Integrated Water Plan (IWP) in November 2005 (Gary Fiske and Associates 2003). The City's IWP objectives were to (1) reduce near-term drought shortages and (2) provide a reliable supply that meets long-term needs while ensuring protection of public health and safety. The IWP components identified to meet these objectives included water conservation, curtailment of water deliveries during drought, and a new supplemental water supply. Water supply alternatives considered in the IWP and related background studies included, but were not limited to, seawater desalination, reclamation/recycled water, various groundwater options, water transfers and exchanges with SqCWD, maximizing storage in Loch Lomond Reservoir, and reservoir storage in the Olympia Quarry (Gary Fiske and Associates 2003).

Based on the outcome of the IWP and related background studies, seawater desalination was initially determined to be the most feasible and reliable alternative for a supplemental supply of drinking water. A cooperative operational scenario that involved partnering with SqCWD and constructing a 2.5-million-gallon-per-day (mgd) seawater desalination plant and related facilities (with the ability to expand the plant up to a maximum of 4.5 mgd to meet future needs through 2030) was selected by the City Council as the preferred alternative. The IWP Program Environmental Impact Report (EIR), certified in 2005, provided a programmatic analysis of a 2.5-mgd desalination facility and incremental expansions up to 4.5 mgd (City of Santa Cruz 2005a, 2005b). The results of the IWP process were incorporated into the City's 2010 UWMP (City of Santa Cruz 2011).

The City and SqCWD partnered to undertake environmental review for the proposed scwd$^2$ Desalination Program,[9] which involved the construction and operation of a seawater reverse osmosis desalination plant and related facilities to provide up to 2.5 mgd of potable water. Between 2007 and 2013, desalination background studies were conducted to support the development of the scwd$^2$ Regional Seawater Desalination Project Draft EIR (scwd$^2$ DEIR) (URS 2013a).

[9] The City of Santa Cruz and the SqCWD formed the scwd$^2$ Desalination Program to oversee technical studies, permitting, environmental review, and design of a previously proposed desalination facility.

The scwd2 DEIR was released for public review and comment in May 2013. The City chose to suspend the pursuit of seawater desalination in late 2013 to allow for a broader public discussion on the topic of water supply for the City.

## Water Supply Advisory Committee Final Report and Urban Water Management Plan

After the pursuit of seawater desalination was suspended in 2013, the City Council approved formation and membership of the Water Supply Advisory Committee (WSAC) in 2014. The WSAC's charge was to "explore, through an iterative, fact-based process, the City's water profile, including supply, demand and future risks; analyze potential solutions to deliver a safe, adequate, reliable, affordable and environmentally sustainable water supply; and, to develop recommendations for City Council consideration" (WSAC 2015). The WSAC developed the WSAC Final Report on Agreements and Recommendations (October 2015), which was accepted by the City Council in November 2015. The WSAC Final Report was incorporated by reference into the 2015 UWMP, and the guiding recommendations were presented as the future water supply management strategy for the City (City of Santa Cruz 2016). The WSAC recommendations are designed to address the "Problem Statement" included in the WSAC Final report:

> "Santa Cruz's water supply reliability issue is the result of having only a marginally adequate amount of storage to serve demand during dry and critically dry years when the system's reservoir doesn't fill completely. Both expected requirements for fish flow releases and anticipated impacts of climate change will turn a marginally adequate situation into a seriously inadequate one in the coming years. Santa Cruz's lack of storage makes it particularly vulnerable to multi-year droughts. The key management strategy currently available for dealing with this vulnerability is to very conservatively manage available storage. This strategy typically results in regular calls for annual curtailments of demand that may lead to modest, significant, or even critical requirements for reduction. In addition, the Santa Cruz supply lacks diversity, thereby further increasing the system's vulnerability to drought conditions and other risks…" (WSAC 2015)

The overarching goal of the WSAC recommendations is to provide significant improvement in the sufficiency and reliability of the City water supply by 2025. The recommendations in the WSAC Final Report reflect consensus among WSAC members on how best to address an agreed-upon worst-year gap of 1.2 billion gallons per year during modeled worst-year conditions with implementation of the solutions by 2025.[10] As presented in the 2015 UWMP, the Water Supply Augmentation Strategy portfolio elements include the following (WSAC 2015):

- **Element 0: Additional water conservation** with a goal of achieving an additional 200 to 250 million gallons per year (mgy) of demand reduction by 2035 by expanding water conservation programs.
- **Element 1: Passive recharge of regional aquifers** by working to develop agreements for delivering surface water to the SqCWD and/or the SVWD[11] so they can rest their groundwater wells, help the aquifers recover, and potentially store water for use by the City in dry periods.
- **Element 2: Active recharge of regional aquifers** by using existing infrastructure and potential new infrastructure in the Purisima aquifer in the Soquel-Aptos Basin (now referred to as the Santa Cruz Mid-County Groundwater Basin), in the Santa Margarita/Lompico/Butano aquifers (now referred to as the Santa Margarita Groundwater Basin) in the Scotts Valley area, or in both to store water that can be available for use by the City in dry periods.

10 Since 2015, the City has approved a stepwise implementation of the WSAC Water Supply Augmentation Strategy that may result in final implementation beyond 2025.

11 While WSAC recommendations considered only delivering surface water to SqCWD and SVWD, current conceptual-level planning considers delivering surface water to SLVWD and CWD as well.

- **Element 3: A potable water supply using advanced-treated recycled water** as its source as a supplemental or replacement supply in the event the groundwater storage strategies described above prove insufficient to meet the goals of cost-effectiveness, timeliness, or yield. In the event advanced-treated recycled water does not meet the City's needs, desalination would become Element 3.

Implementation of the Proposed Project would support Elements 1 and 2 above.

### 3.2.1.2 Cooperative Groundwater Management Agreement

In 2015, the City and SqCWD entered into a cooperative monitoring/adaptive groundwater management agreement (cooperative groundwater management agreement). This agreement was developed to ensure the following groundwater management objectives are met: (1) protect the Santa Cruz Mid-County Groundwater Basin from seawater intrusion; (2) allow for redistribution of groundwater pumping inland; (3) maintain inland and coastal groundwater levels to abate seawater intrusion; and (4) provide both agencies flexibility to respond to changing conditions. The agreement also includes groundwater pumping goals, which are defined as maximum annual limits. The agreement addresses groundwater pumping activities of the City and SqCWD, but does not explicitly address the operation of potential aquifer storage and recovery (ASR) facilities or Pure Water Soquel, as WSAC and Pure Water Soquel planning efforts were not far enough along at the time the agreement was executed. While ASR could be designed to achieve the four groundwater management objectives of the agreement (see above), there are some elements of the agreement that do not apply to ASR, such as the groundwater pumping goals. Since the development of this agreement, the Santa Cruz Mid-County Groundwater Agency has developed a groundwater sustainability plan for the basin that does contemplate ASR, Pure Water Soquel, and water transfers among other management actions to restore the Mid-County Groundwater Basin (see Section 3.2.1.3, Santa Cruz Mid-County Groundwater Sustainability Plan). The City and SqCWD are currently exploring options to revise, amend, replace, or abolish the cooperative groundwater management agreement to provide both agencies flexibility to pursue projects and operate within the basin consistent with the groundwater sustainability plan, as well as with the groundwater management objectives of the cooperative groundwater management agreement.

### 3.2.1.3 Santa Cruz Mid-County Groundwater Sustainability Plan

The City has joined with SqCWD, CWD, the County of Santa Cruz, and private well representatives to form the Santa Cruz Mid-County Groundwater Agency, the local groundwater sustainability agency created pursuant to the requirements of California's Sustainable Groundwater Management Act (SGMA), enacted in September 2014. The Santa Cruz Mid-County Groundwater Agency has overseen 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. Over-pumping in the Santa Cruz Mid-County Groundwater Basin resulted in a groundwater overdraft condition and seawater intrusion along the coast. The City pumps from a portion of the Purisima Formation in the Mid-County Groundwater Basin, which local officials have recognized as threatened by potential over-pumping with an ongoing risk of seawater intrusion that could jeopardize the future production of the City's groundwater sources (City of Santa Cruz 2016).

The Santa Cruz Mid-County Groundwater Basin GSP was released for public review in July 2019. The GSP was completed and adopted by the Santa Cruz Mid-County Groundwater Agency in November 2019 and submitted to the Department of Water Resources 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 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. Baseline projects and management actions (Group 1), in conjunction with other projects and management actions planned to reach sustainability (Group 2), include water conservation and demand management, installation and redistribution of municipal groundwater pumping, Pure Water Soquel, ASR in the Beltz system (Beltz ASR) and elsewhere, water transfers/in lieu groundwater recharge and distributed stormwater managed aquifer recharge. Additional potential future projects and management actions may be evaluated in the future (Group 3). 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). Additional information about Beltz ASR and water transfers/in lieu groundwater recharge from the GSP is provided below.

### Beltz Aquifer Storage and Recovery

Consistent with the WSAC Final Report, the Santa Cruz Mid-County Groundwater Basin GSP indicates that ASR would inject excess surface water, treated to drinking water standards, into the natural structure of Basin aquifers for use as an underground storage reservoir. The ASR project modeled for the GSP optimizes existing City infrastructure as a more efficient use of available resources to inject excess drinking water into Basin aquifers. The GSP acknowledges, however, that eventual implementation of the ASR project may include new infrastructure. Drinking water stored in the Basin from an ASR project would provide a drought supply for the areas served by the City. The GSP further indicates that information generated by pilot test evaluations will help inform the degree to which ASR can fulfill the City's strategy to improve the reliability of its water supply, along with helping to evaluate whether an ASR project can be developed and operated in a manner that will achieve both supply reliability and groundwater sustainability benefits.

According to the GSP, Basin groundwater elevations are expected to increase with ASR's injection of excess surface water, treated to drinking water standards, and continued basin management. ASR withdrawals would be managed to ensure they do not impact the attainment of or ongoing Basin sustainability. Benefits would be evaluated using the existing groundwater monitoring well network and data management systems to compare groundwater levels over time. Potential impacts of recovering water from the Basin through ASR would be monitored to ensure ongoing groundwater sustainability is maintained. Specifically, operation of an ASR system would be conducted in such a way that it avoids negative impacts on protective groundwater elevations and chloride concentrations at coastal monitoring wells. See Section 3.4.3, Water Supply Augmentation, for a description of the ASR component of the Proposed Project.

### Water Transfers/In Lieu Groundwater Recharge

The Santa Cruz Mid-County Groundwater Basin GSP indicates that water transfers/in lieu groundwater recharge would deliver excess City treated surface water, treated to drinking water standards, to SqCWD to reduce groundwater pumping and allow an increase in groundwater storage. Water transfers have the potential to reduce the threat of seawater intrusion and possibly increase groundwater storage if adequate amounts of treated surface water are consistently and reliably available when SqCWD customers have the demand needed to use City excess surface water. If water transfers benefit groundwater levels, and are sustainable over time, and the Basin's performance consistently reaches sustainability targets, then the GSP indicates that the City potentially could recover some of the increase in groundwater in storage as a supplemental supply during droughts. The GSP also

acknowledges the pilot water transfer program between the City and SqCWD described in Section 3.1.2.4, Soquel Creek Water District. See Section 3.4.3, Water Supply Augmentation, for a description of the water transfers and exchanges component of the Proposed Project.

#### 3.2.1.4 Santa Margarita Groundwater Sustainability Plan

Santa Margarita Groundwater Agency (SMGWA) is a groundwater sustainability agency that was formed as a Joint Powers Authority. It has three member agencies—SVWD, SLVWD, and the County of Santa Cruz—and is governed by a Board of Directors comprising two representatives from each member agency, one representative from the City of Scotts Valley, one from the City of Santa Cruz, one from Mount Hermon Association, and two private well owner representatives. The Santa Margarita Groundwater Basin is generally bounded by the City of Scotts Valley and State Highway 17 on the east; the unincorporated communities of Felton, Mount Hermon, Ben Lomond, Brookdale, and Boulder Creek and State Highway 9 on the west; and the unincorporated communities of Lompico and Zayante on the north (see Figure 3-3). The major water administrators that rely on the supply from the Santa Margarita Groundwater Basin are SVWD, SLVWD, and Mount Hermon Association. Since the early 1980s, SVWD has actively managed groundwater resources. In 1994, the agency formally adopted a Groundwater Management Plan in accordance with Assembly Bill 3030, also known as the Groundwater Management Act under California Water Code Section 10750 (SMGWA 2020). The main goal of the Groundwater Management Plan is to better manage the aquifers providing the community's drinking water through the management of quantity and quality of the groundwater supply.

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, which must be completed and submitted to the Department of Water Resources by 2022 (SMGWA 2020).

### 3.2.2 Anadromous Salmonid Habitat Conservation Plan Development

#### 3.2.2.1 Overview

Since 2001, City staff have been developing an Anadromous Salmonid Habitat Conservation Plan (ASHCP)[12] with the California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Service (NMFS) staff for California Endangered Species Act (CESA) and federal Endangered Species Act (ESA) compliance for City water-system operation and maintenance activities that may adversely affect special-status anadromous salmonids (City of Santa Cruz 2021). The anadromous salmonids covered by the ASHCP include Central California Coast coho salmon (coho) (*Oncorhynchus kisutch*), a state and federally listed endangered species, and the Central California Coast steelhead (steelhead) (*Oncorhynchus 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 "Covered Activities" on "Covered Species" (steelhead and coho) and their habitat in support of the long-term viability of these

[12] A HCP is prepared under Section 10 of the federal ESA 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 CESA. 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.

populations within streams affected by the ASHCP Covered Activities.[13] 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 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 (NMFS 2012, 2016). Additional information about these local anadromous salmonid species, development of bypass flows and the status of the ASHCP are further discussed below and described in greater detail in Appendix C.

#### 3.2.2.2 Local Anadromous Salmonid Species

The San Lorenzo River and North Coast streams from which the City diverts water are inhabited by two protected anadromous salmonid species, steelhead and coho. Steelhead inhabiting the drainages within the area are part of the Central California Coast Distinct Population Segment (DPS) listed as threatened under the federal ESA (NMFS 1997). The Central California Coast DPS consists entirely of winter-run steelhead and extends from the Russian River south to Soquel Creek in the southern end of Santa Cruz County. Streams in the area are included in the critical habitat designation for Central California Coast steelhead (NMFS 2005). Coho in the area are part of the Central California Coast Evolutionarily Significant Unit (ESU), which is listed as endangered under the federal ESA. Under the ESA, the Central California Coast ESU extends from Punta Gorda in Humboldt County south to, and including, the San Lorenzo River (NMFS 1996). Critical habitat has been designated for the Central California Coast ESU, including the accessible portions of the streams in the area.

##### Steelhead Life History

Steelhead life history is quite diverse and adaptive, providing the necessary flexibility to survive varied environmental conditions naturally occurring throughout their range and within their natal watershed. In general, steelhead grow and mature in the ocean and spawn in freshwater. In central California, adult steelhead enter coastal streams during the wet season in association with increased runoff. The majority of steelhead enter freshwater from January through March or April, and spawn relatively soon after entering freshwater. Incubation can take from a few weeks to a few months. Young steelhead (or fry) typically disperse to the stream margins. Depending upon the size attained by the fall following emergence, the juveniles aggregate in pools and begin the smolting process that prepares them for life in the ocean (known as smoltification). Juvenile steelhead can spend from 1 to 3 years in freshwater before smolting. Steelhead migrate downstream to the ocean as early as the fall, but most commonly in the spring (March through May). Steelhead may spend from 1 to 2 years in the ocean before reaching maturity and returning to their natal stream to spawn.

##### Coho Life History

Coho spawning migrations from the ocean to freshwater streams or rivers usually begin after the first heavy rains in late fall or winter. In the short coastal streams of central California, coho typically return to freshwater during November through February. The female may dig several pits to complete spawning, laying an average of 2,500 eggs per female. Newly hatched fry (embryos) remain in gravel for approximately 3 weeks before emerging. As they grow during the spring, juvenile coho disperse to pools where they set up individual territories. After spending the ensuing summer, fall and winter in the stream, the immature yearling coho begin to migrate downstream toward the ocean

[13] The ASHCP Covered Activities include operation, maintenance, and rehabilitation of the City's water supply and water system facilities, including surface water diversions, operation and maintenance of the City's municipal facilities, and management of City lands.

in spring. During this time, juveniles undergo smoltification. Growth in freshwater varies, but typically smolts leave California streams after 1 to 2 years. Outmigration typically peaks from late April to mid-May. Coho have a fairly strict 3-year life cycle, with about half spent in freshwater and half spent in saltwater. After 2 years of growing and sexually maturing in the ocean, coho return to their natal streams as 3-year-olds to spawn and die. Some precocious males (jacks) return to freshwater at 2 years of age. There is very little variability in age of spawning for female coho; nearly all wild female coho spawn at 3 years.

#### 3.2.2.3 Bypass Flows

Numerous studies undertaken in support of the ASHCP have evaluated what limiting factors may be affecting fish in streams from which the City diverts water. Among other things, these analytical efforts include evaluation of instream flow needs during all freshwater life phases (migration, spawning, incubation, and rearing) over a range of hydrologic year types. Because these studies indicated that, at certain times and locations, habitat conditions in these streams could be improved by bypassing flows which would otherwise be diverted (bypass flows),[14] the City began voluntarily diverting less flow in 2007 on an interim basis in connection with the pursuit of the ASHCP. Currently, the City is implementing interim bypass flow requirements[15] protective of steelhead and coho in agreement with CDFW at the diversions on the North Coast streams and at one of two diversions on the San Lorenzo River (the Tait Diversion) that supply surface water to the City (see Appendix C for the interim bypass flow requirements).

The City has negotiated long-term minimum bypass flow requirements (Agreed Flows) with CDFW and NMFS as part of the ASHCP process. In particular, the ASHCP seeks to optimize habitat conditions for all life-stages of the subject species within the natural variability of the hydrologic regime. Any impacts to coho would be of particular concern because coho populations south of the Golden Gate Bridge are on the brink of extirpation. Provision of the Agreed Flows would generally require reduced diversions from the North Coast sources and from the San Lorenzo River at Tait at certain times and corresponding increased use of stored water from Loch Lomond Reservoir and use of groundwater. This would result in reduced storage in Loch Lomond Reservoir available for use during dry and drought periods. Overall, the implementation of the Agreed Flows would further reduce the City's dry-year water supply reliability, as it would further limit the amount of water that the City can divert.

The Proposed Project in its entirety would serve to provide additional flexibility in the use of all City water sources to address the reduced storage at Loch Lomond Reservoir while benefiting instream flows for salmonid habitat. Without such flexibility, it would not be feasible for the City to implement the Agreed Flows and meet current and future demands. At the same time, the Proposed Project would potentially benefit regional water supply security and provide opportunities to address regional groundwater overdraft. Therefore, the ASHCP conservation strategy assumes, and is dependent upon, approval of the Proposed Project by the City and the SWRCB.

#### 3.2.2.4 Anadromous Salmonid Habitat Conservation Plan Status

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

[14] A bypass flow refers to requirements that water that would otherwise be diverted instead be bypassed from the diversion and left in the stream.

[15] The interim bypass flow requirements are those flow requirements agreed to by CDFW and the City as part of an April 2018 agreement between CDFW and the City. The City and CDFW have had numerous such agreements since 2007 during development of the ASHCP.

The City's adoption of the ASHCP will be subject to a separate review under CEQA, and NMFS's processing of the ASHCP as a Section 10 permit application will be subject to a separate environmental review under the National Environmental Policy Act. However, as both CDFW and NMFS have tentatively agreed on the bypass flow requirements, the City has committed to implement the Agreed Flows as part of this Proposed Project regardless of the final outcome of the ASHCP process. See Section 3.4.2.6, Bypass Requirements (Agreed Flows), for additional information about the Agreed Flows.

# 3.3 Project Purpose and Objectives

Section 15124 of the CEQA Guidelines indicates that the EIR project description shall include a statement of the objectives sought by the Proposed Project. A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project.

The underlying purpose of the Proposed Project is to improve flexibility in operation of the City's water system while enhancing stream flows for local anadromous fisheries. Incorporating the Agreed Flows into all City water rights is necessary to benefit local fisheries, specifically for coho and steelhead, but would further constrain the City's limited surface water supply. Consequently, the City needs to improve operational flexibility of the water system within existing rights, permits, and licenses to allow better use of limited water resources. To do this, the City is proposing water rights modifications to its existing rights, permits, and licenses to expand the authorized place of use (POU), to better utilize existing diversions, and to extend the City's time to put water to full beneficial use. The objectives for the Project are as follows:

1. Improve the flexibility with which the City operates the water system to facilitate the City's ability to meet drinking water demand while providing flow conditions protective of coho and steelhead.
2. Provide flow conditions that are protective of coho and steelhead within all streams from which the City diverts water, as negotiated with CDFW and NMFS during the preparation of the pending ASHCP, which is the habitat conservation plan being developed under the federal ESA and CESA.
3. To improve the City's limited storage and support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers and exchanges) and Element 2 (active recharge of regional aquifers via ASR) in order to deliver a safe, adequate, reliable and environmentally sustainable water supply.
4. Facilitate opportunities within the City and regionally for conjunctive use[16] of the City's surface water rights in combination with groundwater, including by addressing significant barriers to implementing conjunctive use due to the place of use associated with the City's water-right permits and licenses to, among other things, assist in implementation of the "Water Transfers/In Lieu Groundwater Recharge" element of the Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan.
5. Provide more options for where and how the City can utilize its existing appropriative water rights.
6. Provide for the underground storage of surface water primarily to support more reliable and improved water supply by allowing the City to use such stored water during dry periods and also to contribute to the

[16] Conjunctive use refers to a range of actions and projects that provide for the coordinated management of surface water and groundwater supplies to increase total supplies and enhance water supply reliability. Conjunctive use actions and projects can also be used to sustainably manage groundwater supplies.

protection of groundwater quality from seawater intrusion per the Santa Cruz Mid-County Groundwater Basin GSP and to allow for the implementation of the "Aquifer Storage and Recovery" element of the Santa Cruz Mid-County Groundwater Basin GSP.

7. Remove potential operational constraints on City water rights that do not explicitly recognize direct diversion.
8. Allow additional time for the City to fully reach beneficial use under existing water-right permits at Felton.
9. Improve fish screening at the Felton Diversion and Tait Diversion and improve fish passage at the Felton Diversion. Consideration of fish passage improvements at Tait Diversion would be incorporated into future projects as required.
10. Address reliability and operational deficits at the Tait Diversion and Coast Pump Station to meet other project objectives.
11. Implement state policy favoring integrated regional water management by involving the City and other local agencies in "significantly improving" the "reliability of water supplies" by "diversifying water portfolios, taking advantage of local and regional opportunities, and considering a broad variety of water management strategies," specifically by making more extensive conjunctive use of the surface-water, groundwater and groundwater-storage resources available to the City and, when Agreed Flows and City demands are met, making excess surface water under the City's surface-water rights available to neighboring agencies who are dependent on overdrafted groundwater basins. (Water Code Section 10531[c].)
12. Consider other related actions or activities that would be foreseeable as a logical part in a chain of contemplated actions should the Proposed Project be approved, including facilities that would provide for ASR, water transfers, and water exchanges.

# 3.4 Project Characteristics

## 3.4.1 Overview

The Proposed Project includes components that are considered in the EIR at a "project" level (project components) and components that are considered at a "programmatic" level (programmatic components), and therefore this EIR is both a project EIR and a program EIR. (See Chapter 2 for information about the distinction between a project and program EIR.) The programmatic components of the Proposed Project would include potential future activities that may occur after the City water rights are modified. Because these activities are considered to be foreseeable as a logical part in a chain of contemplated actions, but the full physical extent and timing of these improvements are not known at this time, these activities are addressed in the EIR at a programmatic level. Some of these actions would be undertaken in conjunction with surrounding water districts and some would be undertaken solely by the City. If warranted, additional environmental analysis will be undertaken at the time these foreseeable future activities or actions are under active consideration. See Chapter 2, Introduction, for information about additional environmental documentation that may be required.

Table 3-3 identifies these components, which include the following:

- **Water rights modifications,** which are evaluated at a project level in this EIR, including modifications related to place of use, method of diversion, points of diversion and rediversion, underground storage and purpose of use, extension of time and stream bypass requirements for fish habitat (referred to in this EIR as Agreed Flows);
- **Water supply augmentation components,** which are evaluated at a project or programmatic level in this EIR, depending on what is known about the components, including:

  - ASR, which is evaluated at a programmatic level, unless otherwise specified below:
    - New ASR facilities at unidentified locations (referred to as "new ASR facilities" in this EIR).
    - Beltz ASR facilities at the existing Beltz well facilities (referred to as "Beltz ASR facilities" in this EIR), which are evaluated at a project level.
  - Water transfers and exchanges and associated intertie improvements, which are evaluated at a programmatic level in this EIR.
- **Surface water diversion improvements**, which are evaluated at a programmatic level in this EIR, including the Felton Diversion fish passage improvements and the Tait Diversion and Coast Pump Station improvements.

Certification of this EIR will support the City's consideration of the approval and construction of the Beltz ASR project component, as well as the SWRCB's consideration of the water rights modifications project component.

The subsections below further describe the project components and programmatic components.

**Table 3-3. 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 Components*** | | |
| 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 | | ✓ |

## 3.4.2 Water Rights Modifications

Project components of the Proposed Project include modifications to the City's existing pre-1914 and post-1914 appropriative water rights (see Table 3-4).

Table 3-4. Summary of Proposed Water Rights Modifications

| Location | Place of Use | Method of Diversion | Points of Diversion | Underground Storage and Purpose of Use | Extension of Time | Bypass Requirement |
|---|---|---|---|---|---|---|
| **All North Coast Streams:** Statements of Water Diversion and Use S002043, S002042, S002044, and S008610 | Expand the authorized POUs to (1) ensure that the POUs of all of the City's water rights are consistent, (2) include the Santa Margarita and Santa Cruz Mid-County Groundwater Basins, and (3) include the service areas of potential partnering regional water districts[2] | — | Add Beltz 8, 9, 10, and 12 wells as points of rediversion into and out of groundwater storage | Add protection of water quality as new beneficial use | — | Add minimum bypass flows to reflect Agreed Flows |
| **Tait:** Licenses 1553 and 7200 (A004017 and A005215) | Expand the authorized POUs to (1) ensure that the POUs of all of the City's water rights are consistent, (2) include the Santa Margarita and Santa Cruz Mid-County Groundwater Basins, and (3) include the service areas of potential partnering regional water districts[2] | — | Add Beltz 8, 9, 10, and 12 wells as points of rediversion into and out of groundwater storage | Add underground storage supplement associated with Beltz 8, 9, 10, and 12 wells<br>Add protection of water quality as new beneficial use | — | Add minimum bypass flows to reflect Agreed Flows<br>Enhance fish screening at the Tait Diversion consistent with the ASHCP and incidental take permit for anadromous species |
| **Felton:** Permits 16123 and 16601 (A022318 and A023710) | Expand the authorized POUs to (1) ensure that the POUs of all of the City's water rights are consistent, (2) include the Santa Margarita and Santa Cruz Mid-County Groundwater Basins, and (3) include the service areas of potential partnering regional water districts[2] | Explicitly recognize direct diversion | Add Beltz 8, 9, 10, and 12 wells as points of rediversion into and out of groundwater storage<br>Add Tait Diversion Facility as an authorized point of diversion | Add underground storage supplement associated with Beltz 8, 9, 10, and 12 wells<br>Add protection of water quality as new beneficial use | Extend time to maximize beneficial use under the permits to 2043[1] | Add minimum bypass flows to reflect Agreed Flows<br>Enhance fish passage and screening at the Felton Diversion consistent with the ASHCP and incidental take permit for anadromous species |

Table 3-4. Summary of Proposed Water Rights Modifications (continued)

| Location | Place of Use | Method of Diversion | Points of Diversion | Underground Storage and Purpose of Use | Extension of Time | Bypass Requirement |
|---|---|---|---|---|---|---|
| **Newell Creek:** License 9847 (A017913) | Expand the authorized POUs to (1) ensure that the POUs of all of the City's water rights are consistent, (2) include the Santa Margarita and Santa Cruz Mid-County Groundwater Basins, and (3) include the service areas of potential partnering regional water districts[2] | Explicitly recognize direct diversion<br>Add a maximum direct diversion rate of 31 cfs | — | Add protection of water quality as new beneficial use | — | Add minimum bypass flows to reflect Agreed Flows |

**Notes:** ASHCP = Anadromous Species Habitat Conservation Plan; cfs= cubic feet per second; POU = place of use.

1 The time to maximize beneficial use ended on December 31, 2006, although the City filed a prior extension petition before that date.

2 Service areas of potential partnering regional water districts to include: SqCWD, SVWD, SLVWD, and CWD, as shown on Figure 3-3.

In order to both develop and analyze the Proposed Project presented in this EIR, the City has utilized a modeling system comprised of a hydrologic model, a water supply model, and a biological effects model. Together, these tools have allowed the City to understand the potential effects of Proposed Project features on both water supply availability and anadromous fisheries, allowing refinements in the Proposed Project to maximize available water supply while protecting local anadromous fisheries. See Section 3.5, Proposed Project Modeling, for additional information about the modeling of the Proposed Project and Appendix D for hydrologic, water supply, and fisheries habitat modeling of the effects of the proposed water rights modifications based on the reasonably foreseeable operations of the City's water system.

The City will pursue changes to its pre-1914 water rights through action by the Santa Cruz City Council. The City is pursuing proposed changes to its post-1914 permits and licenses through the filing of change and extension petitions with the SWRCB. These change and extension petitions were filed with the SWRCB in August 2020 (see Appendix B). No change to the authorized amounts of diversions under any of the City's appropriative water rights is proposed as part of the Proposed Project. Overall, implementation of these modifications would provide the City greater flexibility in the operation of the water system while enhancing stream flows for local anadromous fisheries.

#### 3.4.2.1 Place of Use

The Proposed Project would expand the POUs of the City's pre-1914 and post-1914 appropriative water rights to include the areas served by the City, two local groundwater basins, and the service areas of neighboring water agencies, as shown in Figure 3-3. A significant barrier to implementing more conjunctive use of the City's sources of supply is existing constraints on the POUs for these sources. The Proposed Project would align the POUs of all of the City's appropriative water rights to cover the same area and expand those authorized POUs to include the Santa Cruz Mid-County Basin and Santa Margarita Basin as well as the service areas of the SqCWD, SVWD, SLVWD, and CWD. Expanded POUs are also necessary for improving the potential for conjunctive use of the region's resources with adjoining water agencies and within the region's groundwater basins. Conjunctive use of surface and groundwater supplies through the City's ASR operations could make some additional recovered groundwater available to the City and potentially to the region during dry periods. See Table 3-4 for the proposed water rights modifications being sought by the City that relate to POUs. See Section 3.4.3, Water Supply Augmentation, for additional information.

#### 3.4.2.2 Method of Diversion

The Proposed Project would result in explicit authorization of direct diversion as a method of diversion under the City's Newell Creek License and Felton Permits to complement the existing stated storage rights and add a new maximum direct diversion rate of 31 cubic feet per second (cfs) to the Newell Creek License. The existing Newell Creek License and Felton Permits do not explicitly authorize the diversion and use of water until it has been stored in Loch Lomond Reservoir for at least 30 days. The City has determined, however, that the amounts of diversion authorized by its license for Loch Lomond Reservoir (License 9847) could only be possible utilizing direct diversion as a second method of diversion. Because a water-right license confirms prior usage and maximum beneficial use of water, License 9847 implicitly incorporates direct diversions. If enforced strictly, the explicit terms of the City's existing Felton Permits and Newell Creek License could have the potential to constrain the City's ability to deliver water for beneficial use until 30 days after water has been collected and stored in the Loch Lomond Reservoir. To support the necessary flexibility in the use of the reservoir, the City needs to be able to directly divert water as a method of diversion from both the Felton Diversion and Newell Creek at Loch Lomond

Reservoir without a 30-day storage requirement. Direct diversion under the Felton Permits would allow for water diverted under the permits to be sent directly to the City's GHWTP without storage in Loch Lomond Reservoir. The new maximum diversion rate for the Newell Creek License of 31 cfs is being added per request to the SWRCB as set forth in the City's 2020 change petitions filing. The maximum diversion rate proposed was based on the City's anticipated maximum infrastructure capacity. See Table 3-4 for the proposed water rights modifications being sought by the City that relate to method of diversion.

### 3.4.2.3 Points of Diversion

#### Points of Rediversion for Each Water Right

The Proposed Project would add the City's existing Beltz system (Beltz 8, 9, 10, and 12 facilities) as points of rediversion[17] into and out of groundwater storage to the City's Tait Licenses, Felton Permits and pre-1914 appropriative rights. This would provide flexibility for utilization of the City's San Lorenzo River surface water supplies for the Beltz ASR component of the Proposed Project. The Proposed Project would also include the Beltz system as points of rediversion into and out of groundwater storage for the City's water rights on North Coast streams. See Section 3.4.3, Water Supply Augmentation, for a description of the ASR component of the Proposed Project. See Table 3-4 for the proposed water rights modifications being sought by the City that relate to points of rediversion.

#### Points of Diversion for the Felton Permits

The Proposed Project would add the Tait Diversion as a new point of diversion on the Felton Permits. Because the implementation of the Agreed Flows would constrain the water system in order to be protective of local fisheries, the City needs to increase the operational flexibility of the water system. The City needs the option of diverting water under the existing Felton Diversion water rights at either the Felton Diversion or downstream at the Tait Diversion. This would provide the ability to divert water under the Felton Permits with or without activation of the Felton Diversion inflatable dam and improve operational flexibility. Additionally, when water under the Felton Permits would be diverted at the Tait Diversion, water would remain in the San Lorenzo River longer, bypassing the Felton Diversion before being diverted at the Tait Diversion, thus providing fisheries benefits. The maximum rates of diversion at the Felton Diversion and Tait Diversion, respectively, would remain unchanged. See Table 3-4 for the proposed water rights modifications being sought by the City that relate to points of diversion for the Felton Permits.

### 3.4.2.4 Underground Storage and Purpose of Use

The Proposed Project would add underground storage supplements to the City's Tait Licenses and Felton Permits to allow for the Beltz ASR component of the Proposed Project. An underground storage supplement is required to be filed with the SWRCB for post-1914 water-right permits and licenses seeking to divert surface water to groundwater aquifers to artificially recharge these aquifers for further beneficial use. The underground storage supplements to allow for Beltz ASR are the only underground storage supplements being pursued now because these facilities are the only proposed ASR facilities whose locations and proposed capacities are currently known. The City would not be able to implement and operate other ASR facilities under its post-1914 permits and licenses without submitting additional underground storage supplements to those permits and licenses to the SWRCB and obtaining the

[17] A point of rediversion is a point, other than the point of initial diversion, where controlled water is diverted from a natural stream or another water source. In this case, water would be rediverted into and out of groundwater storage in the Beltz system.

SWRCB's approval. The City would potentially need to analyze those additional underground storage supplements in a future project-level environmental document building upon the programmatic analysis found in this EIR (see Chapter 2, Introduction, for information about additional environmental documentation that may be required). While an underground storage supplement is not necessary for the addition of ASR operations to the City's pre-1914 appropriative water rights, that element would be added to those rights through a City Council action.

Protection of water quality would also be added as a new purpose of use to all City appropriative water rights to support the use of surface water for ASR as it contributes to the protection of groundwater quality from seawater intrusion per the Santa Cruz Mid-County GSP. See Section 3.4.3, Water Supply Augmentation, for a description of the ASR component of the Proposed Project. See also Table 3-4 for the proposed water rights modifications being sought by the City that relate to underground storage and purpose of use.

#### 3.4.2.5 Extension of Time

The Proposed Project would extend the time under the Felton Permits to December 31, 2043 in which the City could make full beneficial use of the 3,000 afy diversion. Due to an extensive and successful water conservation program among other factors, reductions in per-capita water use from 2005 and 2015 have more than offset population increases; that is, even though the population of the areas served by the City has been slowly rising, total water use has declined (City of Santa Cruz 2015). Full implementation of the Agreed Flows as part of the Proposed Project, however, necessitates increased flexibility within the water system, requiring additional time under the City's Felton Permits to fully reach beneficial use. Additional time is also needed to implement water supply options that may be necessary to meet City water supply needs, including components such as ASR and other water supply augmentation components that may be pursued in conjunction with partnering water agencies (see Section 3.4.3, Water Supply Augmentation). Additionally, under the Felton Permits, explicitly authorizing direct diversion and adding the Tait Diversion as an authorized point of diversion would also facilitate full utilization of the 3,000 afy of diversion authorized by those Permits. See Table 3-4 for the proposed water rights modifications being sought by the City that relate to extension of time.

#### 3.4.2.6 Bypass Requirements (Agreed Flows)

##### Agreed Flows

The Proposed Project would include modifying City water rights to incorporate the bypass requirements for each water right the City negotiated with CDFW and NMFS during development of the ASHCP to better protect federally listed coho and steelhead in all watersheds from which the City diverts water. As described in Section 3.2.2, Anadromous Salmonid Habitat Conservation Plan Development, these bypass requirements are referred to as Agreed Flows, given that they were developed in conjunction with CDFW and NMFS. The Agreed Flows would be incorporated into both pre-1914 rights on the North Coast streams and post-1914 permits and licenses on the San Lorenzo River and Newell Creek. This would improve instream habitat and flow conditions for these fish species in the San Lorenzo River compared to historic operations. While it is expected that Agreed Flows will become terms and conditions of permits and authorizations issued under the ESA, CESA, and Section 1600 et seq. of the Fish and Game Code, the Proposed Project would commit the City to these flows regardless of the outcomes of these processes.

Through interim bypass agreements with CDFW, the City has already begun implementing improved bypass flows not required by its existing water rights at diversion facilities on the North Coast streams and at the Tait Diversion on the San Lorenzo River, further constraining the City's limited water supply, particularly in dry years.

Application of the Agreed Flows to all City surface water rights as part of the Proposed Project would further reduce the City's dry-year water supply reliability, as it would further limit the amount of water that the City can divert. The implementation of the Agreed Flows and resulting constraints on water supply are a primary driver of the City's need to increase the resiliency of the water supply system, as described in Section 3.3, Project Purpose and Objectives.

The Agreed Flows comprise a schedule of minimum instream flows (bypass flows) that would avoid and minimize effects on steelhead and coho due to operation of the Laguna Creek, Liddell Spring, Majors Creek, Tait and Felton Diversions, as well as the Loch Lomond Reservoir. The minimum instream flow requirements are those flows needed to maintain habitat for steelhead and coho during all freshwater life stages (migration, spawning, incubation, and rearing) over a range of Hydrologic Condition Types (see Table 3-5a). The Hydrologic Condition Types are based on the record of cumulative daily average flow by water year (October 1–September 30) at the Big Trees gage on the San Lorenzo River. To develop the Hydrologic Condition Types, cumulative flow was calculated for each month in the record (water years 1937–2015), sorted from lowest to highest, and split into five equal parts representing a range of hydrologic conditions from driest to wettest conditions. Operationally, the Hydrologic Condition Type would be determined each month based on conditions for the preceding month, and the bypass flows would be established based on the month and hydrologic condition as described in Table 3-5a.

## Table 3-5a. Agreed Flows Hydrologic Condition Types

| Month | Flow Ranges Used to Determine Monthly Hydrologic Condition Type[1] (cfs) Using San Lorenzo River End-of-Month Cumulative Daily Flow[2] | | | | |
|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (wettest)* |
| Oct | ≤459 | 460 – 539 | 540 – 709 | 710 – 875 | >875 |
| Nov | ≤1,186 | 1,187 – 1,497 | 1,498 – 1,827 | 1,828 – 2,485 | >2,485 |
| Dec | ≤2,397 | 2,398 – 3,134 | 3,135 – 5,642 | 5,643 – 10,196 | >10,196 |
| Jan | ≤4,322 | 4,323 – 8,456 | 8,457 – 16,694 | 16,695 – 28,019 | >28,019 |
| Feb | ≤8,442 | 8,443 – 16,368 | 16,369 – 29,140 | 29,141 – 42,995 | >42,995 |
| Mar | ≤13,004 | 13,005 – 22,948 | 22,949 – 35,371 | 35,372 – 57,968 | >57,968 |
| Apr | ≤14,203 | 14,204 – 24,491 | 24,492 – 39,487 | 39,488 – 67,884 | >67,884 |
| May | ≤15,448 | 15,449 – 25,279 | 25,280 – 41,659 | 41,660 – 71,412 | >71,412 |
| Jun | ≤16,005 | 16,006 – 26,116 | 26,117 – 43,123 | 43,124 – 73,420 | >73,420 |
| Jul | ≤16,364 | 16,365 – 26,819 | 26,820 – 44,073 | 44,074 – 74,718 | >74,718 |
| Aug | ≤16,653 | 16,654 – 27,355 | 27,356 – 44,799 | 44,800 – 75,591 | >75,591 |
| Sep | ≤16,978 | 16,979 – 27,843 | 27,844 – 45,398 | 45,399 – 76,368 | >76,368 |

**Notes:** cfs = cubic feet per second.

1 The Hydrologic Condition Types are based on the record of cumulative daily average flow by water year (water years 1937–2015) at the Big Trees gage on the San Lorenzo River.

2 To implement the Agreed Flows, the Hydrologic Condition type is determined on the first day of each month based upon the previous month's San Lorenzo River end-of-month cumulative flow for the Water Year. Water Year is defined as the 12-month period from October 1 through September 30.

a. The end-of-month cumulative daily flow is calculated by adding the San Lorenzo River daily flows, as measured at the Big Trees Gage, from the first day of the Water Year to the last day of the month.

b. The flow ranges for the month are then reviewed to determine within which Hydrologic Condition type this end-of-month cumulative daily flow falls.

c. This Hydrologic Condition type is used until the first day of the next month to determine bypass flow conditions under the Agreed Flows across all City of Santa Cruz source waters.

Agreed Flows are presented as bypass flows in Tables 3-5b through 3-5g for each of the City diversions and described in more detail in Appendix C. Values in the tables represent a limit for City diversions such that diversions would not reduce flow below these levels. Bypass flow requirements vary by life stage, and the applicable minimum flow is determined by the life stage requiring the highest flow.

All flow above the required level for each time period is available for diversion, up to the diversion capacity for each facility. If the required bypass flow is greater than the available streamflow, then the full streamflow is bypassed and the City diversion would not operate.

### Laguna Creek Diversion

Laguna Creek was given the highest priority of the North Coast streams for restoration of anadromous species during the development of the ASHCP. It is the largest watershed and has the longest reach of anadromous habitat of the North Coast streams from which the City diverts water. It also has the potential to support coho and has a nearly intact lagoon system that can be very productive for steelhead. Instream flow requirements for Laguna Creek are described below and summarized in Table 3-5b.

The City would provide the following minimum bypass flows in the anadromous reach of Laguna Creek for steelhead:

- For rearing juvenile steelhead, 2.0 cfs at all times;
- For adult migration, a lower threshold of 11.3 cfs and an upper threshold of 15.5 cfs[18] when flow would be at this level without City diversion during December through March and additionally in April for Hydrologic Conditions 1-3;
- For spawning, 9.4 cfs during December through May for 14 days following any adult migration period;
- For egg incubation, 4.0 cfs during January through May for 60 days after the last spawning day or until May 31, whichever is earliest; and
- For smolt outmigration, 3.8 cfs
    - in Hydrologic Condition Types 1–4, during January through May, and
    - in Hydrologic Condition 5, for at least 3 consecutive days per week in March, April, and May.

The required minimum bypass flow in any given month is determined by the life stage requiring the highest flow.

The point of compliance for minimum bypass flows is the City-maintained stream gage in the anadromous reach of Laguna Creek. Other gages would also be used to ascertain effects of diversions by others on flows and habitat availability in the anadromous reach.

[18] When river flows reach the lower threshold, minimum bypass flows would be as follows: when river flows without City diversion are above the upper threshold, the minimum bypass is the upper threshold; when river flow without City diversion is between the lower and upper threshold, the minimum bypass is the natural flow; and when river flows without City diversion fall below the lower threshold again, adult migration bypass flow requirements cease and required minimum bypass flow is determined by the life stage requiring the next-highest flow.

Table 3-5b. Agreed Flows for Laguna Creek Diversion, as Measured at the Laguna Creek Anadromous Gage[1]

| Month | Rearing (Base Flow) (cfs) | | | | | Adult Migration (cfs) | Spawning[2] (cfs) | Egg Incubation[3] (cfs) | Smolt Out-migration[4] (cfs) |
|---|---|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (very wet)* | | | | |
| Jan | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 11.3/15.5 | 9.4 | 4.0 | 3.8 |
| Feb | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 11.3/15.5 | 9.4 | 4.0 | 3.8 |
| Mar | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 11.3/15.5 | 9.4 | 4.0 | 3.8 |
| Apr | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 11.3/15.5[5] | 9.4 | 4.0 | 3.8 |
| May | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | 9.4 | 4.0 | 3.8 |
| Jun | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | — | — | — |
| Jul | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | — | — | — |
| Aug | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | — | — | — |
| Sep | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | — | — | — |
| Oct | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | — | — | — |
| Nov | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | — | — | — |
| Dec | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 11.3/15.5 | 9.4 | — | — |

**Notes**: cfs = cubic feet per second.

1 The required flow is determined by the life stage requiring the highest flow in any given month.

2 Provided for 14-day period after any potential migration event.

3 Provided for 60 days following occurrence of last spawning flow or May 31, whichever occurs first.

4 Provided in Hydrologic Conditions 1–4 and for 3 consecutive days per week in Hydrologic Condition 5 in March, April, and May.

5 April adult migration flows provided in Hydrologic Conditions 1–3.

### Liddell Spring Diversion

The City's diversion is located at Liddell Spring, which feeds Liddell Creek. NMFS and CDFW gave Liddell Creek lower restoration priority for anadromous species than Laguna Creek and the San Lorenzo River due to limited productive capacity for steelhead, unsuitability of habitat for coho, relatively short anadromous reach, and the relatively small size of the City's diversion. While the Liddell Spring diversion is relatively small, it is an important component of the City's water supply because it is used to improve the quality of the blended water treated at the GHWTP, and as a spring, it is persistent in dry conditions. Productive capacity for anadromous fish is limited in Liddell Creek due to excessive amounts of fine sediment and a lack of a functional lagoon. Instream flow requirements for Liddell Creek are described below and summarized in Table 3-5c.

The City would provide the following minimum bypass flows in the anadromous reach of Liddell Creek:

- For rearing juvenile steelhead
  - in Hydrologic Conditions 4–5, 0.25 cfs, and
  - in Hydrologic Conditions 1–3, up to 5.2 cfs, as detailed in Table 3-5c;
- For adult migration, a lower threshold of 4.9 cfs and an upper threshold of 11.3 cfs[19] when flow would be at this level without City diversion during December through April in Hydrologic Conditions 1–3;

19 When river flows reach the lower threshold, minimum bypass flows would be as follows: when river flows without City diversion are above the upper threshold, the minimum bypass is the upper threshold; when river flow without City diversion is between the lower and upper threshold, the minimum bypass is the natural flow; and when river flows without City diversion fall below the lower threshold again, adult migration bypass flow requirements cease and required minimum bypass flow is determined by the life stage requiring the next-highest flow.

- For spawning, 7.4 cfs during December through May in Hydrologic Conditions 1–3 for 14 days following any adult migration period;
- For egg incubation, 2.0 cfs during January through May in Hydrologic Conditions 1–3 for 60 days after the last spawning day or until May 31, whichever is earliest; and
- For smolt outmigration, 2.0 cfs
    - in Hydrologic Conditions 1–3 during January through May and
    - in Hydrologic Conditions 4–5 for at least three consecutive days per week during March through May.

The required minimum bypass flow in any given month is determined by the life stage requiring the highest flow.

The point of compliance for minimum bypass flows is the City-maintained stream gage in the anadromous reach of Liddell Creek. Other gages would also be used to ascertain effects of diversions by others on flows and habitat availability in the anadromous reach.

### Table 3-5c. Agreed Flows for Liddell Spring Diversion, as Measured at the Liddell Creek Anadromous Gage[1]

| Month | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) | Egg Incubation[4] (cfs) | Smolt Out-migration[5] (cfs) |
|---|---|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (very wet)* | | | | |
| Jan | 0.25 | 0.25 | 2.9 | 3.6 | 4.7 | 4.9/11.3 | 7.4 | 2.0 | 2.0 |
| Feb | 0.25 | 0.25 | 4.6 | 3.9 | 5.1 | 4.9/11.3 | 7.4 | 2.0 | 2.0 |
| Mar | 0.25 | 0.25 | 3.5 | 4.8 | 5.2 | 4.9/11.3 | 7.4 | 2.0 | 2.0 |
| Apr | 0.25 | 0.25 | 3.0 | 4.3 | 4.6 | 4.9/11.3 | 7.4 | 2.0 | 2.0 |
| May | 0.25 | 0.25 | 2.6 | 3.3 | 4.0 | — | 7.4 | 2.0 | 2.0 |
| Jun | 0.25 | 0.25 | 2.0 | 2.4 | 2.9 | — | — | — | — |
| Jul | 0.25 | 0.25 | 1.6 | 1.9 | 2.2 | — | — | — | — |
| Aug | 0.25 | 0.25 | 1.4 | 1.7 | 1.8 | — | — | — | — |
| Sep | 0.25 | 0.25 | 1.3 | 1.5 | 1.6 | — | — | — | — |
| Oct | 0.25 | 0.25 | 1.5 | 1.5 | 1.6 | — | — | — | — |
| Nov | 0.25 | 0.25 | 1.8 | 1.9 | 1.9 | — | — | — | — |
| Dec | 0.25 | 0.25 | 2.1 | 2.6 | 3.0 | 14.9/11.3 | 7.4 | — | — |

**Notes**: cfs = cubic feet per second.

1 The required flow is determined by the life stage requiring the highest flow in any given month.
2 Provided in Hydrologic Conditions 1–3 only.
3 Provide for 14-day period after any potential migration event in Hydrologic Conditions 1–3.
4 Provided in Hydrologic Conditions 1–3 for 60-day period following occurrence of last spawning flow or May 31, whichever occurs first
5 Provided in Hydrologic Conditions 1–3, and for 3 consecutive days per week in March, April, and May in Hydrologic Conditions 4–5.

#### Majors Creek Diversion

In the development of the ASHCP, NMFS and CDFW gave Majors Creek lower restoration priority for anadromous species than Laguna Creek and the San Lorenzo River due to its relatively short anadromous reach length, unsuitability of habitat for coho, and lack of a developed lagoon. The City also has a relatively small diversion capacity on Majors Creek relative to Laguna Creek and the San Lorenzo River. Instream flow requirements for Majors Creek are described below and summarized in Table 3-5d.

The City would provide the following minimum bypass flows in the anadromous reach of Majors Creek for steelhead:

- For rearing juvenile steelhead,
    - in Hydrologic Conditions 4–5, 0.25 cfs, and
    - in Hydrologic Conditions 1–3, up to 4.7 cfs, as detailed in Table 3-5d;
- For adult migration, a lower threshold of 9.0 cfs and an upper threshold of 16.0 cfs[20] when flow would be at this level without City diversion during December through April in Hydrologic Conditions 1–3;
- For spawning, 12.1 cfs during December through May in Hydrologic Conditions 1–3 for 14 days following any adult migration period;
- For egg incubation, 2.9 cfs during January through May in Hydrologic Conditions 1–3 for 60 days after the last spawning day or until May 31, whichever is earliest; and
- For smolt outmigration, 3.4 cfs
    - in Hydrologic Conditions 1–3 during January through May and
    - in Hydrologic Conditions 4–5 during March through May for at least three consecutive days per week.

The required minimum bypass flow in any given month is determined by the life stage requiring the highest flow.

The point of compliance for minimum bypass flows is the City-maintained stream gage in the anadromous reach of Majors Creek. Other gages would also be used to ascertain effects of diversions by others on flows and habitat availability in the anadromous reach.

**Table 3-5d. Agreed Flows for Majors Creek Diversion, as Measured at the Majors Creek Anadromous Gage[1]**

| Month | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) | Egg Incubation[4] (cfs) | Smolt Out-migration (cfs) |
|---|---|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (very wet)* | | | | |
| Jan | 0.25 | 0.25 | 2.2 | 2.7 | 4.1 | 9.0/16.0 | 12.1 | 2.9 | 3.4 |
| Feb | 0.25 | 0.25 | 4.1 | 3.0 | 4.4 | 9.0/16.0 | 12.1 | 2.9 | 3.4 |
| Mar | 0.25 | 0.25 | 2.4 | 4.3 | 4.7 | 9.0/16.0 | 12.1 | 2.9 | 3.4[5] |
| Apr | 0.25 | 0.25 | 1.7 | 3.1 | 3.2 | 9.0/16.0 | 12.1 | 2.9 | 3.4[5] |
| May | 0.25 | 0.25 | 1.4 | 1.8 | 2.4 | — | 12.1 | 2.9 | 3.4[5] |
| Jun | 0.25 | 0.25 | 1.0 | 1.2 | 1.6 | — | — | — | — |
| Jul | 0.25 | 0.25 | 0.8 | 1.0 | 1.1 | — | — | — | — |
| Aug | 0.25 | 0.25 | 0.7 | 0.8 | 0.9 | — | — | — | — |
| Sep | 0.25 | 0.25 | 0.6 | 0.7 | 0.7 | — | — | — | — |
| Oct | 0.25 | 0.25 | 0.8 | 0.9 | 0.8 | — | — | — | — |
| Nov | 0.25 | 0.25 | 1.1 | 1.2 | 1.2 | — | — | — | — |
| Dec | 0.25 | 0.25 | 1.5 | 1.9 | 2.1 | 9.0/16.0 | 12.1 | — | — |

**Notes**: cfs = cubic feet per second.

1 The required flow is determined by the life stage requiring the highest flow in any given month.

2 Provided in Hydrologic Conditions 1–3 only.

3 Provide for 14-day period after any potential migration event in Hydrologic Conditions 1–3.

4 Provided in Hydrologic Conditions 1–3 for 60-day period following occurrence of last spawning flow or May 31, whichever occurs first.

5 Provided in Hydrologic Conditions 1–3, and for 3 consecutive days per week in March, April, and May in Hydrologic Conditions 4–5.

20 When river flows reach the lower threshold, minimum bypass flows would be as follows: when river flows without City diversion are above the upper threshold, the minimum bypass is the upper threshold; when river flow without City diversion is between the lower and upper threshold, the minimum bypass is the natural flow; and when river flows without City diversion fall below the lower threshold again, adult migration bypass flow requirements cease and required minimum bypass flow is determined by the life stage requiring the next-highest flow.

### Tait Diversion, San Lorenzo River

NMFS and CDFW gave the San Lorenzo River a high priority for restoration of anadromous species in the development of the ASHCP. It has a large watershed with extensive habitat in both the main stem and its tributaries. The San Lorenzo River supports steelhead and potentially coho. Its lagoon is important for rearing juvenile steelhead. Instream flow requirements for the San Lorenzo River below Tait Diversion are described below and summarized in Table 3-5e.

The City would provide the following minimum bypass flows downstream of Tait Diversion on the San Lorenzo River for steelhead and coho:

- For rearing juvenile steelhead,
    - in Hydrologic Conditions 4–5, 8.0 cfs, and
    - in Hydrologic Conditions 1–3, up to 18.5 cfs, as detailed in Table 3-5e;
- For adult migration, a lower threshold of 17.0. cfs and an upper threshold of 25.2 cfs[21] when flow would be at this level without City diversion in December through April in Hydrologic Conditions 1–3, in December through March in Hydrologic Conditions 4 and 5, and with the following exceptions:
    - May be reduced to 3 consecutive days a week if storage levels in Loch Lomond Reservoir fall below the following levels in million gallons (mg): December—1,900 mg, January—2,000 mg, February—2,100 mg, and March—2,200 mg.
    - May be reduced to 5 consecutive days after each storm event that exceeds 17 cfs if storage levels in Loch Lomond Reservoir fall below the following levels: December—1,600 mg, January—1,700 mg, February—1,800 mg, and March—1,900 mg.
- For smolt outmigration, 10 cfs
    - in Hydrologic Conditions 1–4 during January through May, and
    - in Hydrologic Condition 5 during March through May for at least 3 consecutive days per week.

The required minimum bypass flow in any given month is determined by the life stage requiring the highest flow.

The point of compliance for minimum bypass flows is the City-funded United States Geological Survey-maintained stream gage in the San Lorenzo River immediately downstream of Tait Diversion.

[21] When river flows reach the lower threshold, minimum bypass flows would be as follows: when river flows without City diversion are above the upper threshold, the minimum bypass is the upper threshold; when river flow without City diversion is between the lower and upper threshold, the minimum bypass is the natural flow; and when river flows without City diversion fall below the lower threshold again, adult migration bypass flow requirements cease and required minimum bypass flow is determined by the life stage requiring the next-highest flow.

Table 3-5e. Agreed Flows for Tait Diversion on the San Lorenzo River, as Measured at the City Gage immediately downstream of Tait Diversion[1]

| Month | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) | Egg Incubation[3] (cfs) | Smolt Out-migration (cfs) |
|---|---|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (very wet)* | | | | |
| Jan | 8.0 | 8.0 | 15.8 | 16.4 | 17.5 | 17.0/25.2 | — | — | 10.0 |
| Feb | 8.0 | 8.0 | 15.9 | 16.7 | 18.0 | 17.0/25.2 | — | — | 10.0 |
| Mar | 80. | 8.0 | 16.3 | 17.3 | 18.2 | 17.0/25.2 | — | — | 10.0[4] |
| Apr | 8.0 | 8.0 | 17.2 | 17.9 | 18.4 | 17.0/25.2[5] | — | — | 10.0[4] |
| May | 8.0 | 8.0 | 17.7 | 18.2 | 18.5 | — | — | — | 10.0[4] |
| Jun | 8.0 | 8.0 | 16.6 | 18.1 | 18.5 | — | — | — | — |
| Jul | 8.0 | 8.0 | 12.4 | 15.8 | 18.2 | — | — | — | — |
| Aug | 8.0 | 8.0 | 9.8 | 11.9 | 16.4 | — | — | — | — |
| Sep | 8.0 | 8.0 | 9.0 | 11.1 | 13.3 | — | — | — | — |
| Oct | 8.0 | 8.0 | 9.8 | 11.4 | 13.3 | — | — | — | — |
| Nov | 8.0 | 8.0 | 12.5 | 14.1 | 16.4 | — | — | — | — |
| Dec | 8.0 | 8.0 | 15.1 | 16.2 | 17.6 | 17.0/25.2 | — | — | — |

Notes: cfs = cubic feet per second.

1 The required flow is determined by the life stage requiring the highest flow in any given month.

2 May be reduced to 3 consecutive days a week if storage levels in Loch Lomond fall below the following levels in million gallons (mg): Dec-1900 mg; Jan-2000 mg; Feb-2100 mg; Mar-2200 mg. Further, adult migration flows may be reduced to 5 consecutive days after each storm event that exceeds 17 cfs if storage levels in Loch Lomond fall below the following levels: Dec-1600 mg; Jan-1700 mg; Feb-1800 mg; Mar-1900 mg.

3 No spawning or incubation occurs in this reach.

4 During Hydrologic Conditions 5, provided at least 3 days per week.

5 April adult migration flows provided only in Hydrologic Conditions 1–3.

### Felton Diversion, San Lorenzo River

As described above, NMFS and CDFW gave the San Lorenzo River a high priority for restoration of anadromous species in the development of the ASHCP. Instream flow requirements for the San Lorenzo River below Felton Diversion are described below and summarized in Table 3-5f. No diversions are permitted at Felton Diversion during June through August.

The City would provide the following minimum bypass flows downstream of Felton Diversion on the San Lorenzo River for steelhead and coho:

- For rearing juvenile steelhead, egg incubation, and smolt migration
    - during October, 25 cfs,
    - during November through May, 20 cfs, and
    - during September, 10 cfs;
- For adult migration, 40 cfs during December through April when flow would be at this level without City diversion and the river mouth is open; and
- For spawning, 40 cfs during December through May for 14 days after any adult migration period.

The required minimum bypass flow in any given month is determined by the life stage requiring the highest flow.

The point of compliance for minimum bypass flows is the U.S. Geographical Survey–maintained stream gage near Henry Cowell Redwoods State Park entrance (Big Trees Gage).

### Table 3-5f. Agreed Flows for Felton Diversion on the San Lorenzo River, as Measured at the Big Trees Gage[1]

| Month | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) |
|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (very wet)* | | |
| Jan | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| Feb | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| Mar | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| Apr | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| May | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | — | 40.0 |
| Jun | No Diversion | | | | | | |
| Jul | | | | | | | |
| Aug | | | | | | | |
| Sep | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | — | — |
| Oct | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | — | — |
| Nov | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | — | — |
| Dec | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |

**Notes**: cfs = cubic feet per second.

1 The required flow is determined by the life stage requiring the highest flow in any given month.

2 Provided when river mouth is open and natural flow would occur at this level without diversion.

3 Provided for 14 days following any potential migration event.

#### Newell Creek Diversion

Operation of the Newell Creek Diversion (also referred to as Newell Creek Dam) and Loch Lomond Reservoir alters the natural hydrograph of Newell Creek except during periods when the reservoir is spilling. There is an agreed minimum release of 1 cfs in Newell Creek below Loch Lomond Reservoir. When Loch Lomond Reservoir storage is low enough to result in supply shortages, an exception minimum of 0.25 cfs would be released in place of the 1 cfs. A flow of 1 cfs below Newell Creek Dam exceeds unimpaired flows at certain times. Loch Lomond storage levels that would result in the 0.25 cfs exception minimum bypass flow are provided in Table 3-5g. Instream flow requirements for Newell Creek below Newell Creek Dam are described below and summarized in Table 3-5g.

The City would provide the following minimum bypass flows to Newell Creek downstream of Newell Creek Dam for steelhead:

- For rearing juvenile steelhead, 1.0 cfs, unless storage in Loch Lomond Reservoir is insufficient and triggers the exception minimum as detailed in Table 3-5g.

The point of compliance for minimum bypass flows is the City-maintained stream gage in Newell Creek immediately downstream of Newell Creek Dam.

**Table 3-5g. Agreed Flows for the Newell Creek Dam, as Measured at the City Gage immediately downstream of Newell Creek Dam**

| Month | Exception Minimum (cfs)[1] | Base Flow (cfs) | | | | |
|---|---|---|---|---|---|---|
| | | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (very wet)* |
| Jan | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Feb | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Mar | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Apr | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| May | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Jun | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Jul | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Aug | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Sep | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Oct | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Nov | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Dec | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |

**Notes**: cfs = cubic feet per second.

[1] Exception minimum flows are triggered and would supersede base flow requirements when storage in Loch Lomond Reservoir falls below the following level: 2000 million gallons (mg) during January through June, 1800 mg during July, 1500 mg during August through November, or 1700 mg during December.

## Improvements Associated with Agreed Flows

Additionally, the City is committed to enhancing fish screening at the Tait Diversion, and fish passage and screening at the Felton Diversion consistent with anticipated issuance of incidental take permits for steelhead and coho in association with the ASHCP from NMFS and either an Incidental Take Permit or Consistency Determination from CDFW. In this EIR, the upgrades to these facilities are considered programmatic components of the Proposed Project. A description of these activities is provided in Section 3.4.3, Water Supply Augmentation. See Section 4.0, Introduction to Analyses, for a discussion of other City projects considered in the cumulative analysis that would also enhance fishing screening and/or fish passage.

## Comparison of Agreed Flows to Interim Bypass Flows

The major differences between the Agreed Flows and the interim bypass flows contained in the 2018 agreement with CDFW are described in detail in Appendix C. The interim bypass flows also contain a non-flow provision that specifies reservation of 650 gallons per minute (gpm) from the North Coast sources for local (North Coast) demand. Under conditions when bypass flow and North Coast demand requirements cannot be met, the City coordinates with North Coast customers to optimize predictability of use and potential for achieving goals, and consults with CDFW on reassessing conservation priorities in the context of water supply reliability. This provision is not included in the Agreed Flows and would not be part of the Proposed Project.

## 3.4.3 Water Supply Augmentation

### 3.4.3.1 Aquifer Storage and Recovery Facilities

As indicated in Section 3.2.1, Water Supply Planning Background, the City's Water Supply Augmentation Strategy includes active recharge of regional aquifers referred to as aquifer storage and recovery or ASR. ASR involves using existing infrastructure and potential new infrastructure to inject surface water, treated to drinking water standards, and to store this water during normal or wet periods in local groundwater basins, which would act as underground storage reservoirs. This stored water can then be available for use by the City in dry periods via extraction.

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. 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). Overall, ASR is a programmatic component of the Proposed Project; however, as a subcomponent of ASR, Beltz ASR facilities is a project component of the Proposed Project.

To the extent ASR facilities and operations would occur outside of the City's existing water-right place of use, they would be enabled by the Proposed Project's expansion of the POU of the City's appropriative water rights. As described in Section 3.4.2, Water Rights Modifications, the Proposed Project includes the addition of underground storage supplements to the City's post-1914 appropriative permits and licenses only for the Beltz ASR facilities because those are the only proposed ASR facilities whose locations and proposed capacities are currently known. While additional underground storage supplements to those permits and licenses would have to be submitted to and approved by the SWRCB to implement other ASR facilities, the Proposed Project could ultimately result in the possible installation of ASR facilities in both groundwater basins to allow for injection of treated water from the City's GHWTP and possible subsequent extraction.

The total ASR capacity is intended to provide sufficient capacity to address the City's agreed-upon worst-year water supply gap of 1.2 billion gallons per year during modeled worst-year conditions identified during the WSAC planning process, described in Section 3.2.1, Water Supply Planning Background. ASR would have a total proposed injection infrastructure capacity of 4.5 mgd and a proposed extraction infrastructure capacity of 8.0 mgd, to meet this worst-year gap of 1.2 billion gallons per year. The injection infrastructure sizing is smaller than the extraction infrastructure sizing because, generally, diverted surface water could be injected for groundwater storage over multiple years to be available for extraction over a shorter timeframe during drought or dry periods. Based on water supply modeling, it is estimated that with this infrastructure capacity, an average of approximately 233 mgy, with a maximum of up to approximately 702 mgy, of treated surface water could be injected into the groundwater basin(s), and an average of approximately 176 mgy, with a maximum of approximately 1,064 mgy, of injected water could be extracted. To contribute to groundwater sustainability of the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin, estimated annual operations show that long-term average extraction volumes would be lower than long-term average injection volumes. However, maximum annual extraction volumes could exceed injection volumes during drought or dry periods when more water supply is needed to meet City demands. Table 3-6 summarizes the ASR programmatic component of the Proposed Project and provides a conservative worst-case estimate of the proposed capacity and operational volumes for ASR.

As a subcomponent of ASR, Beltz ASR would provide only a portion of the total ASR capacity and operations, as shown in Table 3-6. The remainder of the total capacity and estimated annual operations would be provided at new ASR facilities. Further planning and analysis are required to determine locations for any potential new ASR facilities. Actual capacity and operational characteristics for new ASR facilities and Beltz ASR facilities would be based on completion of ASR pilot programs, design-level groundwater modeling, and the ASR design process. Additionally, it is possible that these processes could lead to some modification of the proposed facilities described in the following subsections and could potentially lead to the need for additional environmental analysis. See Chapter 2, Introduction, for information about additional environmental documentation that may be required.

## Table 3-6. Proposed Aquifer Storage and Recovery Capacity and Estimated Operation

| | Proposed Capacity (mgd) | | Estimated Operation (mgy) | | | |
|---|---|---|---|---|---|---|
| | *Injection* | *Extraction* | *Average* | | *Maximum* | |
| | | | *Injection* | *Extraction* | *Injection* | *Extraction* |
| Total Aquifer Storage and Recovery (ASR) | 4.5 | 8.0 | 233 | 176 | 702 | 1,064 |
| New ASR Facilities at Unidentified Locations | TBD | TBD | TBD | TBD | TBD | TBD |
| Beltz ASR Facilities at Existing Beltz Well Facilities | 2.10 | 2.17[1] | 188 | 137 | 358 | 315 |

**Source:** Gary Fiske and Associates 2021a, 2021c.
**Notes:** mgd = million gallons per day; mgy = million gallons per year; TBD = to be determined.
[1] Based on the physical limitations of the Beltz well facilities, the maximum extraction capacity at Beltz 8, 9, 10, and 12 is 3.27 mgd. Given that the existing groundwater system at these facilities extracts 1.1 mgd, 2.17 mgd of the total capacity is available for the proposed ASR facilities at these Beltz facilities.

Standard operational practices for ASR facilities described in Section 3.4.5, Standard Operational and Construction Practices, would be implemented during development and operation of ASR facilities. Operation of ASR facilities would be consistent with applicable adopted existing or future GSPs and could contribute to groundwater sustainability of the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin, depending on the facilities' locations. Contribution to groundwater sustainability of the Santa Cruz Mid-County Groundwater Basin would also contribute to the protection of groundwater quality from seawater intrusion per the Santa Cruz Mid-County GSP in support of the proposed water quality beneficial use identified in Section 3.4.2, Water Rights Modifications.

Components of new ASR facilities and Beltz ASR facilities along with likely construction, operation, and maintenance characteristics for each are provided below.

### New Aquifer Storage and Recovery Facilities

New ASR facilities could be located in the Santa Cruz Mid-County and/or the Santa Margarita Groundwater Basins and would likely consist of the following components: (1) a pump control and chemical storage building; (2) a treatment system; (3) backwash tank(s) used in the treatment system; (4) a water well and monitoring wells, submersible pump and concrete pedestal, station piping including treated water pipelines, sewer connections, and stormwater drainage facilities that would connect to nearby facilities in adjacent roadways. Additionally, new ASR facilities would include security fencing and security lighting that would be limited to low-wattage, shielded outdoor lighting, directed onto the site. A typical facility would require a site approximately 0.25 acres in size. Up to four new

ASR facilities and associated sites are anticipated and could be located in the Santa Cruz Mid-County and the Santa Margarita Groundwater Basins.

### New ASR Facility Construction Characteristics

Construction of each new ASR facility in the Santa Cruz Mid-County and the Santa Margarita Groundwater Basins would likely occur over a 12- to 18-month period. See Section 3.4.6, Estimated Construction Schedule, for the estimated construction schedule for all infrastructure components. Equipment to be used to perform the work would likely include an excavator or backhoe, a truck to off-haul trench spoils and borehole cuttings and to deliver new backfill and well construction material, support trucks for tools and equipment, a rotary drill rig, support truck with water tank, a vacuum trailer or truck for fluid removal, and a logging van/truck to send geophysical logging tools down the borehole. It is expected that a four-person crew would perform the work. Construction activities would typically occur between 8:00 a.m. and 5:30 p.m. on weekdays. However, during the drilling of new production wells, activities would include continuous 24-hour construction over an approximately 3-month period to avoid the risk of the borehole walls collapsing before the wells are fully constructed. Besides drilling and building of the wells themselves, no other construction-related activities would occur on weekends or holidays, or at night.

Drill fluid would be contained and removed as necessary during the course of the work and disposed of at a facility licensed to handle non-toxic and non-hazardous liquid waste using a qualified vacuum truck. There would be no discharge of well installation materials or fluids generated during construction of the monitoring well into any storm drain. Disposal of non-dewatered construction waste would likely occur at the Monterey Regional Waste Management District Facility in Marina, California. Disposal of dry construction waste would likely occur at the County of Santa Cruz Buena Vista Landfill or the City's Dimeo Lane Landfill/Resource Recovery Facility.

### New ASR Operations and Maintenance Characteristics

For new ASR facilities, injection operations would typically take place during the winter months, sometime between the beginning of November and the end of April, and extraction operations would typically take place sometime between the beginning of May and the end of October. This manner of operation of ASR is what the City can reasonably foresee at this time and, for that reason, is reflected in the water-system modeling that supports this EIR. It is possible, however, that in dry conditions, the City might seek to extract groundwater generated by prior ASR injections, during the November-April period. To the extent that such extractions are not reflected in the water-system modeling, they nonetheless are discussed qualitatively in this EIR. See Section 3.5, Proposed Project Modeling, for additional information about the modeling conducted for the water supply augmentation components of the Proposed Project.

Backflushing of injection and extraction facilities would also take place and would result in the generation of sludge that would be discharged to a nearby County of Santa Cruz sanitary sewer line. Sewer discharge permits from the County of Santa Cruz would be required for each new ASR facility.

Both during the injection and extraction operations, the facility would run for 24 hours a day, 7 days a week. Routine maintenance would consist of a daily visit by a City or other water department staff person in a small truck to check on the facility operations. During a typical site visit, City staff would collect pressure, water level, and flow rate information to ensure that values for each parameter are within expected ranges for either an injection or extraction cycle. Although not at every site visit, it is expected that staff would periodically collect water quality samples from injected and extracted water to ensure regulatory compliance. Additionally, staff may decide to manually initiate backflushing of injection and extraction facilities based on information collected during their site visit. Backflushing

would involve reversing the flow of water to flush contaminants from the system. Backwash water would be sent to a reclaim tank for solids settling. Some of this water would then be returned to the system as reclaimed water with the rest being discharged through existing on-site connections to the storm sewer, if storm discharge requirements are met, or otherwise to the sanitary sewer.

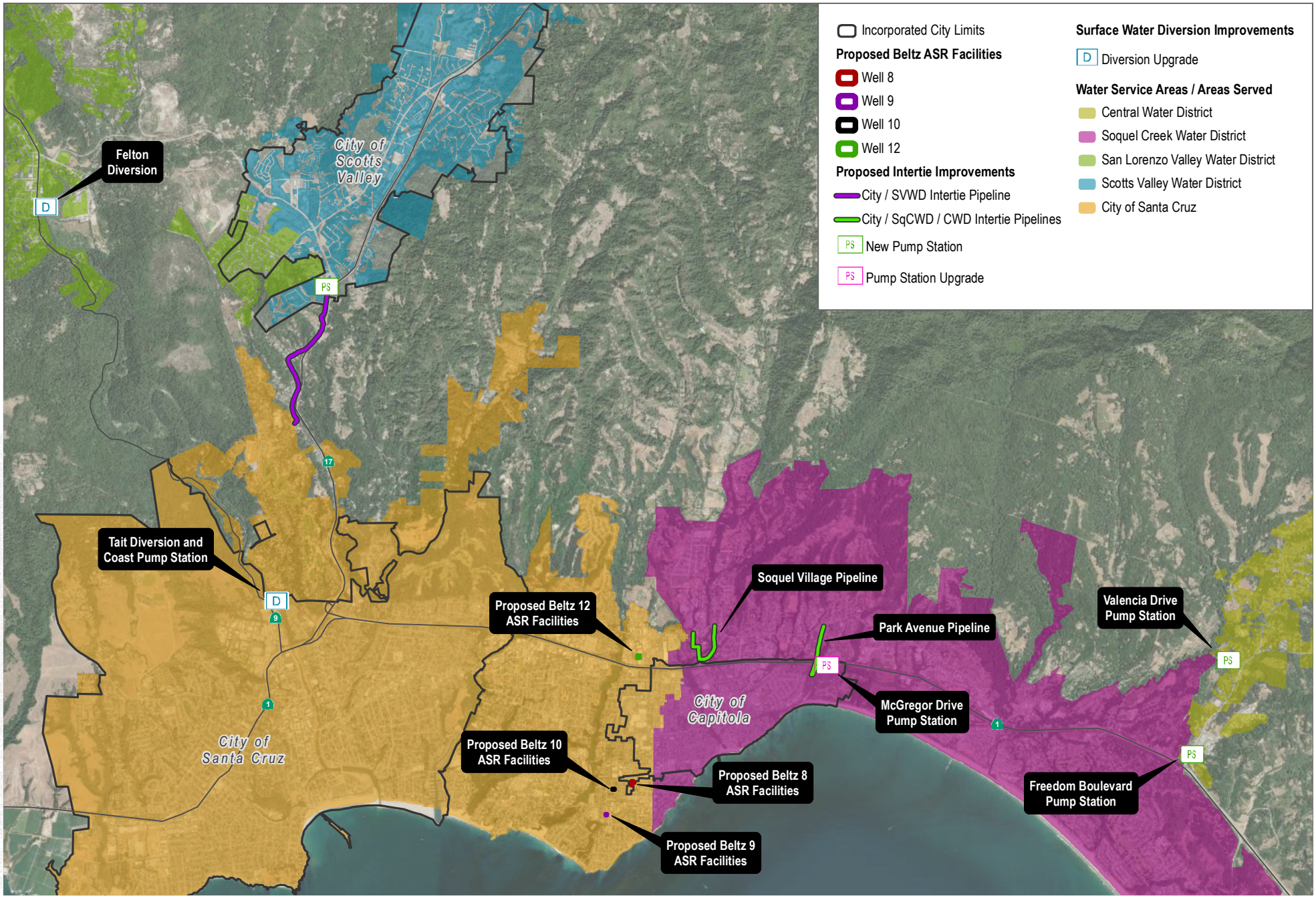
### Beltz Aquifer Storage and Recovery

In the Beltz system (see Figure 3-4), this project component would involve injecting surface water, treated to drinking water standards, into the Santa Cruz Mid-County Groundwater Basin, which would act as an underground storage reservoir, consistent with the GSP for this basin (MGA 2019). This project component involves the installation of upgrades to the Beltz system at the existing Beltz 8, 9, 10, and 12 facilities to allow for injection of treated water from the City's GHWTP and subsequent recovery (referred to below as extraction). Proposed improvements at each of the Beltz facilities, along with construction, operations, and maintenance characteristics, are provided below. Figures 3-4a through 3-4d illustrate the project site boundaries and proposed improvements at each of the Beltz sites.

The proposed Beltz ASR system in the Santa Cruz Mid-County Groundwater Basin would retain the existing groundwater extraction capacity of the Beltz system of 1.1 million gallons per day (mgd) subject to seasonal and hydrological constraints. Additionally, the system would be modified to accommodate proposed ASR injection capacity of approximately 2.10 mgd, and proposed ASR extraction capacity of approximately 2.17 mgd[22] (see Table 3-6 above). These capacities are based upon limitations of the existing well infrastructure. The injection infrastructure sizing would be smaller than the extraction infrastructure sizing because, generally, diverted surface water could be injected for groundwater storage over multiple years in order to be available for extraction over a shorter timeframe during drought or dry periods.

Based on water supply modeling, it is estimated that with this system capacity an average of approximately 188 mgy, with a maximum of up to approximately 358 mgy, of treated surface water could be injected and an average of approximately 137 mgy, with a maximum of approximately 315 mgy, of injected water could be extracted from the Beltz ASR component (see Table 3-6). To contribute to groundwater sustainability of the Santa Cruz Mid-County Groundwater Basin per the Santa Cruz Mid-County GSP, estimated annual operations show that average extraction volumes would be lower than injection volumes. However, maximum annual extraction volumes could exceed injection volumes during drought or dry periods when more water supply is needed to meet City demands. Table 3-6 summarizes the Beltz ASR component of the Proposed Project and provides a conservatively high estimate of the proposed capacity and operational volumes for Beltz ASR that is intended to capture all potential environmental effects. As indicated previously, actual capacity and operational characteristics for Beltz ASR would be based on completion of the ASR pilot program underway by the City, design-level groundwater modeling, and the ASR design process.

[22] Based on the physical limitations of the Beltz well facilities the maximum capacity at Beltz 8, 9, 10, and 12 is 3.27 mgd. Given that the existing groundwater system at these facilities pumps 1.1 mgd, 2.17 mgd of the total capacity is available for the proposed ASR facilities at these Beltz facilities.




SOURCE: Bing Maps Accessed 2020, Kennedy/Jenks Consultants 2012 and 2014, URS 2013, County of Santa Cruz 2020

DUDEK

0 3,250 6,500 Feet

**FIGURE 3-4**

Proposed New and Upgraded Infrastructure Components

Santa Cruz Water Rights Project

### Beltz 8 Aquifer Storage and Recovery Facility

Existing Facility

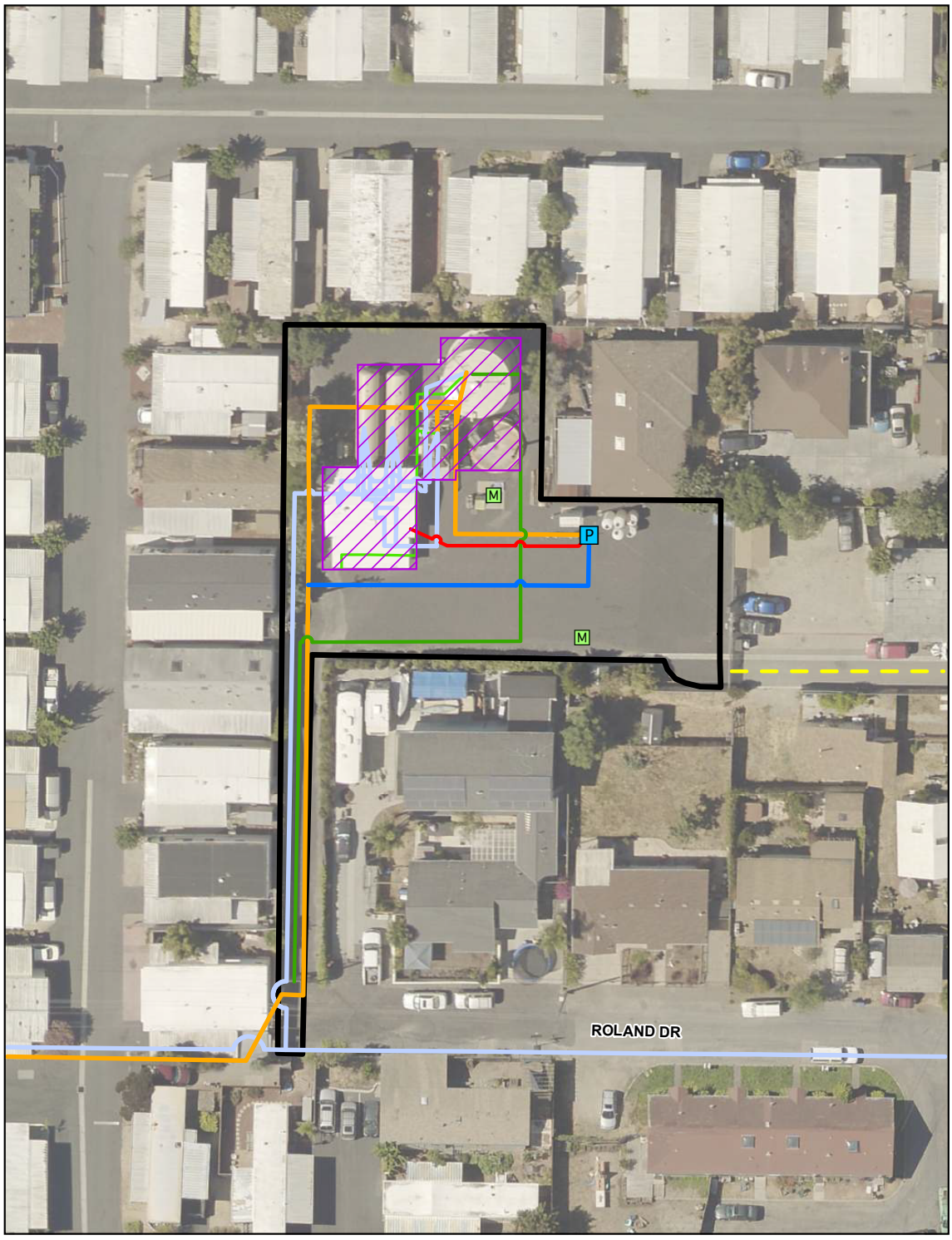
Beltz No. 8 (Beltz 8) and associated treatment facilities are located on City-owned property at 3701 Roland Drive in the unincorporated County of Santa Cruz, California (see Figure 3-4a for location). Components of the existing facility include the following: (1) a pump control and chemical storage buildings; (2) an iron and manganese treatment system consisting of two pressurized dual media filter tanks; (3) one 75,000-gallon backwash tank used in the iron and manganese treatment; and (4) a 210-foot-deep well that has a casing diameter of 14 inches, submersible pump and concrete pedestal, station piping including treated water pipeline, and a sewer connection that connects to other facilities in Roland Drive.

Facility Upgrades

For injection purposes, a new permanent supply pipeline between the well and the existing on-site distribution system piping would be installed. The pipeline would be approximately 120 feet in length and 6 inches in diameter, and would be installed within the existing City-owned property along an already-paved alignment. A new pipeline between the existing tank and the existing storm drain inlet would also be installed and used during the injection process. For maintenance purposes and to maintain well efficiency, during an injection cycle, the well would be back flushed into the existing tank. Decanted and dechlorinated water from the existing tank would be sent to the storm drain system through this new approximately 14-inch storm drain pipeline.

The new approximately 6-inch injection pipeline would have a backflow prevention device and be capable of delivering up to approximately 400 gpm of treated injection water. Modifications to the well head would be made to allow for the installation of multiple 2-inch-diameter stainless steel drop tubes, or a single 3- or 4-inch-diameter drop tube with adjustable flow control valves.

For extraction purposes, the existing submersible pump and motor assembly currently rated at 350 gpm at 155 feet of Total Dynamic Head (TDH) would be removed and replaced with a new submersible pump and motor assembly rated for approximately 800 gpm at approximately 150 feet TDH, which would be capable of extracting approximately 700 gpm. During installation of the new submersible pump, the new injection flow control valves would also be installed inside the well. The control panel for the flow control valves would most likely be installed adjacent to the existing control panel. New piping (approximately two 1-inch-diameter pipes) and electrical conduits (approximately two 1-inch-diameter conduits) would be installed between the well head and the new control panel. In addition, as part of a treatment plant upgrade, a second backwash tank might be installed to handle the additional backwash volumes once all existing Beltz wells (8, 9, 10 and 12) are converted to ASR wells. The existing pump and motors might be upsized to handle additional flows from the wells once all wells are converted to ASR wells. The exact size of individual pumps and motors would not be known until after pilot testing of individual wells. No additional nighttime security lighting would be required. Figure 3-4a illustrates the proposed improvements.




SOURCE: City of Santa Cruz 2021

**FIGURE 3-4A**

Proposed Beltz 8 ASR Facilities

Santa Cruz Water Rights Project

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### Beltz 9 Aquifer Storage and Recovery Facility

Existing Facility

Beltz No. 9 (Beltz 9) is located on City-owned property at 740 30th Avenue, in the unincorporated County of Santa Cruz, California (see Figure 3-4b for location). Components of the existing facility include the following: (1) a pump control cabinet and (2) a 240-foot-deep well that has a casing diameter of 14 inches, submersible pump and concrete pedestal, and well head station piping.

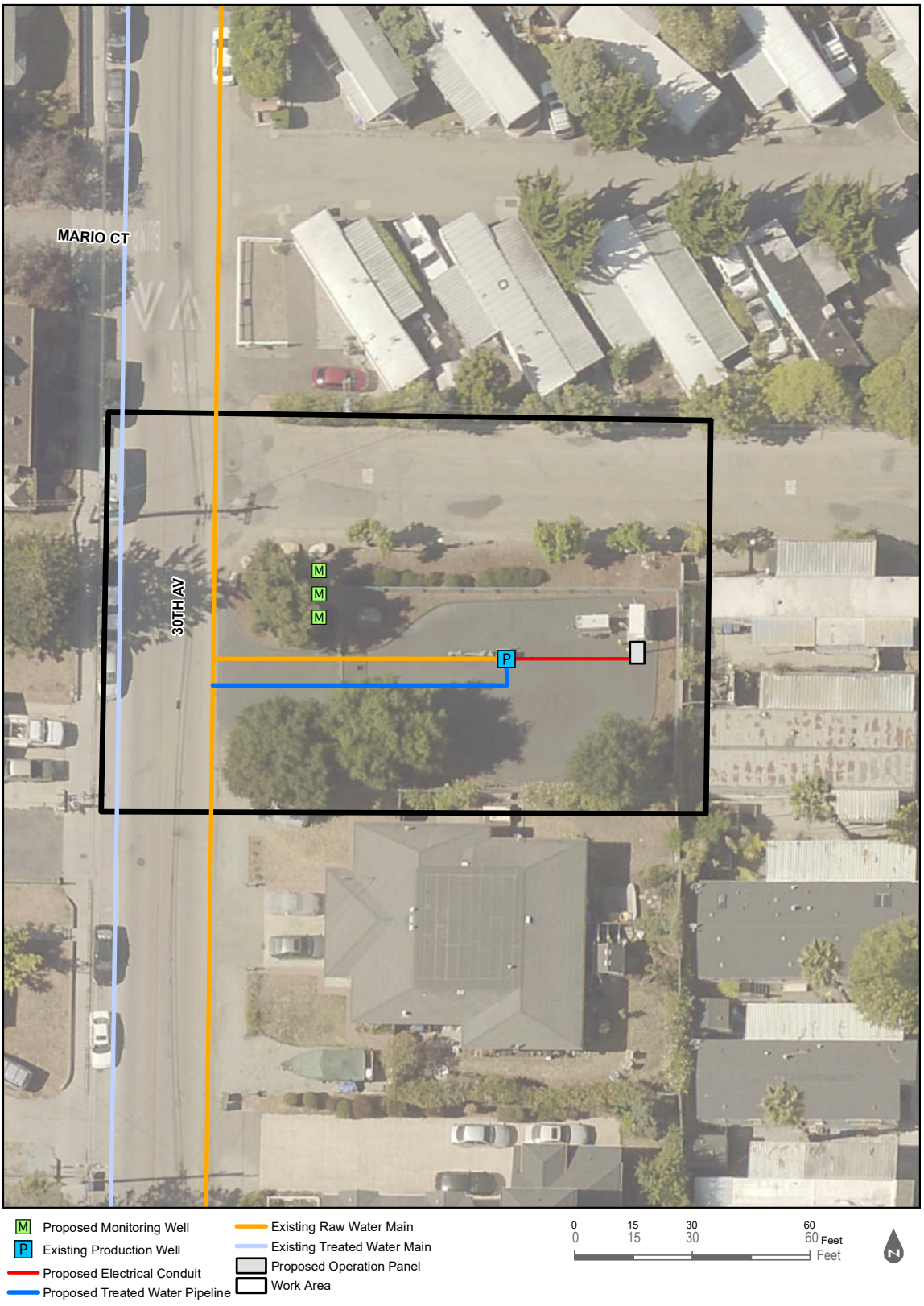
Facility Upgrades

For injection purposes, a new permanent supply pipeline between the well and the existing distribution system piping located on 30th Avenue would be installed. The pipeline would be approximately 120 feet in length and 6 inches in diameter; approximately 60 feet of the pipeline would be installed in paved right-of-way and the remainder would be installed in a paved alignment on City-owned property at the Beltz 9 ASR facility.

The new approximately 6-inch injection pipeline would have a backflow prevention device and be capable of delivering up to approximately 400 gpm of treated injection water. Modifications to the well head would be made to allow for the installation of multiple 2-inch-diameter stainless steel drop tubes, or a single 3- or 4-inch-diameter drop tube with adjustable flow control valves.

For extraction purposes, the existing submersible pump and motor assembly currently rated at 385 gpm at 300 feet TDH would be removed and replaced with a new submersible pump and motor assembly rated for approximately 800 gpm at approximately 300 feet TDH, which would be capable of extracting approximately 700 gpm. During installation of the new submersible pump, the new injection flow control valves would also be installed inside the well. The control panel for the flow control valve would most likely be installed adjacent to the existing control panel. New piping (approximately two 1-inch-diameter pipes) and electrical conduits (approximately two 1-inch-diameter conduits) would be installed between the well head and the new control panel.

At Beltz 9 ASR facility, up to three additional approximately 2-inch-diameter monitoring wells (screened in the A and AA formation of the Purisima Aquifer) could be constructed. The wells would be constructed within the City-owned property in existing pavement or adjacent to the pavement within an existing planter area. No additional nighttime security lighting would be required. Figure 3-4b illustrates the proposed improvements.




SOURCE: City of Santa Cruz 2019

**FIGURE 3-4B**

Proposed Beltz 9 ASR Facilities

Santa Cruz Water Rights Project

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### Beltz 10 Aquifer Storage and Recovery Facility

Existing Facility

Beltz No. 10 (Beltz 10) is located on City-owned property at 977 34th Avenue, in the unincorporated County of Santa Cruz, California (see Figure 3-4c for location). Components of the existing facility include the following: (1) a pump control cabinet and (2) a 240-foot-deep well that has a casing diameter of 14 inches, submersible pump and concrete pedestal, and well head station piping.

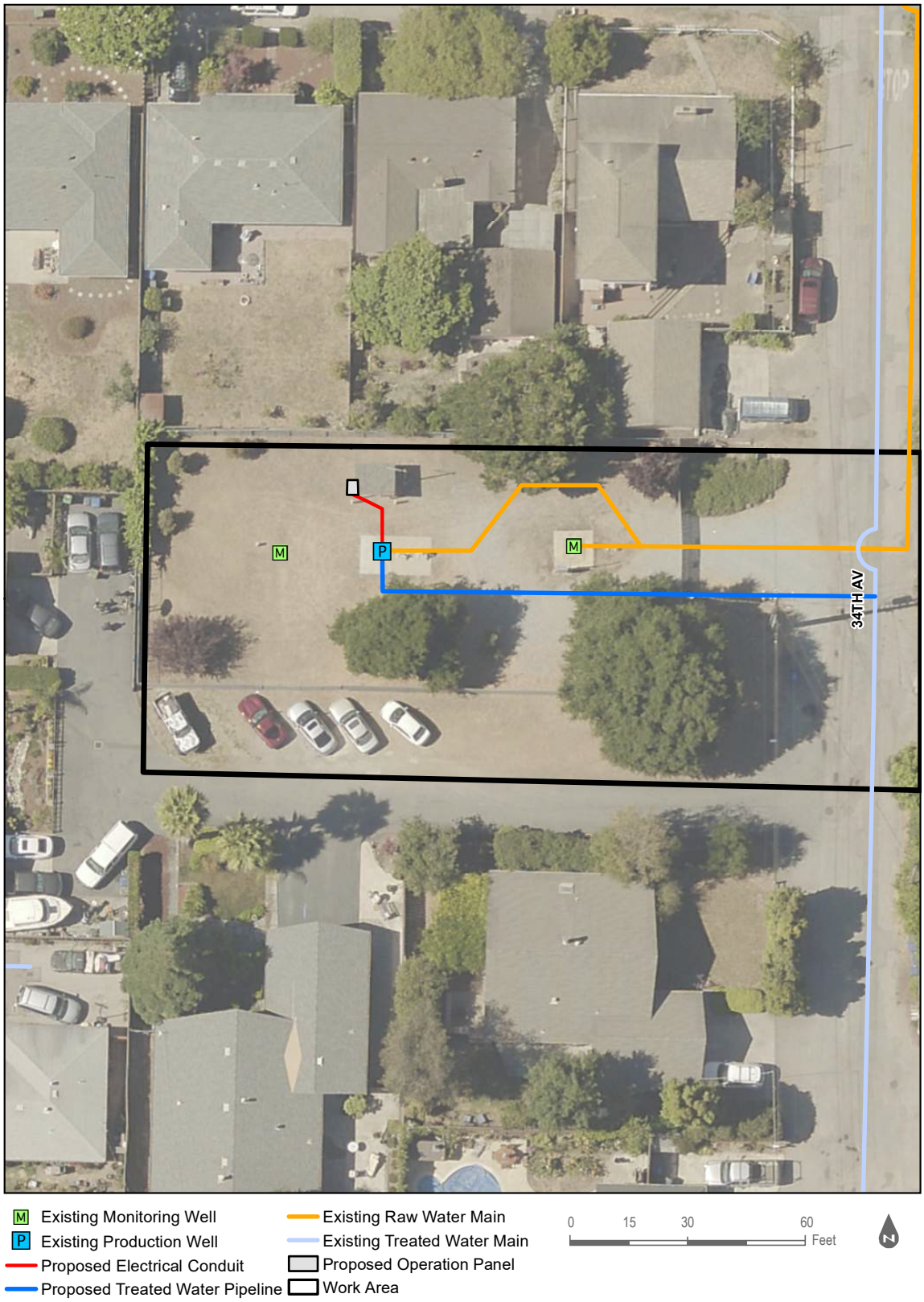
Facility Upgrades

For injection purposes, a new permanent supply pipeline between the well and the existing distribution system piping located on 34th Avenue would be installed. The pipeline would be approximately 140 feet in length and 6 inches in diameter; approximately 30 feet of the pipeline would be installed in paved right-of-way and the remainder would be installed in City property at the Beltz 10 ASR facility under graveled surface.

The new approximately 6-inch injection pipeline would have a backflow prevention device and be capable of delivering up to approximately 400 gpm of treated injection water. Modifications to the well head would be made that would allow for the installation of multiple 2-inch-diameter stainless steel drop tubes, or a single 3- or 4-inch-diameter drop tube with adjustable flow control valves.

For extraction purposes, the existing submersible pump and motor assembly currently rated at 250 gpm at 310 feet TDH would be removed and replaced with a new submersible pump and motor assembly rated for approximately 800 gpm at approximately 310 feet TDH, which would be capable of extracting approximately 700 gpm. During installation of the new submersible pump, the new injection flow control valves would also be installed inside the well. The control panel for the flow control valve would most likely be installed adjacent to the existing control panel. New piping (approximately two 1-inch-diameter pipes) and electrical conduits (approximately two 1-inch-diameter conduits) would be installed between the well head and the new control panel.

No additional monitoring wells would be constructed, as there is an existing monitoring well approximately 50 feet from Beltz 10 ASR facility from which adequate monitoring data can be obtained. Additionally, no additional nighttime security lighting would be required. Figure 3-4c illustrates the proposed improvements.




SOURCE: City of Santa Cruz 2021

**FIGURE 3-4C**

Proposed Beltz 10 ASR Facilities

Santa Cruz Water Rights Project

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### Beltz 12 Aquifer Storage and Recovery Facility

Existing Facility

Beltz No. 12 (Beltz 12) and associated treatment facilities are located on City-owned property at 2750 Research Park Drive, in Soquel, California (see Figure 3-4d for location). Components of the existing facility include the following: (1) a pump control and chemical storage building; (2) an iron and manganese treatment system consisting of a pressurized filter tank with various media inside; (3) two backwash tanks used in the iron and manganese treatment that each have a capacity of 35,000 gallons; and (4) a 640-foot-deep well that has a casing diameter of 16 inches, submersible pump and concrete pedestal, station piping including treated water pipeline, sewer connections, and stormwater drainage facilities that connect to other facilities in Research Park Drive.

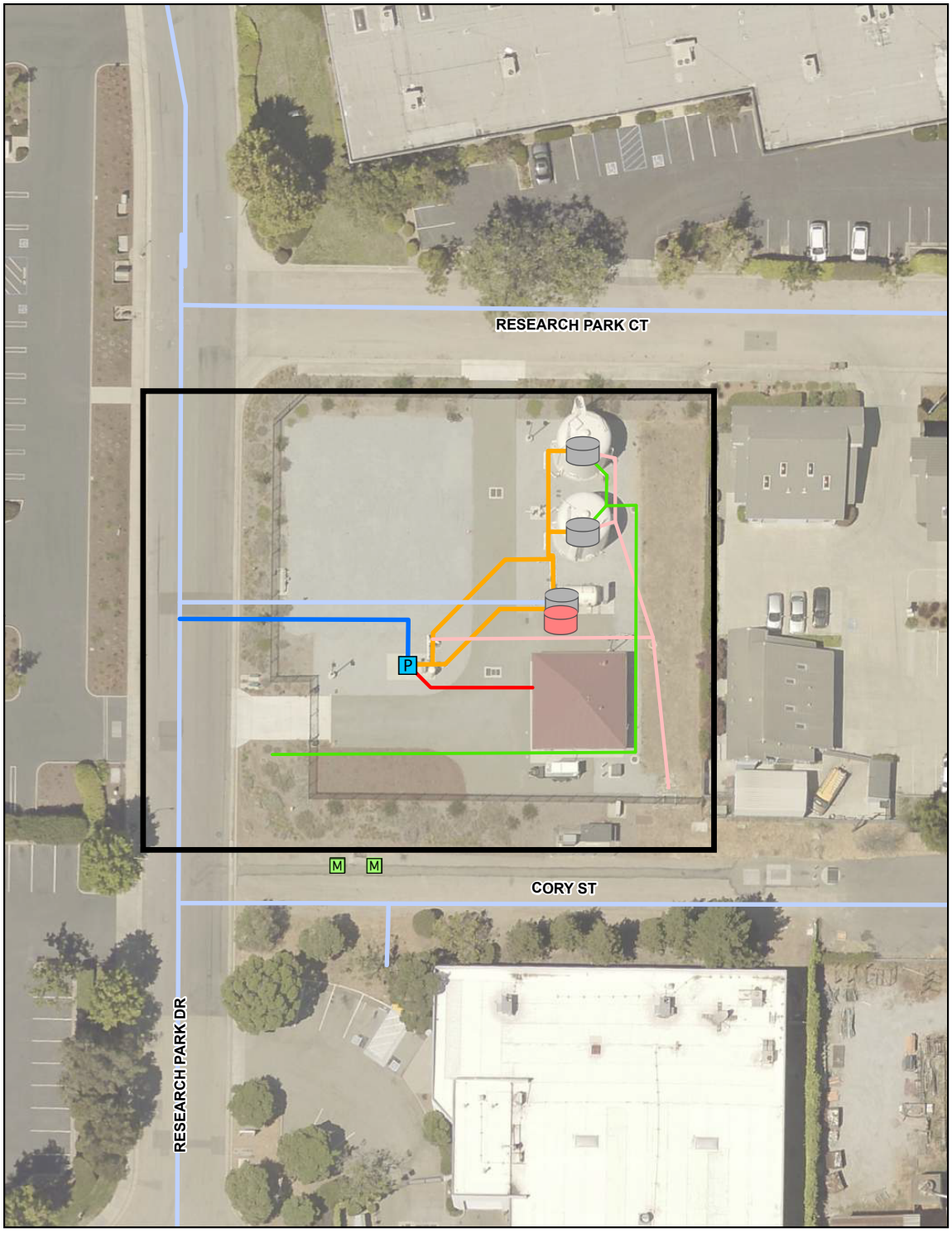
Facility Upgrades

For injection purposes, a new permanent supply pipeline between the well and the existing distribution system on Research Park Drive adjacent to the site would be installed. The pipeline would be approximately 100 feet in length and 6 inches in diameter; approximately 35 feet of the pipeline would be installed in paved right-of-way and the remainder would be installed in unpaved right-of-way and in City-owned property at the Beltz 12 ASR facility.

The new injection pipeline would have a backflow prevention device and be capable of delivering up to approximately 400 gpm of treated injection water delivered from the GHWTP through the City's water distribution system. Modifications to the well head would be made to allow for the installation of multiple 2-inch-diameter stainless steel drop tubes, or a single 3- or 4-inch-diameter drop tube with adjustable flow control valves.

For extraction purposes, the existing submersible pump and motor assembly at Beltz 12 currently rated at 400 gpm at 500 feet TDH would be removed and replaced with a new submersible pump and motor assembly rated for approximately 800 gpm at approximately 500 feet of TDH, which would be capable of extracting approximately 700 gpm. During installation of the new submersible pump, the new injection flow control valves would also be installed inside the well. The control panel for the flow control valve would most likely be installed inside the existing control building. New piping (approximately two 1-inch-diameter pipes) and electrical conduits (approximately two 1-inch-diameter conduits) would be installed between the well head and the existing control building. In addition, a second pressurized media filter tank used in the iron and manganese treatment system may be installed if needed to handle the additional flow delivered from the well. No new backwash pipelines would be installed, but modification to the existing backwash piping would be made to facilitate flushing into and draining of the existing backwash tanks.

No additional monitoring wells would be constructed as there is an existing monitoring well approximately 70 feet from Beltz 12 from which adequate monitoring data can be obtained. Additionally, no additional nighttime security lighting would be required. Figure 3-4d illustrates the proposed improvements.




SOURCE: City of Santa Cruz 2021

**FIGURE 3-4D**

Proposed Beltz 12 ASR Facilities

Santa Cruz Water Rights Project

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### Beltz ASR Construction Characteristics

Beltz 8, 9, 10, and 12 ASR Equipment and Schedule

Construction of the proposed upgrades at each of the Beltz 8, 9, 10, and 12 ASR facility sites would occur over a 1- to 3-month period. If constructed sequentially, construction for all sites would occur within about a 1-year timeframe. See Section 3.4.6, Estimated Construction Schedule, for the estimated construction schedule for all infrastructure components. Figures 3-4a through 3-4d illustrate the worst-case area of disturbance associated with construction at each facility, including temporary staging of materials and equipment. Equipment to be used to perform the work would include an excavator or backhoe, a truck to off-haul trench spoils and borehole cuttings (Beltz 9 ASR facility site only) and deliver new backfill material and well construction material (Beltz 9 ASR facility only), support trucks for tools and equipment, and a drill rig. Additional equipment for the monitoring well construction at the Beltz 9 ASR facility would include a support truck with water tank, a vacuum trailer or truck for fluid removal, and a logging van/truck to send geophysical logging tools down the borehole. It is expected that a four-person crew would perform the work at each site. Disposal of dry construction waste would likely occur at the County of Santa Cruz Buena Vista Landfill or the City's Dimeo Lane Landfill/Resource Recovery Facility. Disposal of non-dewatered construction waste such as drilling and well development fluids, would likely occur at the Monterey Regional Waste Management District Facility in Marina, California. Except under special circumstances, construction activities would occur between 8:00 a.m. and 5:30 p.m. on weekdays. No construction-related activities would occur on weekends or holidays, or at night.

Beltz 9 ASR Monitoring Well Construction Process

To construct the monitoring wells, up to three boreholes (9 to 12 inches wide and up to approximately 400 feet deep) would be drilled. The boreholes would be drilled and lithologically and geophysically logged. The wells would be drilled by a contractor licensed in the State of California utilizing a direct circulation mud-rotary drilling method.

During borehole excavation (drilling), drill fluid consisting of bentonite clay slurry and cutting consisting of native clay, silt, sand, and gravel would be contained. Drill cutting generated during the course of the work would ultimately be disposed of properly off site, most likely at the City Landfill on Dimeo Lane or County of Santa Cruz's Buena Vista Landfill. Drilling fluids and well development fluids would be removed as necessary during the course of the work using a qualified vacuum truck service and would likely be disposed of at the Monterey Regional Waste Management District Facility in Marina, a facility licensed to handle non-toxic and non-hazardous liquid waste. There would be no discharge of well installation materials or fluids generated during construction of the monitoring well into any storm drain.

Within each borehole, a single monitoring well would be installed. Each monitoring well would consist of a 2-inch-diameter well casing. The space between the wells and the casing would be filled with gravel pack, bentonite, and a cement sanity seal in accordance with state and County of Santa Cruz standards. Final design and actual construction would be based on the borehole lithological and geophysical logs and actual conditions encountered during drilling of the borehole. Well construction would also include well development whereby the well is cleared of the drilling mud and fluids used during the drilling process. After construction of the monitoring wells, the wells would be secured using locking well caps to prevent tampering and enclosed in flush-mounted traffic-rated vaults.

### Beltz ASR Operations and Maintenance Characteristics

For the Beltz ASR system, injection operations would typically be expected to take place during the winter months, sometime between the beginning of November and the end of April, and extraction operations could typically take place sometime between the beginning of May through the end of October. This manner of operation of ASR is what the City can reasonably foresee at this time and, for that reason, is reflected in the water-system modeling that supports this EIR. It is possible, however, that in dry conditions the City might seek to extract groundwater generated by prior ASR injections, during the November-April period. To the extent that such extractions are not reflected in the water-system modeling, they nonetheless are discussed qualitatively in this EIR. See Section 3.5, Proposed Project Modeling, for additional information about the modeling conducted for the water supply augmentation components of the Proposed Project.

Both during the injection and extraction operations, the facilities would run for 24 hours a day, 7 days a week. Noise levels would be consistent with existing levels during ASR operations. Routine maintenance would consist of a daily visit by a City staff person in a small truck to check on the facility operations at each site. During a typical site visit, City staff would collect pressure, water level, and flow rate information to ensure that values for each parameter are within expected ranges for either an injection or extraction cycle. In addition, although not at every site visit, it is also expected that staff would periodically collect water quality samples from injected and extracted water to ensure regulatory compliance. Additional operations and maintenance information is provided below.

#### Beltz 8 and 12 ASR Facilities

Approximately once a week during injection operations, the wells at Beltz ASR 8 and 12 ASR facilities would be backwashed to remove particulates deposited in the well filter pack. During the extraction, operation of the facility would remain the same as under existing conditions. The filter media would be backwashed daily to remove the accumulated iron and manganese. The backwash would then be piped to the backwash tank where the iron and manganese would settle out from the groundwater. The clear water is recirculated to the wellhead treatment and the remaining sludge, composed of particulate sediment, iron, manganese and other naturally occurring constituents, would be discharged to the County of Santa Cruz sanitary sewer line located immediately adjacent to the Beltz 8 and 12 sites via existing connections as per current operation. Given that backwashing during injection would also be required, as noted above, ASR at Beltz 8 and 12 would result in an increase in the sludge that would be discharged to the County of Santa Cruz sanitary sewer line. However, these operations would continue to occur under the existing sewer discharge permits with the County of Santa Cruz and associated requirements related to flow rate, volume, and quality.

#### Beltz ASR 9 and 10 ASR Facilities

Approximately once a week during injection operations, the wells at Beltz 9 and 10 ASR facilities would be backwashed to remove particulates deposited in the well filter pack. Backflush water would be pumped from the wells, using the well pump, to the reclaim tank located at the Beltz Groundwater Treatment Plant at the Beltz 8 ASR facility. During the extraction, operation of the Beltz 9 and 10 ASR facilities would remain the same as under existing conditions. Water extracted from these wells would also be sent to the treatment facility located at the Beltz 8 ASR facility.

### 3.4.3.2 Water Transfers and Exchanges and Intertie Improvements

As indicated in Section 3.2.1, Water Supply Planning Background, the City's Water Supply Augmentation Strategy also includes passive recharge of regional aquifers by transferring treated drinking water to other water districts in the area so they can rest their groundwater wells, help the aquifers recover, and potentially store water for use by the City in dry periods.

Modification of the City's appropriative water rights as proposed would facilitate the opportunity for potential future water transfers and exchanges with neighboring water agencies, including SVWD, SLVWD, SqCWD, and CWD. Such transfers and exchanges would likely be provided for via agreements with defined terms related to timing, volume of water, water year conditions, return of water, etc., that would be developed between the City and one or more of the neighboring agencies. New or improved interties between the water systems of the City and of neighboring water agencies may be needed to facilitate future water transfers and exchanges once City water rights are modified (see Figure 3-4).

Several options have been considered recently to reasonably describe potential future water transfer and exchange conditions. When water is available and conditions of future agreements are met, these transfers include a range of water volumes of approximately 98 mgy to 277 mgy (0.5 to 1.5 mgd from November 1–April 30) transferred by the City to SqCWD and/or CWD via the intertie facilities identified below, with some volume of water potentially returned to the City during dry periods. Additionally, up to approximately 163 mgy (0.9 mgd from November 1–April 30) of water could be transferred by the City to SVWD and/or SLVWD via the intertie facilities identified below, again with some volume of water potentially returned to the City during dry conditions. The amount of water that may be returned through exchanges is unknown at this time. The Santa Cruz Mid-County Groundwater Basin GSP indicates 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, as described in Section 3.2.1.3, Santa Cruz Mid-County Groundwater Sustainability Plan. As indicated previously, the conditions of such transfers and exchanges would be established in future agreements between the City and one or more of the neighboring water agencies, if such a project or projects are pursued. Standard operational practices for transfers and exchanges described in Section 3.4.5, Standard Operational and Construction Practices, would be implemented during development and operation.

Because no new interties or intertie improvements are currently being planned and designed, the number, specific location, size, and design cannot be specifically known at this time. However, conceptual planning information is available regarding the interconnection of the above systems based on prior planning for the scwd[2] Regional Seawater Desalination Project (URS 2013a); Scotts Valley Multi-Agency Regional Intertie Project (URS 2013b); and Cooperative Water Transfer, Groundwater Recharge, and Resource Management Pilot Project (City of Santa Cruz and SqCWD 2016; City of Santa Cruz 2015) and based on coordination with SqCWD, CWD, SVWD, and SLVWD conducted during the preparation of this EIR. The conceptual plans described below and illustrated in Figures 3-4e through 3-4g, provide an indication of the general location and the length and type of facilities required to interconnect the water systems of the above agencies.

## City/SVWD Intertie

The City's water supply system could be interconnected to the SVWD's system through installation of approximately 8,000 linear feet of new 12-inch-diameter intertie piping from Sims Road in the south, along La Madrona Drive to the north to the City of Scotts Valley where a new pump station would be constructed (URS 2013b) (see Figure 3-4e). A generalized location for the pump station is provided in Figure 3-4e, but the precise location, facility footprint, and equipment characteristics and sizing are not known at this time. Given typical pump stations in Santa Cruz County, this pump station is expected to be a single-story building with outdoor paved area surrounded by security fencing. It would also include security lighting that would be limited to low-wattage, shielded outdoor lighting, directed onto the site.

The City could deliver water to SLVWD through the City's potential intertie with SVWD and SVWD's existing interconnection with SLVWD. Interconnection of the SVWD and the SLVWD systems has already been constructed and permitted for emergency use, as part of the Scotts Valley Multi-Agency Regional Intertie Project. Additional permitting would be required to use the existing intertie for non-emergency use such as could be pursued as part of a potential future water supply transfer and exchange project.

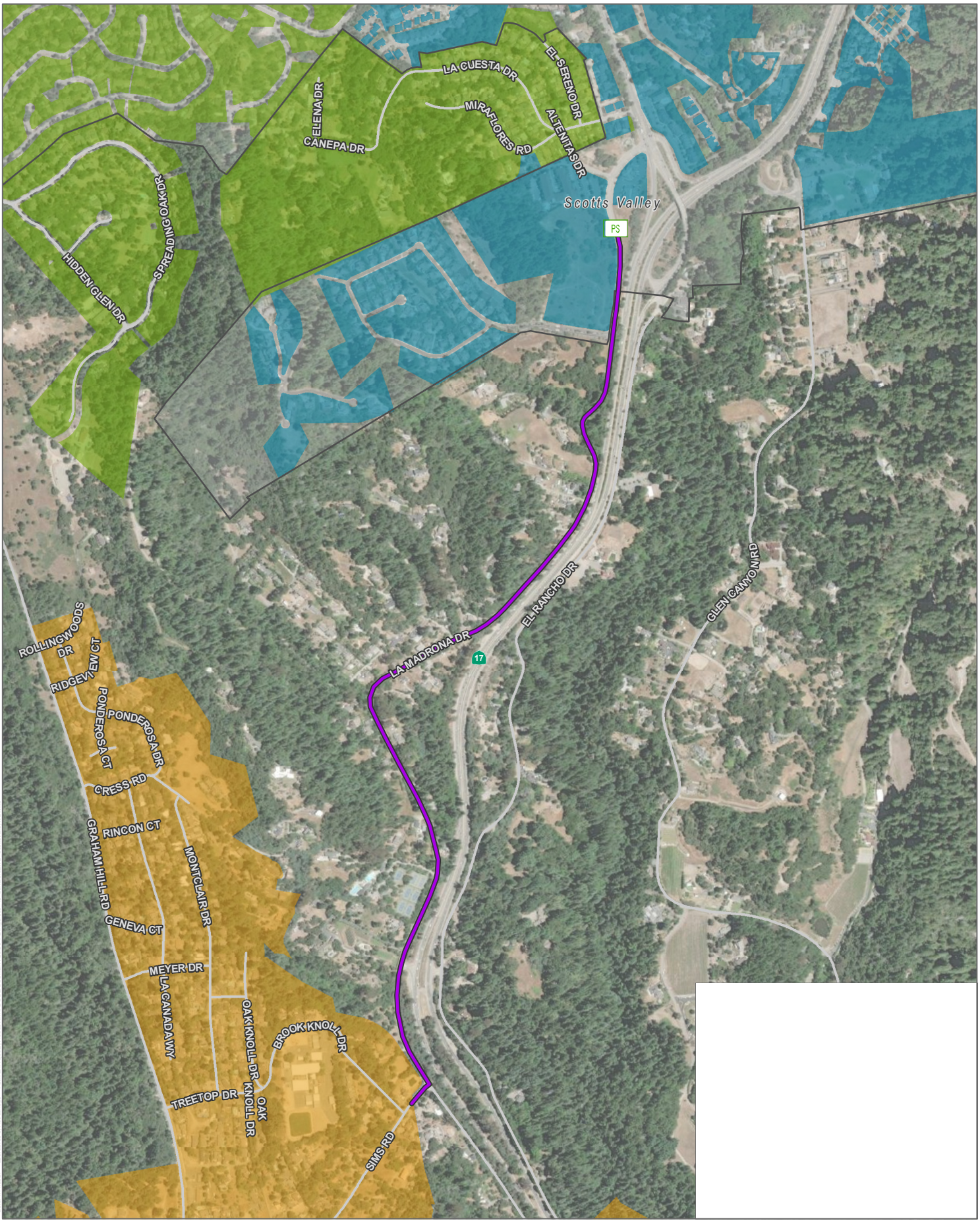
It is possible that other alignments to connect the City's system to SVWD and/or SLVWD could be considered in the future. A range of alternative pipeline alignments and pump station locations would likely be considered if and when an intertie project is pursued, planned, and designed. Depending upon the ultimate alignment and project selected, additional environmental review under CEQA may be required.

## City/SqCWD/CWD Intertie

As described in the Cooperative Water Transfer, Groundwater Recharge, and Resource Management Pilot Project Initial Study/Negative Declaration, the existing interties between the City's water system and the SqCWD's water system have capacity for 1.5 mgd during normal operations (City of Santa Cruz 2015). However, additional pipeline replacements, referred to as the Soquel Village pipeline and Park Avenue pipeline in this EIR, and an upgrade to SqCWD's McGregor Drive pump station would likely be needed to more efficiently move water through its service area (see Figure 3-4f). The McGregor Drive pump station upgrade would involve replacing two 25-horsepower (HP) pumps with two 50-HP pumps. All piping and electrical is already appropriately sized and would not require upgrading. No other improvements would be required at the existing McGregor Drive pump station.

According to SqCWD staff, SqCWD has two interties with the CWD, one on Huntington Drive near Valencia Road and one on Soquel Drive near Freedom Boulevard. Currently, CWD can move water to SqCWD, but SqCWD cannot move water to CWD due to the hydraulics in the water distribution systems for both districts (Dufour, pers. comm. 2019). New booster pump stations on these two interties would be required to allow SqCWD to move water to CWD (see Figure 3-4g). These booster pump stations are referred to as the Freedom Boulevard pump station and the Valencia Road pump station in this EIR. Generalized locations for these pump stations are provided in Figure 3-4g, but precise locations, facility footprints, and equipment characteristics and sizing are not known at this time. Given typical pump stations in Santa Cruz County, these pump stations are expected to be single-story buildings with outdoor paved areas surrounded by security fencing. They would also include security lighting that would be limited to low-wattage, shielded outdoor lighting, directed onto the site.

Potential pump station locations would likely be considered if and when such pump stations are pursued, planned, and designed. Depending upon the ultimate site or sites selected, additional environmental review under CEQA may be required.




SOURCE: Bing Maps Accessed 2019, Kennedy/Jenks Consultants 2012 and 2014, URS 2013, County of Santa Cruz 2020

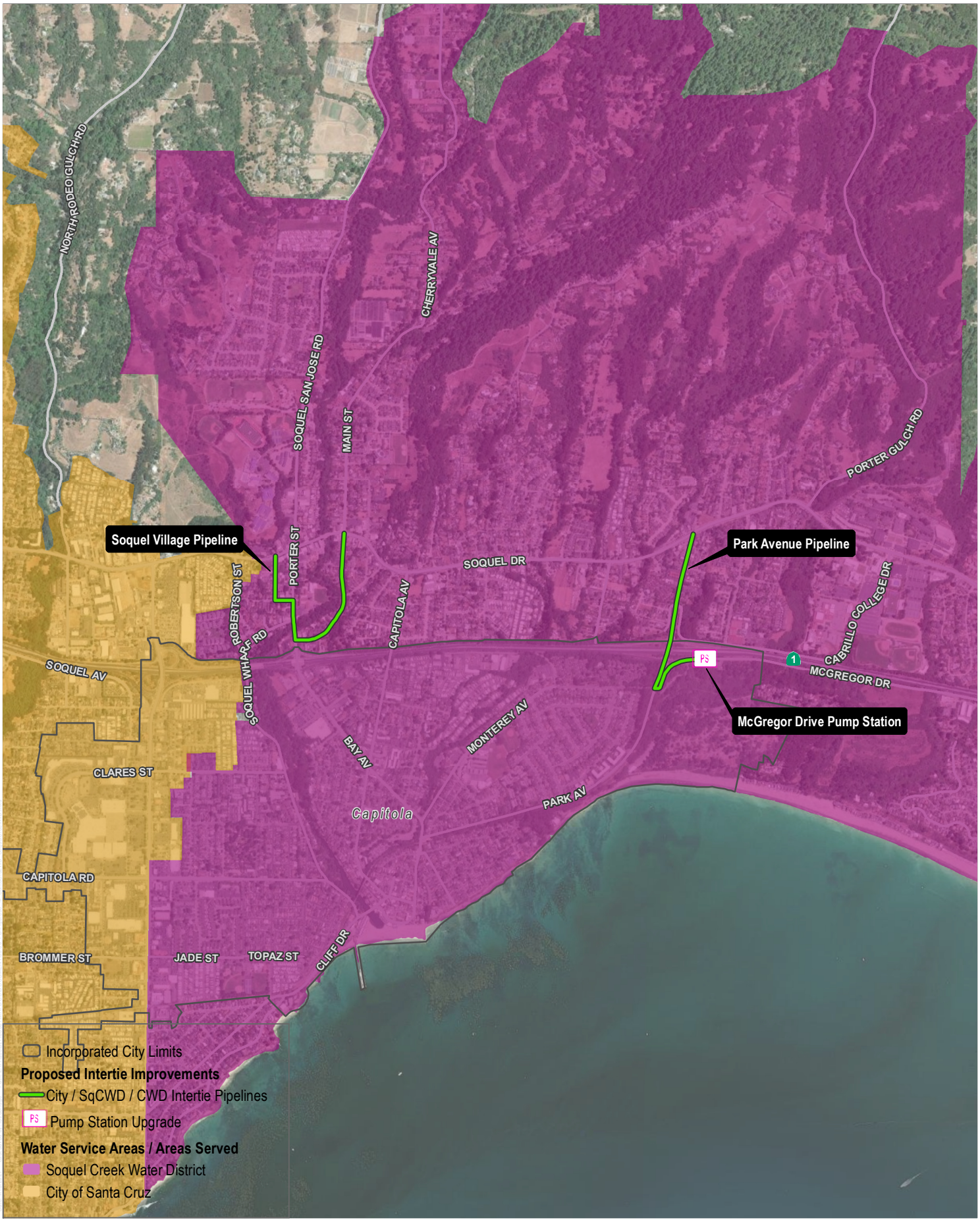
DUDEK

0 500 1,000 Feet

**FIGURE 3-4E**

City of Santa Cruz and Scotts Valley Water District Intertie

Santa Cruz Water Rights Project




SOURCE: Bing Maps Accessed 2019, Kennedy/Jenks Consultants 2012 and 2014, URS 2013, County of Santa Cruz 2020

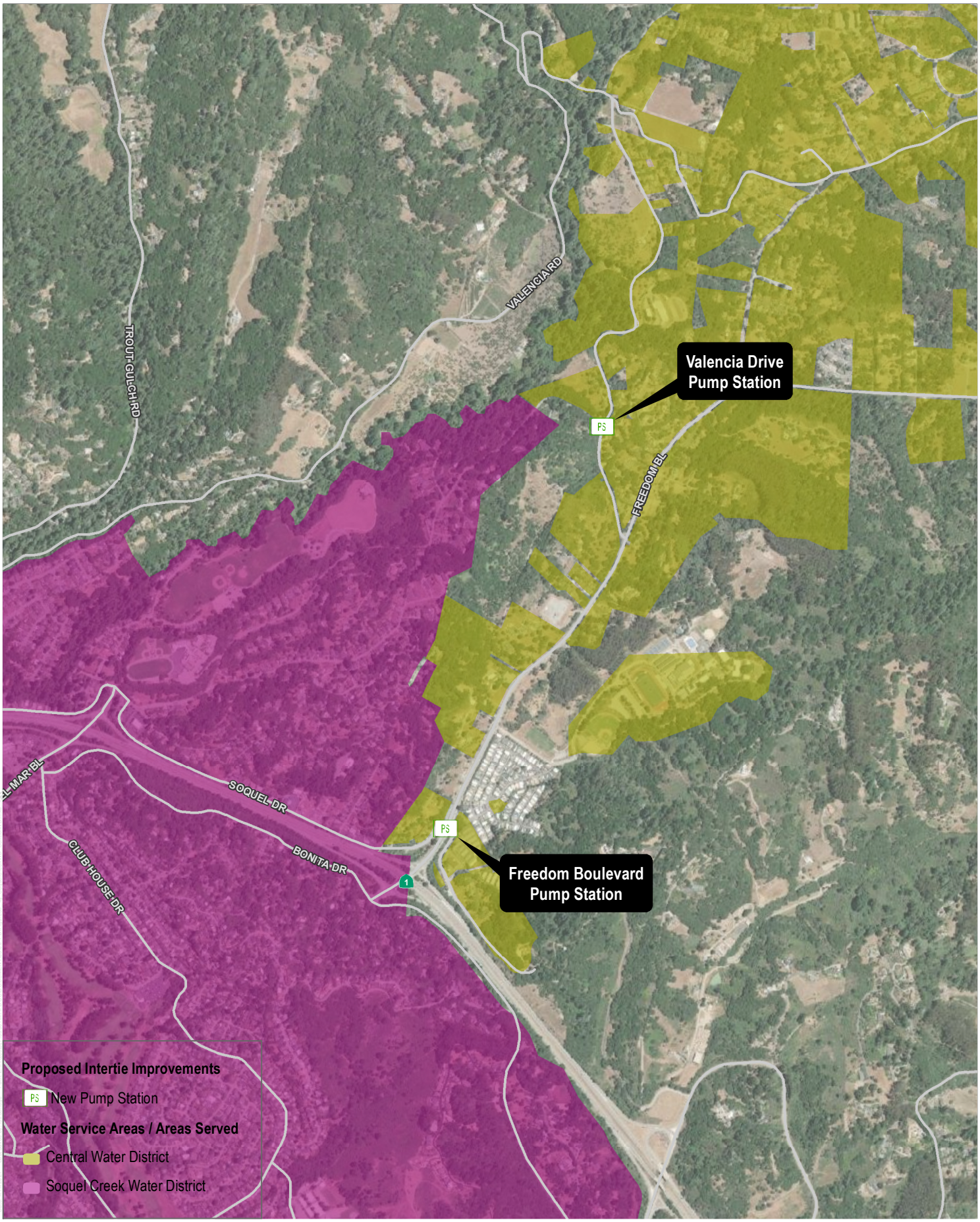
DUDEK

0 1,000 2,000 Feet

**FIGURE 3-4F**

City of Santa Cruz and Soquel Creek Water District Intertie Improvements

Santa Cruz Water Rights Project




SOURCE: Bing Maps Accessed 2019, Kennedy/Jenks Consultants 2012 and 2014, URS 2013, County of Santa Cruz 2020

DUDEK

0 750 1,500 Feet

**FIGURE 3-4G**

Soquel Creek Water District and Central Water District Intertie Improvements

Santa Cruz Water Rights Project

## 3.4.4 Surface Water Diversion Improvements

### 3.4.4.1 Felton Diversion Fish Passage Improvements

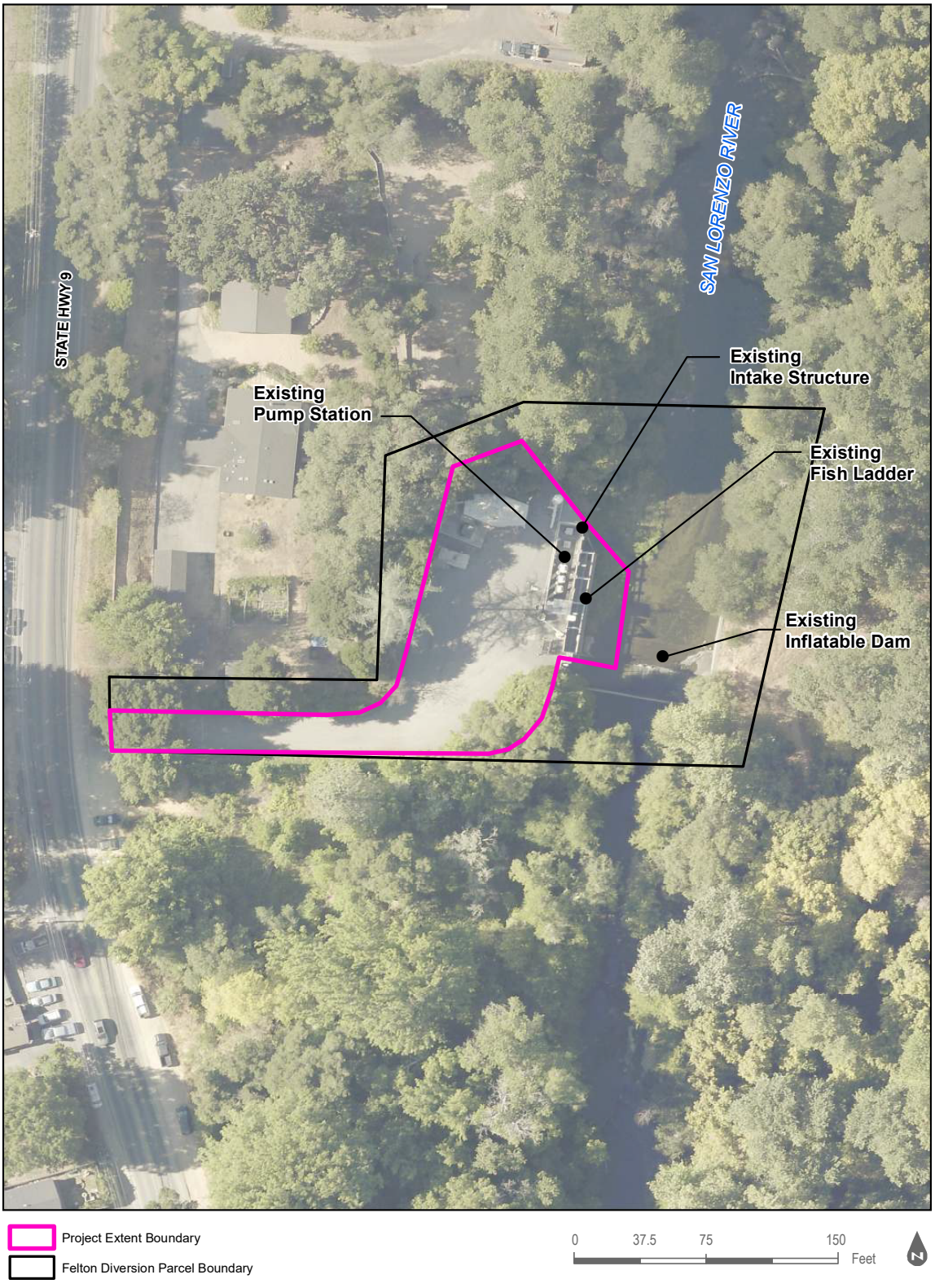
The Felton Diversion is a surface water diversion/intake on the San Lorenzo River that pumps raw water from the river to the City's Loch Lomond Reservoir (see Figure 3-4h). The Felton Diversion was constructed in 1976 and, in general, consists of an inflatable rubber dam, a fish-screened intake structure, a conventional sump and high-lift pump station, a slide-gated bypass channel, a Denil-style fish ladder, an operations building, and miscellaneous site improvements. With the dam fully inflated, a portion of river flow is bypassed through the existing Denil fish ladder and the bypass channel, depending on slide gate position. The bypass channel is adjacent to the intake structure, and both structures share a common wall. The fish ladder shares a common wall with the bypass channel and is located on the streamside of the structure. The fishway consists of several 4-foot-wide fabricated metal chute modules featuring incrementally spaced baffles of standard configuration. The Felton Diversion was constructed based on the best fish passage design information available at the time. Since that time, fish screening criteria and fishway design guidelines have been published by the CDFW and NMFS.

Proposed fish passage improvements at the Felton Diversion would provide for compliance with current fish passage and screening requirements. Minor modifications to the existing Felton Diversion are needed to comply with the latest fish passage and screening criteria (Wood Rodgers 2006). The modifications would be designed to support use of City water rights while improving passage for coho and steelhead. These improvements may include fish screen replacement, installation of a traveling brush system to keep the fish screens operating at optimum efficiency, and construction of a continuous downstream outmigration bypass route within the existing bypass channel with downstream opening slide gate. These improvements would be constructed on the west side of the Felton Diversion entirely within the existing concrete diversion facility structure. These improvements would not require any construction activities or disturbance in the river bed. The existing concrete bypass channel and fish ladder would be dewatered, if needed, and closed during construction. Dewatering would be accomplished through the hand placement of sandbags on either side of the concrete bypass channel. Once construction is completed, any construction debris would be removed from the bypass channel and fish ladder prior to reopening them. Figure 3-4h shows the worst-case area of disturbance associated with construction of the Felton Diversion improvements. See Section 3.4.5, Standard Operational and Construction Practices, for standard construction practices that would be implemented with this programmatic component.

### 3.4.4.2 Tait Diversion and Coast Pump Station Improvements

The Tait Diversion is located on a fairly straight, low-gradient section of the San Lorenzo River approximately 2.4 miles upstream of the mouth of the river, and is one of the City's critical water supply sources, supplying up to 12.2 cfs to its overall water supply via the adjacent Coast Pump Station facility (see Figure 3-4i). The original Tait Diversion was constructed in 1961; it was modified in 1983 with a fish screen that met California Department of Fish and Game[23] and NMFS regulatory design criteria at that time. The City's Coast Pump Station facility has evolved over time and currently includes two pump stations, the Coast Pumps and the River Pumps, which pump raw water from City's North Coast sources and the San Lorenzo River, respectively, to City's GHWTP, approximately 1 mile to the north. Over the last several decades, the San Lorenzo River has experienced periods of channel erosion and sedimentation that have changed the morphology of the River at the Tait Diversion. While storm events have caused pitting and abrasion to the Tait Diversion, the overall stability of the Tait Diversion structure is good for the age of the structure. The risk of structural damage during high streamflows is low due to the prior performance during historic flood events and current structural condition.

[23] The former Department of Fish and Game was renamed the Department of Fish and Wildlife in 2013.




SOURCE: City of Santa Cruz 2019

**FIGURE 3-4H**

Felton Diversion Fish Passage Improvements Site

Santa Cruz Water Rights Project

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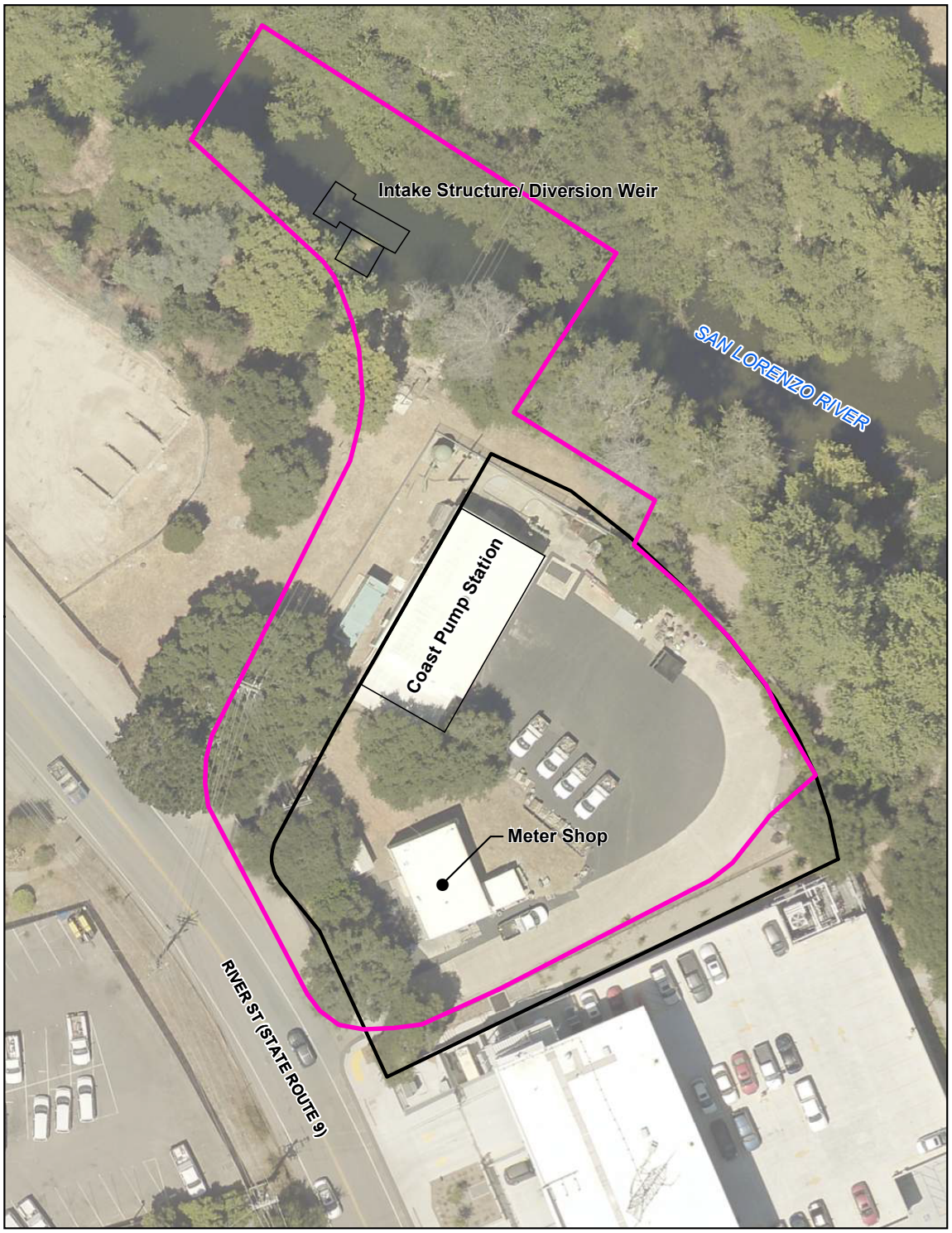
Intake Structure/ Diversion Weir
SAN LORENZO RIVER
Coast Pump Station
Meter Shop
RIVER ST (STATE ROUTE 9)
Project Extent Boundary
Coast Pump Station Parcel Boundary
0 25 50 100 Feet
0 25 50 100 Feet
N

Proposed improvements at the Tait Diversion would provide for compliance with current fish screening requirements. The City is in the process of evaluating improvements at the Tait Diversion and Coast Pump Station facility to ensure future reliability of the water supply and to allow the City to divert water under the existing Felton Diversion water rights at either the Felton Diversion or downstream at the Tait Diversion, as described in Section 3.4.2, Water Rights Modifications, and shown in Tables 3-2 and 3-4. Specifically, the capacity of the Tait intake and pump station would be designed to accommodate up to 28 cfs[24] of surface water flows. Improvements at the Tait Diversion could include, but would not be limited to, (1) a new or modified intake design, (2) upstream and/or downstream hydraulic modifications, (3) improvements to the check dam, and (4) any required fish passage upgrades. Upgrades would be implemented to meet current state and federal fisheries protection criteria. Improvements could include, but would not be limited to, one or more of the following:

- Dam notching incorporating a spillway crest gate and new upstream river intake with flat plate intake screen;
- Conventional vertical slot fish ladder and new upstream river intake housing a gallery of retrievable cylindrical fish screens;
- Incorporation of a Coanda intake screen within the dam and conventional Denil-style fish ladder at the right abutment; and/or
- 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, but would not be limited to, (1) new pumps and motors; (2) primary and backup power upgrades, which could include upgrades to the Pacific Gas & Electric substation; (3) a new or modified concrete wet well; and (4) a solids handling system.

The Tait Diversion improvements would likely require construction activities and disturbance in the river bed. Figure 3-4i shows the worst-case area of disturbance associated with construction of the Tait Diversion and Coast Pump Station Facility Improvements. See Section 3.4.5, Standard Operational and Construction Practices, for standard construction practices that would be implemented with this programmatic component.

## 3.4.5 Standard Operational and Construction Practices

### 3.4.5.1 Standard Operational Practices

1. Ramping rates[25] developed during the pending ASHCP process and agreed to by CDFW and NMFS will be implemented at all City diversion facilities as follows:
    - During changes in diversion rates, a ramping rate will be implemented at the Laguna Diversion, Liddell Diversion, Majors Diversion, and Tait Diversion to limit downstream flow reductions below the diversions such that the change in stage is no greater than 0.16 feet per hour when fry may be present (January 15 through May 31) and no greater than 0.3 feet per hour at all other times.
    - During changes in bypass rates downstream of Newell Creek Dam, a ramping rate will be implemented to limit flow reductions in Newell Creek such that the change in stage is no greater than 0.16 feet per hour when fry may be present (January 15 through May 31) and no greater than 0.3 feet per hour at all other times.

[24] Intake and pump station capacity of 28 cfs would provide for the proposed diversion of water at the Tait Diversion under both the Tait Licenses and Felton Permits, accommodating for practical throughput of the diverted water at the GHWTP.

[25] Ramping rates are diversion rates that gradually alter diversions from a stream channel to limit the downstream rate of change to stream stage. Stage is the water level in a stream or river defined in reference to a certain height.

- During inflation and deflation of the dam at Felton Diversion, a ramping rate will be implemented such that during inflation of the dam, downstream stage decreases will be limited to no more than 0.55 feet per hour, and during deflation of the dam, downstream stage increases below the diversion will be limited to no more than 1.68 feet per hour.

2. Operation of the ASR injections and extractions anticipated by the Proposed Project will be consistent with the sustainable management criteria, and will avoid any undesirable results identified in the adopted Santa Cruz Mid-County Groundwater Basin GSP and in any future revisions to the GSP. ASR facilities and associated injections and extractions in the Santa Margarita Groundwater Basin will be planned to be installed and operated after the Santa Margarita Groundwater Basin GSP is prepared, adopted, and submitted to the Department of Water Resources in January 2022. The proposed timing will allow ASR injections and extractions to be consistent with the sustainable management criteria, and avoid any undesirable results identified, in the adopted Santa Margarita Groundwater Basin GSP and in any future revisions to the GSP.
3. ASR facilities will be permitted, constructed, and operated in accordance with the SWRCB Water Quality Order 2012-0010, General Waste Discharge Requirements for Aquifer Storage and Recovery Projects that Inject Drinking Water into Groundwater. This Order provides consistent regulation of ASR projects state-wide; provides a streamlined review and permitting process for ASR projects; and ensures compliance with applicable regulations and policies, including the RWQCB Basin Plans and State Water Board Resolution 68-18 (the Antidegradation Policy). The Order addresses possible elevated concentrations of naturally occurring or anthropogenic constituents in the aquifer, as well as the potential effects of mixing water from different sources, which may cause geochemical reactions in the aquifer that can improve or degrade groundwater quality. The Order requires groundwater monitoring of the injection/extraction wells and monitoring wells to evaluate the potential for groundwater quality changes. In accordance with this Order, a technical report will be required in association with ASR permitting, including a hydrogeologic evaluation (e.g., injected aquifer characteristics) and water quality evaluation (e.g., potential impact to ongoing remediation efforts, mobilization of contaminants). A Monitoring and Reporting Program will be required, including requirements for monitoring of injected water quality, groundwater quality, and groundwater elevation/gradient.
4. Diversions from surface streams to provide water for ASR injections will be limited by the following:
    - No diversions to provide water for ASR injections will occur in months classified as Hydrologic Condition 5 (driest) as defined in the Agreed Flows (Table 3-5a).
5. Diversions by the City from surface streams to support City water transfers and/or exchanges to neighboring agencies will be limited by the following:
    - The City will not divert water 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 (Table 3-5a).
6. At times when the Loch Lomond Reservoir is spilling during late spring and summer when surface temperatures in the reservoir are warmer and the cooler 1 cfs fish release below the dam (generally between 11°C and 14°C) may not be sufficient to maintain temperatures in Newell Creek below 21°C, which is within the suitable range for steelhead and coho, the City will 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.

### 3.4.5.2 Standard Construction Practices

The City has identified standard construction practices, presented in this section that will be implemented by the City or its contractors during construction activities associated with the project and programmatic components, where relevant.

## Erosion Control and Air Quality Control

1. Implement erosion control best management practices for all construction activities occurring in or adjacent to jurisdictional aquatic resources (resources subject to permitting under Clean Water Act Section 404, Clean Water Act Section 401, Porter-Cologne Water Quality Act Section 13000 et seq., and/or California Fish and Game Code Section 1600). These measures may include, but are not limited to, (1) installation of silt fences, fiber or straw rolls, and/or bales along limits of work/construction areas and from the edge of the water course; (2) covering of stockpiled spoils; (3) revegetation and physical stabilization of disturbed graded and staging areas; and (4) sediment control including fencing, dams, barriers, berms, traps, and associated basins.
2. Provide stockpile containment and exposed soil stabilization structures (e.g., Visqueen plastic sheeting, fiber or straw rolls, gravel bags, and/or hydroseed).
3. Provide runoff control devices (e.g., fiber or straw rolls, gravel bag barriers/chevrons) used during construction phases conducted during the rainy season. Following all rain events, runoff control devices shall be inspected for their performance and repaired immediately if they are found to be deficient.
4. Implement wind erosion (dust) controls, including the following:
    - Use a water truck;
    - Water active construction areas as necessary to control fugitive dust;
    - Hydro seed and/or apply non-toxic soil binders to exposed areas after cut and fill operations;
    - Cover inactive storage piles;
    - Cover all trucks hauling dirt, sand, or loose materials off site; and
    - Install appropriately effective track-out capture methods at the construction site for all exiting trucks.

## Water Quality Protection

5. Locate and stabilize spoil disposal sites and other debris areas such as concrete wash sites. Sediment control measures shall be implemented so that sediment is not conveyed to waterways or jurisdictional resources (resources subject to permitting under Clean Water Act Section 404, Clean Water Act Section 401, and/or California Fish and Game Code Section 1600).
6. Minimize potential for hazardous spills from heavy equipment by not storing equipment or fueling within a minimum of 65 feet of any active stream channel or water body unless approved by permitting agencies along with implementation of additional spill prevention methods such as secondary containment and inspection.
7. Ensure that gas, oil, or any other substances that could be hazardous to aquatic life or pollute habitat are prevented from contaminating the soil or entering waters of the state or of the United States by storing these types of materials within an established containment area. Vehicles and equipment will have spill kits available, be checked daily for leaks, and will be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease. Any gas, oil, or other substance that could be considered hazardous shall be stored in water-tight containers with secondary containment. Emergency spill kits shall be on site at all times.
8. Prevent equipment fluid leaks through regular equipment inspections.
9. Implement proper waste/trash management.

### In-Channel Work and Fish Species Protection

10. For facilities that are in or adjacent to streams and drainages, avoid activities in the active (i.e., flowing) channel whenever possible. New ASR facilities shall avoid streams and drainages.
11. Isolate work areas as needed and bypass flowing water around work site (see dewatering measures below).
12. Personnel shall use the appropriate equipment for the job that minimizes disturbance to the channel bed and banks. Appropriately tired vehicles, either tracked or wheeled, shall be used depending on the situation.

### General Habitat Protection

13. Avoid disturbance of retained riparian vegetation to the maximum extent feasible when working in or adjacent to an active stream channel.
14. Restore all temporarily disturbed natural communities/areas by replanting native vegetation using a vegetation mix appropriate for the site.
15. Require decontamination of any used tools and equipment prior to entering water ways.
16. A qualified biologist shall conduct a training-educational session for project construction personnel prior to any mobilization-construction activities within the project sites to inform personnel about species that may be present on site. The training shall consist of basic identification of special-status species that may occur on or near the project site, their habitat, their basic habits, how they may be encountered in the work area, and procedures to follow when they are encountered. The training will include a description of the project boundaries; general provisions of the Migratory Bird Treaty Act, California Fish and Game Code, and federal and state Endangered Species Acts; the necessity for adhering to the provision of these regulations; and general measures for the protection of special-status species, including breeding birds and their nests. Any personnel joining the work crew later shall receive the same training before beginning work.

### Dewatering

17. Prior to the start of work or during the installation of temporary water diversion structures, capture native aquatic vertebrates in the work area and transfer them to another reach as determined by a qualified biologist. Capture and relocation of aquatic native vertebrates is not required at individual project sites when site conditions preclude reasonably effective operation of capture gear and equipment, or when the safety of the biologist conducting the capture may be compromised.
18. When work in a flowing stream is unavoidable, isolate the work area from the stream. This may be achieved by diverting the entire streamflow around the work area by a pipe or open channel. Coffer dams shall be installed upstream and downstream, if needed, of the work areas at locations determined suitable based on site-specific conditions, including proximity to the construction zone and type of construction activities being conducted. Coffer dam construction shall be adequate to prevent seepage to the maximum extent feasible into or from the work area. Where feasible, water diversion techniques shall allow stream flows to flow by gravity around or through the work site. If gravity flow is not feasible, stream flows may be pumped around the work site using pumps and screened intake hoses. Sumps or basins may also be used to collect water, where appropriate (e.g., in channels with low flows). The work area will remain isolated from flowing water until any necessary erosion protection is in place. All water shall be discharged in a non-erosive manner (e.g., gravel or vegetated bars, on hay bales, on plastic, on concrete, or in storm drains when equipped with filtering devices).
19. If a bypass will be of open channel design, the berm confining the channel may be constructed of material from the channel.

20. Diversions shall maintain ambient flows below the diversion, and waters discharged below the project site shall not be diminished or degraded by the diversion. All imported materials placed in the channel to dewater the channel shall be removed when the work is completed. Dirt, dust, or other potential discharge material in the work area will be contained and prevented from entering the flowing channel. Normal flows shall be restored to the affected stream as soon as is feasible and safe after completion of work at that location.
21. To the extent that streambed design changes are not part of the Proposed Project, return the streambed, including the low-flow channel, to as close to pre-project condition as possible unless the pre-existing condition was detrimental to channel condition as determined by a qualified biologist or hydrologist.
22. Remove all temporary diversion structures and the supportive material as soon as reasonably possible, but no more than 72 hours after work is completed.
23. Completely remove temporary fills, such as for access ramps, diversion structures, or coffer dams upon finishing the work.

### Other Practices

24. In the event that archaeological resources (sites, features, or artifacts) are exposed during construction activities for the Proposed Project, immediately stop all construction work occurring within 100 feet of the find until a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find, and whether the archaeological resources qualify as unique archaeological resources, historical resources of an archaeological nature, or subsurface tribal cultural resources. The archaeologist will determine whether additional study is warranted. Should it be required, the archaeologist may install temporary flagging around a resource to avoid any disturbances from construction equipment. Depending upon the significance of the find under CEQA (14 CCR 15064.5[f]; California Public Resources Code, Section 21082), the archaeologist may record the find to appropriate standards (thereby addressing any data potential) and allow work to continue. If the archaeologist observes the discovery to be potentially significant under CEQA, preservation in place or additional treatment may be required.
25. In accordance with Section 7050.5 of the California Health and Safety Code, if potential human remains are found, immediately notify the lead agency staff and the County Coroner of the discovery. The coroner will provide a determination within 48 hours of notification. No further excavation or disturbance of the identified material, or any area reasonably suspected to overlie additional remains, can occur until a determination has been made. If the County Coroner determines that the remains are, or are believed to be, Native American, the coroner will notify the Native American Heritage Commission within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the Native American Heritage Commission must immediately notify those persons it believes to be the Most Likely Descendant from the deceased Native American. Within 48 hours of this notification, the Most Likely Descendant will recommend to the lead agency her/his preferred treatment of the remains and associated grave goods.
26. Notify adjacent property owners of nighttime construction schedules. A Construction Noise Coordinator will be identified. The contact number for the Construction Noise Coordinator will be included on notices distributed to neighbors regarding planned nighttime construction activities. The Construction Noise Coordinator will be responsible for responding to any local complaints about construction noise. When a complaint is received, the Construction Noise Coordinator shall notify the City within 48 hours of the complaint, determine the cause of the noise complaint, and implement as possible reasonable measures to resolve the complaint, as deemed acceptable by the City.

27. For construction on undeveloped sites or sites with surrounding trees and other vegetation, internal combustion engine equipment shall include spark arrestors, fire suppression equipment (e.g., fire extinguishers and shovels) must be stored onsite during use of such mechanical equipment, and construction activities may not be conducted during red flag warnings issued by the California Department of Forestry and Fire Protection (CAL FIRE). Red flag warnings and fire weather watches are issued by CAL FIRE based on weather patterns (low humidity, strong winds, dry fuels, etc.) and listed on their website (https://www.fire.ca.gov/programs/communications/red-flag-warnings-fire-weather-watches/).

## 3.4.6 Estimated Construction Schedule

A summary of estimated construction schedules for the project and programmatic infrastructure components is provided in Table 3-8. The construction timing for Beltz ASR facilities is based on the City's current planning for these facilities. The construction schedules for the other infrastructure components were developed to provide a reasonable worst-case construction scenario for the evaluation of environmental impacts by providing for the earliest possible construction initiation date for each component (see Section 4.2, Air Quality, for additional information). The actual construction schedules for these components could be extended further out in time.

**Table 3-8. Construction Schedules for Analysis Purposes**

| Project and Programmatic Infrastructure Components | Construction Schedule for Analysis Purposes[1] |
|---|---|
| **Aquifer Storage and Recovery (ASR)** | |
| New ASR Facilities (up to 4 new ASR facilities)[2] | |
| New Monitoring wells (2 to 3 wells per ASR facility) | July 2024 – September 2024 |
| New ASR wells | September 2024 – November 2024 |
| New Treatment facilities | January 2025 – September 2025 |
| Beltz ASR Facilities | |
| Beltz 9 ASR monitoring well | May 2022 |
| Beltz 12 ASR upgrades | July 2022 – September 2022 |
| Beltz 8 ASR upgrades | September 2022 – January 2023 |
| Beltz 9 ASR upgrades | January 2023 – February 2023 |
| Beltz 10 ASR upgrades | February 2023 – March 2023 |
| **Water Transfers and Exchanges and Intertie Improvements** | |
| City/SVWD intertie pipeline | May 2027 – November 2027 |
| City/SVWD intertie pump station | May 2027 – June 2027 |
| City/SqCWD/CWD intertie pipelines | May 2022 – November 2022 |
| City/SqCWD/CWD intertie pump stations (new) | May 2022 – June 2022 |
| City/SqCWD/CWD intertie pump station (upgrade) | April 2022 – May 2022 |
| **Felton Diversion Fish Passage Improvements** | June 2027 – August 2027 |
| **Tait Diversion and Coast Pump Station Improvements** | |
| Coast Pump Station improvements | April 2028 – May 2028 |
| Tait Diversion improvements | May 2028 – December 2028 |

**Notes**:

1 The construction schedules for the programmatic components was developed to provide a reasonable worst-case construction scenario for the evaluation of environmental impacts by providing for the earliest possible construction initiation date for each component (see Section 4.2, Air Quality, for additional information). The actual construction schedules for these components could be extended further out in time.

2 Up to four new ASR facilities are anticipated and were conservatively assumed in the analysis to be constructed concurrently.

## 3.4.7 Project Operations

### 3.4.7.1 City Water Supply Production with Proposed Project

The proposed water rights modifications would enable implementation of water supply augmentation components, which support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers and exchanges) and Element 2 (active recharge of regional aquifers via ASR) to meet the project objectives defined in Section 3.3, Project Purpose and Objectives, and to meet the water demand of 3,200 mgy that is forecasted in the City's 2015 UWMP (see Table 3-9). Additionally, the Proposed Project would allow the City to fill the identified worst-year water supply gap of 1.2 mgy (see Table 3-10).

**Table 3-9. City Water Supply with Proposed Project**

| Water Supply | 2018 Baseline (mg) | Proposed Project (mg)[1] |
|---|---|---|
| ***Average of All Years*** | | |
| Treated Surface Water from Graham Hill Water Treatment Plant | 2,977 | 3,589 |
| • *Minus* Water Injected into Underground Storage Via ASR | NA | -233 |
| • *Minus* Water Transferred to Other Suppliers | NA | -424[2] |
| *Total Treated Surface Water to City Customers* | *2,977* | *2,932* |
| *Total Beltz Groundwater Extraction to City Customers* | *127* | *92* |
| *Total ASR Extraction to City Customers* | *NA* | *176* |
| **Total Supply** | **3,104** | **3,200** |
| ***Average of Critically Dry Years*** | | |
| Treated Surface Water from Graham Hill Water Treatment Plant | 2,501 | 2,673 |
| • *Minus* Water Injected into Underground Storage Via ASR | NA | -132[3] |
| • *Minus* Water Transferred to Other Suppliers | NA | -25[2, 3] |
| *Total Surface Water to City Customers* | *2,501* | *2,516* |
| *Total Beltz Groundwater Extraction to City Customers* | *185* | *166* |
| *Total ASR Extraction to City Customers* | *NA* | *518* |
| **Total Supply** | **2,686** | **3,200** |

**Source:** Gary Fiske and Associates 2021c.

**Notes:** mg = million gallons.

1 A negative number is presented for ASR injections given that injection volumes are not available until they are extracted. Likewise, water transfers to other agencies are also shown as negative numbers given that those volumes are transferred and not available to the City.

2 The maximum volume of water for water transfers provided above is based on the hydrologic and water supply modeling conducted for the Proposed Project (Appendix D). However, this chapter uses the existing infrastructure capacities of the existing systems as the basis for the proposed maximum volume of water that could be transferred due to the Proposed Project. That number (440 mg) is slightly larger than the maximum volume of water presented above.

3 ASR injections and water transfers may take place during what turns out to be critically dry or dry years given that critically dry or dry conditions may not be determined until a portion of the water year has elapsed. For example, rains in October and November could provide the conditions where the City would inject and/or transfer water while subsequent months of reduced rainfalls, indicating a critically dry or dry water year, may cause the City to cease these operations.

**Table 3-10. Worst-Year Water Supply Gap (in million gallons)[1]**

| Worst Drought Years in Historical Record | 2018 Baseline Conditions | Proposed Project |
|---|---|---|
| 1976 | 843 | 0 |
| 1977 | 1,170 | 0 |
| **Total** | **2,013** | **0** |

**Source:** Gary Fiske and Associates 2021b.
**Notes:**
1 City's agreed-upon worst-year water supply gap of 1.2 billion gallons per year during modeled worst-year conditions identified during the WSAC planning process.

Table 3-9 demonstrates that the Proposed Project would provide needed supplemental water supplies during times of identified water supply shortfalls, based on water supply modeling conducted for the Proposed Project (see Appendix D). Negative numbers are presented in the table to reflect treated surface water that would be routed to underground storage via ASR injections or to water transfers to neighboring water agencies with the Proposed Project. A negative number is presented for ASR injections given that injection volumes are not available to customers of the City's water system until they are extracted. The extraction of that stored surface water, along with Beltz groundwater extraction are then shown as additions to the City's water supply. Water transfers to other neighboring water agencies are also shown as negative numbers because those volumes are not available to customers of the City's water system. Water supplies to the City that could derive from neighboring water agencies returning water to the City as part of an exchange are not shown as supplies in Table 3-9 because it is not reasonably certain how or when they would occur. Some exchanges, however, could occur with the Proposed Project and therefore are discussed programmatically in this EIR.

### 3.4.7.2 Project Staffing

It is anticipated that up to three new staff would be needed to operate under Proposed Project conditions: one staff for the Agreed Flows implementation and two staff for the new ASR facilities maintenance. Operation and maintenance of other facilities would be expected to be conducted by existing staff.

## 3.5 Proposed Project Modeling

As indicated in Section 3.4.2, Water Rights Modifications, the City has utilized a modeling system comprised of a hydrologic model, a water supply model, and a biological effects model to both refine and analyze the Proposed Project. See Appendix D for a detailed description of these models. Together, these tools have allowed the City to develop a Proposed Project that can maximize available water supply while being protective of local anadromous fisheries.

As described above, the Agreed Flows were developed over years of coordination with CDFW and NMFS to improve conditions for steelhead and coho in local streams and rivers. At the same time, the City has been developing a supply strategy to address identified water supply shortages that will be exacerbated by the implementation of the Agreed Flows that culminated in the WSAC strategy currently being implemented by the City, as described in Section 3.2.1, Water Supply Planning Background. The same modeling tools were utilized during development of the Agreed Flows and WSAC Strategy as were used to develop the Proposed Project, providing for consistency and stability across planning efforts.

To understand the implications of the Proposed Project, the City developed baseline and Proposed Project modeling to serve as the basis of project analysis. The baseline represents the current system as modeled for City water supply planning, as of the 2018 Notice of Preparation for the Proposed Project. The Proposed Project modeling provides the best possible representation of the Proposed Project within the framework of the modeling system. To represent the Proposed Project, the City developed a series of assumptions regarding the City's existing and future infrastructure capacities, the implications of proposed water rights changes, and the parameters of related supply projects currently under parallel development with the goal of forecasting maximum potential effects to anadromous fisheries from the Proposed Project. None of these modeling assumptions are intended to constrain or otherwise impede system operations in any way other than as described for the Proposed Project in detail above or to prevent future system operational changes or improvements that would be independently pursued and analyzed under CEQA. Key modeling assumptions regarding infrastructure capacity, water supply augmentation, and/or water rights modifications are described below.

## 3.5.1 Modeling of Infrastructure Capacities

Because approval of the proposed water rights modifications would result in changed conditions that extend into the future, City modeling assumed implementation of all upgrades to existing infrastructure currently being planned. These upgrades include the surface water diversion improvements at the Felton Diversion and Tait Diversion/Coast Pump Station, which are part of the Proposed Project. 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. (See Section 4.0, Introduction to Analyses, for a description of the City's other planned infrastructure upgrades that are evaluated in the cumulative analysis contained in this EIR.) Together, these modeled infrastructure upgrades allow for analysis of impacts to anadromous fisheries resulting from long-term implementation of the Proposed Project. The assumptions used in the project modeling about infrastructure capacities are as follows:

#### Assumptions for Surface Water Diversion Improvements (Programmatic Components)

- Felton Diversion – Improvements to the Newell Creek Pipeline eliminate existing hydraulic constraints between the Felton Diversion and Loch Lomond Reservoir (see Newell Creek Pipeline below).
- Tait Diversion and Coast Pump Station – Diversion capacity of combined Tait Diversion and Tait wells increases from 12.2 cfs to 28 cfs and Coast Pump Station capacity also increases to 28 cfs.

#### Assumptions for Other Planned Infrastructure Upgrades (Cumulative Projects)

- North Coast Pipeline – Eventual replacement/repair of remaining portions of the North Coast Pipeline are implemented; pipeline water loss is reduced from 8% to 3%.
- Newell Creek Pipeline – Eventual replacement of the Newell Creek Pipeline is implemented; pipeline capacity is increased from 13.5 mgd to 20 mgd.
- Graham Hill Water Treatment Plant – The GHWTP Facility Improvements Project results in upgrades to the existing treatment plant with treatment capacity increased from 16.5 mgd to 18 mgd and turbidity treatment improvements resulting in half as many days that high turbidity causes the treatment plant to bypass water from the San Lorenzo River.

## 3.5.2 Modeling of Water Supply Augmentation

This EIR analyzes water supply augmentation components of the Proposed Project as both project components and programmatic components, as described in Section 3.4.3, Water Supply Augmentation. The modeling for these components represents the best current understanding of how the City would pursue these elements of the WSAC strategy. Key assumptions regarding the water supply augmentation components are described below.

### Assumptions for ASR

- ASR infrastructure capacity is sized to fully eliminate the 1.2-billion-gallon worst-year supply shortfall assuming 3.2 billion gallons per year water supply demand as identified in the WSAC strategy.
- The modeling assumes that there is sufficient groundwater storage capacity to receive the modeled ASR injections and does not specify whether that capacity is in the Santa Cruz Mid-County Groundwater Basin, the Santa Margarita Groundwater Basin or a combination of the two. This assumption is supported particularly by the fact that both basins are sizable and the City has not determined the specific locations of its programmatic ASR facilities.
- The Proposed Project explicitly includes diversion to ASR from all City sources except Newell Creek, North Coast sources are prioritized to meet instantaneous City demands due to the high water quality of these sources and therefore they would not be used as a primary source for ASR. Therefore, diversion to ASR is modeled primarily utilizing the San Lorenzo River sources, which includes Felton Diversion and Tait Diversion.
- Supply from storage in ASR and Loch Lomond Reservoir are used concurrently to meet City demand.
- To align the water supply model with typical operations, the model assumes diversion to ASR is limited to November to April each year and extraction is limit to May to October. In practice, the City could divert to and extract from ASR within authorized rights and operational procedures at any time of the year.
- Standard operational practices are implemented as described in Section 3.4.5, Standard Operational and Construction Practices.

### Assumptions for Transfers/Exchanges

- The modeling system only models transfers to neighboring water agencies and not exchanges from such agencies, as the amount of water that may be returned through exchanges is unknown at this time (see Section 3.4.3.2, Water Transfers and Exchanges and Intertie Improvements, for additional information about transfers and exchanges). 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. 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.
- Transfer capacity is sized to meet assumed demands of three neighboring agencies: SqCWD, SVWD, and SLVWD. Demands of CWD, the smallest of the neighboring agencies, was not factored into sizing of transfer capacity, but it is assumed that some portion of the transfers could be provided to CWD by reducing transfer to other agencies. For SqCWD, only demand in the Purisima aquifer is considered. The modeled transfer capacity conservatively exceeds the assumed capacity of pipelines and pump stations and the anticipated transfer volume for this component identified in Section 3.4.3.2, Water Transfers and Exchanges and Intertie Improvements.

- Transfers only occur when excess surface water is available from the City's flowing sources. Because the water supply model prioritizes diversions from the North Coast Streams to meet City demand before the San Lorenzo River, the model effectively results in diversions to transfers from the San Lorenzo River only, but in practice, the City would have flexibility to divert to transfer from all flowing sources.
- Standard operational practices are implemented as described in Section 3.4.5, Standard Operational and Construction Practices.

## 3.5.3 Modeling of the Water Rights Modifications

A summary of the modeling assumptions used for the water rights modifications of the Proposed Project is provided below.

**Assumptions for Water Rights Modifications**

- Place of Use – To understand the potential effects of the expanded POU, the combined effect of ASR and water transfers are considered. These components could not proceed without expanded POU.
- Method of Diversion – Because the proposed modification to the authorized method of diversion, including the proposed maximum direct diversion rate for the Newell Creek water right license (License 9847), would explicitly authorize current operations, no additional assumptions are required to model the Proposed Project, as compared to the baseline.
- Points of Diversion
    - Points of Rediversion for each Water Right – The ASR component is used to understand the effects of adding the Beltz system as new points of rediversion into and out of groundwater storage.
    - Felton Permits – The effects of adding the Tait Diversion as a new point of diversion to the Felton Permits (water right permits 16123 and 16601) were modeled by combining the allowed diversions under the Tait Licenses (water right licenses 1553 and 7200) and Felton Permits. This combined allowance was then prioritized for diversion first from the Tait Diversion, as permitted, before diversion of any excess allowance at the Felton Diversion. Model runs were back-checked to confirm that diversions from the Felton Diversion never exceeded authorized diversions for this facility. This approach resulted in rare instances of diversion from the Felton Diversion modeled during summer months when diversion from Felton is neither permitted nor feasible. While diversions from the Felton Diversion during summer months would never occur during City operations, the modeling results are considered acceptable because occurrences are both rare and conservative for fisheries analysis. The modeling is conservative because it may overstate the effect of diversions at Felton on relevant resources.
- Underground Storage – The ASR component is used to understand the effects of adding an underground storage supplement for the Beltz system to accommodate the Beltz ASR subcomponent of ASR because ASR encompasses the total volume of potential ASR, including the volume of Beltz ASR.
- Extension of Time – Modeling assumes the opportunity for full beneficial use of diversions authorized under the Felton Permits. No additional assumptions are required to model the Proposed Project as compared to the baseline.
- Agreed Flows – All rules and requirements of the Agreed Flows are fully incorporated into modeling of the Proposed Project.

# 3.6 References

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# 4 Environmental Setting, Impacts, and Mitigation Measures

## 4.0 Introduction to Analyses

This chapter provides a project- and programmatic-level analysis of the physical environmental effects of implementing the Santa Cruz Water Rights Project (Proposed Project). The following sections in this chapter evaluate the environmental impacts of the Proposed Project:

- 4.1 — Impacts Not Found to Be Significant
- 4.2 — Air Quality
- 4.3 — Biological Resources
- 4.4 — Cultural Resources and Tribal Cultural Resources
- 4.5 — Geology and Soils
- 4.6 — Greenhouse Gas Emissions
- 4.7 — Hazards, Hazardous Materials, and Wildfire
- 4.8 — Hydrology and Water Quality
- 4.9 — Land Use, Agriculture and Forestry, and Mineral Resources
- 4.10 — Noise and Vibration
- 4.11 — Recreation
- 4.12 — Transportation
- 4.13 — Utilities and Energy

### 4.0.1 Scope of Analyses

#### 4.0.1.1 Section Organization

Each environmental resource section listed above generally has a similar format as described below.

- **Existing Conditions.** This section provides a general overview of the existing physical environmental conditions related to the topic being addressed, based on the conditions present at the time that the Notice of Preparation for the EIR was released (2018).
- **Regulatory Framework.** This section describes applicable federal, state, and local, laws and regulations relevant to the environmental resource topic and the Proposed Project.
- **Impacts and Mitigation Measures.** This section identifies thresholds of significance used to evaluate whether an impact is considered significant, based on standards derived from Appendix G of the California Environmental Quality Act (CEQA) Guidelines and from the City of Santa Cruz CEQA Guidelines. In some cases, agency policies and regulations or professional judgment are used to further define CEQA standards of significance.

This section first presents a discussion of the standards of significance for which no impacts have been identified, if any. The section then evaluates and analyzes project impacts, states the level of significance prior to mitigation, and proposes mitigation measures for significant impacts that would reduce such impacts, if feasible. A statement regarding the level of significance of each impact after mitigation precedes the mitigation measures for that impact.

Cumulative impacts are discussed in each environmental resource section following the description of the project-specific impacts. The cumulative impact analysis considers the effects of the Proposed Project together with, and against the backdrop of, other past, present, or reasonably foreseeable future projects proposed in the project vicinity and region. The cumulative impact analysis is based on the same setting, regulatory framework, and significance thresholds presented for each respective resource topic. Additional mitigation measures may be identified if the analysis determines that the Proposed Project's incremental contribution to a significant cumulative impact would be cumulatively considerable and, therefore, significant in and of itself. Section 4.0.2, Cumulative Impacts Overview, below describes the assumptions and methodology for assessing cumulative impacts.

### 4.0.1.2 Significance Determinations

In accordance with CEQA, specifically Public Resources Code Section 21068, a "significant effect on the environment" means a substantial or potentially substantial adverse change in the environment. The significance thresholds used for each environmental resource topic are presented in each section of this chapter immediately before the discussion of impacts. For each impact described, one of the following significance determinations is made:

- ***No Impact.*** This determination is made if there is no potential that the Proposed Project could affect the resource at issue.
- ***Less than Significant.*** This determination applies if there is a potential for some limited impact on a resource, but the impact is not significant in accordance with the significance standard.
- ***Less than Significant with Mitigation.*** This determination applies if there is the potential for a substantial adverse effect in accordance with the significance standard, but mitigation is available to reduce the impact to a less-than-significant level.
- ***Significant and Unavoidable.*** This determination applies to impacts that are significant, and for which there appears to be no feasible mitigation available to substantially reduce the impact.
- ***Beneficial.*** This determination applies if there is a beneficial change in any of the physical conditions within the area affected by the Proposed Project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.

### 4.0.1.3 Project- and Program-Level Analyses

As indicated in Chapter 2, Introduction, the Proposed Project includes components that are considered in the EIR at a "project" level (project components) and components that are considered at a "programmatic" level (programmatic components) and, therefore, this EIR is both a project EIR and a program EIR (See Chapter 2 for information about the distinction between a project and program EIR). The programmatic components of the Proposed Project would include potential future activities that may occur after the City of Santa Cruz's (City's) water rights are modified. Because these activities are considered to be reasonably foreseeable as a logical part in a chain of contemplated actions, but the full physical extent and timing of these improvements are not known at this time, these activities are addressed in the EIR at a programmatic level. Some of these actions would be undertaken

in conjunction with surrounding water districts and some would be undertaken solely by the City. If warranted, additional environmental analysis will be undertaken at the time these foreseeable future activities or actions are under active consideration. Table 4.0-1 identifies the project components and programmatic components. Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, provides the project and programmatic analysis for the various components of the Proposed Project.

**Table 4.0-1. 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 Components*** | | |
| 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 | | ✓ |

### 4.0.1.4 Analysis Approach

The Proposed Project includes various water rights modifications that would directly affect the City's water system operations. The Proposed Project also includes other related actions or activities that would be reasonably foreseeable as a logical part in a chain of contemplated actions should the water rights modifications be approved, which includes a number of infrastructure components (i.e., ASR facilities, water transfers and exchanges and intertie improvements, and diversion improvements). The approach to the analyses of the various components of the Proposed Project provided in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, is further described below.

#### Water Rights Modifications

As indicated in Chapter 3, Project Description, the Proposed Project would include various water rights modifications that would directly affect the City's water system operations. Specifically, direct impacts associated with the water rights modifications include those related to changes in hydrology of the San Lorenzo River and North Coast streams associated with changed operations. The Proposed Project would modify the hydrology of the San Lorenzo River and the North Coast streams by both increasing and reducing streamflows at different times, in different seasons and in different water-year types. For example, surface water diversions that would support ASR operations could reduce streamflows somewhat in

wetter times. On the other hand, those ASR operations would increase streamflows in Newell Creek, and therefore the San Lorenzo River, at other times because the groundwater storage resulting from those ASR operations would allow Loch Lomond Reservoir to be full more often, which would increase reservoir spills into Newell Creek.

This EIR therefore analyzes the Proposed Project's direct effects on streamflows and reservoir levels and the resulting effects on resources that are dependent on streamflows and reservoir levels, such as the fisheries and other aquatic and near-stream resources that are analyzed in Section 4.3, Biological Resources, surface water hydrology conditions that are analyzed in Section 4.8, Hydrology and Water Quality, and recreational resources that are analyzed in Section 4.11, Recreation. Additionally, changed operations of the City's water system with the Proposed Project would also result in an increase in electrical energy use, which is evaluated in Section 4.6, Greenhouse Gas Emissions and Section 4.13, Utilities and Energy. These analyses are supported by hydrologic, water supply, and fisheries habitat modeling conducted for the Proposed Project and included in Appendix D. To ensure comprehensive evaluation of these operational impacts, the hydrologic, water supply, and fisheries modeling assesses operations with the implementation of the water rights modifications and all infrastructure components of the Proposed Project.

The potential indirect impacts of the proposed water rights modifications are evaluated under the subheading "Infrastructure Components" for each environmental resource topic analyzed in Chapter 4 (Sections 4.2 through 4.13), as once the water rights modifications are approved, they could result in the implementation of the project and programmatic infrastructure components of the Proposed Project.

#### Infrastructure Components

The analysis of infrastructure components of the Proposed Project evaluates the potential construction and operational impacts, as relevant, for all infrastructure components. For construction impacts, an analysis is provided for each component of the Proposed Project, where warranted. Additionally, where there is potential for construction impacts associated with the overlap of construction schedules for the various infrastructure components, the construction overlap of the components is also analyzed. For operational impacts in some sections in Chapter 4 (i.e., Section 4.3, Biological Resources; Section 4.8, Hydrology and Water Quality related to surface water hydrology; and Section 4.11, Recreation), the analysis of the water rights modifications discussed above addresses the combined effect of the Proposed Project, including the infrastructure components, as described above, and the analysis under "Infrastructure Components" simply refers to the analysis for the water rights modifications. Operational impacts for the remainder of the sections in Chapter 4 are only evaluated where there is the potential for operational impacts to result from one or more of the infrastructure components.

## 4.0.2 Cumulative Impacts Overview

The section below presents the CEQA requirements pertaining to the cumulative analysis and the cumulative projects that have been considered in the cumulative impact analysis presented for each environmental resource topic.

### 4.0.2.1 CEQA Guidelines Requirements

CEQA Guidelines Section 15130(a) requires that an environmental impact report (EIR) discuss cumulative impacts of a project "when the project's incremental effect is cumulatively considerable." As defined in CEQA Guidelines Section 15355, a cumulative impact consists of an impact that is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. Pursuant to CEQA Guidelines Section 15065(a)(3), "cumulatively considerable" means that the incremental effects of an individual project are

significant when viewed in connection with the effects of past projects, other current projects, and probable future projects. Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," the lead agency need not consider the effect significant.

CEQA requires an evaluation of cumulative impacts when they are significant. When the combined cumulative impact associated with the project's incremental effect and the effects of other projects is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and is not discussed in further detail in the EIR. Furthermore, according to CEQA Guidelines Section 15130 (a)(1), there is no need to evaluate cumulative impacts to which the project does not contribute.

An EIR may determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus not significant when, for example, a project funds its fair share of a mitigation measure designed to alleviate the cumulative impact. An EIR shall examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.

The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide detail as great as that provided for the impacts that are attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness and should focus on the cumulative impact to which the identified project contributes.

CEQA Guidelines Section 15152(f)(1) provides that "[w]here a lead agency determines that a cumulative effect has been adequately addressed in the prior EIR, that effect is not treated as significant for purposes of the later EIR or negative declaration, and need not be discussed in detail." Section 15152(f)(3) provides that "[s]ignificant environmental effects have been 'adequately addressed' if the lead agency determines that: (A) they have been mitigated or avoided as a result of the prior environmental impact report and findings adopted in connection with that prior environmental report; or (B) they have been examined at a sufficient level of detail in the prior environmental impact report to enable those effects to be mitigated or avoided by site specific revisions, the imposition of conditions, or by other means in connection with the approval of the later project."

### 4.0.2.2 Cumulative Projects and Scope of Analysis

Discussion of cumulative impacts may consider either a list of past, present, and probable future projects producing cumulative impacts or a summary of growth projections contained either in an adopted plan that evaluates conditions contributing to cumulative impacts or in a certified prior environmental document for such a plan. Such projections may also be supplemented with additional information such as a regional modeling program, Examples of plans that can be used for such purposes include a general plan, regional transportation plan, or plans for the reduction of greenhouse gas emissions. Projects that are relevant to the cumulative analysis include projects that could:

- Contribute incremental environmental effects on the same resources as, and would have similar impacts to, those discussed in this EIR applicable to the Proposed Project.
- Be located within the defined geographic scope for the cumulative effect. The defined geographic scope is dependent on the environmental resource affected.
- Contribute impacts that coincide with Proposed Project impacts during construction (short-term) or operation (long-term). Construction of the Proposed Project relates only to the infrastructure components of the Proposed Project. Operations of the Proposed Project relates to operations with the proposed water rights modifications, as well as operation of the proposed infrastructure components. See Chapter 3, Project Description, for a detailed description of the Proposed Project.

This EIR uses a list-based approach for the development of the cumulative projects. Based on the above factors, cumulative projects considered for the analysis include other capital improvement projects planned by the City that would be located in proximity to the project site or whose impacts would otherwise combine with the impacts of the Proposed Project. Santa Cruz County Planning Department and Environmental Health staff were also contacted to determine if other proposed or pending projects are located in proximity to the project and programmatic infrastructure component sites; staff provided information about the more substantive proposed or pending development projects listed in Table 4.0-2 (Drake and Ryan 2020). The City of Scotts Valley list of current projects on its website was also reviewed and the more substantive proposed or pending development projects from that review are listed in Table 4.0-2 (City of Scotts Valley 2020). Additionally, the City of Capitola was also contacted and there are no major cumulative projects pending in Capitola; to date, there is no application yet for the Capitola Mall Redevelopment Project (Orbach 2020). Cumulative projects are discussed below and summarized in Table 4.0-2.

## City of Santa Cruz Water Projects

### Capital Improvement Program Projects

The City Water Department Capital Improvement Program (CIP) includes plans and funding for numerous capital improvements projects, including rehabilitation or replacement projects, upgrades and improvement projects, water supply augmentation components, and water main replacements (City of Santa Cruz 2020a, 2020b). The City is implementing the City Council-adopted recommendations of the Water Supply Advisory Committee for supplemental water supply, which are incorporated in the 2015 Urban Water Management Plan (City of Santa Cruz 2016), to which some of these projects relate, including the Proposed Project. Table 4.0-2 reflects the comprehensive list of capital projects that were reviewed for this EIR.

### Habitat Conservation Plans

Since 2001, the City has been developing two Habitat Conservation Plans (HCPs)[1], one pertaining to anadromous salmonids[2] with the National Marine Fisheries Service and one pertaining to other listed species[3] with the U.S. Fish and Wildlife Service (USFWS). The HCPs will provide for California Endangered Species Act and Federal Endangered Species Act compliance for the City's ongoing operations that may affect special-status species. The Operations and Maintenance HCP (OMHCP) developed with the USFWS and associated incidental take permit, was just completed and the incidental take permit issued in January 2021 (City of Santa Cruz 2021a). For the Anadromous Salmonid HCP (ASHCP) being developed with the National Marine Fisheries Service, the ASHCP was submitted for agency review in spring 2021 (City of Santa Cruz 2021b). Initiation of environmental review for the

1 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.

2 The anadromous salmonids covered by the Anadromous Salmonid (ASHCP) include Central California Coast coho salmon (coho) (*Oncorhynchus kisutch*), a state- and federally listed endangered species, and the Central California Coastal steelhead (steelhead) (*Oncorhynchus mykiss*), a federally listed threatened species.

3 Listed species covered by the other HCP include Ohlone tiger beetle (*Cicindela ohlone*), a federally listed endangered species; Mount Hermon June beetle (*Polyphylla barbata*), a federally listed endangered species; tidewater goby (*Eucyclogobius newberryi*), a federally listed endangered species; Pacific lamprey (*Lampetra tridentata*), a species not currently listed under the Endangered Species Act; California red-legged frog (*Rana draytonii*), a federally listed threatened species; western pond turtle (*Actinemys marmorata*), a federal species of concern; Ben Lomond spineflower (*Chorizanthe pungens* var. *hartwegiana*), a federally listed endangered species; Robust spineflower (*Chorizanthe robusta* var. *robusta*), a federally listed endangered species; Santa Cruz tarplant (*Holocarpha macradenia*), a federally listed threatened species; and San Francisco popcornflower (*Plagiobothrys diffuses*), a state-listed endangered species.

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.

Like the Proposed Project, the ASHCP would also commit the City to maintaining minimum bypass flows for anadromous fisheries at all City diversions. The conservation strategies of the ASHCP are designed to avoid, minimize, and fully mitigate the effects of the City's activities covered by the ASHCP on species and their habitat in support of the long-term viability of these populations within streams and habitats affected by the activities.[4] In particular, the biological goals and objectives of the ASHCP includes: (1) the minimum bypass flows noted above; (2) creating, restoring or enhancing aquatic habitat including removal of passage obstacles, placement of large wood structures, riparian conservation easements, spawning gravel augmentation, riparian restoration, and sediment control projects; and (3) avoiding, minimizing and fully mitigating effects from City operations and maintenance activities by implementing ramping rates during flow changes at diversions to limit flow reductions, reducing the introduction of sediment, upgrading diversion facilities on Laguna, Reggiardo, and Majors creeks (see Table 4.0-1) to provide sediment transport during high flows, and enhancing fish passage through the Felton and Tait Diversions (included in the Proposed Project).

Other than the Felton and Tait Diversions upgrades included in the Proposed Project, the only construction that the ASHCP biological goals and objectives anticipate in the project area includes upgrading the Laguna, Reggiardo and Majors Creek diversions to improve sediment transport during high flows. Retrofits of the existing Laguna Creek Diversion Facility and Majors Creek Diversion Facility are already in the City's CIP, as shown in Table 4.0-2. Specifically, the ASHCP calls for modifying the Laguna, Reggiardo and Majors Creek diversions within 10 years of the signed Incidental Take Permit to provide improved sediment transport during high flows.

The OMHCP with the USFWS does not include construction projects that improve habitat conditions. The biological goals and objectives and conservation measures include restoring habitat temporarily disturbed by activities covered by the permit, contributing to protected and managed lands that support covered species populations, implementing bypass flows consistent with the ASHCP, pursuing other conservation actions that will result in conservation benefits to covered species, and implementing general and species-specific minimization and best management practices.

The City has one other low-effect HCP and related Incidental Take Permit covering the Mount Hermon June beetle, Zayante band-winged grasshopper, and the Ben Lomond spineflower at the Graham Hill Water Treatment Plant (GHWTP) (City of Santa Cruz 2013). This HCP has been implemented since 2013 at the GHWTP and it also includes establishment of a permanent 17-acre preserve in the Laguna Watershed, which serves as off-site mitigation for Mount Hermon June beetle. This preserve is in place and is being managed by the City under a Habitat Management and Monitoring Plan for the Laguna Sandhills Preserve (City of Santa Cruz 2014). Ongoing management activities are intended to protect and preserve habitat at the preserve and would not contribute to cumulative impacts. Therefore, this preserve and its Habitat Management and Monitoring Plan are not further evaluated in the cumulative analysis.

### Other Projects

There are several infrastructure and public projects that are proposed in the vicinity of the project and programmatic infrastructure sites. These include: Pure Water Soquel Groundwater Replenishment and Seawater Intrusion Prevention project, Conjunctive Use Plan for the San Lorenzo River Watershed, San Lorenzo River Culvert, segments of the Monterey Bay Sanctuary Scenic Trail, and segments of the Highway 1 Auxiliary Lanes improvements.

[4] The activities covered by the ASHCP include water diversion and operation, rehabilitation, replacement, repair, and maintenance of conveyance facilities and other existing infrastructure. Activities also include municipal facility operations and maintenance (including flood control channel operation and maintenance), land management, monitoring, and habitat restoration.

Additionally, the University of California, Santa Cruz 2021 Long Range Development Plan is also included because it constitutes a project of regional significance, even though it is not located in proximity to the infrastructure component sites associated with the Proposed Project.

These cumulative projects could have construction periods that overlap with the Proposed Project depending on the ultimate timing of construction of these projects, as well as on the timing of construction of the various components of the Proposed Project. Additionally, the operation of these cumulative projects in conjunction with the operation of the Proposed Project are considered in the cumulative analysis as some of these projects could influence conditions in the San Lorenzo River and the Mid-County Groundwater Basin.

Several other approved or pending development projects in the City of Santa Cruz, County of Santa Cruz and City of Scotts Valley could result in construction periods that overlap with the Proposed Project depending on the ultimate timing of construction of these projects and/or result in cumulative effects within a specific geographic area.

## Table 4.0-2. Cumulative Projects

| # | Project Name | Project Location | Project Description | Estimated Construction Schedule |
|---|---|---|---|---|
| *City of Santa Cruz Water Projects in Capital Improvement Program (CIP)*[1] | | | | |
| 1 | Felton Diversion Pump Station Assessment | ***At the Felton Diversion improvement site***<br><br>Unincorporated Santa Cruz County, near community of Felton | Evaluation of the existing dam and pump station with recommendations to rehabilitate or replace existing facilities. A hydraulic assessment of the existing facility will be conducted to determine what, if any, improvements or operational changes are needed to pump from the diversion directly to the Graham Hill Water Treatment Plant (GHWTP). To improve energy efficiency, new pumps and drives at the diversion are also anticipated. | 2027-2028 |
| 2 | River Bank Filtration Study | ***Near Tait Diversion improvement site***<br><br>Unincorporated Santa Cruz County | Assesses the feasibility of locating new vertical wells along the San Lorenzo River near the Tait Diversion If found feasible, locations and design parameters for installation of wells would be recommended. | 2024-2026 |
| 3 | Newell Creek Dam Inlet/Outlet Replacement Project | Unincorporated Santa Cruz County, near the community of Ben Lomond | Replacement of the existing aging inlet/outlet works at the Newell Creek Dam (NCD), which impounds Loch Lomond Reservoir (Reservoir), and replacement of the northern segment of the Newell Creek Pipeline that transports water to the Reservoir from Felton Diversion and from the Reservoir to the GHWTP. Construction commenced in spring 2020. | 2020-2023 |
| 4 | Newell Creek Pipeline Rehab/ Replacement | Unincorporated Santa Cruz County, in the Santa Cruz Mountains | Replacement of the Newell Creek Pipeline between the pipeline segment completed as part of the NCD Inlet/Outlet Replacement Project and GHWTP. | 2022-2023<br>2030-2031 |
| 5 | Habitat Conservation Plans | Unincorporated and incorporated locations in Santa Cruz County | Anadromous Salmonid HCP under development (National Marine Fisheries Service) and Operations and Maintenance HCP recently completed (U.S. Fish and Wildlife Service). | Not applicable |

Table 4.0-2. Cumulative Projects (continued)

| # | Project Name | Project Location | Project Description | Estimated Construction Schedule |
|---|---|---|---|---|
| 6 | GHWTP Tube Settlers Replacement | City of Santa Cruz | Design and replacement of tube settlers and related appurtenances at the GHWTP on Graham Hill Road. As part of the project, the tube settlers for three basins will be replaced-in-kind and will also include the replacement of associated valves and piping, and making concrete crack repairs in the basins. | Completed |
| 7 | GHWTP Flocculator Rehab/ Replacement | City of Santa Cruz | Design and repair or replacement of aging paddle wheel flocculators at the GHWTP. A condition assessment and alternatives analysis will be performed to determine the best path forward considering cost, schedule, and operations. | Completed |
| 8 | GHWTP Concrete Tanks Project | City of Santa Cruz | Infrastructure improvements to the GHWTP are necessary to meet regulatory requirements, improve operations and increase overall reliability. The design phase of this project is nearly complete for the replacement of the Filtered Water Tank, Wash Water Reclamation Tank (Reclaim Tank), and Sludge Storage Tank. | 2021-2024 |
| 9 | GHWTP Facility Improvement Project | City of Santa Cruz | Process improvements to the GHWTP are necessary to meet regulatory requirements, improve operations and increase overall system reliability. This project currently includes condition assessments, alternatives analyses, preliminary designs and preparation of a Facilities Improvement Project report. Final design and construction services are future phases included in this project. | 2024-2028 |
| 10 | North Coast System Repair and Replacement Project (Phases 4 and 5) | Unincorporated Santa Cruz County, on the North Coast | Replacements/repairs to the following pipeline reaches: Liddell Pipeline, Laguna Pipeline, Laguna-Liddell Pipeline, Majors Pipeline, and a segment of the North Coast Pipeline from west of the entrance to Wilder Ranch State Park through Moore Creek Preserve to the Westside of Santa Cruz. The Laguna Pipeline and the Laguna-Liddell Pipeline reaches would be within the Laguna Watershed and the Laguna Pipeline reach would partially occur within the project site for the Proposed Project. | 2027-2031 |
| 11 | North Coast System Laguna Diversion Rehabilitation | Unincorporated Santa Cruz County, on the North Coast | Retrofit of the existing Laguna Creek Diversion Facility to provide for natural sediment transport past the diversion and to protect fish species and habitats. The retrofit would be comprised of the following primary components: new intake structure and screen; new intake structure appurtenances; new valve control vault; bank protection and armoring; new monitoring and control equipment; new access and safety provisions; and modifications to the existing intake and sediment control bypass valves. The project would not increase the diversion rates, which would remain consistent with existing operations. | 2021 |

Table 4.0-2. Cumulative Projects (continued)

| # | Project Name | Project Location | Project Description | Estimated Construction Schedule |
|---|---|---|---|---|
| 12 | North Coast System Majors Diversion Rehab | Unincorporated Santa Cruz County, on the North Coast | Retrofit of the existing Majors Creek Diversion Facility to include fish screening improvements, sediment management, remote operation and monitoring, improved accessibility and safety, and other upgrades (e.g., future pumping and pipe alignment changes). | 2027-2030 |
| 13 | University Tank No. 4 Rehab/ Replacement | City of Santa Cruz on the University of California, Santa Cruz (UCSC) campus | Engineering analysis and condition assessment of the aging University 4 tank and associated piping to ensure reliable service. Project will include condition assessment, design, acquisition of construction easements from UCSC, permitting, and construction. | 2023-2024 |
| 14 | Main Replacements | Unincorporated and incorporated locations in Santa Cruz County | Ongoing program to replace distribution system water mains, identified and prioritized based on maintaining water system reliability, delivering adequate fire flows, improving circulation and water quality, and reducing maintenance costs. | To be determined |
| 15A | Beltz 10 and 11 Rehab and Development | ***At or near proposed Beltz ASR facilities*** Unincorporated Santa Cruz County | Rehabilitation of Beltz 10 (an existing groundwater production well) and the conversion of an existing monitoring well to a production well (Beltz 11). This project will shift pumping to different geologic layers of the basin. | To be determined |
| 15B | Beltz ASR Pilot Testing | ***At or near proposed Beltz ASR facilities*** Unincorporated Santa Cruz County | Field verify and determine specific hydrogeologic and water quality factors to inform future ASR implementation. | Ongoing, expected to be completed by 2022 |
| *Other Infrastructure Projects* | | | | |
| 16 | San Lorenzo River Lagoon Culvert Project | City of Santa Cruz, in the San Lorenzo River lagoon | Installation of the 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 of 5.0 feet NGVD29, the elevation determined to protect habitat for salmonids and tidewater goby and to lessen localized flooding. | 2021 |
| 17 | Pure Water Soquel: Groundwater Replenishment and Seawater Intrusion Prevention Project | ***Pipeline options near proposed Beltz ASR facilities*** City of Santa Cruz and unincorporated Santa Cruz County | This Soquel Creek Water District project is a water supply project that would supplement natural recharge of the Santa Cruz Mid-County Groundwater Basin with purified water. The project would pump a portion of secondary effluent from the Santa Cruz Wastewater Treatment Facility to an Advanced Water Purification Facility located in Live Oak in unincorporated Santa Cruz County. The project also includes a conveyance system to/from the treatment facilities and from the advanced water treatment facility to groundwater recharge and monitoring wells located at three sites in unincorporated Santa Cruz County. | 2021-2023 |

Table 4.0-2. Cumulative Projects (continued)

| # | Project Name | Project Location | Project Description | Estimated Construction Schedule |
|---|---|---|---|---|
| 18 | Conjunctive Use Plan for the San Lorenzo River Watershed | Unincorporated Santa Cruz County | The San Lorenzo Valley Water District (SLVWD) and the County of Santa Cruz are developing a Conjunctive Use Plan to increase stream baseflow for fish and increase reliability of surface and ground water supplies for the SLVWD. This project would interconnect SLVWD's three independent water systems to allow for increased reliability and allow the distribution systems to utilize surplus surface water from each other, providing in-lieu recharge to the groundwater aquifers through conjunctive-use. Project components identified to date that would allow for conjunctive use of the SLVWD's service areas and with the Scotts Valley Water District 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. | To be determined |
| 19 | Monterey Bay Sanctuary Scenic Trail Network (Coastal Rail Trail), Santa Cruz County Regional Transportation Commission | *Segment 10 near proposed Beltz 8, 9, and 10 ASR facilities*<br>*Segment 11 near proposed McGregor pump station upgrade site*<br>*Segment 12 in immediate vicinity of the proposed Freedom Boulevard pump station*<br><br>Unincorporated Santa Cruz County, North Coast, Live Oak and Aptos; cities of Santa Cruz and Capitola | The Monterey Bay Sanctuary Scenic Trail Network is a 50-mile bicycle and pedestrian pathway along the coast of Santa Cruz County, from the San Mateo County line in the north to the Monterey County line at Pajaro. The Trail Network merges plans for a bicycle/pedestrian trail along the rail line into a connected network to provide safe and convenient route choices. The Trail Networks system's "spine" will be the Coastal Rail Trail, a bicycle and pedestrian trail within the 32-mile Santa Cruz Branch Rail right-of-way, adjacent to the train tracks. The segments most relevant to the Proposed Project are listed below:<br><br>• Segment 5 – North Coast (Wilder Ranch to Davenport)<br>• Segment 7 – Natural Bridges to Downtown Santa Cruz<br>• Segment 8 and 9 – Downtown Santa Cruz to 17th Avenue; Trestle Bridge section is already completed<br>• Segment 10 and 11 – 17th Avenue to State Park Drive<br>• Segment 12 – State Park Drive to Freedom Boulevard; to be completed as part of the Highway 1 Auxiliary Lanes and Bus-on-Shoulder project | <br><br><br><br><br><br><br><br><br><br>2021<br><br>Under construction<br>2022<br><br>2024<br><br>2024 |

Table 4.0-2. Cumulative Projects (continued)

| # | Project Name | Project Location | Project Description | Estimated Construction Schedule |
|---|---|---|---|---|
| 20 | Highway 1, 41st Avenue to Soquel Avenue/Drive Auxiliary Lanes, Bus-on-Shoulder and Chanticleer Bike/Ped Overcrossing | *Near proposed Beltz 12 ASR facility*<br><br>Unincorporated Santa Cruz County | The project will construct northbound and southbound auxiliary lanes and bus-on-shoulder improvements between the 41st Avenue and Soquel Avenue/Drive interchanges and construct a new bicycle and pedestrian overcrossing at Chanticleer Avenue. | 2021 |
| 21 | Highway 1, Bay Avenue/Porter Street to State park Drive Auxiliary Lanes, Bus- on-Shoulder and Mar Vista Bike/Ped Overcrossing | *Immediate vicinity of McGregor Drive pump station upgrade site*<br><br>City of Capitola and unincorporated Santa Cruz County | The project will construct northbound and southbound auxiliary lanes and bus-on-shoulder improvements between Bay Avenue/Porter Street and Park Avenue interchanges and between Park Avenue and State Park Drive interchanges and construct a new bicycle and pedestrian overcrossing at Mar Vista. | 2022-2025 |
| *Residential, Commercial, and Mixed-Use Projects* | | | | |
| 22 | 1930 Ocean View Extension Project | *Near Tait Diversion and Coast Pump Station improvement site*<br><br>City of Santa Cruz, Ocean Street Extension | 32 condominium units. | Unknown; approved in September 2018 |
| 23 | La Madrona Mixed-Use Project | *Immediate vicinity of proposed City/ SVWD intertie*<br><br>City of Scotts Valley | Development of up to a 180-room hotel with a 6,600 square foot (sf) restaurant and 184 residential units (110 senior/74 family) in two, four-story buildings on La Madrona Drive. | Unknown; project under CEQA review |
| 24 | Oak Creek Park Mixed- Use Development | City of Scotts Valley | Mixed-use commercial (25,000 square feet) and residential (52 units) development at Mt. Hermon Road and Glen Canyon. | Unknown; project under CEQA review |
| 25 | Bay Photo Apartments | City of Scotts Valley | Conversion of an existing 92-space parking lot into a 19-unit apartment project, at 4627 Scotts Valley Drive. | Unknown; project revisions pending |
| 26 | Dunslee Way Planned Development | City of Scotts Valley | Construction of a 5,000-square-foot commercial building and 25 residential townhouses on a vacant parcel at the corner of Scotts Valley Drive and Dunslee Way. | Project approved in December 2016 |

Table 4.0-2. Cumulative Projects (continued)

| # | Project Name | Project Location | Project Description | Estimated Construction Schedule |
|---|---|---|---|---|
| 27 | Mission Drive Townhouses | Unincorporated Santa Cruz County | 21 new townhouse units at 3212 Mission Drive. Includes demolition of 1 single-family unit for 20 net units. | Unknown; project pending approval |
| 28 | Prather Lane Residential Units | Unincorporated Santa Cruz County | 60 new residential units of affordable senior housing at 3071 Prather Lane. | Unknown; project pending approval |
| 29 | Erlach Planned Unit Development | ***Near proposed Park Avenue pipeline***<br><br>Unincorporated Santa Cruz County | 102 new units in Planned Unit Development at 3250 Cunnison Lane. | Unknown; project pending approval |
| 30 | Interlight | ***Near proposed Park Avenue pipeline***<br><br>Unincorporated Santa Cruz County | 82 beds within a new Assisted Living facility at 5630 Soquel Drive. | Approved |
| 31 | Dominican Hospital Addition | Unincorporated Santa Cruz County | 84,000-square-foot surgery center addition to existing hospital including 410-space parking garage at 1555 Soquel Drive. | Unknown; project pending approval |
| 32 | Santa Cruz Medical Office Building Project | Unincorporated Santa Cruz County | 160,000-square-foot medical office building and detached parking garage for approximately 720 parking spaces at 5940 Soquel Avenue in Live Oak. | Unknown; project pending approval |
| 33 | CVS | Unincorporated Santa Cruz County | 13,111 SF retail pharmacy at 1505 Commercial Way. | Unknown; project pending approval |
| 34 | Nissan Dealership | ***Near proposed Beltz 12 ASR facility***<br><br>Unincorporated Santa Cruz County | 22,547-square-foot auto dealership at Soquel Drive/41st Avenue. | Unknown; approved |

Table 4.0-2. Cumulative Projects (continued)

| # | Project Name | Project Location | Project Description | Estimated Construction Schedule |
|---|---|---|---|---|
| *Other Projects* | | | | |
| 35 | University of California, Santa Cruz (UCSC) 2021 Long Range Development Plan (LRDP) | UCSC main residential campus and Westside Research Park in the City of Santa Cruz | The UCSC 2021 LRDP would guide physical campus growth through 2040 on two of the three UCSC campus properties located in the City of Santa Cruz: (1) the UCSC main residential campus and (2) the Westside Research Park (2300 Delaware Avenue). The 2021 LRDP proposes a mix of land use categories to accommodate academic, open space, residential, and campus support uses. The LRDP envisions a compact academic core with housing around the periphery and includes improvements to the campus roadway network and alternative transportation. The 2021 LRDP planning effort anticipates that the on-campus student population could grow from approximately 18,518 full-time equivalent (FTE) to a potential enrollment of 28,000 FTE students by the 2040–2041 academic year. UCSC faculty and staff are also anticipated to increase from approximately 2,800 FTE to approximately 5,000 FTE in the same timeframe. | 2021–2041 |

Notes:

[1] The Santa Cruz Water Rights Project (Proposed Project) includes the following CIP projects and therefore these projects are not listed above: Felton Diversion and Tait Diversion and Coast Pump Station upgrades, and aquifer storage and recovery in Mid-County and Santa Margarita Groundwater Basins.

## 4.0.3 References

City of Santa Cruz. 2013. *Low-Effect Habitat Conservation Plan for the Issuance of an Incidental Take Permit Under Section 10(a)(1)(B) of the Endangered Species Act for the Federally Endangered Mount Hermon June Beetle Zayante Band Winged Grasshopper and Ben Lomond Spineflower for the City of Santa Cruz Graham Hill Water Treatment Plant Operations, Maintenance, and Construction Activities.* Prepared by Ebbin, Moser + Skaggs LLP and Richard A. Arnold, Ph.D. June 2013.

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City of Santa Cruz. 2021b. Draft City of Santa Cruz Draft Anadromous Salmonid Habitat Conservation Plan for the Issuance of an Incidental Take Permit under Section 10(a)(1)(B) of the Endangered Species Act. Prepared by City of Santa Cruz Water Department, Ebbin Moser + Skaggs LLP, Hagar Environmental Science, Gary Fiske and Associates, Balance Hydrologics, Inc., and Alnus Ecological. April.

City of Scotts Valley. 2020. City of Scotts Valley Current Projects. Accessed October 13, 2020 at https://www.scottsvalley.org/242/Current-Projects.

Drake, J. 2020. Principal Planner, County of Santa Cruz Planning Department. Emails to Ann Sansevero of Dudek, June 9 and July 9, 2020.

Orbach, M. 2020. Associate Planner, City of Capitola. Email correspondence from Stephanie Strelow of Dudek reporting on discussion with Matthew Orbach, June 26, 2020.

Ryan, S. 2020. Water Resource Planner, County of Santa Cruz Environmental Health. Email to Ann Sansevero of Dudek, September 18, 2020.

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# 4.1 Impacts Not Found to be Significant

California Environmental Quality Act (CEQA) Guidelines Section 15128 requires that an environmental impact report (EIR) contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR. Such a statement may be contained in an attached copy of an initial study. For this EIR, issues related to aesthetics, population and housing, and public services were found not to be significant for the project and programmatic components of the Proposed Project listed in Table 4.1-1. See Chapter 3, Project Description, for a detailed description of the Proposed Project. This determination is based on the Initial Study (Appendix A) and additional information provided in this section.

**Table 4.1-1. 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 | | ✓ |

## 4.1.1 Aesthetics

With regard to potential aesthetic impacts, Appendix G of the CEQA Guidelines and the City of Santa Cruz (City) CEQA Guidelines consider whether a project would have a substantial adverse effect on a scenic vista; substantially damage scenic resources; substantially degrade the existing visual character or quality of public views of the site and surroundings; create a new source of substantial light or glare; or have a substantial, demonstrable, negative aesthetic effect. This section includes an evaluation of potential aesthetic impacts associated with the project and programmatic components of the Proposed Project.

#### 4.1.1.1 Water Rights Modifications

The water rights modifications would not have the potential to result in aesthetic impacts, as these modifications would not directly result in construction and operation of new facilities that would result in changes to scenic vistas, scenic resources, visual character, or light and glare. Additionally, as indicated in Section 4.3, Biological Resources, the water rights modifications would not result in impacts related to riparian or other vegetation along the Loch Lomond Reservoir, Newell Creek, San Lorenzo River, and North Coast streams, as the water rights modifications would not substantially affect surface water levels or baseflows. Therefore, the water rights modifications would have no impact on aesthetics.

#### 4.1.1.2 Infrastructure Components

##### Aquifer Storage and Recovery

The Proposed Project includes the City installing and operating aquifer storage and recovery (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. 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"). The aesthetics analysis for new ASR and Beltz ASR facilities is provided below.

**New Aquifer Storage and Recovery**

New ASR facilities would likely consist of the following components: (1) a pump control and chemical storage building; (2) a treatment system; (3) backwash tank(s) used in the treatment system; (4) a water well and monitoring wells, submersible pump and concrete pedestal, station piping including treated water pipelines, sewer connections, and stormwater drainage facilities that would connect to nearby facilities in adjacent roadways. A typical facility would require a site approximately 0.25 acres in size and would have a similar appearance to the existing Beltz 12 facility, which is a newer facility. Such new facilities would be located on relatively small sites, would be limited in height (e.g., equivalent to a one-story building), and would have new outdoor lighting for nighttime security only, which would be low wattage and directed downward to minimize light spillage. As such, new ASR facilities would not substantially affect scenic vistas, scenic resources, visual character, or light and glare. Therefore, this programmatic component would have less-than-significant aesthetic impacts.

**Beltz Aquifer Storage and Recovery**

Beltz 8, 9, 10, and 12 are existing groundwater well facilities in the City's Beltz system, located in unincorporated Santa Cruz County (see Figure 3-4, Chapter 3, Project Description). The facilities are located on relatively small sites with flat topography in urban settings surrounded by residential, commercial, and/or industrial buildings. The Beltz sites are not publicly accessible due to surrounding chain-link fencing. Each of these well sites currently include a pump control and storage cabinet, groundwater well, submersible pump and concrete pedestal, well head station piping, and surrounding pavement and fencing. Additionally, Beltz 8 and 12 contain water treatment facilities including filter and backwash tanks.

The Beltz ASR facilities would result in the following upgrades to the existing facilities at Beltz 8, 9, 10, and 12: new injection pipeline connections to the existing distribution system, modifications to the well head, replacement of submersible pump and motor, new flow control valves, and new piping and electrical conduits. Additional water treatment facilities may also be added at Beltz 8 and 12 and new monitoring wells would be installed at Beltz 9. The Beltz ASR facilities would have a similar appearance and height as under existing conditions.

The following subsections provide an assessment of the potential for impacts associated with Beltz ASR facilities related to scenic vistas, scenic resources, visual character, and light and glare.

**Scenic Vistas.** No scenic vistas are located near the Beltz ASR facility sites, based on review of the Santa Cruz County General Plan (County of Santa Cruz 2020) and a site visit conducted during the preparation of this EIR. The Beltz ASR sites do not offer publicly available scenic views given the lack of public access, flat topography, and surrounding development. Additionally, the proposed improvements associated with this project component would not increase the height of the existing facilities such that long-range views from off-site vantage points would be adversely affected. Therefore, this project component would have a less-than-significant impact on scenic vistas.

**Scenic Resources.** State Highway 1, south of the Beltz 12 ASR facility site and north of the Beltz 8, 9, and 10 ASR facility sites, is eligible as a scenic highway (Caltrans 2020) and is a County designated scenic road (County of Santa Cruz 1994). However, given the height of the existing and proposed facilities at the Beltz ASR facility sites, flat topography, and surrounding development and vegetation along State Highway 1, the Beltz ASR facility sites are not visible from Highway 1 under existing conditions and would also not be visible under project conditions. Additionally, the Santa Cruz County General Plan and Local Coastal Program indicates that visual and scenic resource areas are defined as areas having regional public importance for their natural beauty or rural agricultural character, including but not limited to, ocean views, agricultural fields, wooded forests, open meadows, mountain hillside views, and unique hydrologic, geologic, and paleontologic features (County of Santa Cruz 2020). As described above, the Beltz ASR facility sites are located in an urban setting and do not include such scenic resources. Therefore, this project component would have a less-than-significant impact on scenic resources.

**Visual Character.** While Beltz ASR facilities would result in some modifications to the existing facilities at Beltz 8, 9, 10, and 12, the Beltz ASR facility sites are currently developed and the proposed upgrades would not alter the existing visual character of the sites or surroundings, as they would be installed on the existing developed Beltz sites, would not change the height of the existing facilities, and would not result in additional night lighting. Therefore, this project component would have a less-than-significant impact on visual character.

**Light and Glare.** The proposed upgrades at the Beltz ASR facility sites would not result in new lighting or sources of glare. Therefore, this project component would have no impacts related to light and glare.

### Water Transfers and Exchanges and Intertie Improvements

Water transfers and exchanges would not have the potential to result in aesthetic impacts, as this operational activity would involve the movement of water in subgrade pipelines between water agencies and districts. The intertie pipelines of this programmatic component would also not have to potential to result in aesthetic impacts, as these modifications would be composed of underground pipelines that would not result in changes to scenic vistas, scenic resources, visual character, or light and glare. As such, the underground pipelines would have no impacts on aesthetics.

The City/Scotts Valley Water District (SVWD) intertie would include one new pump station on La Madrona Drive and the City/Soquel Creek Water District (SqCWD)/Central Water District (CWD) intertie would include one pump station upgrade on McGregor Drive and two new pump stations, one on Freedom Boulevard and one on Valencia Drive (see Figure 3-4 in Chapter 3, Project Description). The McGregor Drive pump station upgrade would involve replacing two pumps and would not involve modifications to the pump station structure, lighting or fencing. As such, the McGregor Drive pump station upgrade would not substantially affect scenic vistas, scenic resources, visual character, or light and glare. Therefore, the McGregor Drive pump station upgrade would have no impacts on aesthetics.

The three new pump stations would be located in predominantly developed areas, surrounded by residential, rural residential, or commercial areas. These small new structures would be single story and not visible from long-range public vantage points. Additionally, according to Santa Cruz County General Plan, there are no scenic vistas located on or nearby the new and upgraded pump station sites (County of Santa Cruz 2020).

Santa Cruz County contains several county-designated scenic roads and state-designated scenic highways (County of Santa Cruz 2020). State Highway 17 and State Highway 1 are eligible as state scenic highways (County of Santa Cruz 2020; Caltrans 2020) and County designated scenic roads (County of Santa Cruz 1994), and are located near the pump station sites. The new pump station that would be located in Scotts Valley would be constructed just east of State Highway 17. However, given the limited height of the proposed single-story structure and the dense canopy of trees and vegetation between State Highway 17 and the pump station site, the pump station would not be visible from State Highway 1. While the new pump station on Freedom Boulevard could potentially be visible from State Highway 1, depending on the ultimate site selected, there is other visible development in this location as well, and given the small size of the structure, it would not damage scenic resources along State Highway 1. The new pump station on Valencia Road would not be visible from State Highway 1 as the site is set back from the highway and there is intervening topography and vegetation that would block views of this location from State Highway 1.

As the new pump station facilities would be located in predominantly developed areas on relatively small sites, would be limited in height (e.g., equivalent to a one-story building), and would have new outdoor lighting for nighttime security only, which would be low wattage and directed downward to minimize light spillage, they would not substantially affect scenic vistas, scenic resources, visual character, or light and glare. Therefore, this programmatic component would have less-than-significant aesthetic impacts.

### Felton Diversion Improvements

Felton Diversion is located east of State Highway 9, adjacent to the San Lorenzo River in unincorporated Santa Cruz County near the community of Felton. This site is surrounded by mountainous terrain and dense forested vegetation, which obscures public views of the site, except that the existing pump station that can be partially viewed from State Highway 9, at the entrance to the facility. The facility includes a surface water diversion on the San Lorenzo River and the adjacent pump station, which are not accessible to the public due to chain-link fencing.

This programmatic component would include modifications to comply with the latest fish passage and screening criteria. These improvements would be constructed on the west side of the Felton Diversion on the existing diversion facility structure. These improvements would not require any construction activities or disturbance in the riverbed. While permanent improvements would result in some alterations to the existing facilities at the site, the site is currently developed with a surface water diversion and pump station and the proposed upgrades would not substantially alter the existing visual character of the site or surroundings, as they would be installed on the existing site, would not change the height of the existing facilities, and would not result in additional night lighting. Given the above, improvements to the Felton Diversion would not substantially affect scenic vistas, scenic resources, visual character, or light and glare. Therefore, this programmatic component would have a less-than-significant impact related to aesthetics.

### Tait Diversion and Coast Pump Station Improvements

The Tait Diversion and Coast Pump Station site (Tait site) is located in the City of Santa Cruz along the San Lorenzo River in a predominantly industrial area (City of Santa Cruz 2019). The Tait site is located approximately 2.4 miles upstream of the mouth of the San Lorenzo River on State Highway 9/River Street. The facility includes a surface

water diversion on the San Lorenzo River and the adjacent Coast Pump Station, both of which are not accessible to the public due to chain-link fencing.

This programmatic component would include modifications to comply with the latest fish passage and screening criteria. The City is currently evaluating needed improvements at the Tait site, which could include, but would not be limited to, new or modified intake design, upstream and/or downstream hydraulic modifications, improvements to the check dam, and any required fish passage upgrades. The River Pumps at the Coast Pump Station facility would also require improvements, which could include, but would not be limited to new pumps and motors, primary and backup power upgrades, new or modified concrete wet well, and solids handling system. The diversion improvements would likely require construction activities and disturbances in the riverbed, which would be temporary. While permanent improvements would result in some alterations to the existing facilities at the site, the site is currently developed with a surface water diversion and pump station and the proposed upgrades would not substantially alter the existing visual character of the site or surroundings, as they would be installed on the existing site, would not change the height of the existing facilities, and would not result in additional night lighting. Given the above, improvements to the Tait Diversion and Coast Pump Station would not substantially affect scenic vistas, scenic resources, visual character, or light and glare. Therefore, this programmatic component would have a less-than-significant impact related to aesthetics.

## 4.1.2 Population and Housing

With regard to potential impacts related to population and housing, Appendix G of the CEQA Guidelines and the City of Santa Cruz CEQA Guidelines consider whether a project would displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere, or whether a project would induce substantial unplanned population growth in an area either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure). Chapter 5, Growth Inducement, evaluates whether the Proposed Project would induce substantial unplanned population growth.

The project and programmatic components would not displace people or housing, as further described below.

### 4.1.2.1 Water Rights Modifications

The water rights modifications would not have the potential to result in population and housing impacts, as these modifications would not directly result in construction and operation of new facilities and therefore this project component would not displace substantial numbers of existing people or housing. Therefore, the water rights modifications would have no direct impact on population and housing.

The following analysis evaluates the potential indirect impacts related to population and housing 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.

### 4.1.2.2 Infrastructure Components

The known project and programmatic infrastructure component sites do not contain existing housing and therefore would not displace substantial numbers of existing people or housing and would not require the construction of replacement housing elsewhere. As no definitive sites have been identified to date for new ASR facilities, the setting of such facility sites is unknown. However, it is unlikely that new ASR sites would be located on sites with existing

housing that would require demolition to accommodate the new ASR facilities. As such, new ASR facilities also would not displace substantial numbers of existing people or housing and would not require the construction of replacement housing elsewhere. Therefore, the project and programmatic infrastructure components would have no impact on population and housing.

## 4.1.3 Public Services

With regard to potential public services impacts, Appendix G of the CEQA Guidelines and the City of Santa Cruz CEQA Guidelines consider whether a project would result in substantial adverse physical impacts associated with the provision of, or need for, new or physically altered governmental facilities, including fire protection, police protection, schools, parks, and other public facilities, in order to meet acceptable performance objectives. The Proposed Project includes water rights modifications and project and programmatic infrastructure components, as shown in Table 4.1-1. No new housing units are proposed that could increase population and demand for public services. As indicated in Chapter 3, Project Description, it is anticipated that up to three new staff would be needed to operate under Proposed Project conditions: one for the Agreed Flows implementation and two for the new ASR facilities maintenance. These staff could be hired from within the County, or from outside the region, which would require relocation. Even if it is conservatively assumed that the three new staff would relocate from outside the area, this population increase is nominal and would not be expected to increase the demand for public services in the County such that new or physically altered governmental facilities would be required in order to meet acceptable performance objectives. Additionally, the project and programmatic infrastructure components would not include any new land uses that would generate substantial new demand for public services. Therefore, the Proposed Project would have a less-than-significant impact on public services.

Section 4.11, Recreation, evaluates whether the Proposed Project would result in recreational impacts in response to a scoping letter received from the State Water Resources Control Board (see Appendix A).

## 4.1.4 References

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URS. 2013. Proposed McGregor Drive Booster Pump Station Final Initial Study/Mitigated Negative Declaration. Prepared for the Soquel Creek Water District. January 2013.

# 4.2 Air Quality

This section describes the existing air quality 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 air quality modeling conducted for the Proposed Project, as part of the preparation of this environmental impact report (EIR). The results of the air quality modeling are summarized in this section and are included in Appendix E.

A summary of the comments received during the scoping period for this EIR is provided in Table 2-1 in Chapter 2, Introduction, and a complete list of comments is provided in Appendix A. There were no comments related to air quality.

## 4.2.1 Existing Conditions

### 4.2.1.1 Meteorological and Topographical Conditions

The Proposed Project is located in the North Central Coast Air Basin (Air Basin), which consists of Monterey, Santa Cruz, and San Benito counties and encompasses an area of 5,159 square miles. The northwest sector of the Air Basin is dominated by the Santa Cruz Mountains. The Diablo Range marks the northeastern boundary and, together with the southern extent of the Santa Cruz Mountains, forms the Santa Clara Valley, which extends into the northeastern tip of the Air Basin. Farther south, the Santa Clara Valley merges into the San Benito Valley, which extends northwest–southeast and has the Gabilan Range as its western boundary. To the west of the Gabilan Range is the Salinas Valley, which extends from Salinas at the northwest end to King City at the southeast end. The western side of the Salinas Valley is formed by the Sierra de Salinas, which also forms the eastern side of the smaller Carmel Valley. The coastal Santa Lucia Range defines the western side of the valley (MBARD 2008). This series of mountain ranges and valleys influences the dispersion of criteria air pollutants through the Air Basin.

The semi-permanent Pacific High pressure cell in the eastern Pacific is the basic controlling factor in the climate of the Air Basin. In the summer, the Pacific High pressure cell is dominant and causes persistent west and northwest winds over the entire California coast. Air descends in the Pacific High pressure cell forming a stable temperature inversion of hot air over a cool coastal layer of air. As the air currents move onshore, they pass over cool ocean waters and bring fog and relatively cool air into the coastal valleys. The warmer air above acts as a lid to inhibit vertical air movement.

During the summer, the generally northwest–southeast orientation of mountainous ridges tends to restrict and channel the onshore air currents. Elevated ground-surface temperatures in the interior portion of the Salinas and San Benito valleys create a weak low pressure area that intensifies the onshore air flow during the afternoon and evening. In the fall, the surface winds become weak, and the marine layer grows shallow, dissipating altogether on some days. The air flow is occasionally reversed in a weak offshore movement, and the relatively stationary air mass is held in place by the Pacific High pressure cell, which allows pollutants to build up over a period of a few days. It is most often during this season that the north or east winds develop to transport pollutants from either the San Francisco Bay Area or the Central Valley into the Air Basin. During the winter, the Pacific High migrates southward and has less influence on the Air Basin. Air frequently flows in a southeasterly direction out of the Salinas and San Benito valleys, especially during night and morning hours. Northwest winds are nevertheless still dominant in winter, but easterly flow is more frequent. The general absence of deep, persistent inversions and the occasional storm systems usually results in good air quality for the Air Basin in winter and early spring (MBARD 2008).

### 4.2.1.2 Pollutants and Effects

#### Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The national and California standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include ozone ($O_3$), nitrogen dioxide ($NO_2$), carbon monoxide (CO), sulfur dioxide ($SO_2$), coarse particulate matter ($PM_{10}$), fine particulate matter ($PM_{2.5}$), and lead. In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants. These pollutants, as well as toxic air contaminants (TACs), are discussed in the following paragraphs.[1]

##### Ozone

$O_3$ is a strong-smelling, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and $O_3$ precursors. These precursors are mainly oxides of nitrogen ($NO_x$) and reactive organic gases (ROGs, also termed volatile organic compounds or VOCs). The maximum effects of precursor emissions on $O_3$ concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in $O_3$ formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. $O_3$ exists in the upper atmosphere $O_3$ layer (stratospheric $O_3$) and at the Earth's surface in the troposphere (ground-level $O_3$). [2] The $O_3$ that the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level $O_3$ is a harmful air pollutant that causes numerous adverse health effects and is thus considered "bad" $O_3$. Stratospheric, or "good," $O_3$ occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the Earth's atmosphere. Without the protection of the beneficial stratospheric $O_3$ layer, plant and animal life would be seriously harmed.

$O_3$ in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) to $O_3$ can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes (EPA 2013). These health problems are particularly acute in sensitive receptors such as the sick, the elderly, and young children.

Inhalation of $O_3$ causes inflammation and irritation of the tissues lining human airways, causing and worsening a variety of symptoms. Exposure to $O_3$ can reduce the volume of air that the lungs breathe in and cause shortness of breath. $O_3$ in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. The occurrence and severity of health effects from $O_3$ exposure vary widely among individuals, even when the dose and the duration of exposure are the same. Research shows adults and children who spend more time outdoors participating in vigorous physical activities are at greater risk from the harmful health effects of $O_3$ exposure. While there are relatively few studies of $O_3$'s effects on children, the available studies show that children are no more or less likely to suffer harmful effects than adults. However, there are a number of reasons why children may be more susceptible to $O_3$ and other pollutants. Children and teens spend nearly twice as much

[1] The descriptions of the criteria air pollutants and associated health effects are based on the EPA's Criteria Air Pollutants (EPA 2018b), CARB's Glossary of Air Pollutant Terms (CARB 2019b), and CARB's "Fact Sheet: Air Pollution Sources, Effects and Control" (CARB 2009).

[2] The troposphere is the layer of the Earth's atmosphere nearest to the surface of the Earth. The troposphere extends outward about 5 miles at the poles and about 10 miles at the equator.

time outdoors and engaged in vigorous activities as adults. Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults. Also, children are less likely than adults to notice their own symptoms and avoid harmful exposures. Further research may be able to better distinguish between health effects in children and adults. Children, adolescents and adults who exercise or work outdoors, where $O_3$ concentrations are the highest, are at the greatest risk of harm from this pollutant (CARB 2019e).

### Nitrogen Dioxide and Oxides of Nitrogen

$NO_2$ is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of $NO_2$ in the atmosphere is the oxidation of the primary air pollutant nitric oxide, which is a colorless, odorless gas. $NO_x$, which includes $NO_2$ and nitric oxide, plays a major role, together with ROG, in the atmospheric reactions that produce $O_3$. $NO_x$ is formed from fuel combustion under high temperature or pressure. In addition, $NO_x$ is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources of $NO_x$ are transportation and stationary fuel combustion sources (such as electric utility and industrial boilers).

A large body of health science literature indicates that exposure to $NO_2$ can induce adverse health effects. The strongest health evidence, and the health basis for the ambient air quality standards (AAQS) for $NO_2$, results from controlled human exposure studies that show that $NO_2$ exposure can intensify responses to allergens in allergic asthmatics. In addition, a number of epidemiological studies have demonstrated associations between $NO_2$ exposure and premature death, cardiopulmonary effects, decreased lung function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses. Infants and children are particularly at risk because they have disproportionately higher exposure to $NO_2$ than adults due to their greater breathing rate for their body weight and their typically greater outdoor exposure duration. Several studies have shown that long-term $NO_2$ exposure during childhood, the period of rapid lung growth, can lead to smaller lungs at maturity in children with higher levels of exposure compared to children with lower exposure levels. In addition, children with asthma have a greater degree of airway responsiveness compared with adult asthmatics. In adults, the greatest risk is to people who have chronic respiratory diseases, such as asthma and chronic obstructive pulmonary disease (CARB 2019c).

### Carbon Monoxide

CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent. Notably, because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots is steadily decreasing.

CO is harmful because it binds to hemoglobin in the blood, reducing the ability of blood to carry oxygen. This interferes with oxygen delivery to the body's organs. The most common effects of CO exposure are fatigue, headaches, confusion and reduced mental alertness, light-headedness, and dizziness due to inadequate oxygen delivery to the brain. For people with cardiovascular disease, short-term CO exposure can further reduce their body's

already compromised ability to respond to the increased oxygen demands of exercise, exertion, or stress. Inadequate oxygen delivery to the heart muscle leads to chest pain and decreased exercise tolerance. Unborn babies whose mothers experience high levels of CO exposure during pregnancy are at risk of adverse developmental effects. Unborn babies, infants, elderly people, and people with anemia or with a history of heart or respiratory disease are most likely to experience health effects with exposure to elevated levels of CO (CARB 2019a).

### Sulfur Dioxide

$SO_2$ is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of $SO_2$ are coal and oil used in power plants and industries; as such, the highest levels of $SO_2$ are generally found near large industrial complexes. In recent years, $SO_2$ concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of $SO_2$ and limits on the sulfur content of fuels.

Controlled human exposure and epidemiological studies show that children and adults with asthma are more likely to experience adverse responses with $SO_2$ exposure, compared with the non-asthmatic population. Effects at levels near the 1-hour standard are those of asthma exacerbation, including bronchoconstriction accompanied by symptoms of respiratory irritation such as wheezing, shortness of breath, and chest tightness, especially during exercise or physical activity. Also, exposure at elevated levels of $SO_2$ (above 1 part per million [ppm]) results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality. The elderly and people with cardiovascular disease or chronic lung disease (such as bronchitis or emphysema) are most likely to experience these adverse effects (CARB 2019f).

$SO_2$ is of concern both because it is a direct respiratory irritant and because it contributes to the formation of sulfate and sulfuric acid in particulate matter (NRC 2005). People with asthma are of particular concern, both because they have increased baseline airflow resistance and because their $SO_2$-induced increase in airflow resistance is greater than in healthy people, and it increases with the severity of their asthma (NRC 2005). $SO_2$ is thought to induce airway constriction via neural reflexes involving irritant receptors in the airways (NRC 2005).

### Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and $PM_{10}$ represent fractions of particulate matter. Coarse particulate matter ($PM_{10}$) is about 1/7 the thickness of a human hair. Major sources of $PM_{10}$ include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter ($PM_{2.5}$) is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides, $NO_x$, and ROG.

$PM_{2.5}$ and $PM_{10}$ pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and $PM_{10}$ can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also

causing injury. $PM_{10}$ tends to collect in the upper portion of the respiratory system, whereas $PM_{2.5}$ is small enough to penetrate deeper into the lungs and damage lung tissue. Suspended particulates also produce haze and reduce regional visibility and damage and discolor surfaces on which they settle.

A number of adverse health effects have been associated with exposure to both $PM_{2.5}$ and $PM_{10}$. For $PM_{2.5}$, short-term exposures (up to 24-hour duration) have been associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days. These adverse health effects have been reported primarily in infants, children, and older adults with preexisting heart or lung diseases. In addition, of all of the common air pollutants, $PM_{2.5}$ is associated with the greatest proportion of adverse health effects related to air pollution, both in the United States and worldwide based on the World Health Organization's Global Burden of Disease Project. Short-term exposures to $PM_{10}$ have been associated primarily with worsening of respiratory diseases, including asthma and chronic obstructive pulmonary disease, leading to hospitalization and emergency department visits (CARB 2017).

Long-term exposure (months to years) to $PM_{2.5}$ has been linked to premature death, particularly in people who have chronic heart or lung diseases, and reduced lung function growth in children. The effects of long-term exposure to $PM_{10}$ are less clear, although several studies suggest a link between long-term $PM_{10}$ exposure and respiratory mortality. The International Agency for Research on Cancer published a review in 2015 that concluded that particulate matter in outdoor air pollution causes lung cancer (CARB 2017).

### Lead

Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phase-out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and, in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood, because children are highly susceptible to the effects of lead. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth.

### Sulfates

Sulfates are the fully oxidized form of sulfur, which typically occur in combination with metals or hydrogen ions. Sulfates are produced from reactions of $SO_2$ in the atmosphere and can result in respiratory impairment, as well as reduced visibility.

### Vinyl Chloride

Vinyl chloride is a colorless gas with a mild, sweet odor, which has been detected near landfills, sewage plants, and hazardous waste sites, due to the microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air can cause nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure through inhalation can cause liver damage, including liver cancer.

### Hydrogen Sulfide

Hydrogen sulfide is a colorless and flammable gas that has a characteristic odor of rotten eggs. Sources of hydrogen sulfide include geothermal power plants, petroleum refineries, sewers, and sewage treatment plants. Exposure to hydrogen sulfide can result in nuisance odors, as well as headaches and breathing difficulties at higher concentrations.

### Visibility-Reducing Particles

Visibility-reducing particles are any particles in the air that obstruct the range of visibility. Effects of reduced visibility can include obscuring the viewshed of natural scenery, reducing airport safety, and discouraging tourism. Sources of visibility-reducing particles are the same as for $PM_{2.5}$ described above.

### Reactive Organic Gases

Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of $O_3$ are referred to and regulated as ROGs (also referred to as VOCs). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

The primary health effects of ROGs result from the formation of $O_3$ and its related health effects. High levels of ROGs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate health standards for ROGs as a group.

## Non-Criteria Air Pollutants

### Toxic Air Contaminants

A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic non-cancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the State of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics “Hot Spots” Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the California State Legislature (Legislature) in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Examples of TACs include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

#### Diesel Particulate Matter

Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. More than 90% of DPM is less than 1 micrometer in diameter (about 1/70th the diameter of a human hair), and thus is a subset of $PM_{2.5}$ (CARB 2019d). DPM is typically composed of carbon particles ("soot," also called black carbon) and numerous organic compounds, including over 40 known carcinogenic organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene (CARB 2019d). CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM) (17 California Code of Regulations [CCR] Section 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars; and off-road diesel engines including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000). To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000 (CARB 2000). Because it is part of $PM_{2.5}$, DPM also contributes to the same non-cancer health effects as $PM_{2.5}$ exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies (CARB 2019d). Those most vulnerable to non-cancer health effects are children, whose lungs are still developing, and the elderly, who often have chronic health problems.

#### Odorous Compounds

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor, and recognition may only occur with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

### 4.2.1.3 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. The term "sensitive receptors" is used to refer to facilities and structures where people who are sensitive to air pollution live or spend considerable amounts of time. Land uses where air pollution-sensitive individuals are most likely to spend time include schools and schoolyards (i.e., preschools and kindergarten through grade 12 schools), parks and playgrounds, daycare centers, nursing homes, hospitals, live in housing (i.e., prisons, dormitories, hospices, or similar), and residential communities (sensitive sites or sensitive land uses) (CARB 2005; MBARD 2008).

Sensitive receptors are located immediately adjacent to or within close proximity to the project and programmatic infrastructure component sites.

## 4.2.2 Regulatory Framework

### 4.2.2.1 Federal

#### Criteria Air Pollutants

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the Clean Air Act, including setting National Ambient Air Quality Standards (NAAQS) for major air pollutants; setting hazardous air pollutant (HAP) standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric $O_3$ protection measures, and enforcement provisions. Under the Clean Air Act, NAAQS are established for the following criteria pollutants: $O_3$, CO, $NO_2$, $SO_2$, $PM_{10}$, $PM_{2.5}$, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for $O_3$, $NO_2$, $SO_2$, $PM_{10}$, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for $O_3$, $NO_2$, $SO_2$, $PM_{10}$, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the standards within mandated time frames.

#### Hazardous Air Pollutants

The 1977 federal Clean Air Act amendments required the EPA to identify National Emission Standards for Hazardous Air Pollutants (HAPs) to protect public health and welfare. HAPs include certain VOCs, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 federal Clean Air Act Amendments, which expanded the control program for HAPs, 189 substances and chemical families were identified as HAPs.

### 4.2.2.2 State

#### Criteria Air Pollutants

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS. As stated previously, an ambient air quality standard defines the maximum amount of a pollutant averaged over a specified period of time that can be present in outdoor air without harm to the public's health. For each pollutant, concentrations must be below the relevant CAAQS before an air basin can attain the corresponding CAAQS. Air quality is considered in attainment if pollutant levels are continuously below the CAAQS and violate the

standards no more than once each year. The CAAQS for $O_3$, CO, $SO_2$ (1-hour and 24-hour), $NO_2$, $PM_{10}$, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

California air districts typically base their thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the air basin can accommodate without affecting the attainment date when attainment will be achieved in the Air Basin for the NAAQS or CAAQS. Thresholds established by air districts are protective of human health, as they are based on attainment of the ambient air quality standards, which reflect the maximum pollutant levels in the outdoor air that would not result in harm to the public's health. Table 4.2-1 presents the NAAQS and CAAQS.

## Table 4.2-1. Ambient Air Quality Standards

| Pollutant | Averaging Time | California Standards[a] | National Standards[b] | |
|---|---|---|---|---|
| | | *Concentrations*[c] | *Primary*[c,d] | *Secondary*[c,e] |
| $O_3$ | 1 hour | 0.09 ppm (180 µg/m³ | — | Same as Primary[f] |
| | 8 hours | 0.070 ppm (137 µg/m³) | 0.070 ppm (137 µg/m³)[f] | |
| $NO_2$ | 1 hour | 0.18 ppm (339 µg/m³) | 0.100 ppm (137 µg/m³) | Same as Primary Standard |
| | Annual Arithmetic Mean | 0.030 ppm (57 µg/m³) | 0.053 ppm (100 µg/m³) | |
| CO | 1 hour | 20 ppm (23 mg/m³) | 35 ppm (40 mg/m³) | None |
| | 8 hours | 9.0 ppm (10 mg/m³) | 9 ppm (10 mg/m³) | |
| $SO_2$ | 1 hour | 0.25 ppm (655 µg/m³) | 0.075 ppm (196 µg/m³)[h] | — |
| | 3 hours | — | — | 0.5 ppm (1,300 µg/m³) |
| | 24 hours | 0.04 ppm (105 µg/m³) | 0.14 ppm (for certain areas)[g] | — |
| | Annual | — | 0.030 ppm (for certain areas)[g] | — |
| $PM_{10}$ | 24 hours | 50 µg/m³ | 150 µg/m³ | Same as Primary Standard |
| | Annual Arithmetic Mean | 20 µg/m³ | — | |
| $PM_{2.5}$ | 24 hours | — | 35 µg/m³ | Same as Primary Standard |
| | Annual Arithmetic Mean | 12 µg/m³ | 12.0 µg/m³ [i] | 15.0 µg/m³ |
| Lead | 30-day Average | 1.5 µg/m³ | — | |
| | Calendar Quarter | — | 1.5 µg/m³ (for certain areas)[k] | |
| | Rolling 3-Month Average | — | 0.15 µg/m³ | |
| Hydrogen sulfide | 1 hour | 0.03 ppm (42 µg/m³) | — | — |
| Vinyl Chloride | 24 hours | 0.01 ppm (26 µg/m³)[j] | — | — |
| Sulfates | 24 hours | 25 µg/m³ | — | — |
| Visibility reducing particles | 8 hour (10:00 a.m. to 6:00 p.m. PST) | Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70% | — | |

## Table 4.2-1. Ambient Air Quality Standards (continued)

**Source:** CARB 2016.
**Notes:** ppm = parts per million by volume; µg/m³ = micrograms per cubic meter; mg/m³= milligrams per cubic meter.

[a] California standards for $O_3$, CO, $SO_2$ (1-hour and 24-hour), $NO_2$, suspended particulate matter—$PM_{10}$, $PM_{2.5}$, and visibility-reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in 17 CCR Section 70200.

[b] National standards (other than $O_3$, $NO_2$, $SO_2$, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The $O_3$ standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For $PM_{10}$, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[e] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[f] On October 1, 2015, the primary and secondary NAAQS for $O_3$ were lowered from 0.075 ppm to 0.070 ppm.

[g] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[h] On June 2, 2010, a new 1-hour $SO_2$ standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 $SO_2$ national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated non-attainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[i] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m³ to 12.0 µg/m³. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³. The existing 24-hour $PM_{10}$ standards (primary and secondary) of 150 µg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[j] CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[k] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated non-attainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

### Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) HAPs. In 1987, the Legislature enacted the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) to address public concern over the release of TACs into the atmosphere. AB 2588 law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years. TAC emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, the facility operator is required to communicate the results to the public in the form of notices and public meetings.

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines (CARB 2000). The regulation is anticipated to result in an 80-percent decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment Program. These regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. There are several airborne toxic control measures that reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 CCR Section 2449 et seq.), In-Use On-Road Diesel-Fueled Vehicles (13 CCR Section 2025), and Limit Diesel-Fueled Commercial Motor Vehicle Idling (13 CCR Section 2485).

#### California Health and Safety Code Section 41700

Section 41700 of the Health and Safety Code states that a person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property (Health and Safety Code Section 41700). This section also applies to sources of objectionable odors.

### 4.2.2.2 Regional

#### Monterey Bay Air Resources District

The Monterey Bay Air Resources District (MBARD) is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the Air Basin, where the Proposed Project is located. The MBARD operates monitoring stations in the Air Basin, develops rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality management planning documents, and conducts source testing and inspections. The MBARD's Air Quality Management Plans (AQMPs) include control measures and strategies to be implemented to attain CAAQS and NAAQS in the Air Basin. The MBARD then implements these control measures as regulations to control or reduce criteria pollutant emissions from stationary sources or equipment.

**Air Quality Management Plan**

The 1991 AQMP for the Monterey Bay Area was the first plan prepared in response to the California Clean Air Act of 1988, which established specific planning requirements to meet the $O_3$ standard. The California Clean Air Act requires that the AQMP be updated every 3 years. The most recent update is the *2012–2015 Air Quality Management Plan* (2012–2015 AQMP), which was adopted in March 2017, and is an update to the elements included in the 2012 AQMP. The primary elements updated from the 2012 AQMP are the air quality trends analysis, emission inventory, and mobile source programs.

The Air Basin is a nonattainment area for the CAAQS for both $O_3$ and $PM_{10}$. The AQMP addresses only attainment of the $O_3$ CAAQS. Attainment of the $PM_{10}$ CAAQS is addressed in the MBARD's *2005 Report on Attainment of the California Particulate Matter Standards in the Monterey Bay Region* (Particulate Matter Plan), which was adopted in December 2005 and is summarized further below. Maintenance of the 8-hour NAAQS for $O_3$ is addressed in MBARD's *2007 Federal Maintenance Plan for Maintaining the National Ozone Standard in the Monterey Bay Region* (Federal Maintenance Plan), which was adopted in March 2007 and is also summarized below.

A review of the air monitoring data for 2013 through 2015, from the most recent AQMP, indicates that there were fewer exceedance days of $O_3$ compared to previous periods (MBARD 2017). The long-term trend shows that progress has been made toward achieving $O_3$ standards. The number of exceedance days has continued to decline during the past 10 years despite population increases. The MBARD's 2012–2015 AQMP identifies a continued trend of declining $O_3$ emissions in the Air Basin primarily related to lowered vehicles miles traveled (VMT). Therefore, the MBARD determined progress was continuing to be made toward attaining the 8-hour $O_3$ standard during the three-year period reviewed (MBARD 2017).

### Federal Maintenance Plan

The Federal Maintenance Plan (May 2007) presents the strategy for maintaining the NAAQS for $O_3$ in the Air Basin. It is an update to an earlier maintenance plan (1994) that was prepared for maintaining the 1-hour NAAQS for $O_3$ and has since been revoked and superseded by the current 8-hour $O_3$ standard. Effective June 15, 2004, the EPA designated the Air Basin as an attainment area for the 8-hour NAAQS for $O_3$. The plan includes an emission inventory for the years 1990 to 2030 for ROG and $NO_x$, the two primary $O_3$ precursor gases. A contingency plan is included to ensure that any future violation of the standard is promptly corrected (MBARD 2007).

### Particulate Matter Plan

The purpose of the Particulate Matter Plan (December 2005) is to fulfill the requirements of Senate Bill 655, which was approved by the Legislature in 2003 with the objective of reducing public exposure to particulate matter. The legislation requires CARB, in conjunction with local air pollution control districts, to adopt a list of the most readily available, feasible, and cost-effective control measures that could be implemented by air pollution control districts to reduce ambient levels of particulate matter in their air basins (MBARD 2005). The Particulate Matter Plan's proposed activities include control measures for fugitive dust, public education, administrative functions, and continued enhancements to the MBARD's smoke management and emission-reduction incentive programs.

### Rules and Regulations

The MBARD establishes and administers a program of rules and regulations to attain and maintain state and national air quality standards and regulations related to TACs. Rules and regulations that may apply to the Proposed Project during construction and/or operations include the following:

- Regulation IV (Prohibitions), Rule 400 (Visible Emissions). This rule provides limits for visible emissions for sources within the MBARD jurisdiction.
- Regulation IV (Prohibitions), Rule 402 (Nuisances). This rule establishes a prohibition against sources creating public nuisances while operating within the MBARD jurisdiction.
- Regulation IV (Prohibitions), Rule 403 (Particulate Matter). This rule provides particulate matter emissions limits for sources operating within the MBARD jurisdiction.
- Regulation IV (Prohibitions), Rule 424 (National Emission Standards for Hazardous Air Pollutants). This rule is to provide clarity on the MBARD's enforcement authority for the National Emission Standards for Hazardous Air Pollutants including asbestos from demolition.
- Regulation IV (Prohibitions), Rule 425 (Use of Cutback Asphalt). This rule establishes VOC emissions limits associated with the use of cutback and emulsified asphalts.
- Regulation IV (Prohibitions), Rule 426 (Architectural Coatings). This rule establishes VOC emissions limits associated with the use of architectural coatings.

### 4.2.2.3 Air Quality

#### North Central Coast Air Basin Attainment Designations

Pursuant to the 1990 federal Clean Air Act amendments, the EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the NAAQS have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as attainment for that pollutant. If an area exceeds the standard, the area is classified as nonattainment for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable." The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are redesignated as maintenance areas and must have approved maintenance plans to ensure continued attainment of the standards. Similar to the federal Clean Air Act, the California Clean Air Act, designated areas as attainment or nonattainment, but based on CAAQS rather than the NAAQS. Table 4.2-2 identifies the current attainment status of the Air Basin, including the project area, with respect to the NAAQS and CAAQS, and the attainment classifications for the criteria pollutants. The Air Basin is designated as a non-attainment area for the state $O_3$ and $PM_{10}$ standards. The Air Basin is designated as unclassified or attainment for all other state and federal standards (EPA 2018a; CARB 2018b). Since the Air Basin has met all NAAQS, it is no longer subject to federal conformity requirements (MBARD 2008).

**Table 4.2-2. North Central Coast Air Basin Attainment Classification**

| Pollutant | Averaging Time | Designation/Classification |
|---|---|---|
| *National Standards* | | |
| $O_3$ | 8 hours | Unclassifiable/Attainment |
| $NO_2$ | 1 hour, annual arithmetic mean | Unclassifiable/Attainment |
| CO | 1 hour; 8 hours | Unclassifiable/Attainment |
| $SO_2$ | 24 hours; annual arithmetic mean | Unclassifiable/Attainment |
| $PM_{10}$ | 24 hours | Unclassifiable/Attainment |
| $PM_{2.5}$ | 24 hours; annual arithmetic mean | Unclassifiable/Attainment |
| Lead | Quarter; 3-month average | Unclassifiable/Attainment |
| *California Standards* | | |
| $O_3$ | 1 hour; 8 hours | Nonattainment-Transitional |
| $NO_2$ | 1 hour; annual arithmetic mean | Attainment |
| CO | 1 hour; 8 hours | Attainment |
| $SO_2$ | 1 hour; 24 hours | Attainment |
| $PM_{10}$ | 24 hours; annual arithmetic mean | Nonattainment |
| $PM_{2.5}$ | Annual arithmetic mean | Attainment |
| Lead | 30-day average | Attainment |
| $SO_4$ | 24 hours | Attainment |
| $H_2S$ | 1 hour | Unclassified |
| Vinyl chloride | 24 hours | No designation |
| Visibility-reducing particles | 8 hours (10:00 a.m.–6:00 p.m.) | Unclassified |

**Sources:** CARB 2020a (California); EPA 2020 (national).
**Notes:** $O_3$ = ozone; $NO_2$ = nitrogen dioxide; CO = carbon monoxide; $SO_2$ = sulfur dioxide; $PM_{10}$ = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; $SO_4$ = sulfates; $H_2S$ = hydrogen sulfide.

### Local Ambient Air Quality

CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across California. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. Table 4.2-3 presents the most recent background ambient air quality data from 2016 to 2018. The Santa Cruz monitoring station, located at 2544 Soquel Avenue, Santa Cruz, California, is the nearest air quality monitoring station to the project area. This station monitors $O_3$ and $PM_{2.5}$. The nearest station that monitors CO and $NO_2$ in the Air Basin is located at 855 E Laurel Drive, Salinas, California, approximately 30 miles southeast of the project area. The nearest station that monitors $PM_{10}$ in the Air Basin is located at 1979 Fairview Road, Hollister, California, approximately 38 miles southeast of the project area. The data collected at these stations is considered generally representative of the air quality experienced in the vicinity of the project area. This data is shown in Table 4.2-3 and includes the number of days that the ambient air quality standards were exceeded.

## 4.2.3 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to air quality. 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.

### 4.2.3.1 Standards of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to air quality 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. Conflict with or obstruct implementation of the applicable air quality plan.
B. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.
C. Expose sensitive receptors to substantial pollutant concentrations.
D. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The MBARD has established thresholds of significance for criteria air pollutants of concern for construction and operations (MBARD 2008). For construction, the threshold is 82 pounds per day of $PM_{10}$. Construction projects using typical construction equipment such as dump trucks, scrappers, bulldozers, compactors and front-end loaders that temporarily emit other air pollutants, such as precursors of $O_3$ (i.e., ROG and $NO_x$), are accommodated in the emission inventories of State- and federally required air plans and would not have a significant impact on the AAQS (MBARD 2008).

For operations, a project would result in a significant impact if it results in the generation of emissions of or in excess of 137 pounds per day for ROG or $NO_x$, 550 pounds per day of CO, 150 pounds per day of sulfur oxides ($SO_x$), and 82 pounds per day of $PM_{10}$ from on-site sources (MBARD 2008). Notably, if a project exceeds the identified significance thresholds, its emissions would be considered cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions; and, conversely, if a project's emissions are below the MBARD thresholds, then the project's cumulative impact would be considered to be less than significant. As stated above, the Air Basin met all NAAQS. As a result, it is no longer subject to federal conformity requirements (MBARD 2008).

## Table 4.2-3. Local Ambient Air Quality Data

| Averaging Time | Ambient Air Quality Standard | Measured Concentration and Exceedances by Year | | |
|---|---|---|---|---|
| | | *2016* | *2017* | *2018* |
| ***Ozone ($O_3$) – Santa Cruz Monitoring Station*** | | | | |
| Maximum 1-hour concentration (ppm) | 0.09 ppm (state) | 0.064 | 0.082 | 0.075 |
| *Number of days exceeding state standard (days)* | | *0* | *0* | *0* |
| Maximum 8-hour concentration (ppm) | 0.070 ppm (state) | 0.058 | 0.075 | 0.061 |
| | 0.070 ppm (federal) | 0.057 | 0.075 | 0.061 |
| *Number of days exceeding state standard (days)* | | *0* | *1* | *0* |
| *Number of days exceeding federal standard (days)* | | *0* | *1* | *0* |
| ***Nitrogen Dioxide ($NO_2$) – Salinas Monitoring Station*** | | | | |
| Maximum 1-hour concentration (ppm) | 0.18 ppm (state) | 0.033 | 0.034 | 0.047 |
| | 0.100 ppm (federal) | 0.033 | 0.034 | 0.047 |
| *Number of days exceeding state standard (days)* | | *0* | *0* | *0* |
| *Number of days exceeding federal standard (days)* | | *0* | *0* | *0* |
| Annual concentration (ppm) | 0.030 ppm (state) | 0.004 | 0.004 | 0.005 |
| | 0.053 ppm (federal) | 0.004 | 0.004 | 0.005 |
| ***Carbon Monoxide (CO) – Salinas Monitoring Station*** | | | | |
| Maximum 1-hour concentration (ppm) | 20 ppm (state) | 4.2 | 2.7 | 3,5 |
| | 35 ppm (federal) | 4.2 | 2.7 | 3.5 |
| *Number of days exceeding state standard (days)* | | *0* | *0* | *0* |
| *Number of days exceeding federal standard (days)* | | *0* | *0* | *0* |
| Maximum 8-hour concentration (ppm) | 9.0 ppm (state) | 0.9 | 0.9 | 1.2 |
| | 9 ppm (federal) | 0.9 | 0.9 | 1.2 |
| *Number of days exceeding state standard (days)* | | *0* | *0* | *0* |
| *Number of days exceeding federal standard (days)* | | *0* | *0* | *0* |
| ***Fine Particulate Matter ($PM_{2.5}$) – Santa Cruz Monitoring Station*** | | | | |
| Maximum 24-hour concentration (µg/m³) | 35 µg/m³ (federal) | 12.7 | 47.3 | 92.0 |
| *Number of days exceeding federal standard[a]* | | *0.0 (0)* | *2.2 (2)* | *9.9 (9)* |
| Annual concentration (µg/m³) | 12 µg/m³ (state) | 5.3 | ND | 8.2 |
| | 12.0 µg/m³ (federal) | 5.2 | 7.0 | 8.3 |
| ***Coarse Particulate Matter ($PM_{10}$) – Hollister Monitoring Station*** | | | | |
| Maximum 24-hour concentration (µg/m³) | 50 µg/m³ (state) | ND | ND | *ND* |
| | 150 µg/m³ (federal) | 44.3 | 80.9 | *95.9* |
| *Number of days exceeding state standard[a]* | | *ND* | *ND* | *ND* |
| *Number of days exceeding federal standard[a]* | | *0.0 (0)* | *0.0 (0)* | *0.0 (0)* |
| Annual concentration (state method) (µg/m³) | 20 µg/m³ (state) | ND | ND | ND |

**Sources:** CARB 2020b; EPA 2018c.

**Notes:** ppm = parts per million; µg/m³ = micrograms per cubic meter; ND = insufficient data available to determine the value. Data taken from CARB iADAM (http://www.arb.ca.gov/adam) and EPA AirData (http://www.epa.gov/airdata/) represent the highest concentrations experienced over a given year.

Exceedances of national and California standards are only shown for $O_3$ and particulate matter. Daily exceedances for particulate matter are estimated days because $PM_{10}$ and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did not exceed national or California standards during the years shown. There is no national standard for 1-hour ozone, annual $PM_{10}$, or 24-hour $SO_2$, nor is there a state 24-hour standard for $PM_{2.5}$.

Santa Cruz Monitoring Station is located at 2544 Soquel Avenue, Santa Cruz, 95060; Salinas Monitoring Station is located at 855 E Laurel Drive, Salinas, 93901; Hollister Monitoring Station is located at 1979 Fairview Road, Hollister, 95023.

[a] Measurements of $PM_{10}$ and $PM_{2.5}$ are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

Consistency with the AQMP is used by MBARD to determine a project's cumulative impact on regional air quality (i.e., ozone levels). Projects which are not consistent with the AQMP have not been accommodated in the AQMP and will have a significant cumulative impact on regional air quality unless emissions are totally offset (MBARD 2008). For localized impacts of the Proposed Project (i.e., $PM_{10}$), the threshold for cumulative impacts is the same as that noted above (82 pounds per day of $PM_{10}$). The localized impacts related to CO hotspots and MBARD's associated thresholds are not applicable, as the Proposed Project would not generate a net increase in operational traffic.

Health effects from carcinogenic air toxics are usually described in terms of cancer risk. The MBARD recommends an incremental cancer risk threshold of 10 in 1 million. "Incremental cancer risk" is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period will contract cancer based on the use of standard Office of Environmental Health Hazard Assessment risk-assessment methodology. In addition, some TACs have noncarcinogenic effects. The MBARD recommends a Hazard Index of 1 or more for acute (short-term) and chronic (long-term) effects.[3]

### 4.2.3.2 Analytical Methods

This section evaluates the potential air quality impacts associated with construction and operation of the Proposed Project. The analysis of potential impacts addresses the various project and programmatic components listed in Table 4.2-4, which are described in detail in Chapter 3, Project Description.

**Table 4.2-4. 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 | | ✓ |

[3] Non-cancer adverse health risks are measured against a hazard index, which is defined as the ratio of the predicted incremental exposure concentrations of the various noncarcinogens from the Project to published reference exposure levels that can cause adverse health effects.

## Construction

Proposed construction activities would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment and soil disturbance) and off-site sources (i.e., on-road haul trucks, delivery trucks, and worker vehicle trips). Construction emissions can vary substantially from day to day, depending on the level of activity; the specific type of operation; and, for dust, the prevailing weather conditions. Therefore, emission levels can only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts.

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions generated during construction of each project and programmatic component modeled. CalEEMod is a statewide computer model developed in cooperation with air districts throughout the state to quantify criteria air pollutant emissions associated with construction activities from a variety of land use projects, such as residential, commercial, and industrial facilities. For the Proposed Project, all project and programmatic infrastructure components (aquifer storage and recovery [ASR] facilities [new ASR facilities and Beltz ASR facilities], intertie improvements, Felton Diversion improvements, and the Tait Diversion and Coast Pump Station improvements) were modeled. Notably, the water rights modifications project component would not directly result in construction activities and therefore would not result in air pollutant emissions and, as such, was not modeled herein.

A construction assumptions scenario was developed for each of the project and programmatic infrastructure components modeled based on the best available information at this time. The earliest possible construction initiation dates were used to provide for a reasonable worst-case analysis, as vehicle and equipment emissions are expected to improve over time, as regulatory requirements become more stringent. Key construction assumptions include phase types, phase timing and duration, off-road equipment use (e.g., type, quantity, and hours of operation per day), number of vehicle trips (e.g., haul trucks, vendor trucks, and worker vehicles) and trip distance, ground disturbance acreage, amount of demolition debris, and paving area. See Appendix E for complete construction assumption details.

A summary of anticipated project and programmatic infrastructure components construction schedules is listed below:

- **ASR Facilities:**
    - New ASR Facilities: Up to four new ASR facilities are anticipated and were conservatively assumed to be constructed concurrently. Facility components would include:
        - Monitoring Wells (2 to 3 wells per ASR facility) (×4) – July 1, 2024 to September 6, 2024
        - Supply Wells (×4) – September 16, 2024 to November 22, 2024
        - Treatment Facilities (×4) – January 1, 2025 to September 12, 2025
    - Beltz ASR Facilities:
        - Beltz 9 Monitoring Well – May 3, 2021 to May 21, 2021[4]
        - Beltz 12 Facility Upgrades – July 5, 2022 to September 9, 2022
        - Beltz 8 Facility Upgrades – September 12, 2022 to January 6, 2023
        - Beltz 9 Facility Upgrades – January 9, 2023 to February 17, 2023
        - Beltz 10 Facility Upgrades – February 20, 2023 to March 31, 2023

[4] As indicated in Chapter 3, Project Description, it is anticipated that this monitoring well would be constructed in May 2022, as opposed to May 2021; however, the construction assumptions used in the modeling are based on the earlier date to provide for a conservative analysis.

- **Intertie Improvements:** Three intertie connection projects are anticipated, one project between the City of Santa Cruz (City) and Scotts Valley Water District (SVWD) and two projects between the City and Soquel Creek Water District (SqCWD)/Central Water District (CWD). Three new pump stations are also anticipated, one for the City/SVWD intertie and two for the City/SqCWD/CWD intertie. Additionally, one pump station upgrade is anticipated for the City/SqCWD/CWD intertie. Components with multiple programmatic components were conservatively assumed to be constructed concurrently.
    - Intertie pipeline connections (×2) – City/SqCWD/CWD – May 1, 2022 to November 16, 2022
    - New pump stations (×2) – City/SqCWD/CWD intertie – May 1, 2022 to June 25, 2022
    - Pump station upgrade –City/SqCWD/CWD intertie – April 1, 2022 to May 7, 2022
    - Intertie pipeline connection – City/SVWD intertie – May 2, 2027 to November 17, 2027
    - New pump station – City/SVWD intertie – May 2, 2027 to June 26, 2027
- **Felton Diversion Improvements:**
    - Felton Diversion improvements – June 27, 2027 to August 4, 2027
- **Tait Diversion and Coast Pump Station Improvements:**
    - Coast Pump Station improvements – April 1, 2028 to May 12, 2028
    - Tait Diversion improvements – May 15, 2028 to December 15, 2028

For each of these infrastructure components, the selected phase type and duration were based on the best available information provided by the City. Phase timing and sequencing was considered where two or more phases overlap; the maximum daily emissions was estimated and presented in this analysis.

Off-road equipment emissions were estimated in CalEEMod based on the type of equipment, the number of pieces of each equipment, and the hours of operation. CalEEMod default values for equipment horsepower and load factor were applied. The majority of equipment was assumed to be in operation for 8 hours per day. However, for well drilling and construction, some pieces of equipment would need to operate up to 24 hours per day. Internal combustion engines used by construction equipment would result in emissions of ROG, $NO_x$, CO, $SO_x$, $PM_{10}$, and $PM_{2.5}$.

Emissions from vehicle trips are estimated in CalEEMod based on the number of trips, the trip distance, and emission factors for the vehicle category. Regarding the vehicle categories, and consistent with CalEEMod default values, worker trips are assumed to be passenger vehicles and light-duty trucks, vendor truck trips are assumed to be a mix of medium- and heavy-heavy duty trucks, and haul truck trips are assumed to be heavy-heavy duty trucks. Each worker, vendor, and haul truck was estimated to result in two one-way trips. As with equipment, internal combustion engines used by vehicles would result in emissions of ROG, $NO_x$, CO, $SO_x$, $PM_{10}$, and $PM_{2.5}$.

Fugitive dust ($PM_{10}$ and $PM_{2.5}$ emissions) is generated by entrained dust, which results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil, which occurs during earth movement phases (site preparation and grading) and during the loading of material into haul trucks. As discussed in Chapter 3, Project Description, of this EIR, the City has identified standard construction practices that would be implemented by the City or its contractors during construction activities, including wind erosion (dust) controls, as further described in the section below.

VOC off-gassing emissions would occur during application of asphalt pavement during paving and the application of paint and other coatings during architectural coating. During paving, ROG off-gassing emissions are estimated in CalEEMod based on the area of asphalt pavement assumed and the default emission factor of 2.62 pounds per acre of VOC. During architectural coating, VOC off-gassing emissions result from evaporation of solvents contained

in surface coatings such as in paints and primers. VOC evaporative emissions from application of surface coatings was estimated based on the VOC emission factor, the estimated building square footage, and the assumed fraction of surface area. The total square footage of new structures was conservatively assumed; however, the majority of the new surfaces are not anticipated to require coating.

### Operation

Once Proposed Project construction is complete, operations would entail a minimal increase in on-road vehicle trips associated with routine inspection and maintenance of the new facilities by City staff. As indicated in Chapter 3, Project Description, it is anticipated that up to three new staff would be needed to operate under Proposed Project conditions: one for the Agreed Flows implementation and two for the new ASR facilities maintenance. An additional daily vehicle trip was also included for Beltz ASR maintenance. For long-term operations, it was conservatively estimated that an increase of up to eight daily one-way trips would be generated in support of the project and programmatic components. As a conservative estimate, these new daily vehicle trips were assumed to occur seven days a week, 365 days per year. On-road vehicle emissions were estimated using CalEEMod, with outputs included in Appendix E. No additional sources of criteria air pollutants are anticipated.

### Application of Relevant Standard Practices

The Proposed Project includes standard construction practices (see Section 3.4.5.2, Standard Construction Practices), that the City or its contractors would implement to avoid or minimize effects to air quality. These practices and their effectiveness in avoiding and minimizing effects are described below.

Standard Construction Practice #1 requires implementation of erosion control best management practices, such as silt fences, fiber or straw rolls, and/or bales; covering of stockpiled spoils; revegetation and physical stabilization of disturbed areas; and sediment-control fencing, dams, barriers, berms, traps, and basins, for activities occurring in or adjacent to jurisdictional aquatic resources. Standard Construction Practice #2 requires stockpile containment and use of exposed soil stabilization structures. Standard Construction Practice #3 requires use of runoff control devices to be used during construction during the rainy season, and inspection of such devices following rain events. Standard Construction Practice #4 requires implementation of wind erosion (dust) controls, such as watering active construction areas, hydroseeding and/or applying non-toxic soil binders to exposed areas after cut and fill activities, covering all trucks hauling loose materials (such as dirt and sand) off-site, and installing appropriate track-out capture methods for exiting trucks. Given that these practices would be implemented during all construction activities and would control fugitive dust from numerous sources, they would be effective at limiting the potential for fugitive dust generation.

If the Proposed Project would have potentially significant impacts even with the implementation of the above standard construction practices, the impact analysis identifies mitigation measures.

## 4.2.3.3 Project Impact Analysis

This section provides a detailed evaluation of air quality impacts associated with the Proposed Project.

**Impact AIR-1:** **Conflict with an Applicable Air Quality Plan (Significance Standard A).** Construction and operation of the Proposed Project would result in emissions of criteria pollutants, but would not exceed adopted thresholds of significance and therefore would not conflict with the MBARD's AQMP. ***(Less than Significant)***

As described in the MBARD CEQA Guidelines (2008), project emissions that are not accounted for in the AQMP's emission inventory are considered a significant cumulative impact to regional air quality. However, for construction of a project, exhaust emissions are accounted for in the AQMP emissions inventory (MBARD 2018), and therefore Proposed Project construction emissions would not result in a significant impact. Furthermore, as determined in Impact AIR-2 (discussed below), the Proposed Project would result in emissions during short-term construction that would not exceed the MBARD thresholds of significance. Regarding long-term operations, project and programmatic components would result in a minimal increase in on-road vehicle activity and negligible emissions associated with routine inspection and maintenance activities. As such, construction and operation of the Proposed Project would not conflict with or obstruct implementation of the AQMP and this impact would be less than significant.

#### Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to conflicts with an applicable air quality plan, and therefore, no mitigation measures are required.

**Impact AIR-2:** **Criteria Pollutant Emissions (Significance Standard B).** Construction and operation of the Proposed Project would result in emissions of criteria pollutants, but would not exceed adopted thresholds of significance, violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, the Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. ***(Less than Significant)***

Short-term construction and long-term operational activities associated with all project and programmatic components of the Proposed Project would result in a minimal increase in daily criteria air pollutant emissions and would not exceed the applicable MBARD thresholds. MBARD considers emissions of ROG, $NO_X$, and $PM_{10}$ from an individual project that exceed the applicable emissions thresholds to be a substantial contribution to a cumulative impact on regional air quality, and projects that do not exceed the project-level thresholds may conclude that they are not cumulatively considerable. As such, the Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is non-attainment under an applicable federal or state ambient air quality standard. This impact would be less than significant, as further described below.

### Construction Emissions

#### Water Rights Modifications

Water rights modifications would not directly result in construction air pollutant emissions and therefore would not exceed the applicable MBARD significance threshold. As such, this project component would result in no direct impacts.

The following analysis evaluates the potential indirect impacts related to construction air pollutant emissions 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

Aquifer Storage and Recovery Facilities

**New ASR Facilities.** Construction emissions associated with the new ASR components were estimated and are depicted in Table 4.2-5. Notably, since up to four ASR facilities are anticipated, it was conservatively assumed that construction of the individual subparts would be constructed concurrently (i.e., four monitoring wells, four supply wells, or four treatment facilities would be constructed at the same time), but would not overlap with each other (i.e., monitoring well and supply well construction would not overlap, for example).

As shown in Table 4.2-5, maximum daily emissions of $PM_{10}$ associated with construction of new ASR facilities would not exceed the applicable MBARD significance threshold. As such, construction emissions for this programmatic component would result in a less-than-significant impact.

### Table 4.2-5. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – New Aquifer Storage and Recovery Facilities

| Programmatic Component | ROG | $NO_x$ | CO | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| | *Pounds per Day* | | | | | |
| *2024* | | | | | | |
| ASR Monitoring Wells[1] | 9.20 | 82.64 | 110.68 | 0.25 | 3.89 | 3.49 |
| ASR Supply Wells[1] | 10.38 | 90.77 | 119.29 | 0.28 | 4.58 | 3.96 |
| **Maximum daily emissions** | **10.38** | **90.77** | **119.29** | **0.28** | **4.58** | **3.96** |
| *2025* | | | | | | |
| ASR Facilities[1] | 19.67 | 62.01 | 94.09 | 0.16 | 4.87 | 2.43 |
| **Maximum daily emissions** | **19.67** | **62.01** | **94.09** | **0.16** | **4.87** | **2.43** |
| *Summary – New ASR Facilities* | | | | | | |
| **Maximum daily emissions** | **19.67** | **90.77** | **119.29** | **0.28** | **4.87** | **3.96** |
| *MBARD threshold* | *N/A* | *N/A* | *N/A* | *N/A* | *82* | *N/A* |
| **Threshold exceeded?** | **N/A** | **N/A** | **N/A** | **N/A** | **No** | **N/A** |

**Notes**: ASR = aquifer storage and recovery; CO = carbon monoxide; MBARD = Monterey Bay Air Resources District; N/A = not applicable; $NO_x$ = oxides of nitrogen; $PM_{10}$ = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases; $SO_x$ = sulfur oxides.
See Appendix E for details.

1 The CalEEMod modeling included in Appendix E accounted for one representative monitoring well, one supply well, and one treatment facility. However, since up to four ASR facilities are anticipated, the emissions outputs for the ASR components were multiplied by four for inclusion in this table, which conservatively assumes that four ASR facilities would be constructed concurrently.

**Beltz ASR Facilities.** Construction emissions associated with the Beltz ASR facilities were estimated and are depicted in Table 4.2-6. Based on the anticipated schedule for the Beltz ASR facilities, no activities are anticipated to occur concurrently; therefore, emissions from each activity are evaluated individually per the MBARD threshold. As shown in Table 4.2-6, maximum daily emissions of $PM_{10}$ associated with construction of the Beltz ASR facilities

would not exceed the applicable MBARD significance threshold. As such, construction emissions for this project component would result in a less-than-significant impact.

### Table 4.2-6. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Beltz Aquifer Storage and Recovery Facilities

| Project Component | ROG | $NO_x$ | CO | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| | *Pounds per Day* | | | | | |
| *2021* | | | | | | |
| Beltz 9 ASR Monitoring Well | 2.91 | 28.33 | 28.11 | 0.06 | 1.48 | 1.35 |
| **Maximum daily emissions** | **2.91** | **28.33** | **28.11** | **0.06** | **1.48** | **1.35** |
| *2022* | | | | | | |
| Beltz 8 ASR Facility Upgrades | 1.24 | 10.81 | 14.44 | 0.02 | 0.65 | 0.56 |
| Beltz 12 ASR Facility Upgrades | 1.91 | 17.17 | 20.55 | 0.04 | 1.03 | 0.87 |
| **Maximum daily emissions** | **1.91** | **17.17** | **20.55** | **0.04** | **1.03** | **0.87** |
| *2023* | | | | | | |
| Beltz 8 ASR Facility Upgrades | 0.87 | 8.70 | 10.40 | 0.02 | 0.48 | 0.40 |
| Beltz 9 ASR Facility Upgrades | 1.44 | 15.11 | 14.62 | 0.03 | 0.79 | 0.63 |
| Beltz 10 ASR Facility Upgrades | 1.44 | 15.08 | 14.57 | 0.03 | 0.79 | 0.63 |
| **Maximum daily emissions** | **1.44** | **15.11** | **14.62** | **0.03** | **0.79** | **0.63** |
| *Summary - Beltz ASR Facilities* | | | | | | |
| **Maximum daily emissions** | **2.91** | **28.33** | **28.11** | **0.06** | **1.48** | **1.35** |
| *MBARD threshold* | *N/A* | *N/A* | *N/A* | *N/A* | *82* | *N/A* |
| **Threshold exceeded?** | **N/A** | **N/A** | **N/A** | **N/A** | **No** | **N/A** |

**Notes**: ASR = aquifer storage and recovery; CO = carbon monoxide; MBARD = Monterey Bay Air Resources District; N/A = not applicable; $NO_x$ = oxides of nitrogen; $PM_{10}$ = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases; $SO_x$ = sulfur oxides.
See Appendix E for details.

Water Transfers and Exchanges and Intertie Improvements

Construction emissions associated with the intertie improvements were estimated and are depicted in Table 4.2-7. Based on the anticipated construction schedules, the intertie improvement programmatic components were assumed to overlap during year 2022 and year 2027. As such, the maximum daily emissions presented are based on the summation of emissions from the construction of all components during that year.

As shown in Table 4.2-7, maximum daily emissions of $PM_{10}$ associated with construction of the intertie improvements would not exceed the applicable MBARD significance threshold. As such, construction emissions for this programmatic component would result in a less-than-significant impact. Notably, based on anticipated construction schedules, the City/SqCWD/CWD intertie connections construction could overlap with Beltz 8 or Beltz 12 facility upgrades (shown in Table 4.2-6 above), and the City/SVWD intertie connection construction could overlap with the Felton Diversion improvements (shown in Table 4.2-8 below), but the overlap of these component would not result in greater emissions than presented Table 4.2-7.

## Table 4.2-7. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Intertie Improvements

| Programmatic Component | ROG | $NO_x$ | CO | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| | *Pounds per Day* | | | | | |
| *2022* | | | | | | |
| City/SqCWD/CWD[1] Intertie - Pipeline | 4.35 | 33.69 | 33.24 | 0.07 | 1.92 | 1.44 |
| City/SqCWD/CWD[1] Intertie - New Pump Stations | 11.72 | 37.54 | 47.50 | 0.08 | 13.24 | 7.60 |
| City/SqCWD/CWD[1] Intertie - Pump Station Upgrade | 2.01 | 17.59 | 22.67 | 0.04 | 0.95 | 0.87 |
| **Maximum daily emissions[2]** | **18.08** | **88.82** | **103.41** | **0.19** | **16.11** | **9.91** |
| *2027* | | | | | | |
| City/SVWD Intertie - Pipeline | 1.84 | 12.33 | 16.15 | 0.03 | 0.73 | 0.50 |
| City/SVWD Intertie - New Pump Station | 5.81 | 15.49 | 23.49 | 0.04 | 6.45 | 3.65 |
| **Maximum daily emissions[2]** | **7.65** | **27.82** | **39.64** | **0.07** | **7.18** | **4.15** |
| *Summary – Intertie Improvements* | | | | | | |
| **Maximum daily emissions** | **18.08** | **88.82** | **103.41** | **0.19** | **16.11** | **9.91** |
| *MBARD threshold* | *N/A* | *N/A* | *N/A* | *N/A* | *82* | *N/A* |
| **Threshold exceeded?** | **N/A** | **N/A** | **N/A** | **N/A** | **No** | **N/A** |

**Notes**: CO = carbon monoxide; CWD = Central Water District; MBARD = Monterey Bay Air Resources District; N/A = not applicable; $NO_x$ = oxides of nitrogen; $PM_{10}$ = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases; $SO_x$ = sulfur oxides; SqCWD = Soquel Creek Water District; SVWD = Scotts Valley Water District.
See Appendix E for details.

1 The CalEEMod modeling included in Appendix E for the City/SqCWD/CWD intertie connections and new pump stations accounted for one representative intertie connection and one new pump station. However, since two intertie connections and two new pump stations are anticipated for the City/SqCWD/CWD intertie, the emissions outputs for these components were multiplied by two for inclusion in this table, which conservatively assumes concurrent construction.

2 The component construction schedules and worst-case day of emissions are assumed to overlap to provide a conservative assessment.

Felton Diversion Improvements

Construction emissions associated with the Felton Diversion improvements were estimated and are depicted in Table 4.2-8.

## Table 4.2-8. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Felton Diversion Improvements

| Project Component | ROG | $NO_x$ | CO | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| | *Pounds per Day* | | | | | |
| *2027* | | | | | | |
| Felton Diversion Improvements | 1.15 | 10.10 | 12.07 | 0.02 | 0.54 | 0.45 |
| **Maximum daily emissions** | **1.15** | **10.10** | **12.07** | **0.02** | **0.54** | **0.45** |
| *MBARD threshold* | *N/A* | *N/A* | *N/A* | *N/A* | *82* | *N/A* |
| **Threshold exceeded?** | **N/A** | **N/A** | **N/A** | **N/A** | **No** | **N/A** |

**Notes**: CO = carbon monoxide; MBARD = Monterey Bay Air Resources District; N/A = not applicable; $NO_x$ = oxides of nitrogen; $PM_{10}$ = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases; $SO_x$ = sulfur oxides.
See Appendix E for details.

As shown in Table 4.2-8, maximum daily emissions of $PM_{10}$ associated with construction of the Felton Diversion improvements would not exceed the applicable MBARD significance threshold. As such, construction emissions of this programmatic component would result in a less-than-significant impact.

Tait Diversion and Coast Pump Station Improvements

Construction emissions associated with the Tait Diversion and Coast Pump Station improvements were estimated and are depicted in Table 4.2-9. Based on the anticipated schedule for the Tait Diversion and Coast Pump Station improvements, no activities are anticipated to occur concurrently; therefore, emissions from each activity are evaluated individually per the MBARD threshold.

As shown in Table 4.2-9, maximum daily emissions of $PM_{10}$ associated with construction of the Tait Diversion and Coast Pump Station improvements would not exceed the applicable MBARD significance threshold. As such, construction emissions of this programmatic component would result in a less-than-significant impact.

### Table 4.2-9. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Tait Diversion and Coast Pump Station Improvements

| Project Component | ROG | $NO_x$ | CO | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| | *Pounds per Day* | | | | | |
| *2028* | | | | | | |
| Coast Pump Station Improvements | 1.63 | 14.34 | 22.47 | 0.04 | 0.65 | 0.57 |
| Tait Diversion Improvements | 3.05 | 25.93 | 40.33 | 0.07 | 1.26 | 1.10 |
| **Maximum daily emissions** | **3.05** | **25.93** | **40.33** | **0.07** | **1.26** | **1.10** |
| *MBARD threshold* | *N/A* | *N/A* | *N/A* | *N/A* | *82* | *N/A* |
| **Threshold exceeded?** | **N/A** | **N/A** | **N/A** | **N/A** | **No** | **N/A** |

**Notes**: CO = carbon monoxide; MBARD = Monterey Bay Air Resources District; N/A = not applicable; $NO_x$ = oxides of nitrogen; $PM_{10}$ = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases; $SO_x$ = sulfur oxides.
See Appendix E for details.

## Operational Emissions

As indicated in Section 4.2.3.2, Analytical Methods, once Proposed Project construction is complete, operations would entail a minimal increase in on-road vehicle trips associated with routine inspection and maintenance of the new facilities by City staff (i.e., up to three new staff for both Agreed Flows implementation and new ASR facilities maintenance). For long-term operations, it was conservatively estimated that an increase of up to eight daily one-way trips would be generated in support of the project and programmatic components, primarily associated with routine inspection and maintenance activities by City staff. Operational emissions associated with these on-road vehicles were estimated and are depicted in Table 4.2-10.

As depicted in Table 4.2-10, the minimal increase in on-road vehicle activity would result in a negligible increase in criteria air pollutant emissions and would not exceed the applicable MBARD significance thresholds. Therefore, this impact would be less than significant.

Table 4.2-10. Estimated Maximum Daily Operational Criteria Air Pollutant Emissions

| Project Component | ROG | $NO_x$ | CO | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| | *Pounds per Day* | | | | | |
| Mobile Sources | 0.02 | 0.04 | 0.31 | <0.01 | 0.09 | 0.02 |
| **Maximum daily emissions** | **0.02** | **0.04** | **0.31** | **<0.01** | **0.09** | **0.02** |
| *MBARD threshold* | *137* | *137* | *550* | *150* | *82* | *N/A* |
| **Threshold exceeded?** | **No** | **No** | **No** | **No** | **No** | **N/A** |

**Notes**: CO = carbon monoxide; MBARD = Monterey Bay Air Resources District; N/A = not applicable; $NO_x$ = oxides of nitrogen; $PM_{10}$ = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases; $SO_x$ = sulfur oxides.
See Appendix E for details.

### Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to criteria air pollutant emissions, and therefore, no mitigation measures are required.

**Impact AIR-3: Exposure of Sensitive Receptors (Significance Standard C).** Construction and operation of the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations. (*Less than Significant*)

### Health Effects of Criteria Air Pollutants

ROG and $NO_x$ are precursors to $O_3$, for which the Air Basin is designated as nonattainment with respect to the CAAQS. The health effects associated with $O_3$ are generally associated with reduced lung function. The contribution of ROG and $NO_x$ to regional ambient $O_3$ concentrations is the result of complex photochemistry. The increases in $O_3$ concentrations in the Air Basin due to $O_3$ precursor emissions tend to be found downwind from the source location to allow time for the photochemical reactions to occur. However, the potential for exacerbating excessive $O_3$ concentrations would also depend on the time of year that the precursor emissions would occur because exceedances of the $O_3$ AAQS tend to occur between April and October when solar radiation is highest. The holistic effect of a single project's emissions of $O_3$ precursors is speculative due to the lack of reliable and meaningful quantitative methods to assess this impact. This is particularly true of a project with less-than-significant emissions of precursors to $O_3$. However, the Proposed Project would generate ROG and $NO_x$ exhaust emissions from typical construction activities, which are already accounted for in the emissions inventories of the state- and federally required air plans, and they would not have a significant impact on the attainment and maintenance of the $O_3$ AAQS or result in potential health effects associated with $O_3$.

Construction and operation of the Proposed Project would not contribute to exceedances of the NAAQS and CAAQS for $NO_2$, which is a constituent of $NO_x$. Health effects that result from $NO_2$ and $NO_x$ include respiratory irritation, which could be experienced by nearby receptors during the periods of heaviest use of off-road construction equipment. In addition, existing $NO_2$ concentrations in the area are well below the NAAQS and CAAQS standards. Construction and operation of the Proposed Project would not create substantial, localized $NO_x$ impacts. Therefore, the Proposed Project is not anticipated to result in potential health effects associated with $NO_2$ and $NO_x$.

Mobile source impacts occur on two scales of motion. Regionally, project-related travel would add to regional trip generation and increase the VMT within the local airshed and the Air Basin. Locally, project-generated traffic would be added to the roadway system near the component sites during construction. If such traffic occurs during periods

of poor atmospheric ventilation, is composed of a large number of vehicles "cold-started" and operating at pollution-inefficient speeds, and is operating on roadways already crowded with non-project traffic, there is a potential for the formation of microscale CO hotspots in the area immediately around points of substantially elevated and localized CO emissions, such as around congested intersections. During construction, the Proposed Project would result in CO emissions from construction worker vehicles, haul trucks, and off-road equipment. Title 40, Section 93.123(c)(5) of the California Code of Regulations, Procedures for Determining Localized CO, $PM_{10}$, and $PM_{2.5}$ Concentrations (hot-spot analysis), states that "CO, $PM_{10}$, and $PM_{2.5}$ hot-spot analyses are not required to consider construction-related activities, which cause temporary increases in emissions. Each site which is affected by construction-related activities shall be considered separately, using established 'Guideline' methods. Temporary increases are defined as those which occur only during the construction phase and last five years or less at any individual site" (40 CCR Section 93.123). Since construction activities would be temporary for each project component, a construction hotspot analysis would not be required. The Proposed Project would result in minimal additional traffic trips during operation for routine inspection and maintenance and therefore would not exceed the MBARD CO screening criteria resulting in the formation of potential CO hotspots. Thus, the Proposed Project's CO emissions would not contribute to significant health effects associated with this pollutant.

As depicted in Table  through Table 4.2-9 above, construction and operation of the Proposed Project would result in minimal emissions of $PM_{10}$ and $PM_{2.5}$ and would not contribute to exceedances of the NAAQS and CAAQS for particulate matter or obstruct the Air Basin from coming into attainment for these pollutants. Since $PM_{10}$ is representative of the levels of DPM, the Proposed Project would also not result in substantial DPM emissions during construction and operation, and therefore, would not result in significant health effects related to DPM exposure. Due to the minimal contribution of $PM_{10}$ and $PM_{2.5}$ during construction and operations, it is not anticipated that the Proposed Project would result in potential health effects related to particulate matter.

The California Supreme Court's *Sierra Club v. County of Fresno* (2018) 6 Cal. 5th 502 decision (referred to herein as the Friant Ranch decision) (issued on December 24, 2018), addresses the need to "substantively connect" mass emission values for criteria air pollutants to specific health consequences, and contains the following direction from the California Supreme Court: "The Environmental Impact Report (EIR) must provide an adequate analysis to inform the public how its bare numbers translate to create potential adverse impacts or it must explain what the agency *does* know and why, given existing scientific constraints, [if] it cannot translate potential health impacts further." (Italics original.) (Sierra Club v. County of Fresno 2018.) As this statement suggests, an EIR may deal adequately with the question of attempting to connect air pollutant emissions with human health effects if the EIR "adequately explains why it is not scientifically feasible at the time of drafting to provide such an analysis." (*Id.*) Currently, the MBARD, CARB, and EPA have not approved a quantitative method to reliably, meaningfully, and consistently translate the mass emission estimates for the criteria air pollutants resulting from the Proposed Project to specific health effects. In addition, there are numerous scientific and technological complexities associated with correlating criteria air pollutant emissions from an individual project to specific health effects or potential additional nonattainment days.

In connection with the judicial proceedings culminating in issuance of the Friant Ranch decision, the South Coast Air Quality Management District (SCAQMD) and the San Joaquin Valley Air Pollution Control District (SJVAPCD) filed amicus briefs attesting to the extreme difficulty of correlating an individual project's criteria air pollutant emissions to specific health impacts. Both SJVAPCD and SCAQMD have among the most sophisticated air quality modeling and health impact evaluation capabilities of the air districts in California. The key, relevant points from SCAQMD and SJVAPCD briefs are summarized herein.

In requiring a health impact type of analysis for criteria air pollutants, it is important to understand how $O_3$ and particulate matter are formed, dispersed, and regulated. The formation of $O_3$ and particulate matter in the atmosphere, as secondary pollutants,[5] involves complex chemical and physical interactions of multiple pollutants from natural and anthropogenic sources. The $O_3$ reaction is self-perpetuating (or catalytic) in the presence of sunlight because $NO_2$ is photochemically reformed from nitric oxide. In this way, $O_3$ is controlled by both $NO_x$ and ROG emissions (NRC 2005). The complexity of these interacting cycles of pollutants means that incremental decreases in one emission may not result in proportional decreases in $O_3$ (NRC 2005). Although these reactions and interactions are well understood, variability in emission source operations and meteorology creates uncertainty in the modeled $O_3$ concentrations to which downwind populations may be exposed (NRC 2005). Once formed, $O_3$ can be transported long distances by wind, and due to atmospheric transport, contributions of precursors from the surrounding region can also be important (EPA 2008). Because of the complexity of $O_3$ formation, a specific tonnage amount of ROG or $NO_X$ emitted in a particular area does not equate to a particular concentration of $O_3$ in that area (SJVAPCD 2015). Particulate matter can be divided into two categories: directly emitted particulate matter and secondary particulate matter. Secondary particulate matter, like $O_3$, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as $SO_x$ and $NO_x$ (SJVAPCD 2015). Because of the complexity of secondary particulate matter formation, including the potential to be transported long distances by wind, the tonnage of particulate matter-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary particulate matter in that area (SJVAPCD 2015). This is especially true for individual projects, like the Proposed Project, where project-generated criteria air pollutant emissions are not derived from a single "point source," but from construction equipment and mobile sources (passenger cars and trucks) driving to, from and around the infrastructure component sites.

Another important technical nuance is that health effects from air pollutants are related to the concentration of the air pollutant that an individual is exposed to, not necessarily the individual mass quantity of emissions associated with an individual project. For example, health effects from $O_3$ are correlated with increases in the ambient level of $O_3$ in the air a person breathes (SCAQMD 2015). However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient $O_3$ levels over an entire region (SCAQMD 2015). The lack of link between the tonnage of precursor pollutants and the concentration of $O_3$ and $PM_{2.5}$ formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects; rather, it is the concentration of resulting $O_3$ that causes these effects (SJVAPCD 2015). Indeed, the AAQS, which are statutorily required to be set by EPA at levels that are requisite to protect the public health, are established as concentrations of $O_3$ and $PM_{2.5}$ and not as tonnages of their precursor pollutants (EPA 2018b). Because the ambient air quality standards are focused on achieving a particular concentration region-wide, the tools and plans for attaining the ambient air quality standards are regional in nature. For CEQA analyses, project-generated emissions are typically estimated in pounds per day or tons per year and compared to mass daily or annual emission thresholds. While CEQA thresholds are established at levels that the air basin can accommodate without affecting the attainment date for the AAQS, even if a project exceeds established CEQA significance thresholds, this does not mean that one can easily determine the concentration of $O_3$ or particulate matter that will be created at or near the project site on a particular day or month of the year, or what specific health impacts will occur (SJVAPCD 2015).

In regard to regional concentrations and air basin attainment, the SJVAPCD emphasized that attempting to identify a change in background pollutant concentrations that can be attributed to a single project, even one as large as the entire Friant Ranch Specific Plan, is a theoretical exercise. The SJVAPCD brief noted that it “would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have” (SJVAPCD 2015). The situation is further complicated by the fact that background concentrations of regional pollutants are not

[5] Air pollutants formed through chemical reactions in the atmosphere are referred to as secondary pollutants.

uniform either temporally or geographically throughout an air basin, but are constantly fluctuating based upon meteorology and other environmental factors. SJVAPCD noted that the currently available modeling tools are equipped to model the impact of all emission sources in the San Joaquin Valley Air Basin on attainment (SJVAPCD 2015). The SJVAPCD brief then indicated that, "Running the photochemical grid model used for predicting $O_3$ attainment with the emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total $NO_x$ and VOC in the Valley) is not likely to yield valid information given the relative scale involved" (SJVAPCD 2015).

SCAQMD and SJVAPCD have indicated that it is not feasible to quantify project-level health impacts based on existing modeling (SCAQMD 2015; SJVAPCD 2015). Even if a metric could be calculated, it would not be reliable because the models are equipped to model the impact of all emission sources in an air basin on attainment and would likely not yield valid information or a measurable increase in $O_3$ concentrations sufficient to accurately quantify $O_3$-related health impacts for an individual project.

Nonetheless, following the Supreme Court's Friant Ranch decision, some EIRs where estimated criteria air pollutant emissions exceeded applicable air district thresholds have included a quantitative analysis of potential project-generated health effects using a combination of a regional photochemical grid model (PGM)[6] and the EPA Benefits Mapping and Analysis Program (BenMAP or BenMAP–Community Edition [CE])[7]. The publicly available health impact assessments (HIAs) typically present results in terms of an increase in health incidences and/or the increase in background health incidence for various health outcomes resulting from the project's estimated increase in concentrations of $O_3$ and $PM_{2.5}$.[8] To date, the five publicly available HIAs have concluded that the evaluated project's health effects associated with the estimated project-generated increase in concentrations of $O_3$ and $PM_{2.5}$ represent a small increase in incidences and a very small percent of the number of background incidences, indicating that these health impacts are negligible and potentially within the models' margin of error. It is also important to note that while the results of the five available HIAs conclude that the project emissions do not result in a substantial increase in health incidences, the estimated emissions and assumed toxicity is also conservatively inputted into the HIA and thus, overestimate health incidences, particularly for $PM_{2.5}$.

As explained in the SJVAPCD brief and noted previously, running the PGM used for predicting $O_3$ attainment with the emissions solely from an individual project like the Friant Ranch project or the Proposed Project is not likely to yield valid information given the relative scale involved. The five available HIAs support the SJVAPCD's brief contention that consistent, reliable, and meaningful results may not be provided by methods applied at this time. Accordingly, additional work in the industry and more importantly, air district participation, is needed to develop a more meaningful analysis to correlate project-level mass criteria air pollutant emissions and health effects for decision makers and the

6 The first step in the publicly available HIAs includes running a regional PGM, such as the Community Multiscale Air Quality (CMAQ) model or the Comprehensive Air Quality Model with extensions (CAMx) to estimate the increase in concentrations of $O_3$ and $PM_{2.5}$ as a result of project-generated emissions of criteria and precursor pollutants. Air districts, such as the SCAQMD, use photochemical air quality models for regional air quality planning. These photochemical models are large-scale air quality models that simulate the changes of pollutant concentrations in the atmosphere using a set of mathematical equations characterizing the chemical and physical processes in the atmosphere (EPA 2017).

7 After estimating the increase in concentrations of $O_3$ and $PM_{2.5}$, the second step in the five examples includes use of BenMAP or BenMAP-CE to estimate the resulting associated health effects. BenMAP estimates the number of health incidences resulting from changes in air pollution concentrations (EPA 2018c). The health impact function in BenMAP-CE incorporates four key sources of data: (i) modeled or monitored air quality changes, (ii) population, (iii) baseline incidence rates, and (iv) an effect estimate. All of the five example HIAs focused on $O_3$ and $PM_{2.5}$.

8 The following CEQA documents included a quantitative HIA to address the requirements of the Friant Ranch decision: (1) California State University Dominguez Hills 2018 Campus Master Plan EIR (CSU Dominguez Hills 2019), (2) March Joint Powers Association K4 Warehouse and Cactus Channel Improvements EIR (March JPA 2019), (3) Mineta San Jose Airport Amendment to the Airport Master Plan EIR (City of San Jose 2019), (4) City of Inglewood Basketball and Entertainment Center Project EIR (City of Inglewood 2019), and (5) San Diego State University Mission Valley Campus Master Plan EIR (SDSU 2019).

public. Furthermore, at the time of writing, every HIA has concluded that health effects estimated using the PGM and BenMAP approach are not substantial and are even potentially within the models' margin of error.

In summary, because construction and/or operation of the Proposed Project would not result in the emissions of criteria air pollutants that would exceed the applicable MBARD significance thresholds, and because the MBARD thresholds are based on levels that the Air Basin can accommodate without affecting the attainment date for the AAQS and the AAQS are established to protect public health and welfare, it is anticipated that the Proposed Project would not result in health effects associated with criteria air pollutants and the impact would be less than significant.

### Toxic Air Contaminants

TACs are defined as substances that may cause or contribute to an increase in deaths or in serious illness, or that may pose a present or potential hazard to human health. State law has established the framework for California's TAC identification and control program, which is generally more stringent than the federal program and aimed at TACs that are a problem in California. The state has formally identified more than 200 substances as TACs, including the federal HAPs, and is adopting appropriate control measures for sources of these TACs. During Proposed Project construction, DPM would be the primary TAC emitted from diesel-fueled equipment and trucks. The following measures are required by state law to reduce DPM emissions:

- Fleet owners of mobile construction equipment are subject to the CARB Regulation for In-Use Off-Road Diesel Vehicles (13 CCR Chapter 9, Section 2449), the purpose of which is to reduce DPM and criteria pollutant emissions from in-use (existing) off-road diesel-fueled vehicles.
- All commercial diesel vehicles are subject to Title 13, Section 2485 of the California Code of Regulations, limiting engine idling time. Idling of heavy-duty diesel construction equipment and trucks during loading and unloading shall be limited to 5 minutes; electric auxiliary power units should be used whenever possible.

Sensitive receptors are located immediately adjacent to or within close proximity to the project and programmatic infrastructure component sites. Health effects from carcinogenic air toxics are usually described in terms of cancer risk. The MBARD recommends an incremental cancer risk threshold of 10 in 1 million. "Incremental cancer risk" is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period will contract cancer based on the use of standard Office of Environmental Health Hazard Assessment risk-assessment methodology (OEHHA 2015). In addition, some TACs have noncarcinogenic effects. The MBARD recommends a Hazard Index of 1 or more for acute (short-term) and chronic (long-term) effects.[9]

DPM emissions would be emitted from heavy equipment operations and diesel-fueled trucks. Heavy-duty construction equipment and commercial trucks are subject to CARB Air Toxic Control Measures to reduce diesel particulate emissions. As described in Table 4.2-5 through Table 4.2-9 above, maximum daily total $PM_{10}$ emissions generated by construction equipment operation and trucks (exhaust particulate matter, or DPM, combined with fugitive dust generated by equipment operation and vehicle travel), would be well below the MBARD significance threshold. Moreover, construction of each of the infrastructure components would be short term, after which project-related TAC emissions (e.g., diesel emissions) would cease. For the linear construction components, such as the intertie pipelines, construction would proceed along the alignments and would not require the extensive use of heavy-duty construction equipment or diesel trucks in any one location over the duration of development, which would limit the exposure of

[9] Non-cancer adverse health risks are measured against a hazard index, which is defined as the ratio of the predicted incremental exposure concentrations of the various noncarcinogens from the Proposed Project to published reference exposure levels that can cause adverse health effects.

any proximate individual sensitive receptor to TACs. No long-term sources of TAC emissions are anticipated during operation of the Proposed Project. Due to the relatively short period of exposure at any individual sensitive receptor and minimal particulate emissions generated, TACs emitted during construction would not be expected to result in concentrations causing significant health risks, which would be a less-than-significant impact.

#### Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to exposure of sensitive receptors to substantial pollutant concentrations, and therefore, no mitigation measures are required.

**Impact AIR-4: Result in Other Emissions Adversely Affecting a Substantial Number of People (Significance Standard D).** Construction and operation of the Proposed Project would not result in other emissions that would adversely affect a substantial number of people. ***(Less than Significant)***

The occurrence and severity of potential odor impacts depends on numerous factors, including the nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of receiving location. Although offensive odors seldom cause physical harm, they can be annoying and cause distress among the public and generate citizen complaints.

Odors would be potentially generated from vehicles and equipment exhaust emissions during Proposed Project construction. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment, architectural coatings, and asphalt pavement application. Such odors would disperse rapidly from the infrastructure component sites and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be less than significant.

Typical sources of odors include landfills, rendering plants, chemical plants, agricultural uses, wastewater treatment plants, and refineries. Regarding operations, the Proposed Project involves improvements to water infrastructure and any odors produced would be minimal and would be similar to existing conditions. Overall, the Proposed Project would not result in odors that would affect a substantial number of people. Therefore, impacts associated with odors during operation would be less than significant.

#### Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to other emissions such as odors, and therefore, no mitigation measures are required.

### 4.2.3.4 Cumulative Impacts Analysis

This section provides an evaluation of cumulative air quality 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 area considered in the cumulative analysis for this topic is described below.

**Impact AIR-5: Cumulative Air Quality Impacts (Significance Standards A, B, C, and D).** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to air quality, with the exception of substantial pollutant concentrations (Significance Standard C), but the Proposed Project's contribution to this impact would not cumulatively considerable. ***(Less than Significant)***

### Air Quality Management Plan

As described under Impact AIR-1, project emissions that are not accounted for in the AQMP's emission inventory are considered to have a significant cumulative impact to regional air quality (MBARD 2008). Notably, construction exhaust emissions are accounted for in the AQMP emissions inventory (MBARD 2018). Since the Proposed Project would result in typical construction activities that would generate exhaust emissions that are accounted for in the AQMP, and since long-term operational emissions would be negligible, the Proposed Project would be consistent with the AQMP, as discussed in Impact AIR-1. Therefore, the Proposed Project would result in a less-than-significant cumulative impact as it would not conflict with MBARD's AQMP.

### Criteria Air Pollutants

By its nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants (i.e., CAAQS for both $O_3$ and $PM_{10}$) is a result of past and present development, and the MBARD develops and implements plans for future attainment of these ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are relevant in the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality. Specifically, MBARD considers emissions of ROG, $NO_X$, and $PM_{10}$ from an individual project that exceed the applicable emissions thresholds to be a substantial contribution to a cumulative impact on regional air quality, and projects that do not exceed the project-level thresholds may conclude that they are not cumulatively considerable. The potential for the Proposed Project to result in a cumulatively considerable impact, specifically a cumulatively considerable new increase of any criteria air pollutant for which the project region is nonattainment under an applicable NAAQS and/or CAAQS, is addressed in Impact AIR-2. As previously discussed, the Proposed Project would not exceed the MBARD significance thresholds for any criteria air pollutant. Therefore, the Proposed Project's construction and operational air quality impacts would result in a less-than-significant cumulative impact on regional air quality.

### Substantial Pollutant Concentrations

As indicated above, the entire Air Basin is the geographic context for the evaluation of cumulative air quality impacts related to substantial pollutant concentrations and related health effects. There are numerous scientific and technological complexities associated with correlating criteria air pollutant emissions from an individual project to specific health effects or potential additional nonattainment days, and there are currently no modeling tools that could provide reliable and meaningful additional information regarding health effects from criteria air pollutants generated by individual projects. As addressed in Impact AIR-3, construction and operation of the Proposed Project would not result in the exceedances of the MBARD significance thresholds, and the MBARD thresholds are based on levels that the Air Basin can accommodate without affecting the attainment date for the AAQS, which are established to protect public health and welfare.

TACs have a localized impact, with the geographic context consisting of sensitive receptors proximate[10] to project and programmatic infrastructure components. The emissions of multiple TACs, including DPM emissions, from cumulative projects could result in a significant cumulative impact to air quality in locations where receptors are exposed to high concentrations of TACs over the long term. However, as described under Impact AIR-3, construction of each of the project and programmatic infrastructure components would be short term, after which project-related TAC emissions would cease. Furthermore, no long-term sources of TAC emissions are anticipated during operation of the Proposed Project. Therefore, due to the relatively short period of exposure at any individual sensitive receptor and minimal DPM emissions generated by the Proposed Project, TACs emitted during Proposed Project construction and operations would not be cumulatively considerable. Therefore, the Proposed Project would result in a less-than-significant cumulative impact related to substantial pollutant concentrations.

#### Odors

Odors are a localized impact. As indicated in Impact AIR-4, the Proposed Project's impact related to odor would be less than significant. Since the MBARD does not have a specific regulation or rule that addresses objectionable odors, any actions related to odors would be based on public complaints made to the MBARD. Additionally, all future projects, including those listed Table 4.0-2 in Section 4.0, Introduction to Analyses, would be subject to MBARD Rule 402 (Nuisances), which prohibits the discharge of air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or which endanger the comfort, repose, health, or safety of any such persons or the public; or which cause, or have a natural tendency to cause, injury or damage to business or property. Therefore, cumulative impacts related to odor would be less than significant.

## 4.2.4 References

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[10] The Bay Area Air Quality Management District identifies a 1,000-foot radius as the geographic context to evaluate health risk impacts, including on a cumulative basis (BAAQMD 2017). MBARD does not have a similar defined radial zone of impact.

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# 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

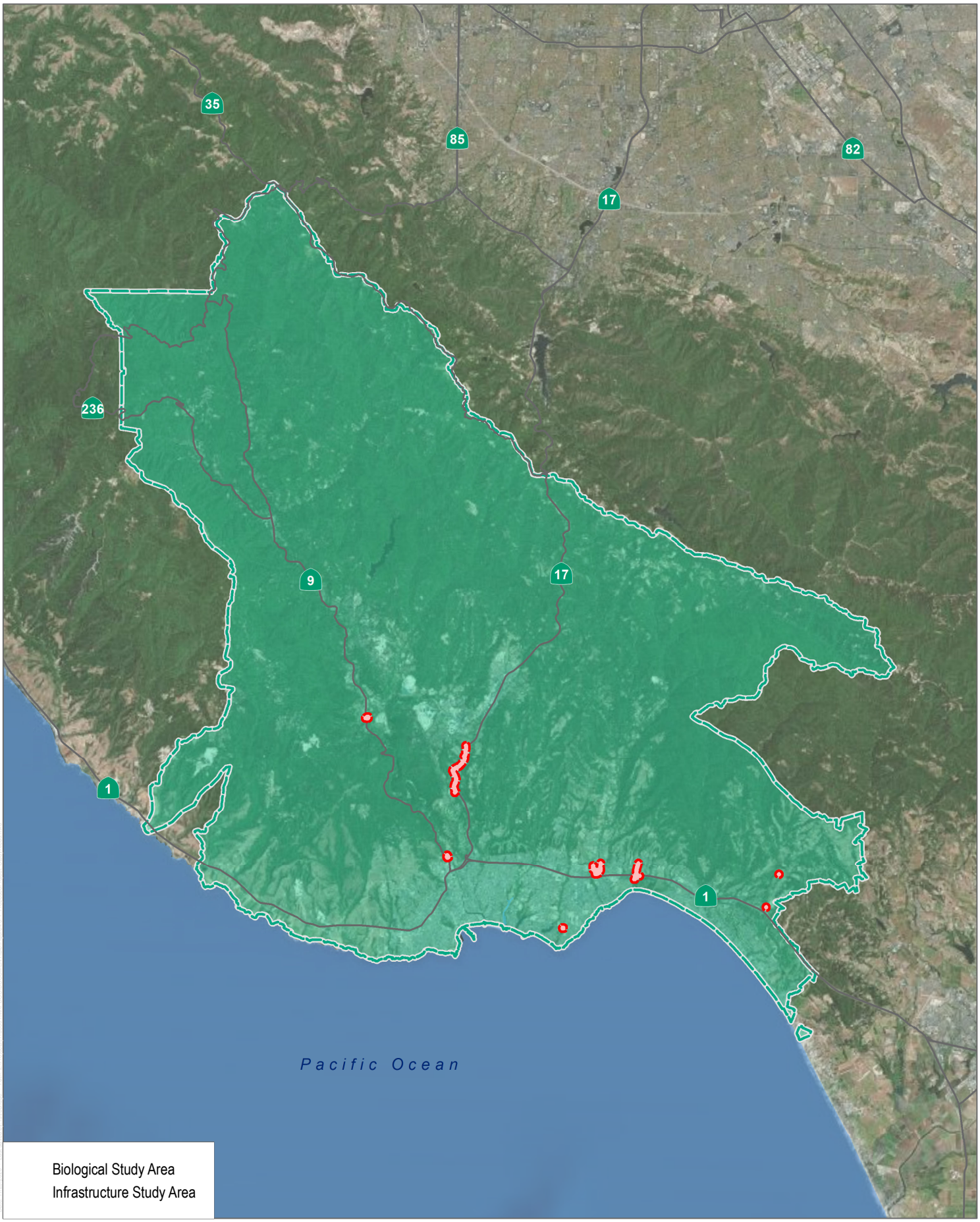
### 4.3.1.1 Biological Study Area

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.

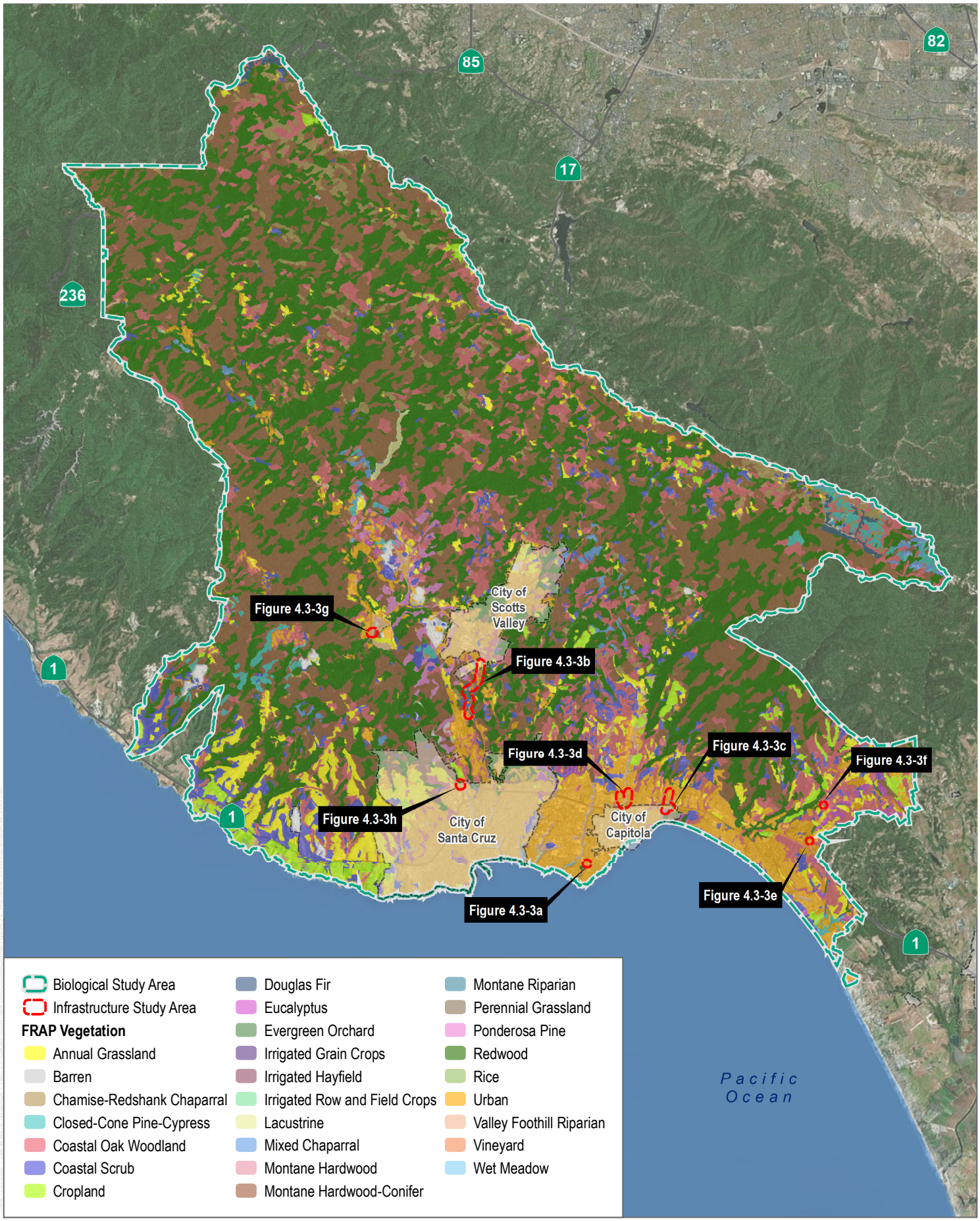
#### Other Streams

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

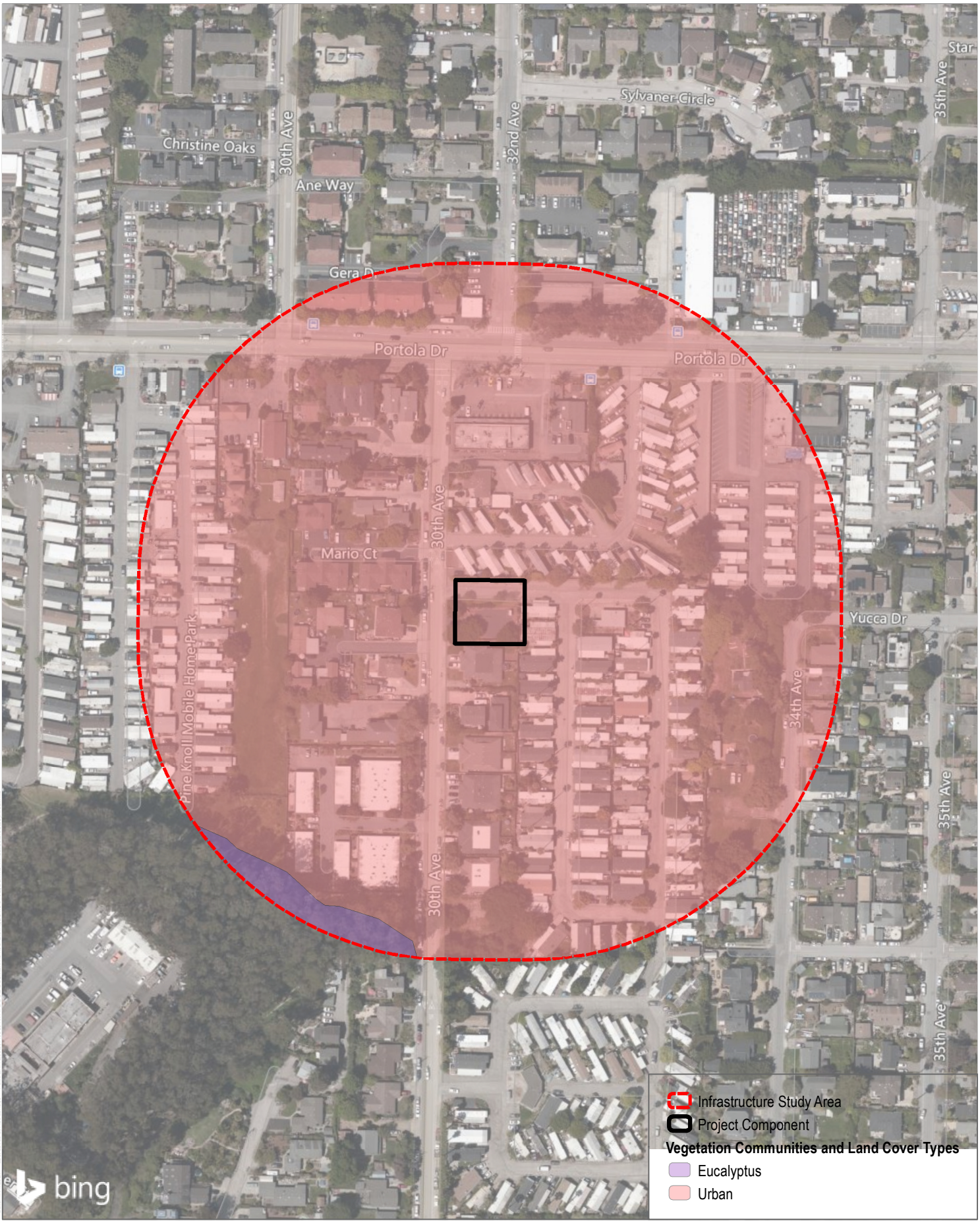
DUDEK

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

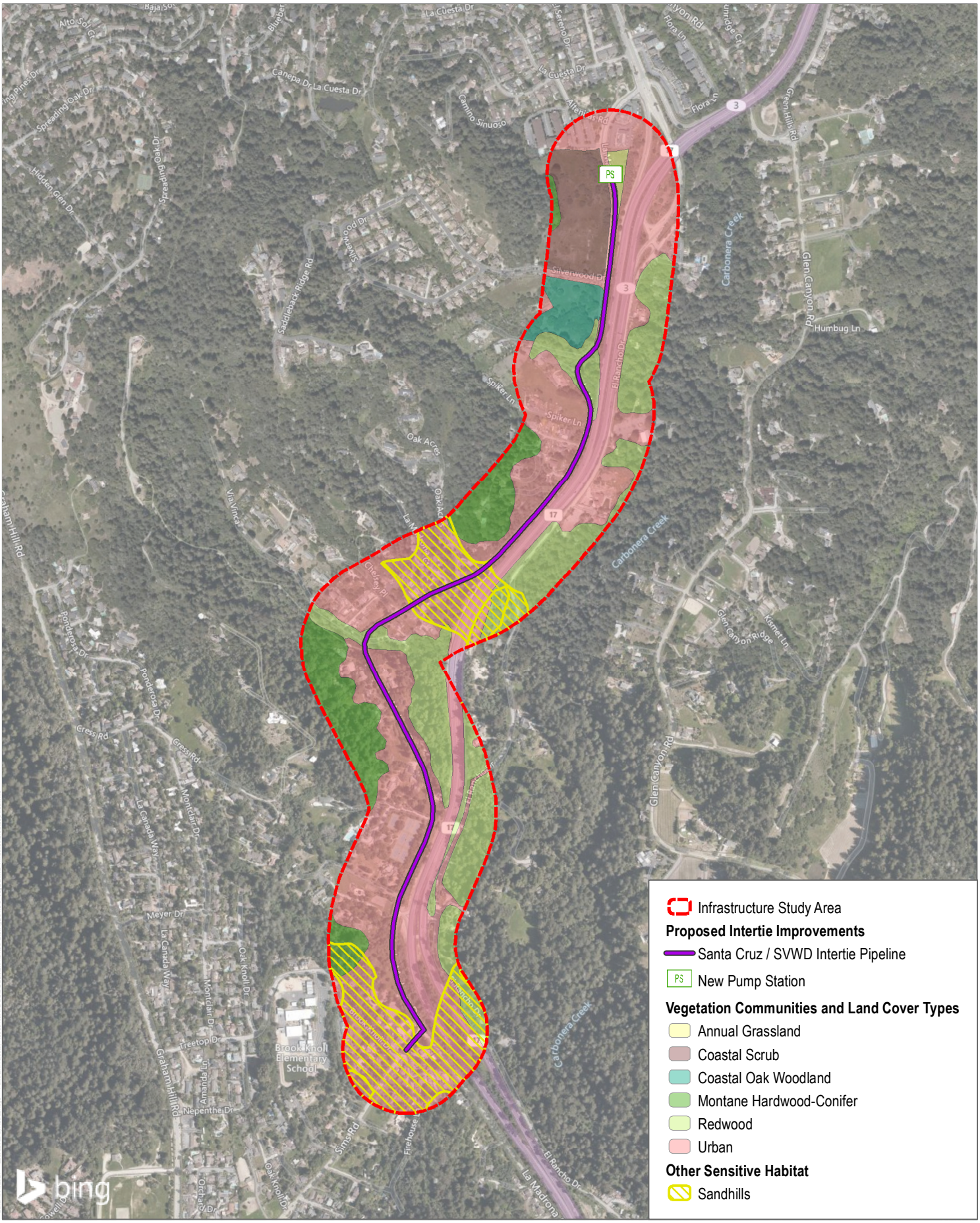
DUDEK

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

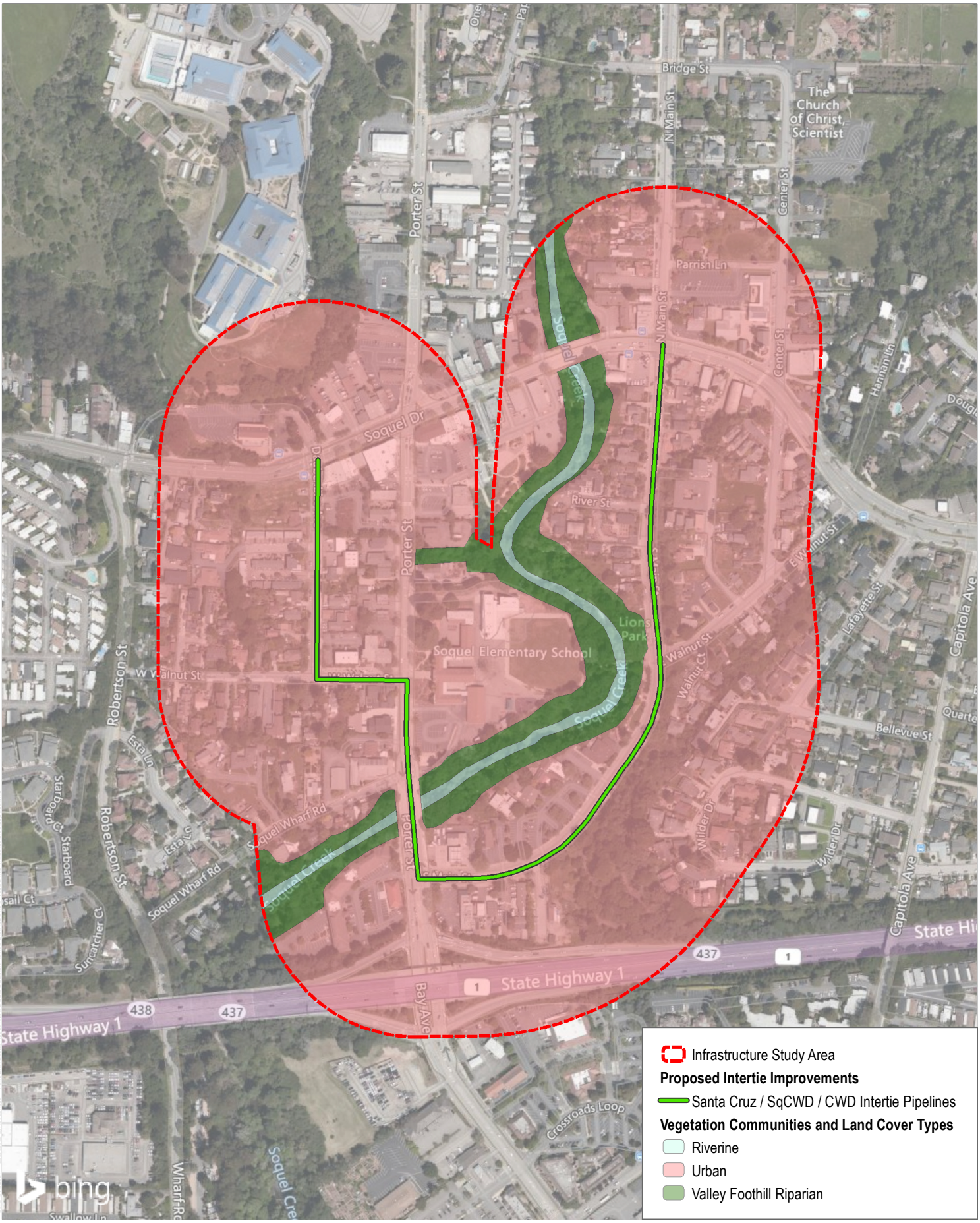
DUDEK

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

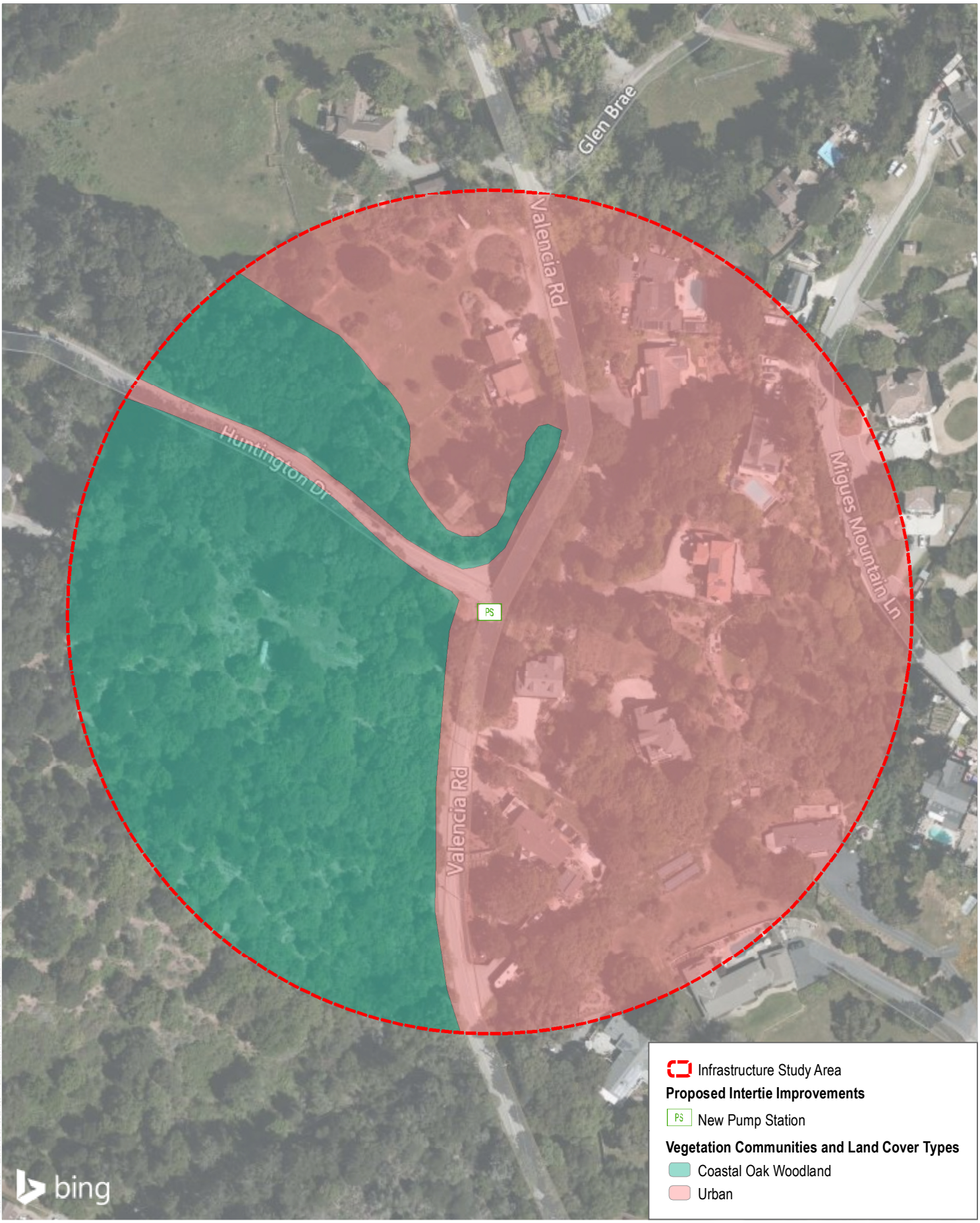
**FIGURE 4.3-3E**

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

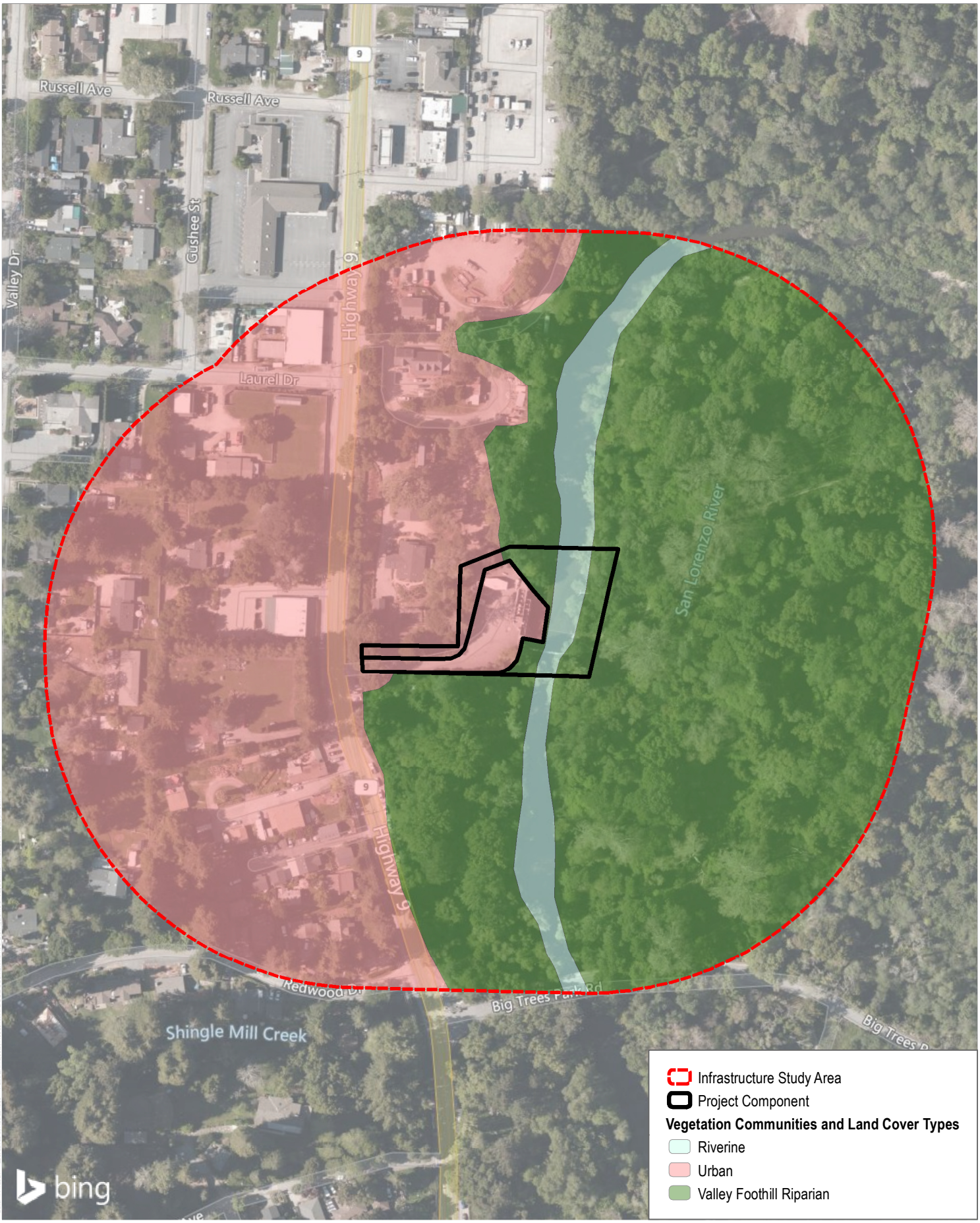
**FIGURE 4.3-3F**

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

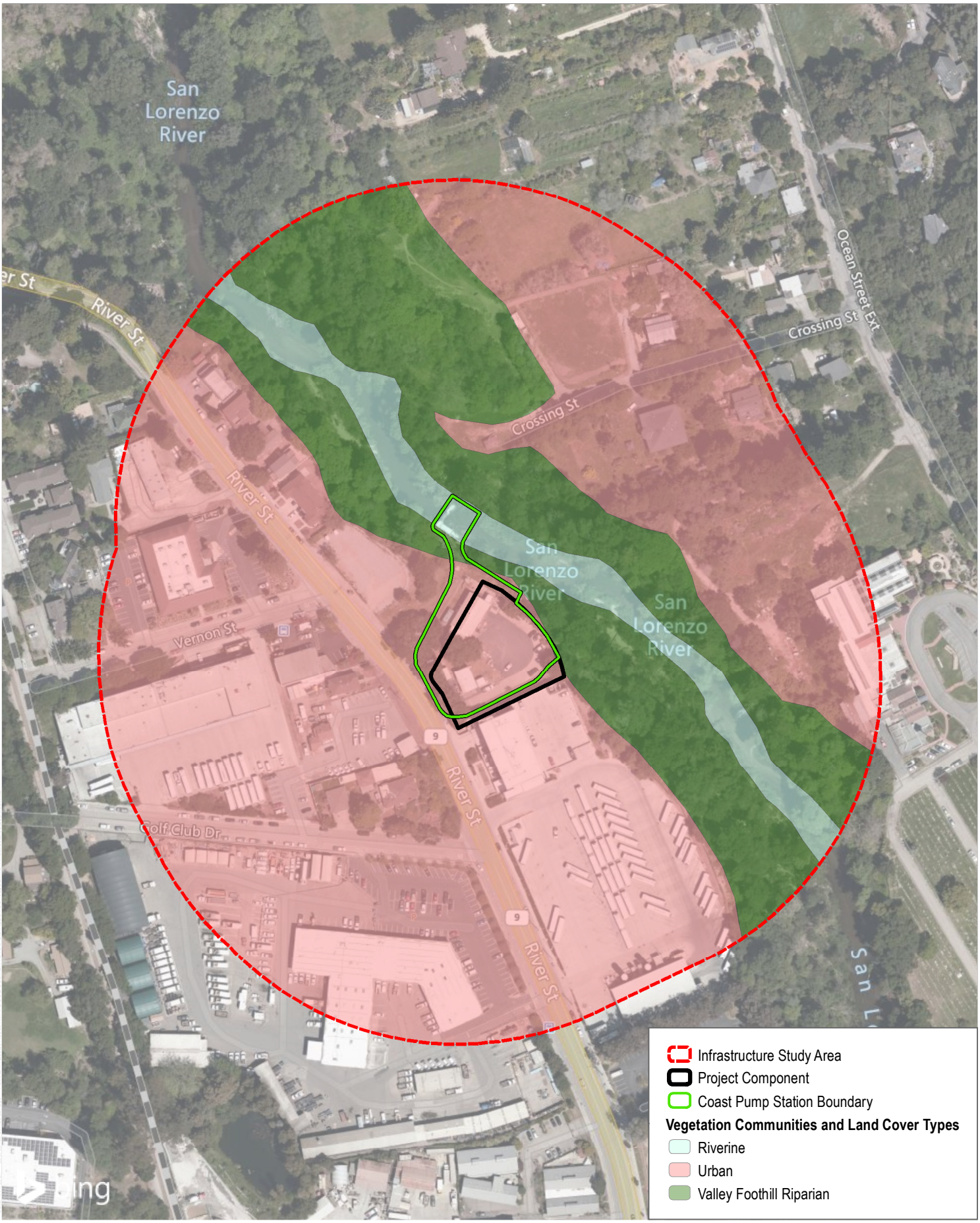
DUDEK

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

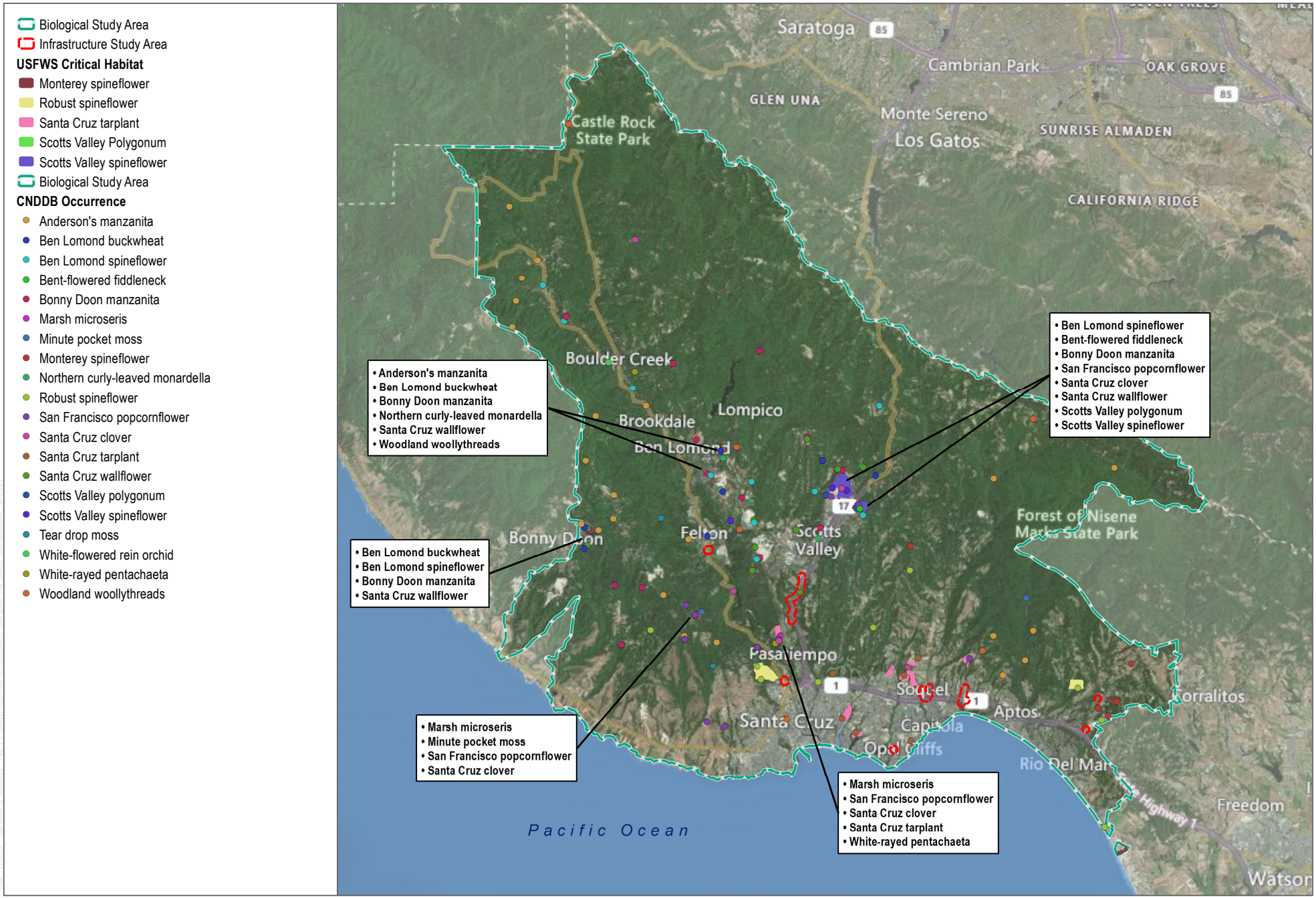
Special-status plant and wildlife species determined to potentially occur in or near the biological study area and/or the infrastructure study area, based on the preliminary review discussed above, on the suitability of habitat to support the species, and on the results of the field assessment, are discussed 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

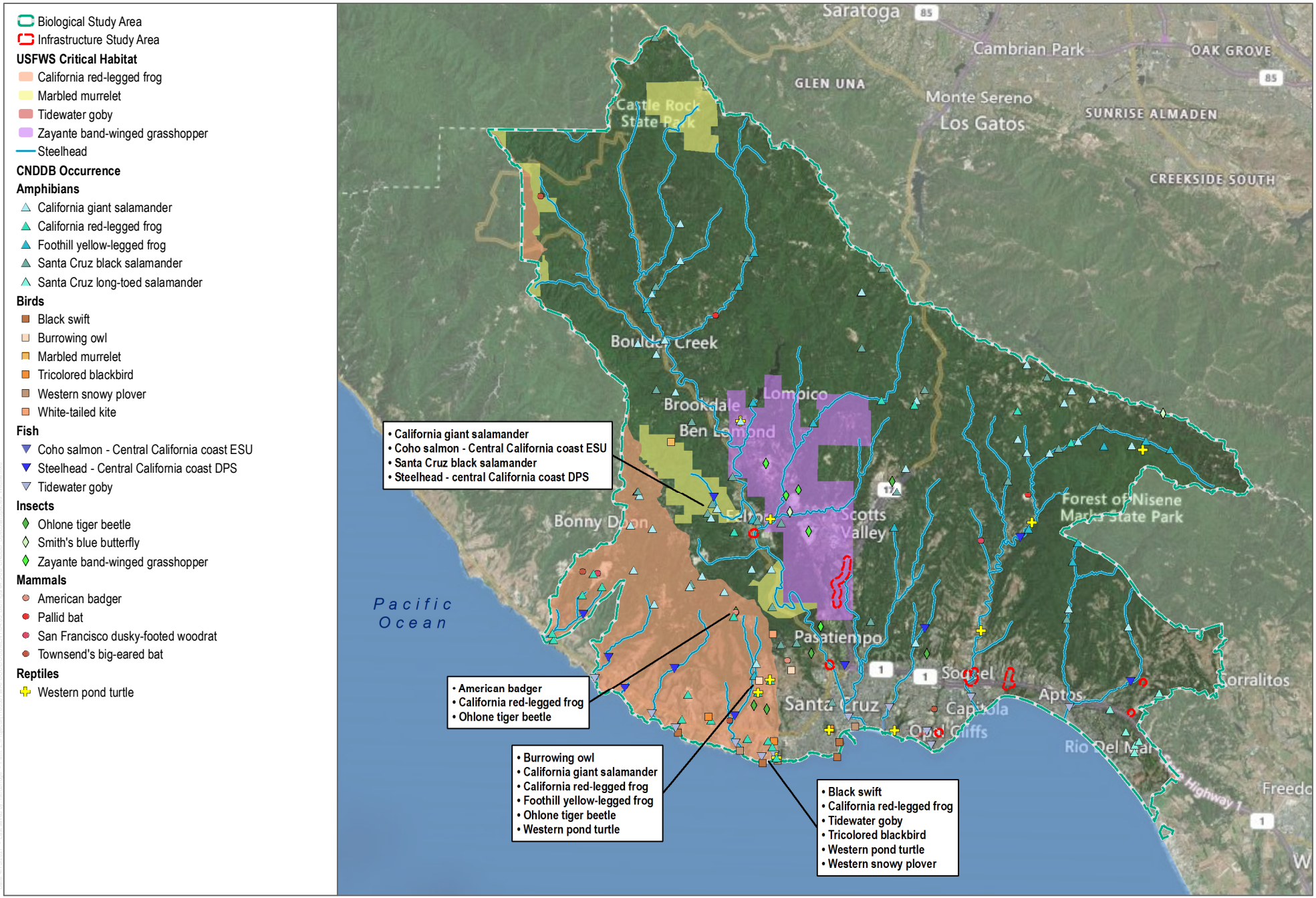
DUDEK

0 10,000 20,000 Feet

**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.

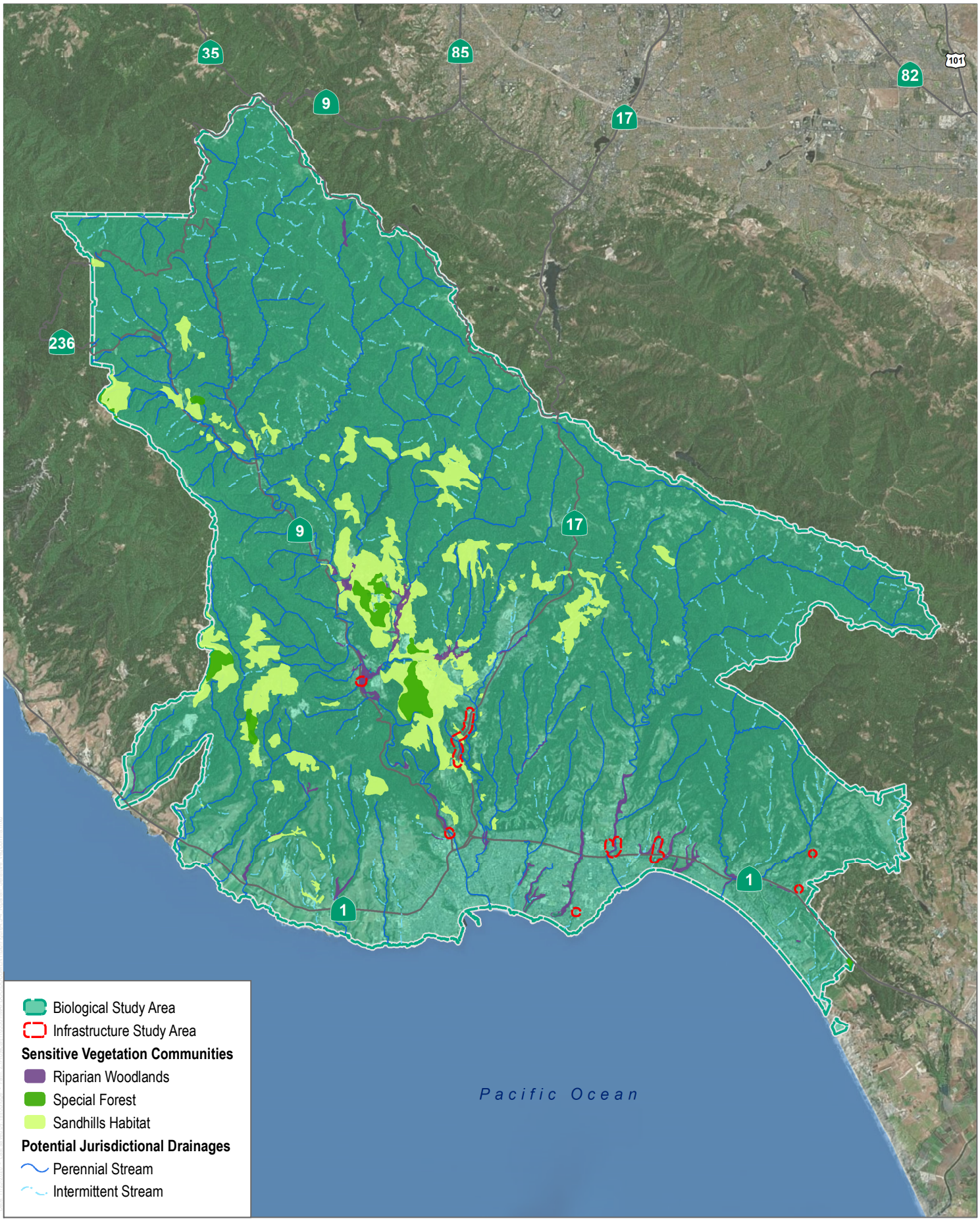
### Aquifer Storage and Recovery Sites

#### 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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# 4.4 Cultural Resources and Tribal Cultural Resources

This section describes the existing conditions related to cultural and tribal cultural 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 a Cultural Resources Inventory, Evaluation, and Finding of Effect Report prepared for the Proposed Project, which is included in Appendix G.

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 cultural resources and tribal cultural resources were received from the Native American Heritage Commission (NAHC). 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.

## 4.4.1 Definitions

Under the sample Initial Study Checklist found in Appendix G of the CEQA Guidelines, the term "cultural resources" encompasses both unique archaeological resources and historical architectural resources. More particularly, the category "cultural resources" focuses on two statutorily defined categories of resources: unique archaeological resources (see Public Resources Code Section 21083.2 and CEQA Guidelines Section 15064.5[c][3]) and "historical resources," which includes both structures and subsurface resources (see Public Resources Code Section 21084.1 and CEQA Guidelines Section 15064.5[a], [c][1]). Pursuant to Assembly Bill (AB) 52, enacted in 2014, CEQA also considers a project's potential impacts on tribal cultural resources. Cultural and tribal cultural resources are further defined as follows:

- Archaeological resources are objects or structures, often below ground, that relate to previous human use of an area. Archaeological resources are often distinguished by whether they are "prehistoric" or "historic." Prehistoric archaeological resources are connected to people who occupied the land prior to European settlement; historic archaeological resources are connected to the period of continuous European settlement forward. In much of California, this generally starts from the date of the Portolá expedition in the year 1769.
- Historic architectural resources are structures and buildings that may have historical associations with people or events of regional significance. Sometimes, historic architecture is also referred to as the "historic built environment." In Santa Cruz County, historic architectural resources are typically associated with the Spanish, Mexican, and American periods in California's history.
- Tribal cultural resources, defined in Section 21074(a) of the Public Resources Code, are sites, features, places, cultural landscapes, sacred places, or objects which are of cultural value to a California Native American tribe. Tribal cultural resources can sometimes also qualify as "unique archaeological resources" or "historical resources" (Public Resources Code Section 21074[c]).

These cultural resource definitions are further described in Section 4.4.3, Regulatory Framework.

## 4.4.2 Existing Conditions

Information in this section was obtained through cultural resource records searches, archival research, pedestrian surveys of the project site, historical significance evaluations, and correspondence with Native American tribes and other interested parties. The information is summarized below and described in detail in Appendix G.

### 4.4.2.1 Study Area

The Proposed Project involves the water system and the areas served of the City of Santa Cruz (City) and 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). The Proposed Project is located within Santa Cruz County and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Figure 3-1 in Chapter 3, Project Description). While the project area is much broader, the study area for cultural resources is focused on the proposed infrastructure component sites where construction and ground disturbance could occur and where new or upgraded facilities would be located (see Figure 3-4 in Chapter 3, Project Description). According to Appendix G, there are 11 discontiguous infrastructure components in the study area. These sites relate to the following: aquifer storage and recovery (ASR) sites where known, intertie improvement sites, the Felton Diversion fish passage improvement site, and the Tait Diversion and Coast Pump Station improvement 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.

### 4.4.2.2 Cultural Context

The following overview is summarized from the Cultural Resources Inventory, Evaluation, and Finding of Effect Report prepared for the Proposed Project (see Appendix G) unless otherwise cited.

#### Prehistoric Context

Prior to European contact, the Project site was within the territory that was occupied by the Costanoan or Ohlone people. The term Costanoan refers to people who spoke eight separate Penutian-stock language groups and lived in autonomous tribelet communities between the vicinities of the City of Richmond in the north to Big Sur in the south. The prehistoric era of the greater Central California coast spans a period of approximately 10,000–12,000 years, and divides into six different periods. Researchers distinguish these periods based on perceived changes in prehistoric settlement patterns, subsistence practices, and technological advances. The Awaswas tribelet occupied the Santa Cruz area at the time of European contact.

**Paleo-Indian Period (Pre-8000 BC)**

The Paleo-Indian Period represents people's initial occupation of the Monterey Bay region, which was quite sparse across the region. The traditional interpretation of Paleo-Indian lifeways is that people were highly mobile hunters who focused subsistence efforts on large mammals. In contrast, the earliest inhabitants of the region focused their economic pursuits on coastal resources. Archaeological sites that support this hypothesis are mainly from the Santa Barbara Channel Islands. Some scholars hypothesize that Paleo-Indian sites in the Bay Area/northern Central Coast region may exist but have been inundated as a result of rising ocean levels throughout the Holocene.

### Millingstone Period (8000 to 3500 BC)

Settlement in the Central Coast appeared with more frequency in the Millingstone Period. Sites are often associated with shellfish remains and small mammal bone, which suggest a collecting-focused economy and a diet composed of 70% to 84% marine resources. Contrary to these findings, deer remains are abundant at some Millingstone sites, which suggests a flexible subsistence focus. Similar to the Paleo-Indian Period, archaeologists generally view people living during the Millingstone Period as highly mobile.

### Early Period (3500 to 600 BC)

The Early Period corresponds with the earliest era of the "Hunting Culture." Early Period sites are located in more varied environmental contexts than Millingstone sites, suggesting more intensive use of the landscape than practiced previously. Early Period sites are common and often found in estuary settings along the coast or along river terraces inland and are present in both Monterey and Santa Cruz counties. Archaeologists have long debated whether the shift in site locations and artifact assemblages during this time represent either population intrusion as a result of mid-Holocene warming trends, or an in-situ adaptive shift. The initial use of mortars and pestles during this time appears to reflect a more labor- intensive economy associated with the adoption of acorn processing.

### Middle Period (600 BC to AD 1000)

The trend toward greater labor investment is apparent in the Middle Period. During this time, there is increased use of plant resources, more long-term occupation at habitation sites, and a greater variety of smaller "use-specific" localities. The pattern reflects a greater emphasis on labor-intensive technologies that include projectile and plant processing. Additionally, faunal evidence highlights a shift toward prey species that are more labor intensive to capture, either by search and processing time or technological needs. These labor-intensive species include small schooling fishes, sea otters, rabbits, and plants such as acorn.

### Middle-Late Transition (AD 1000 to 1250)

The Middle-Late Transition is a time that appears to correspond with social reorganization across the region. This era is also a period of rapid climatic change known as the Medieval Climatic Anomaly. The Medieval Climatic Anomaly is proposed as an impetus for the cultural change that was a response to fluctuations between cool-wet and warm-dry conditions that characterize the event. Archaeological sites are rarer during this period, which may reflect a decline in regional population.

### Late Period (AD 1250-1769)

Late Period sites are found in a variety of environmental conditions and include newly occupied task sites and encampments, as well as previously occupied localities. Coastal sites dating to the Late Period tend to be resource acquisition or processing sites, while evidence for residential occupation is more common inland.

## Historic Context

### Spanish Period (1769 to 1822)

The first European to explore the Central Coast was Sebastián Vizcaíno, who, in 1602, was sent by the Spanish government to map the Californian coastline. It was Vizcaíno who named the area "Puerto de Monterey" after the viceroy of New Spain. The Gaspar de Portolá expedition traveled through the region in 1769 and returned again in

1770 to establish the Monterey Presidio, Spain's first military base in Alta California. Mission Santa Cruz was established in 1791 as the twelfth mission in California. The Spanish missions drastically altered the lifeways of the Native Americans. Spanish missionaries conscripted members of local Native American communities to move to the Mission, where they were indoctrinated as Catholic neophytes. Villa de Branciforte, one of three Spanish civil settlements in California, was established in 1797 on the eastern part of Santa Cruz; the population dwindled by 1817 as people followed new opportunities.

### Mexican Period (1822 to 1848)

Mexico gained independence from Spain in 1821 and, in 1834, the Mexican government secularized the mission lands, releasing the Native Americans from control of the mission system. The City of Monterey continued as the capital of Alta California and the Californios, the Mexicans who settled in the region, were given land grants. These land grants covered over 150,000 acres of present-day Santa Cruz County.

### American Period (1848 to Present)

The United States of America acquired Alta California in 1848 with the signing of the Treaty of Guadalupe Hidalgo, which ended the Mexican-American War. The California Gold Rush of 1848 led to an influx of people seeking gold in the rural counties of California. These included Addison Newell, an early settler of the San Lorenzo Valley who established his ranch along Newell Creek, after whom Newell Creek was named. California became a state in 1850 and Santa Cruz County was designated as one of the original 27 counties in California. Santa Cruz incorporated as a city in 1866 and quickly prospered through logging, lime processing, commercial fishing, and agriculture.

### The Role of Water in the Early Development of Santa Cruz County

The Gold Rush accelerated the desirability of land across the state, and before long, access to water in the drought-prone region took on the highest level of importance. Instead of adopting an equal water access structure in the fashion of the eastern United States, the wealth potential of waterways during the Gold Rush shaped California water law into a "first in time, first in right" system known as Prior Appropriation. Under this system, riparian rights were granted to the first person to use a river or tributary for beneficial consumption like mining, farming, milling, or as-needed domestic use. When land in the Santa Cruz Mountains was subdivided and sold, access to the rivers and streams was enormously important. Not only did it mean that the initial use set out for a waterway was the primary use, it also meant that any subsequent uses could not supersede or negatively affect the chief use. The order that claims were recognized during this period established the foundation of the complicated system of water allocation rights still in use today in Santa Cruz County.

Many of these mountain streams and tributaries were utilized by early landowners and tenant entrepreneurs to make a profit from the natural resources that formed the early economic basis of the County. Several of these mountain creeks still bear the names of the first men who established mills or permanently settled beside them. Majors Creek was named for Joseph L. Majors who established a grist mill on the creek prior to serving as the County Treasurer between 1850 and 1853. Liddell Creek was named for George Liddell who moved to the Santa Cruz Mountains and established a sawmill on the creek in 1851. Newell Creek was named for Addison Newell who established a farm in the steep, "v"-shaped valley on the banks of the creek in 1867.

For others, the streams presented pure economic opportunity. The first power sawmill in California was built on Rancho Zayante by Isaac Graham in the 1842 and was driven by the waters of Zayante Creek. Isaac E. Davis and Albion P. Jordan of the Davis and Jordan Lime Company purchased a portion of Rancho Cañada del Rincon in 1853

as a promising quarry site. They also utilized the falling water on the property to process local lumber into fuel for their many kilns. The California Powder Works was established in 1865 on the bank of the San Lorenzo River on a portion of Rancho Carbonera. The Powder Works used the river to grind raw materials used in the production of the first smokeless powder manufactured on the west coast of the United States. By 1868, there were a sizable number of business and industries that relied on water from County waterways to operate, including 12 water-powered lumber mills, 10 steam-powered lumber mills, and 9 shingle mills in operation within the County.

### 4.4.2.3 Development of Water Infrastructure in Santa Cruz

The San Lorenzo River and the many creeks that wind through the greater Santa Cruz County area have historically been subject to seasonal droughts and floods. Coupled with the many upstream diversions and industrial uses of these waterways by settlers and purveyors in the Santa Cruz Mountains, water shortages are present in the earliest records of the County. By the 1860s, acute cyclical shortages and pollution prompted the development of private for-profit water systems in Santa Cruz.

#### F.A. Hihn Water Works (1864)

In 1864, Elihu Anthony and Fredrick A. Hihn implored the Board of County Supervisors to allow them to dig trenches and lay redwood pipes to transport water throughout Santa Cruz. The "wooden tubes" were chosen as an inexpensive alternative to iron pipes. The source of the water was an 8,000-gallon reservoir on Anthony's property supplied by water from Scott's Creek, and eager recipients of the water could gain access for a fee. The system became known as the F.A. Hihn Water Works, and it was the largest provider of water in the newly chartered City, with Dodero and Carbonero Creeks constituting its primary sources. The company predated the incorporation of Santa Cruz by 2 years.

#### The Santa Cruz Water Company (1866)

A man named E. Morgan acquired rights to the waters of the San Lorenzo River in 1866, just prior to the town of Santa Cruz being officially incorporated later that year. He used these rights to install a section of pipework conveying water to the area known then as the "The Flats," which comprises the modern area of Pacific Avenue and Front Street.

In 1876, Morgan sold his system to a wealthy man from San Francisco named H.K. Lowe. Under Lowe's guidance, the Santa Cruz Water Company incorporated in July 1876 and began construction on a pumping station on the San Lorenzo River approximately 1 mile upstream from the City, as well as a new reservoir located on High Street. By the end of 1876, the Company had also installed a diversion off Branciforte Creek to deliver water to a new reservoir located at the base of School Street. As the City continued to grow and the steam-powered pumping plant installed on the San Lorenzo River became the source of repeated water-quality concerns, the Santa Cruz Water Company acquired partial water appropriation rights to Majors Creek in 1881. For the next several years, the Santa Cruz Water Company focused its attention on the construction of a pipeline to divert water from the newly acquired Majors Creek appropriations. This effort was very costly and the company slipped into dire financial standing, eventually prompting the sale of the company in 1886.

#### City of Santa Cruz

During the 1880s, the rising price of the private, fee-based water systems prompted the City of Santa Cruz to explore its own, City-owned public option that would grant the citizens of Santa Cruz unlimited free water. In August of 1886, the Santa Cruz Water Company along with all of its appurtenances was purchased by the City of Santa Cruz through the sale of bonds from the Bank of Santa Cruz and the Anglo-Californian Bank. Hihn bitterly opposed the issuance

of the bonds and contested their legality in court. The matter reached the Supreme Court and the election in favor of the bonds was declared invalid in 1887. By this time however, the City had already operated the system for over a year when it was re-conveyed to private owners in 1887. The City voted again in March 1888 to put up the bonds necessary to purchase the system from the private owners. While the City was in the process of securing the bonds for the purchase, the system was covertly sold to Hihn in a private, backroom deal before the City could obtain legal ownership. Hihn quickly consolidated the Santa Cruz Water Company system with his own works and effectively severed the opportunity the City had of acquiring an established water works system.

The City revised its approach, and by July 1888, the Common Council had secured nearly all of the water rights to the Laguna Creek. The creek was capable of supplying 1.4 million gallons towards a City-owned water works. Plans for the construction of the first City-owned water works, supplied through a new pipeline by the waters of Laguna Creek, with reserve storage in a new City reservoir were finally in motion. Other components of the City's water system came soon after the 1890 completion of the Laguna Creek Dam, including the Reggiardo Creek Diversion and Dam (1891 and 1912), the High Street Distribution Reservoir (1904), Liddell Spring Diversion (1913), and the Crossing Street Pump Station (1913).

Fredrick Hihn passed away in 1913 and by 1916 the City had acquired the Santa Cruz Water Company system, and assumed full legal ownership of all components, which included rights to water being drawn from Branciforte Creek, Carbonera Creek, Majors Creek, and the San Lorenzo River. After the purchase of the Santa Cruz Water Company the City developed and improved many of the elements of its modern day system, including the Bay Street Reservoir (1924), Crossing Street Pumping Plant (now known as the Coast Pump Station) (1929), Tait Diversion (1961, reconfigured in 1983), Newell Creek Dam (1960, modified in 1985), Graham Hill Water Treatment Plant (1960, upgraded in 1987), Felton Diversion (1976), as well as other components of the system.

### City Purchase of Beltz Water Company and Other Water Companies

In 1936, the County granted Iowa native, Charles Lemar Beltz, the rights to begin operating a private water system in the area of the County roughly bounded by Capitola Road to the north, Rodeo Gulch and Corcoran's Lagoon to the west, the bay to the south, and 41st Avenue to the east. The ambitious service area of the Beltz system covered approximately 25% of the Live Oaks district with water sourced from ground wells located throughout the district and conveyed through pipelines situated beside Live Oak roads. Charles Beltz passed away in 1947 and left the operation of the Beltz Water Company to his only son, Chester Beltz. Under the supervision of his son, the company developed a both a wider, and more dense service area in response to the massive post-war population growth in the County. By 1955, the Beltz Water Company system included six source wells that allowed the system to accommodate incremental growth from 900 customers in 1955 to approximately 1,500 customers by 1967. The City of Santa Cruz finally purchased the Beltz Water Company System in 1967. The City also purchased the Pestana Water Company in 1961 that served the Santa Cruz Gardens subdivision and the Rolling Woods Utilities, Inc. in 1969 that served the Rolling Woods subdivision.

### San Lorenzo Valley Water District

The communities located in the various valleys within the Santa Cruz Mountains owe their existence to the select industries that sought to profit from the wealth of natural resources found here. By 1899, Boulder Creek in the San Lorenzo Valley was the fifth largest shipper of timber in the country. As the San Lorenzo Valley was settled in the mid-1800s, populations in Ben Lomond, Brookdale, and Boulder Creek formed their own water systems. These water systems were supplied by nearby springs and creeks by way of flumes or pipelines and were designed to serve the needs of residents who occupied their vacation homes only a few weeks a year. When the County

population doubled between 1900 to 1940 from 21,512 to 45,057 persons and more people moved permanently into the valley, the existing water systems became inadequate.

Frequent droughts between 1912 and 1939 convinced San Lorenzo Valley leaders to form a water district to better control water, to serve the needs of the valley. After one failed attempt to form a county water district by election in 1939, the SLVWD was formed by the voters on April 3, 1941. In 1959, the SLVWD signed an agreement with the City, in which the SLVWD sold the City its timber and mineral rights to the Newell Creek watershed, in exchange for one-eighth of the water rights from the water stored by Newell Creek Dam.

#### Scotts Valley Water District

The SVWD was formed by a vote in 1961 under the County Water District Law, Division XII of the California Water Code. The 1961 district formation merged multiple small water supply systems that had been servicing the 6 square-mile district encompassing most of the incorporated area of Scotts Valley, but also some unincorporated territory as well.

#### Soquel Creek Water District

The SqCWD was formed by a local vote in 1961 according to the provisions of County Water District Law, Division XII of the California Water Code. The purpose of the District was to implement water management and flood control services. The flood control services were discontinued 3 years later when the SqCWD acquired the Monterey Bay Water Company. Prior to its purchase by the SqCWD in 1964, the Monterey Bay Water Company serviced a large portion of south Santa Cruz County through the gradual purchase of multiple existing systems over time.

#### Central Water District

A proposition to organize the Central Santa Cruz County Water District encompassing the Oakdale and Pleasant Valley School Districts in south Santa Cruz County was adopted by vote in 1950. Today, the district is known by its shortened name, the Central Water District (CWD).

In 1951, obligation bonds were approved by the district voters to fund the construction of a system of waterworks for the district comprised of a well, storage facilities, and distribution infrastructure. In 1953, the district agreed to purchase the Valencia Water Works, which served approximately 24 customers at the time. The CWD was serving about 80 customers by the end of 1953. The district experienced multiple upgrades beginning in 1978. Early in 1978, one-way interties were installed at two locations between the CWD and the SqCWD systems to provide emergency water from the CWD system down gradient to the SqCWD system. The first was located near Huntington Drive and the second on Soquel Drive near Freedom Boulevard. Additional CWD upgrades installed during this period were funded by monies from the California State Safe Drinking Water Bond Law (1976), and included the drilling of "well #10, the Valencia Booster Pump Station, a telemetering system, and approximately 24,560 feet of mainline piping."

### 4.4.2.4 Historic Conditions of Infrastructure Component Sites

This section provides the conditions related to historical architectural resources of the project and programmatic infrastructure sites for which improvements and new facilities are proposed. A cultural records search for the project and programmatic infrastructure component sites and 0.5-mile radius was conducted through the California Historical Resources Information System (CHRIS) at the Northwest Information Center (NWIC) on April 27, 2020.

Additionally, a qualified architectural historian conducted a surface reconnaissance of the study area on May 6, 2020 for all of the project and programmatic infrastructure component sites. The results of the survey were used to evaluate the site features for potential historical significance, based on the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), and the Santa Cruz County Historic Resources Inventory (SCCHRI) or City of Santa Cruz Historic Building Survey criteria, as relevant. See Section 4.4.3, Regulatory Framework, for information about these historic registers. The results of the records search, site survey and historic evaluations performed are summarized below and described in detail in Appendix G.

## Aquifer Storage and Recovery Sites

As indicated in Section 4.4.2.1, Study Area, there are no definitive sites identified to date for new ASR facilities, and therefore, site-specific conditions cannot be described for such sites.

Dudek conducted background research and a CHRIS records search within 0.25 miles of the Beltz ASR sites. No previously recorded or evaluated built environment resources were identified on these sites. Of the four sites (Beltz ASR 8, 9, 10, and 12), the Beltz 8 ASR site, was found to contain buildings and structures over the age of 45 years that required evaluation under NRHP, CRHR, and Santa Cruz County significance criteria.

The Beltz 8 ASR site is located on a municipal property located in the County and demonstrates a layered development history. The first well on the site, Beltz 6, was developed between 1952 and 1967 during the Beltz Water Company operation period before the City acquired the system. The Iron and Manganese Removal Plant was designed by Kingman Engineers and completed in 1971 and subsequently expanded in 1985. Beltz 6 was damaged in the 1989 Loma Prieta earthquake and later replaced by Beltz 8 in 1998. Presently the site contains the Iron and Manganese Removal Plant, Beltz 8, and limited landscaping.

The Iron and Manganese Removal Plant contains a Control Building, two pressure filters, a combination aerator and sump pump, and a wash water recovery tank. The Control Building is a simple utilitarian-style building constructed from flat concrete bricks that features a gabled roof complete with vertical wood siding in the gable end (Dudek 2020, Exhibits 9 and 10). The 1985 addition to the south end of the building is also constructed of concrete brick and features a shed roof that extends from the south elevation of the building. Entry to the building is accessed via one of three simple metal doors, two of which feature a single small window. Otherwise, the building does not contain any fenestration. Metal conduit is present in sizable quantities on the exterior painted surface of the building. Other features evaluated at the facility include: Two cylindrical pressure filters and cylindrical tanks on a concrete pad foundation; the irregular shaped-aerator sump pump stands housed in metal sheeting; and a cylindrical wash water recovery tank constructed of metal sheets riveted together to form a continuous surface.

The Beltz 8 ASR site and facility was not recommended as eligible for listing in the NRHP, CRHR, or the SCCHRI due to a lack of historical associations, architectural merit, and compromised integrity (see Appendix G for details of this evaluation). As such, this property is not a historical resource under CEQA.

## Intertie Improvement Sites

### City/SVWD Intertie

The City/SVWD intertie site includes a pipeline alignment for new piping along Sims Road to La Madrona Drive, and a new pump station site. Based on the 2020 survey and records search conducted for the Proposed Project, this programmatic component site does not contain historic built environment resources and therefore is not a historical

resource under CEQA. This is consistent with the conclusions of a prior cultural resource study conducted of the same intertie facilities and location (URS 2013).

#### City/SqCWD/CWD Intertie

The City/SqCWD/CWD intertie site includes two existing pipeline segments, one in Soquel Village and one in Park Avenue, an existing pump station on McGregor Drive, and two sites for new pump stations on Freedom Boulevard and Valencia Road. Background research on these programmatic component site locations indicate that the only built environment properties that are likely 45 years old or older are the existing Soquel Village and Park Avenue pipelines, given that the McGregor Drive pump station was recently constructed and there were no built environment properties on the new pump station sites. Based on the historic context of the existing water management system the likelihood of the pipelines or any related water facility structure being found eligible for listing in the NRHP, CRHR, or SCCHRI is low.

### Felton Diversion Site

The Felton Diversion was installed on the San Lorenzo River north of Henry Cowell State Park and completed in 1976. The structure is comprised of a permanent concrete foundation spanning the river containing an inflatable rubber dam. The inflatable dam, or bladder, can be raised to maintain and impoundment for the diversion of water which is transported by pipeline to supplement storage at Loch Lomond. The inflatable dam can also be lowered to control the flow of water during a storm surge or other similar event. The structure also includes a fish-screened intake structure, a conventional sump and high-lift pump station, a fish ladder, and a control building.

Based on the background research, a records search, and the 2020 site survey, no previously recorded or evaluated built environment resources were identified on the Felton Diversion site. No buildings or structures over the age of 45 years at the time the Notice of Preparation for the EIR was released in 2018, were identified that required evaluation under NRHP, CRHR, and SCCHRI significance criteria.[1] As such, this property is not a historical resource under CEQA.

### Tait Diversion and Coast Pump Station Site

Based on the background research, records search, and the 2020 site survey, no previously recorded or evaluated built environment resources were identified on the Tait Diversion and Coast Pump Station site. The site was found to contain buildings and structures over the age of 45 years that required evaluation under NRHP, CRHR, and City of Santa Cruz Historic Building Survey designation criteria.

The Tait Diversion and Coast Pump Station is a combined facility located on municipal property within the City. The property demonstrates a layered development history. The Coast Pump Station was added to the larger City system in the late 1920s. The pump station was completed in 1929 as the second of two municipal pumping stations funded by the City in roughly the same location beside the San Lorenzo River north of present-day Highway 1. Archival newspaper sources indicate that a diversion was present at this site dating back to 1934; however, the Tait Diversion as it is now known received a new intake in 1961, which was then reconfigured in 1983. The Tait Diversion and Coast Pump Station combined facility contains three associated built environment structures: the Coast Pump Station (1928), the Meter Shop (c.1964–1968), and Tait Diversion (c.1934).

[1] Chapter 3, Project Description, indicates in Table 3-8 that this programmatic component could be under construction by 2027, at which time the facility would be over 50 years old.

The Tait Diversion and Coast Pump Station site is predominantly paved except for open green areas containing native flora similar to the other nearby areas beside the river. The Tait Diversion is presently comprised of a weir across the San Lorenzo River formed from irregularly shaped concrete sections arranged in a line that disappears into the thick vegetation on the opposite bank of the river. On the west bank of the river, a concrete intake installed in 1983 features a heavy metal grate over both the inflow and the outflow, and the top of the structure is covered by metal decking. The Coast Pump Station is a rectangular, industrial-style building that features ribbed metal siding and a side-gable roof clad in corrugated metal. A square, shed-roof garage addition extends from the southwest elevation of the building and also features ribbed metal cladding and a corrugated roof. The southeast (main) elevation features a narrow metal rollup door and a simple entry door with a single square window; the garage addition also features a wide rollup door on this elevation. Large pipes emerge from the ground on the northeast elevation and are sheltered by a shed roof extending from this elevation. The side and rear of the building do not have any additional doors and windows.

The Meter Shop building is a rectangular, industrial-style building that features 'Stran-steel' brand ribbed metal siding and a front-gable roof clad in corrugated metal. The foundation of the building is constructed from concrete masonry units. The southeast (main) elevation features a small loading dock, a narrow metal rollup door and a simple solid entry door. The entry door is accessed via a set of six side-facing steps fitted with a metal pipe railing. The northeast elevation features a single aluminum sliding window.

The Tait Diversion and Coast Pump Station were not recommended as eligible for listing in the NRHP, the CRHR, or the City of Santa Cruz Historic Building Survey due to a lack of historical associations, architectural merit, and compromised integrity. As such, this property is not a historical resource under CEQA (see Appendix G for details of this evaluation).

### 4.4.2.5 Archaeological Conditions of Infrastructure Component Sites

As indicated previously, a CHRIS cultural records search for the project and programmatic infrastructure component sites and 0.5-mile radius was conducted on April 27, 2020. A search of the Native American Heritage Commission (NAHC) Sacred Lands File was also conducted in April 27, 2020, and no known sacred lands were reported. An intensive pedestrian field survey of the entire study area was conducted in April 2020, which included the Beltz ASR sites, intertie improvement sites, Felton Diversion site and the Tait Diversion and Coast Pump Station site. Neither the CHRIS records search nor the field survey of the study area identified any archaeological or tribal cultural resources within or near the project and programmatic infrastructure component sites. Specifically, no archaeological soil (midden) or material commonly used as raw materials for prehistoric tool manufacture such as chert or obsidian were found. Similarly, no other evidence for use of the study area during prehistoric times (such as charred faunal remains, marine shell, modified rocks, or charcoal) was observed. See Appendix G for additional information about the records search and site surveys conducted for the Proposed Project.

### 4.4.2.6 Tribal Cultural Resources

To date, the City has not been contacted by Native American tribes requesting notification of projects for the purpose of consultation of tribal cultural resources pursuant to AB 52, with the exception of an individual request for consultation for a specific project. See Section 4.4.3, Regulatory Framework, for information about AB 52 requirements. However, on behalf of the City of Santa Cruz, Dudek contacted Native American tribes and tribal organizations in response to NAHC recommendations for making contact when the Sacred Lands File search was

completed by NAHC. Letters were sent to the tribes and tribal organizations identified by the NAHC to notify them of their opportunity to consult with the City regarding the Proposed Project with follow-up calls. Valentin Lopez, Chair of the Amah Mutsun Tribal Band, contacted Dudek. Mr. Lopez requested that a Native American monitor from the Amah Mutsun Tribal Band be hired for all ground-disturbance work within 400 feet of known cultural resource sites. No additional Native American contacts have responded to the outreach letters as of June 4, 2020. A complete record of the Native American outreach effort is included in Appendix G.

## 4.4.3 Regulatory Framework

### 4.4.3.1 Federal

#### National Historic Preservation Act

The NHPA established the NRHP and the President's Advisory Council on Historic Preservation (ACHP), and provided that states may establish State Historic Preservation Officers to carry out some of the functions of the NHPA. Most significantly for federal agencies responsible for managing cultural resources, Section 106 of the NHPA directs that:

> [t]he head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP.

Section 106 also affords the ACHP a reasonable opportunity to comment on the undertaking (16 U.S.C. 470f).

36 CFR Part 800 implements Section 106 of the NHPA. It defines the steps necessary to identify historic properties (those cultural resources listed in or eligible for listing in the NRHP), including consultation with federally recognized Native American tribes to identify resources with important cultural values; to determine whether or not they may be adversely affected by a proposed undertaking; and the process for eliminating, reducing, or mitigating the adverse effects.

The content of 36 CFR 60.4 defines criteria for determining eligibility for listing in the NRHP. The significance of cultural resources identified during an inventory must be formally evaluated for historic significance in consultation with the ACHP and the California State Historic Preservation Officer to determine if the resources are eligible for inclusion in the NRHP. Cultural resources may be considered eligible for listing if they possess integrity of location, design, setting, materials, workmanship, feeling, and association.

Regarding criteria A through D of Section 106, the quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, cultural resources, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that (36 CFR 60.4):

A. Are associated with events that have made a significant contribution to the broad patterns of our history; or
B. Are associated with the lives of persons significant in our past; or

C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Have yielded, or may be likely to yield, information important in prehistory or history.

The 1992 amendments to the NHPA enhance the recognition of tribal governments' roles in the national historic preservation program, including adding a member of an Indian tribe or Native Hawaiian organization to the ACHP.

The NHPA amendments:

- Clarify that properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined eligible for inclusion in the National Register
- Reinforce the provisions of the Council's regulations that require the federal agency to consult on properties of religious and cultural importance.

The 1992 amendments also specify that the ACHP can enter into agreement with tribes that permit undertakings on tribal land and that are reviewed under tribal regulations governing Section 106. Regulations implementing the NHPA state that a federal agency must consult with any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by an undertaking.

### 4.4.3.2 State

#### California Register of Historical Resources

In California, the term "historical resource" includes but is not limited to "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (Public Resources Code Section 5020.1[j]; see also CEQA Guidelines Section 15064.5[a]). In 1992, the California legislature established the CRHR "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (Public Resources Code Section 5024.1[a]). The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the NRHP including associated historic integrity considerations and are enumerated below. According to Public Resources Code Section 5024.1(c)(1–4), a resource is considered historically significant meets at least one of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. Is associated with the lives of persons important in our past.
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
4. Has yielded, or may be likely to yield, information important in prehistory or history.

In order to understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be

considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (see 14 California Code of Regulations [CCR] Section 4852[d][2]).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

## California Environmental Quality Act

As described further below, the following CEQA statutes and CEQA Guidelines are of relevance to the analysis of archaeological, historic, and tribal cultural resources:

- Public Resources Code Section 21083.2(g) defines "unique archaeological resource."
- Public Resources Code Section 21084.1 and CEQA Guidelines Section 15064.5(a) define "historical resources." In addition, CEQA Guidelines Section 15064.5(b) defines the phrase "substantial adverse change in the significance of an historical resource." It also defines the circumstances when a project would "materially impair" the significance of an historical resource (an element of a "substantial adverse change" to the resource) (see discussion below).
- Public Resources Code Section 21074(a) defines "tribal cultural resources."
- Public Resources Code Section 5097.98 and CEQA Guidelines Section 15064.5(e) set forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated ceremony.
- Public Resources Code Sections 21083.2(b)-(c) and CEQA Guidelines Section 15126.4(b) provide information regarding the mitigation framework for archaeological and historical resources, including examples of preservation-in-place mitigation measures; preservation-in-place is the preferred manner of mitigating impacts to both unique archaeological resources and "historical resources of an archaeological nature" because it maintains the relationship between artifacts and the archaeological context and may also help avoid conflict with religious or cultural values of groups associated with the archaeological site(s).

### Historical Resources

More specifically, under CEQA, a project may have a significant effect on the environment if it may cause "a substantial adverse change in the significance of an historical resource" (Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5[b]). If a site is either listed or eligible for listing in the CRHR, or if it is included in a local register of historic resources or identified as significant in a historical resources survey (meeting the requirements of Public Resources Code Section 5024.1[q]), it is a "historical resource" and is presumed to be historically or culturally significant for purposes of CEQA (Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5[a]). The lead agency is not precluded from determining that a resource is a historical resource even if it does not fall within this presumption (Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5[a]).

A "substantial adverse change in the significance of an historical resource" reflecting a significant effect under CEQA means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines

Section 15064.5(b)(1); Public Resources Code Section 5020.1[q]). In turn, CEQA Guidelines section 15064.5(b)(2) states the significance of an historical resource is materially impaired when a project:

1. Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the CRHR; or
2. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
3. Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for purposes of CEQA.

Pursuant to these sections, the CEQA inquiry begins with evaluating whether a project site contains any "historical resources," then evaluates whether that project will cause a substantial adverse change in the significance of a historical resource such that the resource's historical significance is materially impaired.

Where a project has been determined to conform with the Secretary of the Interior's Standards, the project's impact on historical resources would be considered mitigated to below a level of significance and, thus, not significant (14 CCR Section 15126.4[b][1]). In most cases, a project that demonstrates conformance with the Secretary of the Interior's Standards is categorically exempt from CEQA (14 CCR Section 15331), as described in the CEQA Guidelines:

> Where maintenance, repair, stabilization, rehabilitation, restoration, preservation, conservation or reconstruction of the historical resource will be conducted in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (Weeks and Grimmer 1995), the project's impact on the historical resource shall generally be considered mitigated below a level of significance and thus is not significant (14 CCR Section 15126.4[b][1]).

The Secretary of the Interior's Standards are a series of concepts focused on maintaining, repairing, and replacing historic materials, as well as designing new additions or making alterations. They function as common-sense historic preservation principles that promote historic preservation best practices. There are four distinct approaches that may be applied to the treatment of historical resources:

- **Preservation** focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time.
- **Rehabilitation** acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.
- **Restoration** depicts a property at a particular period of time in its history, while removing evidence of other periods.
- **Reconstruction** recreates vanished or non-surviving portions of a property for interpretive purposes.

The choice of treatment depends on a variety of factors, including the property's historical significance, physical condition, proposed use, and intended interpretation. The Guidelines provide general design and technical recommendations to assist in applying the Standards to a specific property. Together, the Standards and Guidelines provide a framework that guides important decisions concerning proposed changes to a historic property.

#### Unique Archaeological Resources

If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (Public Resources Code Section 21083.2[a], [b], and [c]).

Public Resources Code Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Impacts to non-unique archaeological resources are generally not considered a significant environmental impact (Public Resources Code Section 21083.2[a]; CEQA Guidelines Section 15064.5[c][4]). However, if a non-unique archaeological resource qualifies as tribal cultural resource (Public Resources Code Section 21074[c], 21083.2[h]), further consideration of significant impacts is required. CEQA Guidelines Section 15064.5 assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. As described below, these procedures are detailed in Public Resources Code Section 5097.98.

### California Environmental Quality Act Assembly Bill 52 Consultation

State Assembly Bill (AB) 52, effective July 1, 2015, recognizes that California Native American prehistoric, historic, archaeological, cultural, and sacred places are essential elements in tribal cultural traditions, heritages, and identities. The law establishes a separate category of resources in the CEQA called "tribal cultural resources" that considers the tribal cultural values in addition to the scientific and archaeological values when determining impacts and mitigation. Public Resources Code Section 21074 defines a "tribal cultural resource" as either:

- Sites, features, places, cultural landscapes, sacred places and objects with cultural value to a California Nature American tribe that is either listed, or determined to be eligible for listing, on the national, state, or local register of historic resources; or
- A resource determined by the lead agency chooses, in its discretion and supported by substantial evidence, to treat as a tribal cultural resource.

The California Public Resources Code Section 21084.2 now establishes that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment." The Public Resources Code requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project.

The CEQA lead agency for consultation with local Native American tribes is the City of Santa Cruz. As previously indicated, at the time of Draft EIR preparation, the City has not received any Assembly Bill 52 requests from local tribes that apply to all projects. The agency regulatory contact for the consultation is Ms. Sarah Easley Perez, Santa Cruz Water Department, 212 Locust Street, Suite C, Santa Cruz, CA 95060, (831) 420-5327; seasleyperez@cityofsantacruz.com.

### California Health and Safety Code

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. Health and Safety Code Section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains can occur until the County Coroner has examined the remains (California Health and Safety Code Section 7050.5b). Public Resources Code Section 5097.98 outlines the process to be followed in the event that remains are discovered. If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the Native American Heritage Commission (NAHC) within 24 hours (California Health and Safety Code Section 7050.5c). The NAHC would notify the most likely descendant (MLD). With the permission of the landowner, the MLD may inspect the site of discovery. The inspection must be completed within 48 hours of notification of the MLD by the NAHC. The MLD may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

## 4.4.3.3 Local

The study area for the Proposed Project includes the jurisdictions of the City of Santa Cruz, City of Capitola, City of Scotts Valley, and County of Santa Cruz. The general plans and, where relevant, the local coastal programs of these jurisdictions include policies and programs related to cultural resources. Section 4.9, Land Use, Agriculture and Forestry, and Mineral Resources, discusses applicable general plan and local coastal program policies related to cultural resources, as relevant to the Proposed Project.

Specific details are provided in this section about the Santa Cruz County and City of Santa Cruz codes related to the historic inventories of these jurisdictions, as this information was used in the evaluation of the some of the project and programmatic infrastructure components. Historic evaluations were conducted for the Belts 8 ASR site and the Tait Diversion and Coast Pump Station due to the age of these existing facilities.

### Santa Cruz County Code

#### Historic Resources Inventory

Cultural Landmarks in the County of Santa Cruz are termed Historic Resources and are under the aegis of the Planning Department, County of Santa Cruz. A list of Historic Resources is maintained in the County's Historic Resources Inventory, which identifies those Historic Resources located in the unincorporated areas of the County. Historic Resource is defined in Chapter 16:42 Historic Preservation within Title 16: Environmental and Resource Protection as follows (County Code 16.42.030 (I) [Ord. 5061 § 28, 2009; Ord. 4922 § 1, 2008]):

> … any structure, object, site, property, or district which has a special historical, archaeological, cultural or aesthetic interest or value as part of the development, heritage, or cultural characteristics of the County, State, or nation, and which either has been referenced in the County General Plan, or has been listed in the historic resources inventory adopted pursuant to SCCC 16.42.050 and has a rating of significance of NR-1, NR-2, NR-3, NR-4, or NR-5.

In order to be placed on the County Historic Resources Inventory, a property must first be evaluated for its ability to meet one or more of the following criteria: (County Code 16.42.050 Historic Resource Designation [Ord. 4922 § 1, 2008]).

1. The resource is associated with a person of local, state or national historical significance.
2. The resource is associated with an historic event or thematic activity of local, State or national importance.
3. The resource is representative of a distinct architectural style and/or construction method of a particular historic period or way of life, or the resource represents the work of a master builder or architect or possesses high artistic values.
4. The resource has yielded, or may likely yield, information important to history.

#### Santa Cruz County Historic Districts

The County of Santa Cruz defines Historic District as (County Code 16.42.030 (E) [Ord. 5061 § 28, 2009; Ord. 4922 § 1, 2008]):

1. Have character of special historic or aesthetic interest or value; and
2. Represent one or more periods or styles of architecture typical of one or more eras in the history of the County; and
3. Cause such area, by reason of these factors, to constitute a geographically definable area possessing a significant concentration or continuity of sites, buildings, structures, or objects that are unified by past events, or aesthetically by plan or physical development.

### City of Santa Cruz Municipal Code

#### Historic District

Chapter 24.06, Part 2 Historic District Designation, provides procedures for the designation of an historic district. The criteria of a designated historic district include:

1. The proposed historic district is a geographically definable area possessing a significant concentration or continuity of sites, buildings, structures, or objects unified by past events, or aesthetically by plan or physical development.
2. The collective value of the historic district taken together may be greater than the value of each individual structure.
3. The proposed designation is in conformance with the purpose of the City's historic preservation provisions, set forth in Section 24.12.400 of this title and the City's Historic Preservation Plan and the General Plan.

#### Historic Preservation

Chapter 24.12, Part 5 (Historic Preservation) of the City of Santa Cruz Municipal Code outlines methods and regulations for the protection, enhancement, perpetuation and use of structures, districts, lands, and neighborhoods of historic, archaeological, architectural, and engineering significance. The purpose of provisions in this chapter related to historic preservation is to:

1. Designate, preserve, protect, enhance, and perpetuate those historic structures, districts, and neighborhoods contributing to cultural and aesthetic benefit of Santa Cruz;
2. Foster civic pride in the beauty and accomplishments of the past;
3. Stabilize and improve the economic value of certain historic structures, districts, and neighborhoods;
4. Protect and enhance the city's cultural, archaeological and aesthetic heritage;
5. Promote and encourage continued private ownership and use of such buildings and other structures now so owned and used, to the extent that the objectives listed above can be obtained under such policy;
6. Serve as part of the Local Coastal Implementation Plan for the Coastal Program.

## 4.4.4 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to cultural resources and tribal cultural 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.

### 4.4.4.1 Standards of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to cultural resources and tribal cultural resources are based on statutory language found in Public Resources Code Sections 21083.2(a), 21084.1, 21084.2, CEQA Guidelines Section 15064.5(b), 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. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.
B. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5.
C. Disturb any human remains, including those interred outside of formal cemeteries.
D. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074.

### 4.4.4.2 Analytical Methods

This section evaluates the potential cultural resources and tribal cultural resources impacts associated with construction and operation of the Proposed Project. The analysis of potential impacts addresses the various project and programmatic components listed in Table 4.4-1, which are described in detail in Chapter 3, Project Description.

**Table 4.4-1. 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 | | ✓ |

## Records Search and Native American Coordination

As described above, a CHRIS records search and a NAHC Sacred Lands File search were conducted for the project and programmatic infrastructure component sites and 0.5-mile radius was conducted in April 2020. The CHRIS search included a review of the NRHP, CRHR, California Inventory of Historic Resources, historical maps, and local inventories. Additionally, Native American tribes and tribal organizations were contacted in response to NAHC recommendations for making contact when the Sacred Lands File search was completed by NAHC.

## Surveys

Pedestrian surveys of the project and programmatic infrastructure component sites were conducted on May 6, 2020. An archaeological reconnaissance was conducted by a qualified archaeologist using standard archaeological procedures and techniques. All field practices met the Secretary of Interior's standards and guidelines for a cultural resources inventory. The land area was surveyed in pedestrian transects with approximately 5-meter spacing. A qualified architectural historian also conducted a pedestrian survey of the study area. The survey entailed walking all accessible portions of the study area and documenting the site with notes and photographs, specifically noting character-defining features, spatial relationships, and observed alterations, and examining any historic landscape features on the property. See Appendix G for further details on survey methods.

## Historical Resources

Projects can result in a substantial adverse change in the significance of a historical resource if they would cause physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the

significance of a historical resource would be materially impaired (CEQA Guidelines Section 15064.5). According to Appendix G, two properties were identified and recorded that are at least 45 years of age that are located on the infrastructure component sites, the Beltz 8 ASR site and the Tait Diversion and Coastal Pump Station site. The results of these evaluations are presented in Section 4.4.2.4, Historic Conditions of Infrastructure Component Sites. Potential impacts to historic architectural resources for both project and programmatic components are detailed below.

### Archaeological Resources

Archaeological sites are usually adversely affected only by physical destruction or damage that can be caused by grading and excavation, trenching, weather-induced erosion, etc. Impacts to archaeological resources and human remains most often occur as the result of excavation or grading within the vertical or horizontal boundaries of a significant archaeological site. Archaeological resources may also suffer impacts as the result of project activity that increases erosion, or increases the accessibility of a surface resource, and thus increases the potential for vandalism or illicit collection. Because archaeological resources often are buried or cannot be fully defined or assessed on the basis of surface manifestations, substantial ground-disturbing work may have the potential to uncover previously unidentified resources, including archaeological deposits and human remains. As precise fill depths may not be known in all cases, it must be assumed that any ground-disturbing activities in any portion of the study area where development will occur could potentially affect unique archaeological resources, historical resources of an archaeological nature, or subsurface tribal cultural resources.

### Application of Relevant Standard Practices

The Proposed Project includes standard construction practices (see Section 3.4.5.2, Standard Construction Practices), that the City would implement to avoid or minimize effects to archaeological resources and human remains. These practices and their effectiveness in avoiding and minimizing effects are described below.

If archaeological resources (sites, features, or artifacts) are exposed during construction, Standard Construction Practice #24 requires construction activities to stop within a 100 feet of any finds, temporary flagging around the resources, and evaluation of the significance of the finds by a qualified archaeologist. If the archaeologist observes the discovery to be potentially significant under CEQA, preservation in place or additional treatment may be required. This practice is somewhat effective in that it requires work stoppage to evaluate the significance of a potential archaeological resource; however, it stops short of specifying how to appropriately treat such a significant resource, if found.

If human remains are exposed during construction, Standard Construction Practice #25 requires the implementation of California laws that protect Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. The legal requirements are contained in Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the California Public Resources Code (see Section 4.4.3.2, State, for details). These laws are effective in that they require construction work to stop, notification of the lead agency staff and County Coroner, notification of the NAHC and the MLD, and the appropriate treatment of the remains. The MLD may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

If the Proposed Project would have potentially significant impacts even with the implementation of the above standard construction practices, the impact analysis identifies mitigation measures. The mitigation measures developed to address impacts to unique archaeological resources, historical resources of an archaeological nature, and subsurface tribal cultural resources addresses potential impacts both to identified archaeological resources, if any, and to archaeological resources that might be discovered during construction.

### 4.4.4.3 Project Impact Analysis

This section provides a detailed evaluation of cultural resources and tribal cultural resource impacts associated with the Proposed Project.

**Impact CUL-1: Historic Built Environment Resources (Significance Standard A).** Construction of some of the Proposed Project infrastructure components could cause a substantial adverse change in the significance of historical built environment resource. ***(Less than Significant with Mitigation)***

#### Water Rights Modifications

The water rights modifications would not directly result in construction activities that could damage or otherwise alter historical built environment resources. Given that, the water rights modifications would not result in direct impacts to historical built environment resources, as defined in CEQA Guidelines Section 15064.5, and as a result would not cause a substantial adverse change in the significance of such a resource. Therefore, this project component of the Proposed Project would have no direct impacts.

The following analysis evaluates the potential indirect impacts to historic built environment 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

The Proposed Project includes infrastructure components including ASR, water transfers and exchanges and associated intertie improvements, and surface water diversion improvements. Operation of these components, involving the diversion of water, the movement of water in pipelines and the pumping and extraction of water into and out of groundwater basins would not have the potential to impact historic built environment resources and therefore operation of these components is not further evaluated. However, construction of these infrastructure components would have the potential to impact historic built environment resources if such resources are present and therefore construction impacts are further evaluated below.

Aquifer Storage and Recovery Facilities

The Proposed Project includes ASR facilities that could be installed within the Santa Cruz Mid-County Groundwater Basin inside and outside the areas served by the City, and/or in the Santa Margarita Groundwater Basin outside the areas served by the City. ASR would include new ASR facilities at unidentified locations and Beltz ASR facilities at the existing Beltz well facilities, which are analyzed below.

**New ASR Facilities.** Given that specific locations for these facilities have not been identified at this time, information about the potential for historical built environment resources is not fully known. In consideration of the region and property options for the proposed new ASR facilities, there is a low likelihood of finding historical built environment resources eligible for listing in the NRHP, CRHR or SCCHRI at the eventual sites for new ASR facilities. Regardless, if historical built environment resources are discovered on these sites, construction of new ASR facilities could cause a substantial adverse change in the significance of a historical built environment resource. Therefore, this programmatic component of the Proposed Project could have a potentially significant impact on a historical built environment resource.

Implementation of MM CUL-1a and 1b would avoid a substantial adverse change in the significance of a historical built environment resource by requiring: a records search and potential site survey on new ASR site(s) to confirm that there is no potential for historical built environmental resources to be present; preparation of a Historic Resources Evaluation Report (HRER) for properties 45 years old or older that could be impacted during construction; and avoidance of any identified significant resources or implementation of design in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties such that the historical resource continues to convey its historical significance. Therefore, implementation of MM CUL-1a and 1b would reduce potentially significant impacts of this programmatic component on historical built environment resources to a less-than-significant level.

**Beltz ASR Facilities.** Dudek conducted background research and a CHRIS records search within 0.25 miles of the Beltz ASR sites. No previously recorded or evaluated built environment resources were identified on these sites. Of the four sites (Beltz 8, 9, 10, and 12 ASR sites), the Beltz 8 ASR site, was found to contain buildings and structures over the age of 45 years that required evaluation under NRHP, CRHR, and Santa Cruz County significance criteria. The Beltz 8 ASR site and facility was not recommended as eligible for listing in the NRHP, the CRHR, or the SCCHRI due to a lack of historical associations, architectural merit, and compromised integrity, as described in Appendix G. As such, this property is not a historical resource under CEQA. Implementation of the Beltz ASR facilities would not cause a substantial adverse change in the significance of a historical built environment resource. Therefore, these project components of the Proposed Project would have no impact on historical built environment resources.

Water Transfers and Exchanges and Intertie Improvements

**City/SVWD Intertie.** The City/SVWD intertie would result in the placement of a new pipeline along Sims Road and La Madrona Road and construction of a new pump station. Based on the 2020 survey and records search conducted for the Proposed Project, this site does not contain historic built environment resources. This is consistent with the conclusions of a prior cultural resource study conducted of the same intertie facilities and location (URS 2013). Implementation of the City/SVWD intertie would not cause a substantial adverse change in the significance of a historical built environment resource. Therefore, this programmatic component of the Proposed Project would have no impact on historical built environment resources.

**City/SqCWD/CWD Intertie – Soquel Village and Park Avenue Pipelines and McGregor Pump Station Upgrade.** The City/SqCWD/CWD intertie would result in replacement of an existing pipeline in two segments, one in Soquel Village and one in Park Avenue, and upgrade of an existing pump station on McGregor Drive. Background research on these component site locations indicate that the only built environment properties that are likely 45 years old or older are the existing Soquel Village and Park Avenue pipelines, given that the pump station was recently constructed. Based on the historic context of the existing water management system, the likelihood of the pipelines or any related water facility structure being found eligible for listing in the NRHP, CRHR or SCCHRI is low. Regardless, if these pipelines are determined to be historic resources, construction of the intertie could cause substantial adverse changes in the significance of such historical built environment resources. Therefore, this programmatic component of the Proposed Project could have a potentially significant impact on a historical built environment resource.

Implementation of MM CUL-1b would avoid a substantial adverse change in the significance of a historical built environment resource by requiring: a records search and potential site survey on new ASR site(s) to confirm that there is no potential for historical built environmental resources to be present; preparation of a HRER for properties 45 years old or older that could be impacted during construction; and avoidance of any identified significant resources or implementation of design in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties such that the historical resource continues to convey its historical significance.

Therefore, implementation of MM CUL-1b would reduce potentially significant impacts of this programmatic component on historical built environment resources to a less-than-significant level.

**City/SqCWD/CWD Intertie – New Pump Stations.** The portion of the City/SqCWD/CWD intertie that would connect SqCWD and CWD would require the construction of two new pump stations, one on Valencia Road and one on Freedom Boulevard; however precise locations are not known at this time. Based on the 2020 survey and records search conducted for the Proposed Project, these two pump station sites do not contain historic built environment resources. Implementation of these new pump stations would not cause a substantial adverse change in the significance of a historical built environment resource. Therefore, this programmatic component of the Proposed Project would have no impact on historical built environment resources.

Felton Diversion Improvements

Based on the background research, a records search, and the 2020 site survey, no previously recorded or evaluated built environment resources were identified on the Felton Diversion Fish Passage Improvements site. No buildings or structures currently over the age of 45 years were identified that required evaluation under NRHP, CRHR, and Santa Cruz County significance criteria. As such, this property is not currently a historical resource under CEQA. However, as indicated in Chapter 3, Project Description, this programmatic component could be under construction by 2027, at which time the facility would be over 50 years old. Based on the historic context of the existing water management system the likelihood of the diversion being found eligible for listing in the NRHP, CRHR, or SCCHRI is low. Regardless, if the Felton Diversion is determined to be a historical resource, construction of the diversion improvements could cause substantial adverse changes in the significance of such a historical built environment resource. Therefore, this programmatic component of the Proposed Project could have a potentially significant impact on a historical built environment resource.

Implementation of MM CUL-1a and 1b would avoid a substantial adverse change in the significance of a historical built environment resource by requiring: a records search and potential site survey on the Felton Diversion site when this component is pursued to confirm that there is no potential for historical built environmental resources to be present; preparation of a HRE for properties 45 years old or older that could be impacted during construction; and avoidance of any identified significant resources or implementation of design in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties such that the historical resource continues to convey its historical significance. Therefore, implementation of MM CUL-1a and 1b would reduce potentially significant impacts of this programmatic component on historical built environment resources to a less-than-significant level.

Tait Diversion and Coast Pump Station Improvements

Based on the background research, records search, and the 2020 site survey, no previously recorded or evaluated built environment resources were identified on the Tait Diversion and Coast Pump Station site. The site was found to contain buildings and structures over the age of 45 years that required evaluation under NRHP, CRHR, and SCCHRI designation criteria. Neither facility was recommended as eligible for listing in the NRHP, the CRHR, or the SCCHRI due to a lack of historical associations, architectural merit, and compromised integrity. As such, this property is not a historical resource under CEQA. Implementation of the Tait Diversion and Coast Pump Station Improvements would not cause a substantial adverse change in the significance of a CEQA historical built environment resource. Therefore, this programmatic component of the Proposed Project would have no impact on historical built environment resources.

### Mitigation Measures

Implementation of the following mitigation measure would reduce the potentially significant impact related to historical built environment resources to a less-than-significant level.

**MM CUL-1:** **Historic Era Built Environment Resources.** Potentially significant impacts to historic built environmental resources on the infrastructure component sites shall be addressed through the following measures:

a. **Identify Potential Historic Built Environment Resources (Applies to New Aquifer Storage and Recovery [ASR] Facilities and the Felton Diversion).** When new or upgraded facilities move into project-level design and those developments are being pursued by the City of Santa Cruz (City), a qualified cultural resource specialist shall review the project site and conduct a California Historical Resources Information System (CHRIS) records search. If there are no previously recorded resources or historic era buildings or structures located on the site, no further action is warranted. If these project site review efforts indicate a potential for California Environmental Quality Act (CEQA) historical resources, all buildings and structures within the component site that are 45 years or older, shall be identified and measure b shall be implemented.

b. **Evaluate Potential Built Environment Resources (Applies to New ASR Facilities, City/Soquel Creek Water District/Central Water District Intertie – Soquel Village and Park Avenue Pipelines, and the Felton Diversion).** Should potential CEQA historical resources be identified within the above programmatic infrastructure component sites, prior to project implementation, the City or other lead agency overseeing the Proposed Project shall retain a qualified architectural historian, meeting the Secretary of the Interior's Professional Qualification Standards (36 Code of Federal Regulations Part 61), to record such potential resources based on professional standards, to formally assess their significance under CEQA Guidelines Section 15064.5. A Historic Resources Evaluation Report (HRER) shall be prepared by the architectural historian to evaluate properties over 45 years of age under all applicable significance criteria. In consideration of the historic context for the existing water management systems in the region there is a low-likelihood that water management structures that postdate the late 1800s or early 1900s (pioneering water system era) will be found historically significant. Therefore, for existing infrastructure component sites it is likely that the HRER will find that no properties meet the significance criteria and therefore, no CEQA historical resources are likely to be present. No further work shall be required for historic era-built environment properties, buildings, or structures 45 years old or older at these sites that are not found to meet the CEQA historical significance criteria as historical resources. If a property is found to be eligible for listing under the applicable significance criteria and therefore considered a CEQA historical resource, the resource shall be avoided or preserved in place. If avoidance or preservation in place is not feasible, and the historical resource will be modified through design such that it may not be able to convey its historic significance, the City will retain a qualified architectural historian to prepare a subsequent technical report. This required report will assess the proposed project design plans and/or schematics in conjunction with the subject CEQA historical resource and determine whether the Proposed Project conforms with the Secretary of the Interior's Standards for the Treatment of Historic Properties, specifically, the Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Structures). The City shall modify the

Proposed Project, as needed, to ensure that the Secretary of the Interior's Standards are met such that the historical resource continues to convey its historical significance.

**Impact CUL-2: Archaeological Resources and Human Remains (Significance Standards A, B, and C).** Construction of Proposed Project infrastructure components could cause a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, and/or disturb human remains. ***(Less than Significant with Mitigation)***

### Water Rights Modifications

The water rights modifications would not result in construction activities that could damage or otherwise alter unique archaeological resources or historical resources of an archaeological nature or disturb human remains. Given that, the water rights modifications would not disturb human remain or result in direct impacts to unique archaeological resources or historical resources of an archaeological nature, as defined in CEQA and the CEQA Guidelines, and as a result would not cause a substantial adverse change in the significance of such resources. Therefore, this project component of the Proposed Project would have no direct impacts on archaeological resources, historical resources of an archaeological nature, or human remains.

The following analysis evaluates the potential indirect impacts to unique archaeological resources, historical resources of an archaeological nature, or human remains 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

As indicated in Impact CUL-1, operation of the Proposed Project infrastructure components, involving the diversion of water, the movement of water in pipelines and the pumping and extraction of water into and out of groundwater basins would not have the potential to impact unique archaeological resources or historical resources of an archaeological nature, or disturb human remains and therefore operation of these components is not further evaluated. However, construction of these infrastructure components would have the potential to impact unique archaeological resources or historical resources of an archaeological nature if such resources are present, or disturb human remains and therefore construction impacts are further evaluated below.

#### Aquifer Storage and Recovery Facilities

**New ASR Facilities.** The Proposed Project includes new ASR facilities that could be installed 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 City's service area. Given that there are not identified locations for these facilities at this time, site-specific information about potential archaeological resources and human remains is not available. If such resources are present on these sites, Standard Construction Practices would be implemented, as described Chapter 3, Project Description and evaluated in Section 4.4.4.2, Analytical Methods. Standard Construction Practice #24 requires that standard inadvertent discovery clauses be included in all construction contracts to address the discovery of potential resources during construction. Standard Construction Practice #25 provides for the proper handling of human remains discovered inadvertently during construction. With the implementation of Standard Construction Practice #25, potential impacts related to construction of new ASR facilities on human remains would be less than significant. However, with the implementation of Standard Construction Practice #24, potential impacts related to construction of these programmatic components could still cause substantial adverse changes

in the significance of such unique archaeological resources or historical resources of an archaeological nature, as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 4.4.4.2. Therefore, the impact of this programmatic component of the Proposed Project on unique archaeological resources or historical resources of an archaeological nature would be potentially significant.

Implementation of MM CUL-2 would avoid a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature by requiring: a records search and site survey on these component sites to identify the potential for resources to be present on the site(s); inclusion of standard inadvertent discovery clauses in all construction contracts to address the discovery of potential resources during construction; determination by a qualified archaeologist whether the resource qualifies as an unique archaeological resource or a historical resource of an archaeological nature under CEQA Guidelines Section 15064.5; preservation in place, if feasible, if resources are determined to be significant; and appropriate data recovery and permanent curation of recovered materials if preservation in place is not feasible. Therefore, implementation of MM CUL-2 would reduce the potentially significant impacts of this programmatic component on unique archaeological resources or historical resources of an archaeological nature to a less-than-significant level.

**Beltz ASR Facilities.** Dudek conducted a CHRIS records search and a NAHC SLF search within 0.25 miles of Beltz 8, 9, 10, and 12 ASR facility sites as well as an intensive surface reconnaissance within and immediately adjacent to these components. No archaeological resources were identified within any of these component sites. There is low potential for encountering potentially significant unknown archaeological resources during construction. If such resources are present on these sites, Standard Construction Practices #24 and #25 would be implemented, as described in Section 4.4.4.2, Analytical Methods. With the implementation of Standard Construction Practice #25, potential impacts on human remains related to construction of Beltz ASR facilities would be less than significant. However, with the implementation of Standard Construction Practice #24, potential impacts related to construction of these project components could still cause substantial adverse changes in the significance of such unique archaeological resources or historical resources of an archaeological nature, as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 4.4.4.2. Therefore, the impact of this project component of the Proposed Project on unique archaeological resources or historical resources of an archaeological nature would be potentially significant.

Notwithstanding the low sensitivity of the Beltz ASR sites, MM CUL-2 would avoid a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, as described above for new ASR facilities. Therefore, implementation of MM CUL-2 would reduce the potentially significant impacts of this project component on unique archaeological resources or archaeological resources of a historical nature to a less-than-significant level.

Water Transfers and Exchanges and Intertie Improvements

**City/SVWD Intertie.** Dudek conducted a CHRIS records search and a NAHC SLF search within 0.25 miles of this component site as well as an intensive surface reconnaissance within and immediately adjacent to this site. No archaeological resources were identified within this component site. This component was also evaluated for the Scotts Valley Multi-Agency Regional Intertie Project in 2010 (Section 2.1.1); there were no impacts to significant archaeological resources found relative to this component (URS 2013). There is low potential for encountering potentially significant unknown archaeological resources during construction. If such resources are present on this site, Standard Construction Practices #24 and #25 would be implemented, as described in Section 4.4.4.2, Analytical Methods. With the implementation of Standard Construction Practice #25, potential impacts on human remains related to construction of the City/SVWD Intertie would be less than significant. However, with the implementation of

Standard Construction Practice #24, potential impacts related to construction of this programmatic component could still cause substantial adverse changes in the significance of such historical or unique archaeological resources, as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 4.4.4.2. Therefore, the impact of this programmatic component of the Proposed Project on unique archaeological resources or historical resources of an archaeological nature would be potentially significant.

Notwithstanding the low sensitivity of this component site, MM CUL-2 would avoid a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, as described above for new ASR facilities. Therefore, implementation of MM CUL-2 would reduce the potentially significant impacts of this programmatic component on unique archaeological resources or historical resources of an archaeological nature to a less-than-significant level.

City/SqCWD/CWD Intertie - Soquel Village and Park Avenue Pipelines and McGregor Pump Station Upgrade. The CHRIS records search identified two recorded archaeological resources: CA-SCR-191, is located within 150 feet of the Soquel Village pipeline; and CA-SCR-214 is located within ten feet of the Park Avenue pipeline. Documentary research indicates the sites were subjected to subsurface testing and found to be of very low density and integrity (CA-SCR-191) or found not to constitute an actual archaeological deposit (Section 2.1.1). There is low potential for encountering potentially significant unknown archaeological resources during future construction. If such resources are present on these sites, Standard Construction Practices #24 and #25 would be implemented, as described above for new ASR facilities. With the implementation of Standard Construction Practice #25, potential impacts on human remains related to construction of the Soquel Village and Park Avenue pipelines and McGregor pump station upgrade would be less than significant. However, with the implementation of Standard Construction Practice #24, potential impacts related to construction of this programmatic component could still cause substantial adverse changes in the significance of such historical or unique archaeological resources, as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 4.4.4.2, Analytical Methods. Therefore, the impact of this programmatic component of the Proposed Project on unique archaeological resources or historical resources of an archaeological nature would be potentially significant.

Notwithstanding the low sensitivity of these component sites, MM CUL-2 would avoid a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, as described above for new ASR facilities. Therefore, implementation of MM CUL-2 would reduce the potentially significant impacts of this programmatic component on unique archaeological resources or historical resources of an archaeological nature to a less-than-significant level.

City/SQCWD/CWD Intertie – New Pump Stations. As indicated in Impact CUL-1, precise locations are not known at this time for the two new pump stations on Valencia Road and Freedom Boulevard. No archaeological resources were identified within these component sites, based on the records search and site survey. There is low potential for encountering potentially significant unknown archaeological resources during future construction. If such resources are present on these sites, Standard Construction Practices #24 and #25 would be implemented, as described above for new ASR facilities. With the implementation of Standard Construction Practice #25, potential impacts on human remains related to construction of these pump stations would be less than significant. However, with the implementation of Standard Construction Practice #24, potential impacts related to construction of this programmatic component could still cause substantial adverse changes in the significance of such historic or unique archaeological resources, as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 4.4.4.2, Analytical Methods. Therefore, the impact of this programmatic component of the Proposed Project on unique archaeological resources or historical resources of an archaeological nature would be potentially significant.

Notwithstanding the low sensitivity of this programmatic component site, MM CUL-2 would avoid a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, as described above for new ASR facilities. Therefore, implementation of MM CUL-2 would reduce the potentially significant impacts of this programmatic component on unique archaeological resources or historical resources of an archaeological nature to a less-than-significant level.

Felton Diversion and Tait Diversion and Coast Pump Station Improvements

Dudek conducted a CHRIS records search and a NAHC SLF search within 0.25 miles of Tait Diversion and Coast Pump Station improvements site and the Felton Diversion fish passage improvements site as well as an intensive surface reconnaissance within and immediately adjacent to these component sites. No archaeological resources or evidence of human remains were identified within these two component sites. There is low potential at both sites for encountering unknown archaeological resources during construction. If such resources are present on these sites, Standard Construction Practices #24 and #25 would be implemented, as described above for new ASR facilities. With the implementation of Standard Construction Practice #25, potential impacts on human remains related to construction of these diversion improvements would be less than significant. However, with the implementation of Standard Construction Practice #24, potential impacts related to construction of these programmatic components could still cause substantial adverse changes in the significance of such historical or unique archaeological resources, as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 4.4.4.2, Analytical Methods. Therefore, the impact of these programmatic components of the Proposed Project on unique archaeological resources or historical resources of an archaeological nature would be potentially significant.

Notwithstanding the low sensitivity of these component sites, MM CUL-2 would avoid a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, as described above for new ASR facilities. Therefore, implementation of MM CUL-2 would reduce the potentially significant impacts of these programmatic components on unique archaeological resources or historical resources of an archaeological nature to a less-than-significant level.

### Mitigation Measures

Implementation of the following mitigation measure would reduce the potentially significant impact related to unique archaeological resources or historical resources of an archaeological nature to a less-than-significant level.

**MM CUL-2: Unique Archaeological Resources, Historical Resources of Archaeological Nature, and Subsurface Tribal Cultural Resources.** Potentially significant impacts to unique archaeological resources, historical resources of an archaeological nature, or subsurface tribal cultural resources on the infrastructure component sites shall be addressed through the following measures:

a. **Identify Potential Unique Archaeological Resources, Historical Resources of Archaeological Nature, and Subsurface Tribal Cultural Resources (Applies to New Aquifer Storage and Recovery [ASR] Facilities and Other Components where Five Years Have Elapsed).** When new ASR facilities sites are identified and those components are being pursued by the City of Santa Cruz (City), a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, shall conduct a California Historical Resources Information System (CHRIS) records search, a Native American Heritage Commission (NAHC) Sacred Lands File (SLF) search and perform an intensive surface reconnaissance within a specifically defined Area of Direct Impact (ADI). Based on the above, all

archaeological sites within or near the component site or area of potential effect shall be identified. The sensitivity of the site for discovering unknown resources, shall also be identified. The qualified archaeologist will prepare a technical report with the results of the above. The qualified archaeologist shall attempt to ascertain whether the archaeological sites qualify as unique archaeological resources, historical resources of an archaeological nature, or subsurface tribal cultural resources. If known or identified resources of these kinds are present on the site, measure c shall be implemented.

This measure shall also be implemented for any other project or programmatic components that are implemented more than five years after the CHRIS records search and NAHC SLF search were conducted.

b. **Standard Sensitivity Training and Inadvertent Discovery Clauses (Applies to all Components).** The City or other lead agency shall include a standard clause in every construction contract for the Proposed Project, which requires cultural resource sensitivity training for workers prior to conducting earth disturbance in the vicinity of a documented cultural-resource-sensitive area, should one be identified in the future. Prior to site mobilization or construction activities on the project site, a qualified archaeologist with training and experience in California prehistory and historical period archaeology shall conduct the cultural resources awareness training for all project construction personnel. The training shall address the identification of buried cultural deposits, including Native American and historical period archaeological deposits and potential tribal cultural resources, and cover identification of typical prehistoric archaeological site components including midden soil, lithic debris, and dietary remains as well as typical historical period remains such as glass and ceramics. The training must also explain procedures for stopping work if suspected resources are encountered. Any personnel joining the work crew subsequent to the training shall also receive the same training before beginning work.

   Consistent with Standard Construction Practice #24, standard inadvertent discovery clauses shall also be included in every construction contract for the Proposed Project by the City or other lead agency, which requires that in the event that an archaeological resource is discovered during construction (whether or not an archaeologist is present), all soil disturbing work within 100 feet of the find shall cease until a qualified archaeologist can evaluate the find and make a recommendation for how to proceed, as specified in measure c.

c. **Evaluate Potential Unique Archaeological Resources, Historical Resources of Archaeological Nature, and Subsurface Tribal Cultural Resources (Applies to all Components).** For an archaeological resource that is discovered during initial site review (measure a) or during construction (measure b), the City or other lead agency shall:

   - Retain a qualified archaeologist to determine whether the resource has potential to qualify as either a unique archaeological resource, a historical resource of an archaeological nature, or a subsurface tribal cultural resource under Public Resources Code section 21074, California Environmental Quality Act (CEQA) Guidelines Section 15064.5, or Section 106 of the National Historic Preservation Act.
   - If the resource has potential to be a unique archaeological resource, a historical resource of an archaeological nature, or a subsurface tribal cultural resource, the qualified archaeologist, in consultation with the lead agency, shall prepare a

research design and archaeological evaluation plan to assess whether the resource should be considered significant under CEQA criteria.

- If the resource is determined significant, the lead agency shall provide for preservation in place, if feasible. If preservation in place is not feasible, the qualified archaeologist, in consultation with the lead agency, will prepare a data recovery plan for retrieving data relevant to the site's significance. The data recovery plan shall be implemented prior to, or during site development (with a 100-foot buffer around the resource). The archaeologist shall also perform appropriate technical analyses, prepare a full written report and file it with the Northwest Information Center, and provide for the permanent curation of recovered materials. The written report will provide new recommendations, which could include, but would not be limited to, archaeological and Native American monitoring for the remaining duration of project construction.

**Impact CUL-3: Tribal Cultural Resources (Significance Standard D).** Construction of Proposed Project infrastructure components could cause a substantial adverse change in the significance of a tribal cultural resource. ***(Less than Significant with Mitigation)***

A NAHC SLF search did not identify any known tribal cultural resources within any of the study area and a 0.25-mile buffer from the study area. Dudek notified tribes traditionally associated with the study area about the Proposed Project and requested information regarding tribal cultural resources on April 7, 2020. The outreach effort has not resulted in the identification of a tribal cultural resource within or near the study area. No known geographically defined tribal cultural resources have been identified. On April 7, 2020, Valentin Lopez, Chair of the Amah Mutsun Tribal Band, requested that a Native American monitor from the Amah Mutsun Tribal Band be hired for all ground-disturbance work within 400 feet of known cultural resource sites. As indicated in Impact CUL-2, there are two locations where recorded prehistoric sites are within 400 feet of a component of the study area. In both instances, the subject prehistoric sites have been the subject of subsurface testing with findings that suggest either that the resources in question are of very low integrity and or of such low density that their designation as actual prehistoric sites is questionable.

The project and programmatic components would not impact known archaeological sites or tribal cultural resources. Nevertheless, in the event that unknown archaeological sites or tribal cultural resources are uncovered during the course of construction Standard Construction Practices #24 and #25 would be implemented, as described above in Impact CUL-2. With the implementation of Standard Construction Practice #25, potential impacts on human remains would be less than significant. However, with the implementation of Standard Construction Practice #24, the Proposed Project could still cause substantial adverse changes in the significance of a historical or unique archaeological resource or tribal cultural resource, as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 4.4.4.2, Analytical Methods. Therefore, the impact of the Proposed Project on archaeological sites or tribal cultural resources would be potentially significant.

Implementation of MM CUL-2 would avoid substantial adverse changes in the significance of archaeological sites or tribal cultural resources, as described above for new ASR facilities in Impact CUL-2. Therefore, implementation of MM CUL-2 would reduce the potentially significant impacts of the Proposed Project on archaeological sites or tribal cultural resources to a less-than-significant level.

**Mitigation Measures**

Implementation of MM CUL-2 described above would reduce the potentially significant impact related to archaeological sites or tribal cultural resources to a less-than-significant level.

### 4.4.4.4 Cumulative Impacts Analysis

This section provides an evaluation of cumulative cultural resources and tribal cultural 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 area of analysis for cumulative impacts to cultural resources and tribal cultural resources is the County of Santa Cruz.

**Impact CUL-4: Cumulative Cultural Resource and Tribal Cultural Resource Impacts (Significance Standards A, B, C, and D).** Construction of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to cultural resources and tribal cultural resources, but the Proposed Project's contribution would not be cumulatively considerable. ***(Less than Significant)***

As shown in Table 4.0-2, there are numerous cumulative projects that would be located in Santa Cruz County. Some of these cumulative projects would be approved and implemented by the City and some would require discretionary approved from other local lead agencies in the County. The context for the cultural resources and tribal cultural resources cumulative analysis considers the former territory of the Costanoan or Ohlone people and the historic-era settlement patterns that have occurred over roughly the past two centuries. As there are a limited number of significant cultural resources, the loss of any one cultural resource site could affect the scientific value of others in a region. Implementation of appropriate mitigation measures that are identified during the discretionary approval process for cumulative projects can help to capture and preserve knowledge of such resources through a range of typical actions (e.g., preservation in place, data recovery, conformance with the Secretary of the Interior's Standards) and federal, state, and local laws can also protect these resources. However, preservation in place is not always feasible, and therefore cumulative projects could result in a potentially significant cumulative impact on cultural resources and tribal cultural resources.

As described above, construction of project and programmatic infrastructure components of the Proposed Project could result in potentially significant impacts related to historic built environment resources (Impact CUL-1), historic or unique archaeological resources (Impact CUL-2) and tribal cultural resources (Impact CUL-3). MM CUL-1 and MM CUL-2 have been identified to avoid substantial adverse changes to cultural resources and tribal cultural resources. Therefore, with the implementation of these mitigation measures, the Proposed Project would not have a considerable contribution to the cumulative impact. As such, the Proposed Project would result in a less-than-significant cumulative impact related cultural resources and tribal cultural resources.

## 4.4.5 References

Dudek. 2020. *Draft Cultural Resources Inventory, Evaluation, and Finding of Effect Report for the Santa Cruz Water Rights Project.* November 2020. (See Appendix G.)

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# 4.5 Geology and Soils

This section describes the existing geology and soils 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 of the Santa Cruz Water Rights Project (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. One comment related to geology and soils was received from an individual. 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.

## 4.5.1 Existing Conditions

### 4.5.1.1 Study Area

The Proposed Project involves the water system and the areas served of the City of Santa Cruz (City) and 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). The Proposed Project is located within Santa Cruz County and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Figure 3-1, in Chapter 3, Project Description). While the project area is much broader, the study area for geology and soils is focused on the proposed project and programmatic infrastructure component sites where construction and ground disturbance could occur and where new or upgraded facilities would be located (see Figure 3-4, in Chapter 3, Project Description). These sites include the following: aquifer storage and recovery (ASR) sites where known, intertie improvement sites, Felton Diversion fish passage improvement site, and the Tait Diversion and Coast Pump Station improvement 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.

### 4.5.1.2 Regional Geologic Setting

#### Regional Geology

The study area is located along on the southwestern side of the Santa Cruz Mountains. The Santa Cruz Mountains are in the central portion of the Coast Ranges Physiographic Province of California, which is a series of coastal mountain chains paralleling the pronounced northwest-southeast structural grain of central California geology, between Point Arguello, in Santa Barbara County, and the California/Oregon border. The study area and surrounding region are underlain by granitic and metamorphic rocks of the Salinian Block. This suite of basement rocks is separated from contrasting basement rock of the Franciscan Formation to the northeast by the San Andreas Fault System. While the core of the mountain range is dominated by gneiss, schist, limestone, quartzite, and granite, Cretaceous through Holocene sedimentary rocks and lesser amounts of Tertiary volcanic rocks overlie much of the region (USGS 1981a, 1981b; AECOM 2018; USGS 2020a). The geologic conditions of each of the project and programmatic infrastructure components sites are provided in Section 4.5.1.5, Infrastructure Component Site Conditions.

## Regional Seismicity and Seismic Hazards

The study area is located in a seismically active region of California, between two major Holocene-active faults, including the San Andreas Fault, located approximately 3 miles to the northeast, and the San Gregorio Fault, located approximately 3 miles to the southwest (see Figure 4.5-1). Historical earthquakes along the San Andreas Fault and its branches have caused substantial seismic shaking in Santa Cruz County in historical time. The two largest historical earthquakes to affect the area were the moment magnitude (Mw) 7.9 San Francisco earthquake of April 18, 1906, and the Mw 6.9 Loma Prieta earthquake of October 17, 1989 (corresponding to Richter magnitudes of 8.3 and 7.1, respectively). The San Francisco earthquake caused severe seismic shaking and structural damage to many buildings in the Santa Cruz Mountains. The Loma Prieta earthquake may have caused more intense seismic shaking than the 1906 event in localized areas of the Santa Cruz Mountains, although its regional effects were not as extensive. There were also major earthquakes in northern California along or near the San Andreas Fault in 1838, 1865, and possibly 1890 (City of Santa Cruz 2012a).

## Regional Faulting

As previously discussed, Santa Cruz County is in a portion of California that is crossed by several faults. The California Geological Survey (CGS) classifies faults as:

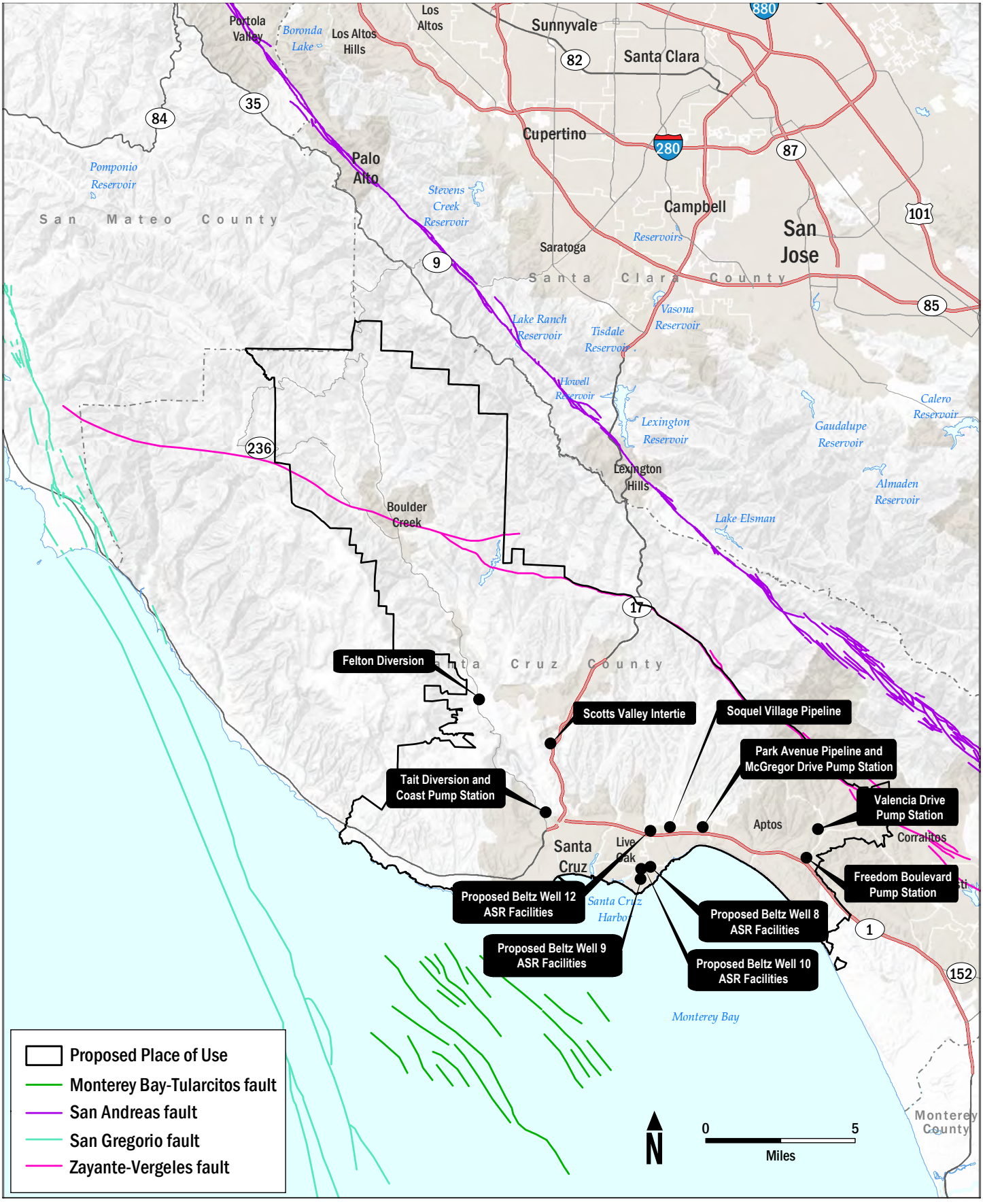
- Holocene-active faults, which are faults that have moved during the past approximate 11,700 years. These faults are capable of surface rupture and are also known as active faults.
- Pre-Holocene faults, which are faults that have not moved in the past 11,700 years. This class of fault may be capable of surface rupture but is not regulated under the Alquist-Priolo Special Studies Zones Act of 1972. Pre-Holocene faults are also known as potentially active faults.
- Age-undetermined faults, which are faults where the recency of fault movement has not been determined (California Geological Survey, 2018). Age-undetermined faults are also known as inactive faults.

This fault classification is consistent with criteria of the Alquist-Priolo Earthquake Fault Zoning Act of 1972 (see Section 4.5.2, Regulatory Framework, for information about this act). Distances to regional faults, maximum probable earthquake magnitudes, and recurrence intervals are shown in Table 4.5-1.

### Table 4.5-1. Distances to Regional Faults

| Fault | Distance from Study Area (miles) | Maximum Expected Earthquake Magnitude (Moment Magnitude) | Approximate Time Between Major Earthquakes (years) |
|---|---|---|---|
| San Gregorio | 3 | 7.5 | 400 |
| Zayante-Vergeles | 0 (traverses study area) | 7.5 | 8,821 |
| Monterey Bay-Tularcitos | 2 | 7.3 | 2,841 |
| San Andreas | 3 | 7.8 | 210 |

**Sources:** AECOM 2018; City of Santa Cruz 2012a; USGS 2017a, 2017b, 2017c, 2017d, 2020b.


Portola Valley
Boronda Lake
Los Altos Hills
Los Altos
Sunnyvale
Santa Clara
Cupertino
Palo Alto
Stevens Creek Reservoir
Pomponio Reservoir
San Mateo County
Campbell
San Jose
Saratoga
Reservoirs
Santa Clara County
Lake Ranch Reservoir
Tisdale Reservoir
Vasona Reservoir
Howell Reservoir
Lexington Reservoir
Gaudalupe Reservoir
Calero Reservoir
Almaden Reservoir
Lexington Hills
Lake Elsman
Boulder Creek
Felton Diversion
Santa Cruz County
Scotts Valley Intertie
Soquel Village Pipeline
Park Avenue Pipeline and McGregor Drive Pump Station
Tait Diversion and Coast Pump Station
Valencia Drive Pump Station
Aptos
Corralitos
Santa Cruz
Live Oak
Freedom Boulevard Pump Station
Proposed Beltz Well 12 ASR Facilities
Santa Cruz Harbor
Proposed Beltz Well 8 ASR Facilities
Proposed Beltz Well 9 ASR Facilities
Proposed Beltz Well 10 ASR Facilities
Monterey Bay
Monterey County
Proposed Place of Use
Monterey Bay-Tularcitos fault
San Andreas fault
San Gregorio fault
Zayante-Vergeles fault
N
0
5
Miles

The study area is traversed by the Zayante-Vergeles Fault (see Figure 4.5-1) (USGS 2020b), which is mapped by the U.S. Geological Survey (USGS) as a late Pleistocene to possibly Holocene fault, active within the past 15,000 years (i.e., Holocene-active to pre-Holocene fault). The Zayante-Vergeles Fault was considered Holocene-active in a review prepared as part of the City of Santa Cruz General Plan EIR (City of Santa Cruz 2012a, Appendix F-4), based on detailed geologic mapping by numerous geologists. Additionally, a magnitude 4.0 earthquake occurred in 1998 along this fault in the Santa Cruz Mountains (USGS 2000). The Zayante-Vergeles Fault is marked by a zone of relatively parallel fault traces that extend from the vicinity of West Waddell Creek, southeast through the Santa Cruz Mountains, beneath Quaternary alluvium of the Pajaro River, and across the northern Gabilan Range, where the fault has a complex junction with the San Andreas Fault, approximately 5 miles southeast of Hollister (USGS 2000). For planning purposes, the maximum probable earthquake associated with the Zayante-Vergeles Fault is Mw 7.5 (USGS 2017a).

The study area is located approximately 3 miles southwest of the San Andreas Fault (see Figure 4.5-1) (USGS 2020b), which is a 680-mile network of Holocene-active faults that collectively accommodate most of the north-south motion between the North American and Pacific tectonic plates. The San Andreas Fault Zone is considered to be a Holocene-active and historically active strike-slip fault that extends along most of coastal California, from its complex junction with the Mendocino Fault Zone on the north, southeast to the northern Transverse Range, and inland to the Salton Sea, where a well-defined zone of seismicity (i.e., the Brawley Seismic Zone) transfers slip to the Imperial Fault. Two major surface-rupturing earthquakes have occurred in historic time, including the 1857 Fort Tejon earthquake and the 1906 San Francisco earthquake (USGS 2002). For planning purposes, the maximum probable earthquake associated with the San Andreas Fault is Mw 7.8 (USGS 2017b).

The study area is located approximately 3 miles northeast of the San Gregorio Fault (see Figure 4.5-1) (USGS 2020b), which is a Holocene-active (past 11,700 years), structurally complex fault zone as much as 3 miles wide. The fault zone is primarily located offshore, west of San Francisco Bay and Monterey Bay, with onshore locations at promontories, such as Moss Beach, Pillar Point, Pescadero Point, and Point Año Nuevo. The San Gregorio Fault is a complex fault zone consisting of several named faults, including the Seal Cove, Frijoles, Coastways, Greyhound Rock, Carmel Canyon, Denniston Creek, and Año Nuevo Faults. This fault zone extends from Bolinas Lagoon south to the Point Sur region (USGS 1999). For planning purposes, the maximum probable earthquake associated with the San Gregorio Fault is Mw 7.5 (USGS 2017c).

The study area is located approximately 2 miles north of the Monterey Bay-Tularcitos Fault Zone (see Figure 4.5-1), which is generally considered late Quaternary (past 15,000 years) (USGS 2020b); however, portions of this fault are considered Holocene-active (past 11,700 years). This offshore fault zone is a complex, generally northwest-trending zone up to 9 miles wide, consisting primarily of right-lateral, reverse/thrust faults, extending across Monterey Bay southeast to the Monterey Peninsula, to near the crest of the Sierra de Salinas (USGS 2001). For planning purposes, the maximum probable earthquake associated with the Monterey Bay-Tularcitos Fault Zone is Mw 7.3 (USGS 2017d).

In addition, the study area is traversed by the Ben Lomond Fault, which has been mapped generally along the San Lorenzo River from Boulder Creek to Felton, as well as on the westside of the City of Santa Cruz, traversing the coastline just east of Mitchell's Cove. This late Quaternary fault (past 130,000 years) is not well-located throughout much of the study area and therefore is not included on Figure 4.5-1 (USGS 1981, 2020b).

### Surface Rupture

Surface rupture involves the displacement and cracking of the ground surface along a fault trace. Surface ruptures are visible instances of horizontal or vertical displacement, or a combination of the two, typically confined to a

narrow zone along the fault. Surface rupture is more likely to occur in conjunction with Holocene-active fault segments, where earthquakes are large, or where the location of the movement (earthquake hypocenter) is shallow.

As discussed in Section 4.5.2, Regulatory Framework, the Alquist-Priolo Earthquake Fault Zoning Act of 1972 regulates development near Holocene-active faults to mitigate the hazard of surface fault rupture. This Act requires the State Geologist to establish regulatory zones (known as Alquist-Priolo Special Study Fault Zones) around the surface traces of Holocene-active faults and to issue appropriate maps. Local agencies must regulate most development projects within the zones. The Alquist-Priolo Special Study Fault Zone located closest to the study area is associated with the San Andreas Fault, located approximately 3 miles to the northeast (USGS 2020b, CGS 2020). Therefore, the study area is not subject to fault rupture.

### Liquefaction and Lateral Spreading

Soil liquefaction occurs when ground shaking from an earthquake causes a sediment layer saturated with groundwater to lose strength and take on the characteristics of a fluid, thus becoming like quicksand. Factors determining the liquefaction potential are soil type, the level and duration of seismic ground motions, the type and consistency of soils, and the depth to groundwater. Liquefaction generally occurs at depths of less than 40 feet in soils that are young (Holocene-age), saturated, and loose (CGS 2004). Soils that are most susceptible to liquefaction are clay-free deposits of sands and silts, and unconsolidated alluvium.

The California Geological Survey has completed regional liquefaction mapping for the San Francisco Bay Area and the greater Los Angeles area. No such maps are available for the study area (CGS 2020). Similarly, the County of Santa Cruz General Plan Safety Element (County of Santa Cruz 2020a) does not include liquefaction potential maps. However, the City of Santa Cruz 2030 General Plan– Hazards, Safety, and Noise Chapter (City of Santa Cruz 2012b); the City of Capitola General Plan Safety and Noise Element (City of Capitola 2019); and the County of Santa Cruz Geographic Information Services (County of Santa Cruz 2020b) provide liquefaction potential maps. Although the potential for liquefaction within Scotts Valley is described in the Scotts Valley General Plan Safety Element, the accompanying liquefaction figure (Figure S-3) is not available online (City of Scotts Valley 1999). As described in Section 4.5.1.5, Infrastructure Component Site Conditions, portions of the study area have been identified as zones of potential liquefaction.

Lateral spreading is the lateral movement of unsupported soils in association with liquefaction. Examples of areas/scenarios prone to lateral spreading include: 1) liquefaction-prone soils on slopes adjacent to rivers, canals, or lakes; and 2) liquefaction-prone soils during excavation and construction of subterranean parking garages.

### Regional Subsidence

Land subsidence is a settling or sudden sinking of a geological surface due to subsurface movement of earth materials. The principal causes of subsidence in California are aquifer-system compaction, drainage and decomposition of organic soils, and oil and gas extraction. Effects of land subsidence include damage to buildings and infrastructure such as roads and canals, increased flood risk in low-lying areas, and lasting damage to groundwater aquifers and aquatic ecosystems. Based on a review of a USGS subsidence map, the study area is not in an area of regional ground subsidence (USGS 2020c).

## 4.5.1.3 Paleontological Resources

Paleontological resources are the fossilized remains, traces, and associated data of plants and animals, preserved in earth's crust, and are generally considered to be older than middle Holocene (approximately 5,000 years before

present) by the Society of Vertebrate Paleontology (SVP 2010). Body fossils include bones, teeth, shells, leaves, and wood, while trace fossils include trails, trackways, footprints, and burrows. With the exception of fossils found in low-grade metasedimentary rocks, significant paleontological resources are found in sedimentary rock units that are old enough to preserve the remains or traces of plants and animals. The fossil potential of geological units is assessed based on the likelihood of encountering fossils within the unit. This study uses the SVP (2010) classification system, which ranks geological units as having high potential (proven track record of producing significant paleontological resources), undetermined potential (little information available on paleontological productivity of geological unit), low potential (rarely if ever produce fossils), and no potential (high-grade metamorphic and plutonic igneous rocks that do not preserve fossils).

To assist in determining the paleontological sensitivity of individual rock units present within the study area, a paleontological records search was requested from the Natural History Museum of Los Angeles County (LACM) on May 22, 2020 and a desktop geological and paleontological research were conducted. The results of this review are presented in Section 4.5.1.5, Infrastructure Component Site Conditions.

### 4.5.1.4 Unique Geological Features

According to the County of San Diego (2007), which provides guidelines for determining significance of unique geological features throughout California, unique geological features include one or more of the following criteria:

- Is the best example of its kind locally or regionally;
- Embodies the distinctive characteristics of a geologic principle that is exclusive locally or regionally;
- Provides a key piece of geologic information important in geology or geologic history;
- Is a “type locality” of a geologic feature;
- Is a geologic formation that is exclusive locally or regionally;
- Contains a mineral that is not known to occur elsewhere in the County; or
- Is used repeatedly as a teaching tool.

Unique geological features do not include surficial geological expressions that are visually appealing.

### 4.5.1.5 Infrastructure Component Site Conditions

This section provides the geology and soils conditions at each of the project and programmatic infrastructure component sites for which improvements and new facilities are proposed.

#### Aquifer Storage and Recovery Sites

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 new ASR facilities, the settings of such future facilities are unknown.

The Beltz 9 ASR site is mapped on the surface as Holocene (<11,700 years ago) basin deposits, which in turn is likely underlain by Pleistocene (approximately 11,700 years ago to 2.58 million years ago [mya]) lowest emergent marine terrace deposits (map unit Qmt2). The Beltz 8, Beltz 10, and Beltz 12 ASR sites are underlain by Pleistocene lowest emergent terrace deposits, which in turn are likely underlain by the Pliocene to late Miocene (approximately 2.58 mya to 11.63 mya) Purisima Formation (map unit Tp) (see Figure 4.5-2) (USGS 2016a, 2020a).

Incorporated City Limits

**Proposed Intertie Improvements**

City / SVWD Intertie Pipeline

City / SqCWD / CWD Intertie Pipelines

PS Pump Station Upgrade

PS New Pump Station

**Surface Water Diversion Improvements**

D Diversion Upgrade

**Proposed Beltz ASR Facilities**

Well 8

Well 9

Well 10

Well 12

**Groundwater Basins**

Santa Cruz Mid-County

Santa Margarita

**Geologic Formation**

Qae : Eolian lithofacies

Qaf : Fluvial lithofacies

Qal : Alluvial deposits, undifferentiated

Qar : Aromas Sand, undivided

Qb : Basin deposits (Holocene)

Qbs : Beach sand (Holocene)

Qcl : Lowest emergent coastal terrace deposits

Qcu : Coastal terrace deposits, undifferentiated (Pleistocene)

Qms : Marine nearshore and shelf deposits (late Holocene)

Qof : Alluvial fan facies

Qt : Terrace deposits, undifferentiated (Pleistocene)

Qtl : Colluvium (Holocene)

Tblc : Conglomerate

Tl : Locatelli Formation (Paleocene)

Tlo : Lompico Sandstone (middle Miocene)

Tm : Monterey Formation (middle Miocene)

Tp : Purisima Formation (Pliocene and late Miocene)

Tp : Purisima Formation (Pliocene and upper Miocene)

Tsc : Santa Cruz Mudstone (upper Miocene)

Tsm : Santa Margarita Sandstone (upper Miocene)

af : Artificial fill

qd : Quartz diorite (Cretaceous)

sch : Metasedimentary rocks (Mesozoic or Paleozoic)

Felton Diversion

Tait Diversion and Coast Pump Station

Proposed Beltz 12 ASR Facilities

Soquel Village Pipeline

Valencia Drive Pump Station

Park Avenue Pipeline and McGregor Pump Station

Proposed Beltz 10 ASR Facilities

Proposed Beltz 8 ASR Facilities

Proposed Beltz 9 ASR Facilities

Freedom Boulevard Pump Station

City of Scotts Valley

City of Santa Cruz

City of Capitola

SOURCE: Bing Maps Accessed 2020, Kennedy/Jenks Consultants 2012 and 2014, URS 2013, County of Santa Cruz 2020, USGS 2020

DUDEK

0 2,500 5,000 Feet

**FIGURE 4.5-2**

Geology Map

Santa Cruz Water Rights Project

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Surface fault rupture is not anticipated in the vicinity of the Beltz ASR sites. The Alquist-Priolo Special Study Fault Zone located closest to the Beltz ASR sites is associated with the San Andreas Fault, located approximately 8 miles to the northeast (see Figure 4.5-1) (USGS 2020b, CGS 2020). Although not within an Alquist-Priolo Special Study Fault Zone, the Holocene-active Zayante-Vergeles, Monterey Bay-Tularcitos, and San Gregorio Faults are located approximately 5 miles, 4 miles, and 12 miles from the Beltz ASR sites, respectively (USGS 2020b).

Based on County of Santa Cruz geographic information system (GIS) data (County of Santa Cruz 2020) and the City of Capitola General Plan Safety and Noise Element (City of Capitola 2019) liquefaction potential maps, the Beltz ASR sites are in an area of low liquefaction potential (see Figure 4.5-3). Although the Pleistocene marine terrace deposits generally consist of sand and gravel, these older sediments have been compacted over time and are not loose and unconsolidated, thus minimizing the potential for liquefaction. Similarly, the underlying Purisima Formation consists of consolidated materials, which would not be prone to liquefaction. Incised (i.e., down-cut) drainages/creeks, including an unnamed creek to the west and Soquel Creek/Capitola Beach to the east, are zones of medium to high liquefaction potential, but the intervening terraced areas, including the Beltz ASR sites, are not prone to liquefaction. The liquefaction potential in the creek areas is a result of shallow perched groundwater and loose, Holocene-age sandy soils in the vicinity of the creeks.

The Beltz ASR sites are located on relatively flat to gently sloping topography. Beltz 8, 9, and 12 ASR sites are located on Watsonville loam soils, which occur on terraces and alluvial fans, on 0% to 15% slopes. Beltz 10 is located on Elkhorn sandy loam, which occurs on terraces and alluvial fans, on 2% to 9% slopes (USDA NRCS 2020). No hillsides are in proximity to these sites. Therefore, there is no potential for landslides or slope instability at the Beltz ASR sites.

Watsonville loam soils, which include loam, clay loam, and sandy clay loam, are somewhat poorly drained and have a very low to moderately low capacity to transmit water. Elkhorn sandy loam and clay loam are well drained and have a moderately high capacity to transmit water (USDA NRCS 2020). The well-drained soils reduce erosion rates by enhancing stormwater infiltration into on-site soils.

The LACM reported no paleontological records from the Beltz 8, Beltz 9, Beltz 10, and Beltz 12 ASR sites (McLeod 2020). However, Pleistocene marine terrace deposits have produced significant invertebrate and vertebrate fossils throughout California. Addicot (1966) reported over 100 marine mollusk, chiton, echinoid, coral, and barnacle species from Santa Cruz Pleistocene marine terraces. In his compilation of Quaternary vertebrate fossil localities in California, Jefferson (1991) listed two Pleistocene fossil localities from Santa Cruz County that included specimens of Columbian mammoth (*Mammuthus columbi*). Jefferson et al (1992) described a variety of fossil terrestrial vertebrate fossils collected from the lowest emergent Pleistocene marine terrace, including horse (*Equus* sp. cf. *E. occidentalis*), camel (*Camelops* sp. cf. *C. hesternus*), bison (*Bison latifrons*), and ground sloth (*Glossotherium harlani*).

No unique geological features were identified from the Beltz 8, Beltz 9, Beltz 10, and Beltz 12 ASR sites.

## Intertie Improvement Sites

### City/SVWD Intertie Site

The City/SVWD intertie site is underlain by undifferentiated Pleistocene terrace deposits (map unit Qt), the late Miocene (approximately 5.33 mya to 11.63 mya) Santa Margarita Sandstone (Santa Margarita Formation) (map unit Tsm), and Cretaceous/Mesozoic (approximately 66 mya to 145) quartz diorite (map unit qd), which is a plutonic (intrusive) igneous rock unit (see Figure 4.5-2) (USGS 1997, 2020a).

Surface fault rupture is not anticipated in the vicinity of the City/SVWD intertie site. The Alquist-Priolo Special Study Fault Zone located closest to the site is associated with the San Andreas Fault, located approximately 8 miles to the northeast (see Figure 4.5-1) (USGS 2020b, CGS 2020). Although not within an Alquist-Priolo Special Study Fault Zone, the Holocene-active Zayante-Vergeles, Monterey Bay-Tularcitos, and San Gregorio Faults are located approximately 5 miles, 7 miles, and 11 miles from the City/SVWD intertie site, respectively (USGS 2020b).

Based on County of Santa Cruz GIS data (County of Santa Cruz 2020) liquefaction potential maps, the central portion of the City/SVWD intertie site is in an area of low liquefaction potential. The remainder of the site has not been mapped with respect to liquefaction (see Figure 4.5-3); however, only younger alluvial materials along creeks and other water courses have a moderate potential for liquefaction (City of Scotts Valley 1999). As indicated above, the City/SVWD intertie site is not underlain by alluvium.

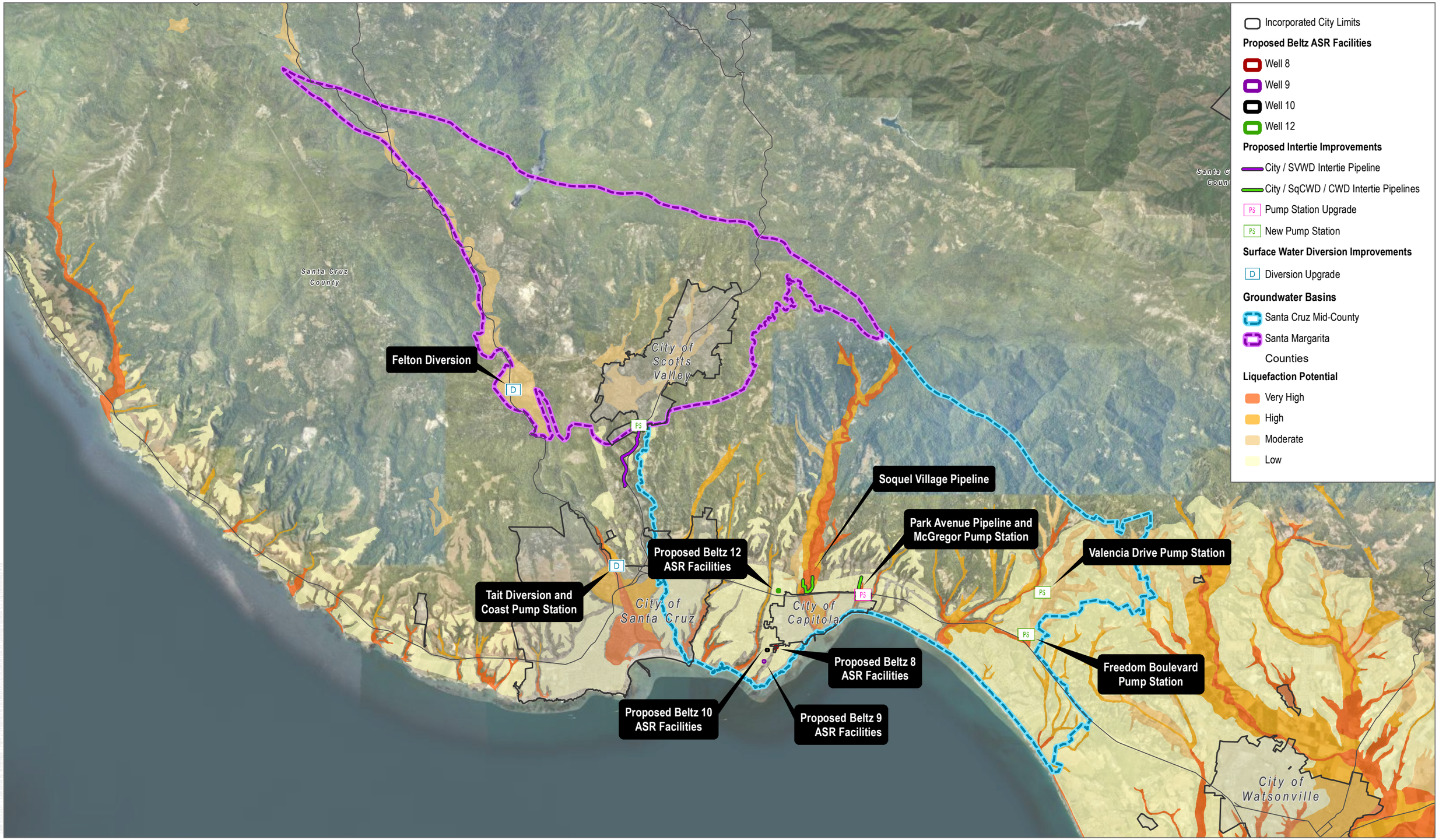
The topography along the City/SVWD intertie site is gently to moderately sloping, but locally trends immediately downslope of moderately steep hillsides within the Santa Cruz Mountains. The intertie also traverses the banks of a creek subsidiary to Carbonera Creek. Steeper sections of the site are underlain by Ben Lomond-Felton complex soils, which are located on 50% to 75% mountain slopes. Locally steep slopes may be susceptible to failure. Other sections of the intertie site are underlain by Pfeiffer gravelly sandy loam, on 15% to 30% slopes; Zayante coarse sand, on 5% to 30% slopes; and Watsonville loam, on 2% to 15% slopes (USDA NRCS 2020).

Ben Lomond-Felton complex soils are located on mountain slopes and consist of sandy loam, clay loam, and weathered bedrock. These soils are well drained and have a moderately low to high capacity to transmit water. Pfeiffer gravelly sandy loams are located on hills and terraces, are well drained, and have a high capacity to transmit water. Zayante coarse sands are located on hills and mountains, are somewhat excessively well drained, and have a high to very high capacity to transmit water. Watsonville loam soils, which include loam, clay loam, and sandy clay loam, are somewhat poorly drained and have a very low to moderately low capacity to transmit water. The Watsonville soils are in the relatively flat-lying portions of the site (USDA NRCS 2020). Project areas on moderate to steep slopes have a relatively higher erosion potential; however, well-drained soils reduce the potential for erosion by reducing stormwater runoff through rainwater infiltration.

The LACM reported no paleontological records from within the City/SVWD intertie site (McLeod 2020). However, there are known Pleistocene and Santa Margarita Formation fossil localities from Santa Cruz County and the vicinity. The quartz diorite does not have the potential to produce fossils. Pleistocene deposits have produced vertebrate fossils throughout California. Jefferson (1991) reported two Pleistocene fossil localities in Santa Cruz County that produced Columbian Mammoth (*Mammuthus columbi*) specimens.

The closest LACM vertebrate fossil localities from the Santa Margarita Formation were found east of Highway 17 on the western side of DeLaveaga Park, north along Glen Canyon Road. These localities include LACM 1779 [= LACM 3255], 3332, 3334, 3544, and 4939-4941, yielded an assemblage of fossil marine vertebrates including bonito shark (*Isurus hastalis*), dogfish (*Squalus serriculus*), sturgeon (*Acipenser*), jack (Carangidae) sea bass (*Stereolepis*), salmon (*Smilodonichthys*), sea turtle (Cheloniidae), sea bird (Aves), sea lions (*Imagotaria downsi* and *Pithanotaria starri*), dolphin (*Liolithax*), 'river' dolphin (*Zarhachis*), four-legged marine mammals (*Desmostylus* and *Paleoparadoxia tabatai*), and sea cow (*Dusisiren jordani)* (McLeod 2020). *Dusisiren jordani* specimens from LACM 1179 (= LACM 3255) and 3544 were figured or published in the scientific literature (Domning 1978).

No unique geological features were identified from the eastern City/SVWD intertie site.




SOURCE: Bing Maps Accessed 2020, Kennedy/Jenks Consultants 2012 and 2014, County of Santa Cruz 2020

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0 5,000 10,000 Feet

**FIGURE 4.5-3**

Liquefaction Map

Santa Cruz Water Rights Project

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### City/SqCWD/CWD Intertie

Soquel Village Pipeline Site

The Soquel Village pipeline site is underlain by late Holocene (approximately 4,200 years ago – Present) alluvial deposits (map unit Qal) and undivided Holocene (<11,700 years ago) alluvial deposits (map unit Qya). A portion of the eastern and western segments of the pipeline site is underlain by Pleistocene alluvial fan deposits (map unit Qof) and these deposits likely underly the Holocene deposits (see Figure 4.5-2) (USGS 2016a, 2020a).

Surface fault rupture is not anticipated in the vicinity of the Soquel Village pipeline site. The Alquist-Priolo Special Study Fault Zone located closest to the intertie site is associated with the San Andreas Fault, located approximately 8 miles to the northeast (see Figure 4.5-1) (USGS 2020b, CGS 2020). Although not within an Alquist-Priolo Special Study Fault Zone, the Holocene-active Zayante-Vergeles, Monterey Bay-Tularcitos, and San Gregorio Faults are located approximately 5 miles, 7 miles, and 12 miles from this portion of the City/SqCWD/CWD intertie site, respectively (USGS 2020b).

Based on County of Santa Cruz GIS data (County of Santa Cruz 2020) and City of Capitola General Plan Safety and Noise Element (City of Capitola 2019) liquefaction potential maps, most of the Soquel Village pipeline site is in an area of high to very high liquefaction potential, associated with shallow groundwater beneath Soquel Creek (see Figure 4.5-3).

The Soquel Village pipeline site is located on variable topography, including relatively flat to gently sloping areas, with localized steep slopes adjacent to and in the vicinity of Soquel Creek. These slopes could potentially be prone to slope instability.

The flat-lying portions of the Soquel Village pipeline site are underlain by Elder sandy loam, Soquel loam, and Elkhorn sandy loam, which occur on alluvial fans, terraces, and flood plains, on 0% to 9% slopes. These soils are well drained and have a high capacity to transmit water. The steeper hillside areas are underlain by Elkhorn-Pfeiffer Complex soils, which consist of sandy loam, gravelly sandy loam, and weathered bedrock. These well-drained soils occur on hills and terraces, on 30% to 50% slopes (USDA NRCS 2020).

The LACM reported no paleontological records from within the Soquel Village pipeline site; however, there are known Pleistocene fossil localities from Santa Cruz County and the vicinity. Pleistocene alluvial fan deposits have produced vertebrate fossils throughout California. Jefferson (1991) reported two Pleistocene fossil localities in Santa Cruz County that produced Columbian Mammoth (*Mammuthus columbi*) specimens.

No unique geological features were identified from the Soquel Village pipeline site.

Park Avenue Pipeline and McGregor Drive Pump Station Sites

The southern portion of the Park Avenue pipeline site is underlain by artificial fill (map unit Af) in the vicinity of the Highway 1 overpass, Pleistocene lowest emergent marine terrace deposits, and the Pliocene to late Miocene Purisima Formation (map unit Tp). The northern portion of the Park Avenue pipeline and McGregor Drive pump station sites are underlain by Pleistocene lowest emergent marine terrace deposits (see Figure 4.5-2) (USGS 2016a, 2020a).

Surface fault rupture is not anticipated in the vicinity of this intertie site. The Alquist-Priolo Special Study Fault Zone located closest to the site is associated with the San Andreas Fault, located approximately 8 miles to the northeast (see Figure 4.5-1) (USGS 2020b, CGS 2020). Although not within an Alquist-Priolo Special Study Fault Zone, the

Holocene-active Zayante-Vergeles, Monterey Bay-Tularcitos, and San Gregorio Faults are located approximately 5 miles, 7 miles, and 12 miles from this portion of the City/SqCWD/CWD intertie site, respectively (USGS 2020b).

Based on County of Santa Cruz GIS data (County of Santa Cruz 2020) and the City of Capitola General Plan Safety and Noise Element (City of Capitola 2019) liquefaction potential maps, portions of the Park Avenue pipeline and McGregor Drive pump station sites are in an area of very high liquefaction potential, associated with shallow groundwater beneath a tributary drainage to Tannery Gulch (see Figure 4.5-3).

The northern part of the Park Avenue pipeline site is located on relatively flat to gently sloping topography. The southern portion traverses slopes associated with Tannery Gulch. The northern portion of the pipeline site overlies Watsonville loam soils, which occur on terraces and alluvial fans, on 0% to 15% slopes (USDA NRCS 2020). This area would not be prone to slope instability. The southern portion of the Park Avenue pipeline site and the McGregor Drive pump station site are located on Tierra-Watsonville complex soils, on 15% to 30% slopes. Based on these slope gradients, localized areas may be susceptible to slope instability.

Watsonville loam soils, which include loam, clay loam, and sandy clay loam, are somewhat poorly drained and have a very low to moderately low capacity to transmit water. Tierra-Watsonville complex soils consist of clay, clay loam, sandy loam, and gravelly sandy loam. These soils are somewhat poorly drained and have very low ability to transmit water (USDA NRCS 2020). Poorly drained soils are not prone to absorbing precipitation, resulting in higher runoff rates and increased erosion potential.

The LACM reported no paleontological records from within the Park Avenue pipeline and McGregor Drive pump station sites; however, there are known Pleistocene and Purisima Formation fossil localities from Santa Cruz County and the vicinity. Pleistocene marine terrace deposits have produced significant invertebrate and vertebrate fossils throughout California. Addicot (1966) reported over 100 marine mollusk, chiton, echinoid, coral, and barnacle species from Santa Cruz Pleistocene marine terraces. In his compilation of Quaternary vertebrate fossil localities in California, Jefferson (1991) listed two Pleistocene fossil localities from Santa Cruz County that included specimens of Columbian mammoth (*Mammuthus columbi*). Jefferson et al (1992) described a variety of fossil terrestrial vertebrate fossils collected from the lowest emergent Pleistocene marine terrace, including horse (*Equus* sp. cf. *E. occidentalis*), camel (*Camelops* sp. cf. *C. hesternus*), bison (*Bison latifrons*), and ground sloth (*Glossotherium harlani*). The LACM did report several fossil localities from the Purisima Formation nearby including LACM 4291-4293 at Seacliff State Beach, LACM 4278 and 7846 at Capitola Beach, and LACM 4339, 4957, 5141, 5986, 6120-6121, 7969 and 7991 along Opal Cliffs (McLeod 2020). These localities yielded a complex fauna of marine vertebrates including dogfish (*Squalus*), hake (*Merluccius*), surfperch (*Cymatogaster* and *Hyperprosopon*), croaker (Sciaenidae), halibut, (*Paralichthys californicus*), sanddabs (*Citharichthys sordidus* and *Citharichthys stigmaeus*), smelt (*Hypomesus* and *Spirinchus*), rockfish (*Sebastes*), walrus (Dusignathinae), right whale (Balaenidae), river dolphin (*Parapontoporia*), common dolphin (*Delphinus*), beluga whale (Delphinapterinae), porpoise (*Phocoena sinus* and *Semirostrum*).

No unique geological features were identified from the Park Avenue pipeline and McGregor Drive pump station sites.

Freedom Boulevard Pump Station Site

The Freedom Boulevard pump station site is underlain by Holocene basin deposits (map unit Qb) and colluvium and Pleistocene undivided Aromas Sand (map unit Qar), and these deposits likely underly the Holocene deposits (see Figure 4.5-2) (USGS 2016a, 2020a). The Aromas Sand is composed of eolian and fluvial (river-deposited) gravels, sands, silts, and clays.

Surface fault rupture is not anticipated in the vicinity of the Freedom Boulevard pump station site. The Alquist-Priolo Special Study Fault Zone located closest to the site is associated with the San Andreas Fault, located approximately 6 miles to the northeast (see Figure 4.5-1) (USGS 2020b, CGS 2020). Although not within an Alquist-Priolo Special Study Fault Zone, the Holocene-active Zayante-Vergeles, Monterey Bay-Tularcitos, and San Gregorio Faults are located approximately 3 miles, 8 miles, and 18 miles from the Freedom Boulevard Pump Station, respectively (USGS 2020b).

Based on County of Santa Cruz GIS data (County of Santa Cruz 2020) liquefaction potential maps, the Freedom Boulevard pump station site is in an area of low liquefaction potential (see Figure 4.5-3). This pump station site is gently sloping and underlain by Baywood loamy sand, which is somewhat excessively drained, on 15% to 30% slopes. The somewhat excessively drained soils would enhance stormwater infiltration and reduce runoff rates.

The LACM reported no paleontological records from the Freedom Boulevard pump station site (McLeod 2020). However, Pleistocene eolian and fluvial deposits have produced significant vertebrate fossils throughout California. In his compilation of Quaternary vertebrate fossil localities in California, Jefferson (1991) listed two Pleistocene fossil localities from Santa Cruz County that included specimens of Columbian mammoth (*Mammuthus columbi*).

No unique geological features were identified from the Freedom Boulevard pump station site.

Valencia Drive Pump Station Site

The Valencia Drive pump station site is underlain by Holocene (approximately 11,700 years ago – Present) colluvial deposits (map unit Qtl) and Pleistocene eolian (wind-blown sands) lithofacies (map unit Qae). The Pleistocene eolian deposits likely underly the Holocene deposits where present (see Figure 4.5-2) (USGS 2016a, 2020a).

Surface fault rupture is not anticipated in the vicinity of the Valencia Drive pump station site. The Alquist-Priolo Special Study Fault Zone located closest to the site is associated with the San Andreas Fault, located approximately 5 miles to the northeast (see Figure 4.5-1) (USGS 2020b, CGS 2020). Although not within an Alquist-Priolo Special Study Fault Zone, the Holocene-active Zayante-Vergeles, Monterey Bay-Tularcitos, and San Gregorio Faults are located approximately 1.5 miles, 10 miles, and 19 miles from the Valencia Drive pump station site, respectively (USGS 2020b).

Based on County of Santa Cruz GIS data (County of Santa Cruz 2020) liquefaction potential maps, the Valencia Drive pump station site is in an area of low liquefaction potential (see Figure 4.5-3).

The Valencia Drive pump station site is gently sloping and underlain by Baywood loamy sand, which is somewhat excessively drained, on 15% to 30% slopes. The somewhat excessively drained soils would enhance stormwater infiltration and reduce runoff rates.

The LACM reported no paleontological records from the Valencia Drive pump station site (McLeod 2020). However, Pleistocene eolian deposits have produced significant vertebrate fossils throughout California. In his compilation of Quaternary vertebrate fossil localities in California, Jefferson (1991) listed two Pleistocene fossil localities from Santa Cruz County that included specimens of Columbian mammoth (*Mammuthus columbi*).

No unique geological features were identified from the Valencia Drive pump station site.

## Felton Diversion Site

The Felton Diversion site is underlain by undifferentiated, Holocene alluvial deposits (map unit Qal), which are likely underlain by Pleistocene alluvium and the Miocene Lompico Sandstone at depth (see Figure 4.5-2) (USGS 1997, 2020a).

Surface fault rupture is not anticipated in the vicinity of the Felton Diversion site. The Alquist-Priolo Special Study Fault Zone located closest to the site is associated with the San Andreas Fault, located approximately 9 miles to the northeast (see Figure 4.5-1) (USGS 2020b, CGS 2020). Although not within an Alquist-Priolo Special Study Fault Zone, the Holocene-active Zayante-Vergeles, Monterey Bay-Tularcitos, and San Gregorio Faults are located approximately 4 miles, 8 miles, and 9 miles from Felton Diversion site, respectively (USGS 2020b).

Based on County of Santa Cruz GIS data (County of Santa Cruz 2020) liquefaction potential maps, the Felton Diversion is in an area of moderate liquefaction potential (see Figure 4.5-3).

The topography at the Felton Diversion site is relatively flat to gently sloping. Except for the San Lorenzo River bank, most of which has been modified for the existing intake structure and fish ladder, no slopes that could be susceptible to failure are present on site.

The Felton Diversion site is underlain by Soquel loam, on 2% to 9% slopes (USDA NRCS 2020). These soils, which include silt loam, silty clay loam, and clay loam, are located on alluvial plains, are moderately well drained, and have moderately high capacity to transmit water. The well-drained soils reduce erosion rates by enhancing stormwater infiltration into on-site soils.

The LACM reported no fossil localities from the Felton Diversion site, as the Holocene alluvium present is generally too young to produce significant paleontological resources. However, Holocene alluvium is oftentimes underlain by Pleistocene alluvium or sedimentary geological formations/units that have the potential to produce fossils.

No unique geological features were identified from the Felton Diversion site.

### Tait Diversion and Coast Pump Station Site

The Tait Diversion and Coast Pump Station site is underlain by late Holocene alluvial deposits (map unit Qal) , which in turn are likely underlain by Pleistocene alluvium or the Miocene Lompico Sandstone at depth (see Figure 4.5-2) (USGS 2016b, 2020a).

Surface fault rupture is not anticipated in the vicinity of the Coast Pump Station site. The Alquist-Priolo Special Study Fault Zone located closest to the site is associated with the San Andreas Fault, located approximately 10 miles to the northeast (see Figure 4.5-1) (USGS 2020b, CGS 2020). Although not within an Alquist-Priolo Special Study Fault Zone, the Holocene-active Zayante-Vergeles, Monterey Bay-Tularcitos, and San Gregorio Faults are located approximately 8 miles, 5 miles, and 10 miles from pump station site, respectively (USGS 2020b).

Based on the County of Santa Cruz GIS data (County of Santa Cruz 2020b) and the City of Santa Cruz 2030 General Plan (City of Santa Cruz 2012b) liquefaction potential maps, the Tait Diversion and Coast Pump Station site is in an area of high liquefaction potential, associated with shallow groundwater beneath the San Lorenzo River (see Figure 4.5-3).

The topography at the Coast Pump Station site is relatively flat to gently sloping. The site is underlain by Baywood loamy sand, on 0% to 2% slopes, and Soquel loam, on 2% to 9 % slopes (USDA NRCS 2020). Except for the San Lorenzo River bank, some of which has been modified for the existing intake structure/diversion weir, no slopes that could be susceptible to failure are present on site.

The Baywood loamy sand is found on valley floors, is somewhat excessively drained, and has high to very high capacity to transmit water. The Soquel loam is found on alluvial plains, is moderately well drained, and has a moderately high capacity to transmit water (USDA NRCS 2020). Well-drained soils reduce erosion rates by enhancing stormwater infiltration into on-site soils.

The LACM reported no fossil localities from the Tait Diversion and Coast Pump Station site, as the Holocene alluvium present is generally too young to produce significant paleontological resources. However, Holocene alluvium is oftentimes underlain by Pleistocene alluvium or sedimentary geological formations/units that have the potential to produce fossils.

No unique geological features were identified from the Tait Diversion and Coast Pump Station site.

## 4.5.2 Regulatory Framework

### 4.5.2.1 Federal

Federal regulations do not directly apply to geology and soils with respect to the Proposed Project. Nonetheless, installation of underground infrastructure/utility lines must comply with national industry standards specific to the type of utility (e.g., National Clay Pipe Institute for sewers, American Water Works Association for water lines), and the discharge of contaminants must be controlled through the National Pollutant Discharge Elimination System (NPDES) permitting program for management of construction and municipal stormwater runoff. These standards contain specifications for installation, design, and maintenance to reflect site-specific geologic and soils conditions.

### 4.5.2.2 State

#### Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Act (Public Resources Code [PRC] Sections 2621 through 2630) was passed in 1972 to mitigate the hazard of surface faulting to structures designed for human occupancy. The main purpose of the law is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. A structure for human occupancy is defined as any structure used or intended for supporting or sheltering any use or occupancy, which is expected to have a human occupancy rate of more than 2,000 person-hours per year. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones known as Earthquake Fault Zones around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning efforts. Before a structure for human occupancy can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, the local agency must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

#### Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act (PRC Sections 2690 through 2699.6 et seq.), passed by the California legislature in 1990, addresses earthquake hazards from non-surface fault rupture, including liquefaction and seismically induced landslides. The act established a mapping program for areas that have the potential for liquefaction, strong ground shaking, or other earthquake and geologic hazards. To date, the CGS has only created liquefaction hazard maps for USGS quadrangle maps in the greater Los Angeles and San Francisco Bay areas (CGS 2007).

## California Building Code

The state regulations protecting structures from geo-seismic hazards are contained in the California Code of Regulations, Title 24, Part 2 (the California Building Code), which is updated every three years. These regulations apply to public and private buildings in the state. Until January 1, 2008, the California Building Code was based on the then-current Uniform Building Code and contained additions, amendments, and repeals specific to building conditions and structural requirements of the State of California. The 2019 California Building Code, effective January 1, 2020, is based on the current (2018) International Building Code and enhances the sections dealing with existing structures. Seismic-resistant construction design is required to meet more stringent technical standards than those set by previous versions of the California Building Code.

Construction activities are subject to occupational safety standards for excavation and trenching, as specified in the California Safety and Health Administration regulations (Title 8 of the California Code of Regulations) and in Chapter 33 of the California Building Code. These regulations specify the measures to be used for excavation and trench work where workers could be exposed to unstable soil conditions. The Project would be required to employ these safety measures during excavation and trenching.

## State Earthquake Protection Law

The State Earthquake Protection Law (Health and Safety Code Section 19100 et seq.) requires that structures be designed and constructed to resist stresses produced by lateral forces caused by wind and earthquakes, as provided in the California Building Code. Chapter 16 of the California Building Code sets forth specific minimum seismic safety and structural design requirements, requires a site-specific geotechnical study to address seismic issues, and identifies seismic factors that must be considered in structural design. Because the program and programmatic infrastructure component sites are not located within an Alquist-Priolo Earthquake Fault Zone, as noted above, no special provisions would be required for development of the Proposed Project related to fault rupture.

## California Environmental Quality Act

The California Environmental Quality Act (CEQA) Guidelines require that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to paleontological resources. Paleontological resources, which are limited, nonrenewable resources of scientific, cultural, and educational value, are recognized as part of the environment under these state guidelines. This analysis satisfies project requirements in accordance with CEQA (13 PRC Section 21000 et seq.) and PRC Section 5097.5 (Stats 1965, c. 1136, p. 2792). This analysis also complies with guidelines and significance criteria specified by the SVP (2010).

Paleontological resources are explicitly afforded protection by CEQA, specifically in Section VII(f) of CEQA Guidelines Appendix G, the "Environmental Checklist Form," which addresses the potential for adverse impacts to "unique paleontological resource[s] or site[s] or … unique geological feature[s]." This provision covers fossils of significant importance – remains of species or genera new to science, for example, or fossils exhibiting features not previously recognized for a given animal group – as well as localities that yield fossils significant in their abundance, diversity, preservation, and so forth. Chapter 1.7, Sections 5097.5 and 30244 of the PRC defines unauthorized removal of fossil resources as a misdemeanor and requires mitigation of disturbed sites.

### 4.5.2.3 Local

The study area for the Proposed Project includes the jurisdictions of the City of Santa Cruz, City of Capitola, City of Scotts Valley, and County of Santa Cruz. The general plans and, where relevant, the local coastal programs of these jurisdictions include policies and programs related to geology and soils. Section 4.9, Land Use, Agriculture and Forestry, and Mineral Resources, discusses applicable general plan and local coastal program policies related to geology and soils, as relevant to the Proposed Project.

## 4.5.3 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to geology and soils. 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.

### 4.5.3.1 Standards of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to geology and soils 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. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
    i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.
    ii. Strong seismic ground shaking.
    iii. Seismic-related ground failure, including liquefaction.
    iv. Landslides.
B. Result in substantial soil erosion or the loss of topsoil. (See Section 4.8, Hydrology and Water Quality, for an analysis of this standard.)
C. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
D. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.
E. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.
F. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

### 4.5.3.2 Analytical Methods

This section evaluates the potential geology and soils impacts associated with construction and operation of the Proposed Project. The analysis of potential impacts addresses the various project and programmatic components listed in Table 4.5-2, which are described in detail in Chapter 3, Project Description.

**Table 4.5-2. 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 | | ✓ |

Construction-related impacts are considered for each component of the Proposed Project that would require construction. Specifically, the components of the Proposed Project that require construction include the proposed project and programmatic infrastructure components listed in Table 4.5-2. Operational-related impacts of the proposed infrastructure components are considered in the context of long-term geologic hazards. The following analysis considers whether the Proposed Project would directly or indirectly cause geologic and soils impacts, taking into account state-mandated construction methods, as specified in the California Safety and Health Administration regulations (Title 8 of the California Code of Regulations) and in Chapter 33 of the California Building Code, as described in Section 4.5.2, Regulatory Framework, and Proposed Project standard construction practices described in detail in Chapter 3, Project Description and evaluated below. Moreover, the analysis considers whether a unique paleontological resource, site, or unique geologic feature would be directly or indirectly destroyed as a result of the Proposed Project. If impacts are determined to be potentially significant, mitigation measures would be provided to reduce impacts to less-than-significant levels, if feasible.

Additionally, the analysis below has been written against the backdrop of CEQA case law addressing the scope of analysis required in EIRs for potential impacts resulting from existing environmental hazards such as geological hazards in the vicinity of a site for a proposed project. In *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369, 377 ("CBIA"), the California Supreme Court held that

"agencies subject to CEQA generally are *not* required to analyze the impact of existing environmental conditions on a project's future users or residents." (Italics added.) For this reason, the court found the following former language from CEQA Guidelines Section 15126.2, subdivision (a), to be invalid: "[A]n EIR on a subdivision astride an active fault line should identify as a significant effect the seismic hazard to future occupants of the subdivision. The subdivision would have the effect of attracting people to the location and exposing them to the hazards found there." (*Id*. at p. 390.)

The court did not hold, however, that CEQA never requires consideration of the effects of existing environmental conditions on the future occupants or users of a proposed project. But the circumstances in which such conditions may be considered are narrow: "when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the project's impact on the environment—and not the environment's impact on the project—that compels an evaluation of how future residents or users could be affected by exacerbated conditions." (*Id*. at pp. 377-378, italics added.) Because this exception to the general rule would presumably never apply to existing seismic hazards, the court concluded that this particular topic was outside the ambit of CEQA. (*Id*. at p. 390.)

These considerations are reflected in the significance thresholds set forth above, which consider the extent to which the Proposed Project would "[d]irectly or indirectly *cause* potential substantial adverse effects[.]"

### Application of Relevant Standard Practices

The Proposed Project includes a standard operational practice (see Section 3.4.5.1, Standard Operational Practices), that the City or its contractors would implement to avoid or minimize effects to groundwater and specifically subsidence due to groundwater withdrawals. This practice and its effectiveness in avoiding and minimizing effects is described below.

Standard Operational Practice #2 requires compliance with both the Santa Cruz Mid-County Groundwater Basin Sustainability Plan (GSP) and the pending Santa Margarita Groundwater Basin GSP, as well as any future revisions to these GSPs. It further requires that new ASR facilities in the Santa Margarita Groundwater Basin be installed and operated after the Santa Margarita Groundwater Basin GSP is submitted to the Department of Water Resources in January 2022. This measure documents the City's commitment to installing and operating ASR facilities in compliance with these GSPs and any further revisions and indicates that the City would not pursue new ASR facilities in the Santa Margarita Groundwater Basin until after that GSP is submitted. This practice would be effective in providing for ASR operations in conformance with the applicable GSP and any future revisions.

If the Proposed Project would have potentially significant impacts even with the implementation of the above standard operational practice, the impact analysis identifies mitigation measures.

## 4.5.3.3 Project Impact Analysis

### Areas of No Impact

The Proposed Project would not have impacts with respect to the following standards of significance for the following reasons:

- **Earthquake Fault Rupture (Significance Standard A-i).** As indicated in Section 4.5.1, Existing Conditions, the project and programmatic infrastructure components would not be located on a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Therefore, the Proposed Project would have no impacts related to fault rupture.
- **Septic Tanks/Alternative Wastewater Disposal (Significance Standard E)**. The project and programmatic infrastructure components would not involve the installation of septic tanks or alternative wastewater disposal systems. Therefore, the Proposed Project would have no impacts related to soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems.

## Impacts

This section provides a detailed evaluation of geology and soils impacts associated with the Proposed Project. Construction-related impacts associated with soil erosion/loss of topsoil (Significance Standard B) is addressed in Section 4.8, Hydrology and Water Quality.

**Impact GEO-1: Seismic Hazards (Significance Standards A-ii and A-iii).** Construction and operation of the Proposed Project could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking, landslides, or seismic related ground failure, including liquefaction and associated lateral spreading. ***(Less than Significant with Mitigation)***

This evaluation addresses impacts related to induced liquefaction/lateral spreading, induced seismicity, and collapse (due to seismically induced ground failure). Impact GEO-2 addresses other types of unstable soil conditions that can result from landslide, slope failure/instability, and subsidence.

### Water Rights Modifications

The water rights modifications of the Proposed Project would not directly result in construction or operation of new infrastructure facilities and would not directly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking, landslides, or seismic related ground failure, including liquefaction and lateral spreading. Therefore, this project component would have no direct impacts.

The following analysis evaluates the potential indirect impacts related to seismic hazards 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

Aquifer Storage and Recovery Facilities

*New ASR Facilities*

**New Facility Impacts.** The Proposed Project could result in installation of new ASR facilities in the Santa Cruz Mid-County Groundwater Basin, inside or outside the City's service area, and in the Santa Margarita Groundwater Basin, outside the City's service area, to allow for injection of treated water from the City's Graham Hill Water Treatment Plant and possible subsequent extraction. This programmatic component includes ASR of sufficient capacity to address the City's agreed-upon worst-year water supply gap of 1.2 billion gallons per year, during modeled worst-

year conditions. Other than the Beltz ASR facilities (see evaluation below), the locations of new ASR facilities have not been determined to date. New ASR facilities would likely consist of the following components: (1) a pump control and chemical storage building; (2) a treatment system; (3) backwash tank(s) used in the treatment system; (4) a water well and monitoring wells, submersible pump and concrete pedestal, station piping including treated water pipelines, sewer connections, and stormwater drainage facilities that would connect to nearby facilities in adjacent roadways. A typical facility would require a site approximately 0.25 acres in size.

These facilities would potentially be subject to damage as a result of strong seismically induced ground shaking and ground failure associated with an earthquake on regional faults. However, the design and construction of the facility infrastructure would be completed in accordance with CBC regulations, thus minimizing the potential for damage. In addition, installation of new ASR facilities would not exacerbate the potential for seismically induced ground shaking and ground failure to occur. As such, construction and operation of the proposed infrastructure facilities would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking or seismic related ground failure. As a result, this programmatic component would have a less-than-significant impact.

**Induced Seismicity Impacts.** A public comment received during the Scoping period (see Chapter 2, Introduction, and Appendix A) expressed concern that the injection of water into ASR wells associated with the Proposed Project could cause earthquakes. New ASR facility injections would not cause earthquakes, such as have occurred in oil field related wastewater injections in the central United States, including Oklahoma, Kansas, Colorado, and Arkansas, which have locally resulted in earthquakes with magnitudes up to 5.8. Most of the earthquakes are in the magnitude 3 to 4 range. This induced seismicity is due to long-duration, high-volume injection of wastewater in disposal wells in deep geologic formations, far below water extracted for drinking water. Wastewater injection typically occurs at depths of 3,000 to 7,000 feet below ground surface, in cratonic basement rocks. Earthquakes occur when the injection pressure of the wastewater is greater than the fracture pressure of faults in the vicinity of the injection well. Few of the surge in oil field related earthquakes in Oklahoma, where most of the earthquakes have occurred since 2009, have occurred due to fracking (USGS 2021; Castro et al. 2019; CalGEM 2021). While very strong statistical evidence exists of induced seismicity in Oklahoma, only moderate evidence exists of induced seismicity in California associated with wastewater injection (McClure et al. 2017).

The Proposed Project could result in installation of new ASR facilities in the Santa Cruz Mid-County Groundwater Basin and in the Santa Margarita Groundwater Basin. Currently, the deepest aquifers used for groundwater production are the Purisima-AA and Tu aquifers, which are underlain by impervious granitic basement rocks. Based on water well data, the base of the Purisima-AA aquifer is as deep as 1,000 feet, and based on oil well data, the base of the Tu aquifer is as deep as 3,000 feet. However, groundwater wells extending to the base of the Purisima-AA and Tu aquifers are less than 1,000 feet deep (SCMGA 2019). Based on these well depths, ASR injection in new facilities would not be completed in deep basement rocks, as occurs in wastewater injection wells in the central United States where induced seismicity has occurred. Injection would generally occur into relatively shallow (i.e., less than 1,000 feet), semi-consolidated, permeable deposits, which would not be prone to fracturing and induced seismicity and therefore would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking or seismic related ground failure. As a result, this programmatic component would have a less-than-significant impact.

**Induced Liquefaction Impacts.** As discussed in Section 4.5.1, Existing Conditions, factors determining liquefaction potential are soil type, the level and duration of seismic ground motions, the type and consistency of soils, and the depth to groundwater. Liquefaction generally occurs at depths of less than 40 feet in soils that are young (Holocene-age), saturated, and loose. If ASR operations were to raise water elevations to within 40 feet of the ground surface

and the soils are prone to liquefaction (as illustrated in Figure 4.5-3), liquefaction would potentially occur due to the operation of new ASR facilities. ASR-induced liquefaction could result in damage to existing overlying structures and infrastructure, including utilities. As a result, this programmatic component would potentially cause substantial adverse effects, including the risk of loss, injury, or death resulting from liquefaction and associated lateral spreading and impacts would be potentially significant.

Implementation of MM GEO-1 would avoid substantial adverse effects, including the risk of loss, injury, or death resulting from liquefaction and associated lateral spreading by maintaining and operating ASR injections in new wells located in potential liquefaction zones, as depicted on Figure 4.5-3, such that existing shallow groundwater (i.e., depth generally less than 100 feet) does not rise to within 40 feet of the ground surface, which would limit liquefaction potential. Similarly, ASR injections in potential liquefaction zones shall be maintained and operated such that existing groundwater within a depth of 40 feet or less does not rise closer to the ground surface. Therefore, with the implementation of this mitigation measure, the impact of this programmatic component would be reduced to a less-than-significant level.

*Beltz ASR Facilities*

**Facility Upgrade Impacts.** This project component would involve injecting treated surface water into the Santa Cruz Mid-County Groundwater Basin, which would act as an underground storage reservoir, consistent with the Groundwater Sustainability Plan (GSP) for this basin (Santa Cruz Mid-County Groundwater Agency 2019). Specifically, treated surface water would be injected at the existing Beltz 8, 9, 10, and 12 facilities, which would be modified as part of the Proposed Project, to allow for injection of treated water and subsequent extraction. The Beltz system would be modified to accommodate proposed ASR injection capacity of 2.10 million gallons per day (mgd), and proposed ASR extraction capacity of 2.17 mgd. In addition, the proposed Beltz ASR system would retain its existing groundwater extraction capacity of 1.1 mgd, subject to seasonal and hydrological constraints. Proposed upgrades to the Beltz system to allow for ASR would include new connection pipelines within each well infrastructure; wellhead modifications; new submersible pump and motor assembly; and new valves, electrical conduit, and backwash tanks. Up to three monitoring wells, approximately 400 feet deep, would be installed at Beltz 9.

These facilities would potentially be subject to damage as a result of strong seismically induced ground shaking and ground failure associated with an earthquake on regional faults. However, the design and construction of the facility upgrades would be completed in accordance with CBC regulations, thus minimizing the potential for damage. In addition, installation of new facilities would not exacerbate the potential for seismically induced ground shaking and ground failure to occur. As such, construction and operation of the proposed upgrades would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking or seismic related ground failure. As a result, this programmatic component would have a less-than-significant impact.

**Induced Seismicity Impacts.** As indicated for new ASR facilities, Beltz ASR facility injections would not cause earthquakes, such as have occurred in oil field related wastewater injection in the central United States. Oil field related wastewater disposal in the central United States has locally resulted in earthquakes due to long-duration, high-volume injection of wastewater in injection wells in deep geologic formations, far below water extracted for drinking water. Wastewater injection typically occurs at depths of 3,000 to 7,000 feet below ground surface, in cratonic basement rocks. The Proposed Project would include injecting surface water at the Beltz 8, 9, 10, and 12 ASR facilities, which would be upgraded for ASR operations. These wells are in the western portion of the Santa Cruz Mid-County Groundwater Basin and extend to the base of the AA-Purisima aquifer, at depths less than 700 feet below ground surface (SCMGA 2019). Based on these well depths, ASR injection in the Beltz wells would not be completed in deep basement rocks, as occurs in wastewater injection wells in the central United States where

induced seismicity has occurred. Injection would generally occur into relatively shallow (i.e., less than 1,000 feet), semi-consolidated, permeable deposits, which would not be prone to fracturing and induced seismicity and would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking or seismic related ground failure. As a result, this programmatic component would have a less-than-significant impact.

**Induced Liquefaction Impacts.** As indicated for new ASR facilities, liquefaction generally occurs at depths of less than 40 feet in soils that are young (Holocene-age), saturated, and loose. Based on the City of Capitola General Plan Safety and Noise Element liquefaction potential maps and County of Santa Cruz GIS data, the Beltz sites are in an area of low liquefaction potential, as described in Section 4.5.1.5, Infrastructure Component Site Conditions. Incised (i.e., down-cut) drainages/creeks, including an unnamed creek to the west and Soquel Creek/Capitola Beach to the east, are zones of medium to high liquefaction potential, but the intervening terraced areas, including the Beltz sites, are not prone to liquefaction. Given that, the potential for lateral spreading on the Beltz sites is also low.

If Beltz ASR operations were to raise water elevations to within 40 feet of the ground surface and the soils are prone to liquefaction, the potential for increased liquefaction would occur. Treated surface water injection from Beltz ASR into the Santa Cruz Mid-County Groundwater Basin, could result in groundwater levels within 40 feet of the ground surface. Groundwater modeling was completed as part of the Mid-County GSP to determine the adequacy of well injection in raising groundwater levels over time to prevent undesirable results related to seawater intrusion. Groundwater modeling simulated Pure Water Soquel Groundwater Replenishment and Seawater Intrusion Project (Pure Water Soquel) and Beltz ASR, in combination, because the expected benefits of ASR injection are to raise groundwater levels above minimum thresholds (as determined in the GSP) at the City wells to prevent seawater intrusion and maintain sustainability of the Santa Cruz Mid-County Groundwater Basin (see Section 4.8, Hydrology and Water Quality, for additional information regarding minimum thresholds of groundwater levels). Although Beltz 8, 9, 10, and 12 are deep, ranging from 210 to 640 feet, groundwater levels in nested wells (i.e., screened within shallow, medium, and deep aquifer intervals) in the Santa Cruz Mid-County Groundwater Basin are similar for each screened interval within individual wells, indicating that there is hydraulic connectivity between aquifers. There is a demonstrable indirect influence on shallow groundwater from deeper aquifers pumped by municipal and private wells. As these observations are made from only a few wells on Soquel Creek, further study as part of GSP implementation would revise the current understanding of the relationship between streamflow and groundwater (Santa Cruz Mid-County Groundwater Agency 2019). However, based on the currently known effects of municipal pumping on shallow groundwater levels in the vicinity of Soquel Creek, Beltz ASR injection into the deeper screened intervals of the Beltz wells could result in shallow groundwater conditions in the vicinity of the Beltz wells.

As previously discussed, the Beltz wells are located in areas of low liquefaction potential. Although the liquefaction potential could increase in the adjacent liquefaction-prone drainages as a result of a rise in groundwater levels from the operation of Pure Water Soquel and Beltz ASR, these areas are not overlain by residences, businesses, schools, or infrastructure that would be susceptible to damage from liquefaction. As such, this project component would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from liquefaction and would have a less-than-significant impact.

Water Transfers and Exchanges and Intertie Improvements

New or improved intertie facilities between the water systems of the City and of neighboring water agencies are proposed to facilitate future water transfers and exchanges once City water rights are modified. The facilities include the City/SVWD intertie, which includes a new pipeline and pump station; and the City/SqCWD/CWD intertie, which

includes the Soquel Village and Park Avenue pipeline replacements, the McGregor Drive pump station upgrade, and the new Freedom Boulevard and Valencia Road pump stations.

Based on County of Santa Cruz GIS data and the City of Capitola General Plan Safety and Noise Element liquefaction potential map, most of the Soquel Village pipeline site is in an area of high to very high liquefaction potential, associated with shallow groundwater beneath Soquel Creek. In addition, portions of the Park Avenue pipeline site are in an area of very high liquefaction potential, associated with shallow groundwater beneath a tributary drainage to Tannery Gulch. The McGregor Drive, Freedom Boulevard, and Valencia Drive pump station sites are in areas of low liquefaction potential. The liquefaction potential for the City/SVWD intertie has not been fully determined as a portion of the site has not been mapped with respect to liquefaction. Although the intertie facilities would be susceptible to damage as a result of ground shaking, seismic related ground failure, and liquefaction and associated lateral spreading, design and construction of the interties would be completed in accordance with standard, site-specific geotechnical investigations, in accordance with CBC and Cal/OSHA regulations, thus minimizing the potential for damage and safety impacts. In addition, construction and operation of new intertie facilities would not exacerbate the potential for seismically induced ground shaking and ground failure to occur. As such, construction and operation of the interties would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking or seismic related ground failure, including liquefaction and lateral spreading. As a result, this programmatic component would have a less-than-significant impact.

Felton Diversion Improvements

Felton Diversion improvements would include fish screen replacement, installation of a traveling brush system to keep the fish screens operating at optimum efficiency, and construction of a continuous downstream outmigration bypass route within the existing bypass channel with downstream opening slide gate. These improvements would be constructed on the west side of the Felton Diversion on the existing diversion facility structure. Based on County of Santa Cruz GIS data, the Felton Diversion is in an area of moderate liquefaction potential. Design and construction of the diversion improvements would be completed in accordance with CBC and Cal/OSHA regulations, thus minimizing the potential for damage and safety impacts. In addition, construction and operation of Felton Diversion improvements would not exacerbate the potential for seismically induced ground shaking and ground failure to occur. As such, construction and operation of the diversion improvements would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking or seismic related ground failure, including liquefaction and associated lateral spreading. As a result, this programmatic component would have a less-than-significant impact.

Tait Diversion and Coast Pump Station Improvements

Improvements at the Tait Diversion could include, but would not be limited to, (1) a new or modified intake design, (2) upstream and/or downstream hydraulic modifications, (3) improvements to the check dam, and (4) any required fish passage upgrades. Upgrades would be implemented to meet current state and federal fisheries protection criteria. The River Pumps at the Coast Pump Station facility would also require improvements, which could include, but would not be limited to (1) new pumps and motors; (2) primary and backup power upgrades, which could include upgrades to the Pacific Gas & Electric substation; (3) a new or modified concrete wet well; and (4) a solids handling system.

Based on County of Santa Cruz GIS data and the City of Santa Cruz 2030 General Plan liquefaction potential maps, the Tait Diversion and Coast Pump Station are in an area of high liquefaction potential, associated with shallow groundwater beneath the San Lorenzo River. Creation of over-steepened excavations along the riverbank would be prone to lateral spreading, but would temporary pending completion of construction, thus minimizing the potential

for lateral spreading. However, design and construction of the diversion and pump station improvements would be completed in accordance with CBC and Cal/OSHA regulations, thus minimizing the potential for damage and safety impacts. In addition, construction and operation of the diversion and pump station improvements would not exacerbate the potential for seismically induced ground shaking and ground failure to occur. As such, construction and operation of the diversion and pump station improvements would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking or seismic related ground failure, including liquefaction and associated lateral spreading. As a result, this programmatic component would have a less-than-significant impact.

### Mitigation Measures

Implementation of the following mitigation measure would reduce potentially significant geology and soils impacts of the Proposed Project related to liquefaction to a less-than-significant level, as described above.

**MM GEO-1:** **Operation of New Aquifer Storage and Recovery (ASR) Facilities in Liquefaction-Prone Areas (Applies to New ASR Facilities).** To avoid increasing the potential for liquefaction, ASR injections in new wells located in potential liquefaction zones, as depicted on Figure 4.5-3, shall be maintained and operated such that existing shallow groundwater (i.e., depth generally less than 100 feet) does not rise to within 40 feet of the ground surface. Similarly, ASR injections in potential liquefaction zones shall be maintained and operated such that existing groundwater within a depth of 40 feet or less does not rise closer to the ground surface.

**Impact GEO-2:** **Unstable Geologic Unit or Soils (Significance Standards A-iv and C).** Construction and operation of the Proposed Project would not cause adverse effects involving landslides or be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Proposed Project, and potentially result in on- or off-site landslide, slope failure/instability, subsidence, or collapse. ***(Less than Significant)***

Impact GEO-1 addresses impacts related to liquefaction, lateral spreading and collapse (due to seismically induced ground failure). This impact discussion addresses other types of unstable soil conditions that can result from landslide, slope failure/instability, and subsidence. As indicated in Section 4.5.1.2, Regional Geologic Setting, the study area is not in an area of regional ground subsidence. Therefore, subsidence is discussed below only where the project and programmatic infrastructure components have the potential to cause subsidence.

### Water Rights Modifications

The water rights modifications of the Proposed Project would not directly result in construction or operation of new infrastructure facilities and would not directly cause potential substantial adverse effects, including being located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Proposed Project. Therefore, this project component would have no direct impacts.

The following analysis evaluates the potential indirect impacts related to unstable geologic units or soils 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

Aquifer Storage and Recovery Facilities

**New ASR Facilities.** As indicated in Impact GEO-1, the locations of new ASR facilities have not been determined to date. However, City wells are typically located on flat-lying topography that is not susceptible to landslides or other forms of slope failure and given that it is expected that new ASR facilities would be located in similar conditions. Therefore, new ASR construction and operation would not occur on geologic units or soils that are unstable, or that would become unstable as a result of construction and operation, and therefore would not result in on- or off-site landslide or slope failure/instability.

As indicated in Section 4.5.1.2, Regional Geologic Setting, the principal causes of subsidence in California are aquifer-system compaction due to lowered groundwater levels, drainage and decomposition of organic soils, and oil and gas extraction. Based on regional mapping by the USGS, the study area is not an area of regional ground subsidence. As discussed in more detail in Section 4.8, Hydrology and Water Quality, new ASR facilities would be operated in accordance with the Santa Cruz Mid-County Groundwater Basin GSP or the Santa Margarita Groundwater Basin GSP, depending on the location of the facilities. This is confirmed by the inclusion of Standard Operational Practice #2, which requires compliance with both of these GSPs as well as any future revisions to these GSPs and further requires that new ASR facilities be installed and operated after the Santa Margarita Groundwater Basin GSP is submitted to the Department of Water Resources in January 2022 (see Section 4.5.3.2, Analytical Methods, for additional information about the effectiveness of this practice). The Santa Cruz Mid-County Groundwater Basin GSP has included, and the Santa Margarita Groundwater Basin GSP would include quantifiable minimum thresholds related to groundwater levels and associated subsidence, such that undesirable effects would not occur, and groundwater basin sustainability would be maintained. Based on compliance with the Santa Cruz Mid-County Groundwater Basin GSP and Santa Margarita Groundwater Basin GSP, including the associated groundwater monitoring programs, new ASR facilities would not decrease groundwater levels such that subsidence would occur. As a result, this programmatic component would have a less-than-significant impact.

**Beltz ASR Facilities.** The Beltz ASR sites are located on relatively flat to gently sloping topography. Beltz 8, 9, and 12 ASR sites are located on Watsonville loam soils, which occur on terraces and alluvial fans, on 0% to 15% slopes. Beltz 10 is located on Elkhorn sandy loam, which occurs on terraces and alluvial fans, on 2% to 9%. No hillsides are in proximity to the Beltz ASR sites. Design and construction of the Beltz ASR improvements would be completed in accordance with CBC regulations, thus minimizing the potential for slope instability. Water injection into the Beltz ASR facilities and construction and operation of the ASR upgrades would not occur on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and would not potentially result in on- or off-site landslide or slope failure/instability.

Similar to that discussed for new ASR facilities, Beltz ASR facilities would be completed and operated in accordance with the Santa Cruz Mid-County Groundwater Basin GSP, as documented in Standard Operational Practice #2 (see Section 4.5.3.2, Analytical Methods, for additional information about the effectiveness of this practice), which includes quantifiable minimum thresholds related to groundwater levels and associated subsidence, such that undesirable effects would not occur, and groundwater basin sustainability would be maintained. Based on compliance with the Santa Cruz Mid-County Groundwater Basin GSP, including the associated groundwater monitoring programs, Beltz ASR facilities would not decrease groundwater levels such that subsidence would occur. As a result, this project component would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of this Project component, and would not result in on- or off-site landslide, subsidence, or collapse. Therefore, this project component would have a less-than-significant impact.

Water Transfers and Exchanges and Intertie Improvements

The topography along the City/SVWD intertie pipeline site is gently to moderately sloping, but locally trends immediately downslope of moderately steep hillsides within the Santa Cruz Mountains. This intertie also traverses the banks of a creek subsidiary to Carbonera Creek. Steeper sections of the site are underlain by Ben Lomond-Felton complex soils, which are located on 50% to 75% mountain slopes. Locally steep slopes may be susceptible to failure. Other sections of the intertie alignment are underlain by Pfeiffer gravelly sandy loam, on 15% to 30% slopes; Zayante coarse sand, on 5% to 30% slopes; and Watsonville loam, on 2% to 15% slopes. Steeper slopes within these areas of Pfeiffer gravelly sandy loam may similarly be susceptible to failure.

Related to the City/SqCWD/CWD intertie, the Soquel Village pipeline site is located on variable topography, including relatively flat to gently sloping areas, with localized steep slopes adjacent to and in the vicinity of Soquel Creek. These slopes could potentially be prone to slope instability. The northern part of the Park Avenue pipeline site is located on relatively flat to gently sloping topography; however, the southern portion of this site is located on Tierra-Watsonville complex soils, which occur on slopes up to 30%. Based on these slope gradients, localized areas may be susceptible to slope instability. The McGregor Drive, Freedom Boulevard, and Valencia Drive pump station sites are located on relatively flat to gently sloping topography. Slope instability or other geologic hazards are not anticipated in association with construction and operation of these pump stations.

It is anticipated that all intertie pipeline construction would take place in existing public roadways, which would minimize the potential for slope instability or failure. Additionally, design and construction of these interties and pump stations would be completed in accordance with site-specific geotechnical investigations and applicable CBC regulations pertaining to slope stability, further minimizing the potential for slope instability during construction and operation. Construction and operation of the interties and pump stations would not occur on a geologic unit or soil that is unstable, or that would become unstable as a result this programmatic component, and would not result in on- or off-site landslide, or slope failure/instability. Therefore, this programmatic component would have a less-than-significant impact.

Felton Diversion Improvements

The topography at the Felton Diversion site is relatively flat to gently sloping. Except for the San Lorenzo River bank, most of which has been modified for the existing intake structure and fish ladder, no slopes that could be susceptible to failure are present on-site. Design and construction of proposed diversion improvements would be completed in accordance with applicable CBC regulations related to slope stability, thus minimizing the potential for slope instability along the San Lorenzo River bank during construction and operation. Construction and operation of the diversion improvements would not occur on a geologic unit or soil that is unstable, or that would become unstable as a result of this programmatic component, and would not result in on- or off-site landslide or slope failure/instability. Therefore, this programmatic component would have a less-than-significant impact.

Tait Diversion and Coast Pump Station Improvements

The topography at the Tait Diversion and Coast Pump Station site is also relatively flat to gently sloping. Except for the San Lorenzo River bank, some of which has been modified for the existing intake structure/diversion weir, no slopes that could be susceptible to failure are present on-site. Design and construction of proposed diversion and pump station improvements would be completed in accordance with applicable CBC regulations related to slope stability, thus minimizing the potential for slope instability along the San Lorenzo River bank during construction and operation. Construction and operation of the diversion and pump station improvements would not occur on a

geologic unit or soil that is unstable, or that would become unstable as a result of this programmatic component, and would not result in on- or off-site landslide or slope failure/instability. Therefore, this programmatic component would have a less-than-significant impact.

### Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to unstable geologic units or soils, and therefore, no mitigation measures are required.

**Impact GEO-3: Expansive Soil (Standard of Significance D).** Construction of Proposed Project infrastructure components may be located on expansive soil, as defined by the 2019 California Building Code, but would not create substantial direct or indirect risks to life or property caused in whole or in part by the Proposed Project's exacerbation of the existing environmental conditions. ***(Less than Significant)***

### Water Rights Modifications

The water rights modifications of the Proposed Project would not directly result in construction or operation of new infrastructure facilities and would not create substantial direct risks to life or property related to expansive soil. Therefore, this project component would have no direct impacts.

The following analysis evaluates the potential indirect impacts related to expansive soil 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

Some of the project and programmatic infrastructure components are located in areas with expansive soils. Expansive soils are clay-rich deposits that expand when wet and contract when dry. Alternating soil expansion and contraction can result in distress and damage to overlying structure foundations and/or infrastructure, such as pipelines. The Beltz ASR sites, northern portion of the City/SqCWD/CWD intertie Park Avenue pipeline site, and limited portions of the City/SVWD pipeline site are located on Watsonville loam soils, which may be susceptible to soil expansion, resulting in possible damage to proposed improvements at these sites. The Felton Diversion site is underlain by Soquel loam, which may also be susceptible to soil expansion. The McGregor Drive pump station site is located on Tierra-Watsonville complex soils, which consist of clay, clay loam, sandy loam, and gravelly sandy loam. The Valencia Drive and Freedom Boulevard pump station sites are located on Baywood loamy sand. Depending on the ultimate sites selected for new ASR facilities expansive soils may be present at these sites, as well. None of the other programmatic component sites are located in areas with expansive soils.

Site-specific geotechnical investigations, which typically include an analysis of the soil expansion potential, have not been completed for the project and programmatic infrastructure components of the Proposed Project. However, construction would be completed in accordance with CBC regulations, which include provisions for construction on expansive soils. These construction techniques include over-excavation of soils beneath structures and pipelines, followed by construction on a layer of sandy, nonexpansive soils. Alternatively, post-tensioned slabs can be constructed to prevent cracking associated with expansive soils. In addition, construction and operation of the infrastructure components would not exacerbate the potential for soil expansion to occur. As a result, the project and programmatic infrastructure components would have less-than-significant impacts.

### Mitigation Measures

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

**Impact GEO-4: Paleontological Resources (Standard of Significance F).** Construction of the Proposed Project could potentially directly or indirectly destroy a unique paleontological resource or site during construction. However, the Proposed Project would not directly or indirectly destroy a unique geological feature. ***(Less than Significant with Mitigation)***

As indicated in Section 4.5.1.4, Unique Geological Features, the study area does not contain unique geological features. Therefore, this impact evaluation addresses the potential that the Proposed Project could directly or indirectly destroy a unique paleontological resource during construction.

### Water Rights Modifications

The water rights modifications of the Proposed Project would not directly result in construction or operation of new infrastructure facilities and would not directly destroy a unique paleontological resource during construction. Therefore, this project component would have no direct impacts.

The following analysis evaluates the potential indirect impacts to paleontological 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

Aquifer Storage and Recovery Facilities

**New ASR Facilities.** Given that there are not identified locations for these facilities at this time, site-specific information about potential paleontological resources is not available. If the selected sites are determined to be situated on igneous bedrock or high-grade metamorphic bedrock with low paleontological sensitivity, it is unlikely that a unique paleontological resource would be destroyed with construction of this programmatic component. If the selected sites are underlain by sedimentary geological units with moderate or high paleontological sensitivity, construction of these programmatic components could directly or indirectly destroy a unique paleontological resource during construction and the impact would be potentially significant.

Implementation of MM GEO-2 would avoid directly or indirectly destroying a unique paleontological resource by requiring: a paleontological records search and desktop geological and paleontological research be conducted by a qualified paleontologist when a new ASR facility site is being pursued; preparation and implementation of a Paleontological Resources Impact Mitigation Program (PRIMP) if known or identified resources are present on the site, or if the site is determined to have moderate or high paleontological sensitivity; implementation of standard paleontological clauses in construction contracts at sites with known resources or with high sensitivity for such resources, which require paleontological resource sensitivity training for workers prior to conducting earth disturbance activities and procedures to follow in the event that paleontological resources are unearthed during grading. Specifically, the PRIMP and the paleontological clauses in construction contracts shall require that collection and documentation of identified fossils occurs before construction is initiated for a known find or resumed for a find discovered during construction, thereby avoiding complete destruction of the find. Therefore, with the

implementation of this mitigation measure, the impact of this programmatic component would be reduced to a less-than-significant level.

**Beltz ASR Facilities.** The Beltz ASR sites are underlain by Pleistocene marine terrace deposits that have high paleontological sensitivity owing to their record of producing significant paleontological resources throughout California. Excavations and construction associated with the Beltz ASR upgrades could directly or indirectly destroy a unique paleontological resource during construction and the impact would be potentially significant.

Implementation of MM GEO-2 would avoid directly or indirectly destroying a unique paleontological resource by requiring: preparation and implementation of a PRIMP; and implementation of standard paleontological clauses in construction contracts, which require paleontological resource sensitivity training for workers prior to conducting earth disturbance activities and procedures to follow in the event that paleontological resources are unearthed during grading. Specifically, the PRIMP and the paleontological clauses in construction contracts shall require that collection and documentation of identified fossils occurs before construction is initiated for a known find or resumed for a find discovered during construction, thereby avoiding complete destruction of the find. Therefore, with the implementation of this mitigation measure, the impact of this project component would be reduced to a less-than-significant level.

Water Transfers and Exchanges and Intertie Improvements

The various intertie improvements are underlain by artificial fill, Holocene and Pleistocene alluvial deposits, Pleistocene marine terrace deposits, Pliocene to late Miocene Purisima Formation, late Miocene Santa Margarita Formation, and Cretaceous/Mesozoic quartz diorite. Artificial fill and diorite have no paleontological sensitivity, Holocene alluvial deposits have low paleontological sensitivity that increases to high with depth; and Pleistocene alluvial and marine terrace deposits have high paleontological sensitivity, as do the Purisima and Santa Margarita Formations. The City/SVWD intertie site is in an area of high paleontological sensitivity as it is underlain by Pleistocene terrace deposits and Santa Margarita Formation. Related to the City/SqCWD/CWD intertie, the Park Avenue pipeline site and McGregor pump station site are also in an area of high paleontological sensitivity as they are underlain by Pleistocene marine terrace deposits and Purisima Formation. The Soquel Village pipeline site, and the Freedom Boulevard and Valencia Drive pump station sites are in areas of low paleontological sensitivity that increases to high with depth as they are underlain by Holocene deposits, which in turn are underlain by Pleistocene or older sedimentary deposits. Any excavations in undisturbed Pleistocene deposits and excavations into Holocene deposits or colluvium that are deeper than five feet below the ground surface could directly or indirectly destroy a unique paleontological resource during construction, and the impact would be potentially significant.

Implementation of MM GEO-2 would avoid directly or indirectly destroying a unique paleontological resource, as described above for Beltz ASR facilities. Therefore, with the implementation of this mitigation measure, the impact of this programmatic component would be reduced to a less-than-significant level.

Felton Diversion Improvements

The Felton Diversion site is underlain by Holocene alluvium with low paleontological sensitivity on the surface that increases with depth if the Holocene alluvium is underlain by Pleistocene alluvium or sedimentary geological formations/units that have the potential to produce fossils. If excavations at this site are deeper than five feet below the ground surface such activities could directly or indirectly destroy a unique paleontological resource during construction and the impact would be potentially significant.

Implementation of MM GEO-2 would avoid directly or indirectly destroying a unique paleontological resource, as described above for Beltz ASR facilities. Therefore, with the implementation of this mitigation measure, the impact of this programmatic component would be reduced to a less-than-significant level.

Tait Diversion and Coast Pump Station Improvements

Like the Felton Diversion site, the Tait Diversion and Coast Pump Station site is also underlain by Holocene alluvium with low paleontological sensitivity on the surface that increases with depth if the Holocene alluvium is underlain by Pleistocene alluvium or sedimentary geological formations/units that have the potential to produce fossils. If excavations at this site are deeper than five feet below the ground surface such activities could directly or indirectly destroy a unique paleontological resource during construction and the impact would be potentially significant.

Implementation of MM GEO-2 would avoid directly or indirectly destroying a unique paleontological resource, as described above for Beltz ASR facilities. Therefore, with the implementation of this mitigation measure, the impact of this programmatic component would be reduced to a less-than-significant level.

### Mitigation Measures

Implementation of the following mitigation measure would reduce potentially significant paleontological resource impacts of the Proposed Project related to paleontological resources to a less-than-significant level, as described above.

**MM GEO-2:** **Paleontological Resources Impact Mitigation Program and Paleontological Monitoring.** Potentially significant impacts to paleontological resources on the project and programmatic infrastructure component sites shall be addressed through the following measures:

a. **Identify Potential Paleontological Resources (Applies to New Aquifer Storage and Recovery [ASR] Facilities).** When new ASR facilities sites are identified and those components are being pursued by the City or other lead agency, a qualified a qualified paleontologist pursuant to the Society of Vertebrate Paleontology (SVP) 2010 guidelines, shall conduct a paleontological records search from the Natural History Museum of Los Angeles County (LACM) and conduct a desktop geological and paleontological research. Based on the above, all paleontological sites within or near the programmatic component site shall be identified. The sensitivity of the site for discovering unknown paleontological resources, shall also be identified. The qualified paleontologist will prepare a brief technical report with the results of the above. If known or identified resources are present on the site, or if the site has moderate to high sensitivity for paleontological resources, measures b and c shall be implemented.

b. **Develop Paleontological Resources Impact Mitigation Program (Applies to all Known Infrastructure Components and May Apply to New ASR Facilities).** Prior to commencement of any grading activity on infrastructure component sites with moderate to high paleontological sensitivity or that may have such sensitivity at depth, the City or other lead agency shall retain a qualified paleontologist pursuant to the SVP (2010) guidelines. The paleontologist shall prepare a Paleontological Resources Impact Mitigation Program (PRIMP) for the Proposed Project. The PRIMP can be written to include all infrastructure components located in sites with moderate to high paleontological sensitivity. The PRIMP shall be consistent with the SVP (2010) guidelines and shall, at a minimum, contain the following elements:

- Introduction to the project, including project location, description of grading activities with the potential to impact paleontological resources, and underlying geologic units.
- Description of the relevant laws, ordinances, regulations, and standards pertinent to the project and potential paleontological resources.
- Requirements for preconstruction meeting attendance by the qualified paleontologist and/or their designee and worker environmental awareness training for grading contractors that outlines laws protecting paleontological resources and the types of resources that may be encountered on site.
- Identification of locations where full-time paleontological monitoring within geological units with high paleontological sensitivity is required within the project or programmatic sites based on construction plans and/or geotechnical reports.
- Requirements and frequency of paleontological monitoring spot-checks below a depth of five feet below the ground surface in areas underlain by Holocene sedimentary deposits.
- The types of paleontological field equipment the paleontological monitor shall have on-hand during monitoring.
- Discoveries treatment protocols and paleontological methods (including sediment sampling for microinvertebrate and microvertebrate fossils).
- Requirements for adequate reporting and collections management, including daily logs, monthly reports, and a final paleontological monitoring report that details the monitoring program and includes analyses of recovered fossils and their significance and the stratigraphy exposed during construction.
- Requirements for collection and complete documentation of fossils identified within the project site prior to construction and during construction, including procedures for temporarily halting construction within a 50-foot radius of the find while documentation and salvage occurs and allowing construction to resume once collection and documentation of the find is completed. Prepared fossils along with copies of all pertinent field notes, photos, maps, and the final paleontological monitoring report shall be deposited in a scientific institution with paleontological collections. Any curation costs shall be paid for by the City.

c. **Standard Paleontological Clauses in Construction Contracts (Applies to all Infrastructure Components).** The City or other lead agency shall include standard clauses in construction contracts for infrastructure components located in areas with moderate to high paleontological sensitivity. A standard clause shall be included that requires paleontological resource sensitivity training for workers prior to conducting earth disturbance activities. A standard inadvertent discovery clause shall also be included that indicates that in the event that paleontological resources (e.g., fossils) are unearthed during grading, the paleontological monitor will temporarily halt and/or divert grading activity to allow recovery of paleontological resources. The area of discovery will be roped off with a 50-foot-radius buffer. Once documentation and collection of the find is completed, the monitor will allow grading to recommence in the area of the find.

### 4.5.3.4 Cumulative Impact Analysis

This section provides an evaluation of cumulative geology and soils 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 area considered in the cumulative analysis for geology and soils is generally the immediate vicinity of the project and programmatic infrastructure component sites, with the exception that the ASR-induced liquefaction analysis considers other active recharge projects located in the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin.

The Proposed Project would not contribute to cumulative impacts related to earthquake fault rupture (Significance Standard A-i) or septic tanks/alternative wastewater disposal (Significance Standard E) because it would have no impacts related to these standards as described above. Therefore, these significance standards are not further evaluated. Erosion-related cumulative impacts (Significance Standard B) are addressed in Section 4.8, Hydrology and Water Quality. Additionally, the proposed water rights modifications are not further evaluated given no geology and soils impacts were identified for this project component (see Impact GEO-1 through Impact GEO-4) and therefore this component would not contribute to cumulative impacts.

**Impact GEO-5: Cumulative Geologic Hazards (Significance Standards A-ii, A-iii, A-iv, C, and D).** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to geology and soils, but the Proposed Project's contribution to this impact would not be cumulatively considerable. ***(Less than Significant)***

With the exception of potential ASR injection-induced liquefaction, the Proposed Project would not have the potential to result in cumulative impacts related to geologic hazards, including faulting, seismically induced ground shaking/failure, landslides, subsidence, and expansive soils, because potential cumulative impacts related to geologic hazards would be reduced on a site-by-site basis by modern construction methods and compliance with CBC and Cal/OSHA regulatory requirements that minimize the potential for damage and safety impacts. Therefore, these geologic hazards are not further evaluated.

The geographic area considered in the cumulative analysis related to liquefaction is the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin. As indicated in Table 4.0-2, groundwater recharge would occur in the Santa Cruz Mid-County Groundwater Basin in association with the Pure Water Soquel Groundwater Replenishment and Seawater Intrusion project. This project is a water supply project that would supplement natural recharge of the Santa Cruz Mid-County Groundwater Basin with purified water, at three injection sites in unincorporated Santa Cruz County. As described for Beltz ASR facilities in Impact GEO-1, if ASR injection was to raise water elevations to within 40 feet of the ground surface and the soils are prone to liquefaction (as illustrated in Figure 4.5-3), liquefaction would potentially occur. However, Beltz ASR facility sites are not located on soils prone to liquefaction. Similar to the Beltz ASR sites, the Pure Water Soquel groundwater replenishment wells would be located in areas of low liquefaction potential (SqCWD 2020). These wells would be located on Pleistocene marine terrace deposits and Pliocene marine bedrock, which do not consist of Holocene loose sandy soils and therefore are not prone to liquefaction. Although the liquefaction potential could increase in the adjacent liquefaction-prone drainages as a result of a rise in groundwater levels from the operation of Pure Water Soquel and Beltz ASR, these adjacent areas are not overlain by residences, businesses, schools, or infrastructure that would be susceptible to damage from liquefaction.

The only other known cumulative project that could result in active groundwater recharge is the Conjunctive Use Plan for the San Lorenzo River Watershed (Conjunctive Use Plan), which is considering injection of excess surface water during wet periods and extraction of groundwater during dry periods in the Olympia area of the Santa Margarita Groundwater Basin. Such injections would be completed in accordance with the Santa Margarita Groundwater Basin GSP, once it is completed, thus minimizing the potential for liquefaction to occur. However, while there are many unknowns, there is some possibility that the implementation of the Conjunctive Use Plan in conjunction with the new ASR facilities of the Proposed Project in the Santa Margarita Groundwater Basin could result in substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking or seismic related ground failure, including liquefaction and associated lateral spreading. As a result, the cumulative impact would be potentially significant. However, as described in Impact GEO-1, implementation of MM GEO-1 would avoid substantial adverse effects, including the risk of loss, injury, or death resulting from liquefaction and associated lateral spreading by maintaining and operating ASR injections in new wells located in potential liquefaction zones, such that existing shallow groundwater does not rise to levels that would cause liquefaction. Therefore, with the implementation of this mitigation measure, the Proposed Project would not have a considerable contribution to the cumulative impact. As such, the Proposed Project would result in a less-than-significant cumulative impact related to liquefaction.

**Impact GEO-6: Cumulative Paleontological Resources Impacts (Significance Standard F).** Construction of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to paleontological resources, but the Proposed Project's contribution to this impact would not be cumulatively considerable. ***(Less than Significant)***

Potential cumulative impacts on paleontological resources would result from projects that combine to create an environment where fossils, exposed on the surface, are vulnerable to destruction by earthmoving equipment, looting by the public, and natural causes such as weathering and erosion. Most impacts to paleontological resources are site-specific and are therefore generally mitigated on a project-by-project basis. Cumulative projects should be required to assess impacts to paleontological resources as part of the discretionary approval process and should incorporate individual mitigation for site-specific geological units present on each individual project site. However, it is possible that these cumulative projects could have a significant cumulative impact if individual projects are not properly mitigated. However, as indicated in Impact GEO-4, the Proposed Project does not propose construction (including grading/excavation) or design features which could directly or indirectly contribute to an increase in a cumulative impact to paleontological resources, as MM GEO-2 ensures that any significant paleontological resources uncovered during excavations for project and programmatic infrastructure components would be properly analyzed and salvaged by the on-site paleontological monitor thereby avoiding complete destruction of the find. Therefore, with the implementation of this mitigation measure, the Proposed Project would not have a considerable contribution to the cumulative impact. As such, the Proposed Project would result in a less-than-significant cumulative impact related paleontological resources.

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# 4.6 Greenhouse Gas Emissions

This section describes the existing greenhouse gas (GHG) 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 GHG modeling conducted for the Proposed Project as part of the preparation of this environmental impact report (EIR). The results of the GHG modeling are summarized in this section and are included in Appendix E.

A summary of the comments received during the scoping period for this EIR is provided in Table 2-1 in Chapter 2, Introduction, and a complete list of comments is provided in Appendix A. There were no comments related to GHG emissions.

## 4.6.1 Existing Conditions

### 4.6.1.1 Climate Change Overview

Climate change refers to any significant change in measures of climate—such as temperature, precipitation, or wind patterns—lasting for an extended period of time (decades or longer). The Earth's temperature depends on the balance between energy entering and leaving the planet's system. Many factors, both natural and human, can cause changes in Earth's energy balance, including variations in the sun's energy reaching Earth, changes in the reflectivity of Earth's atmosphere and surface, and changes in the greenhouse effect, which affects the amount of heat retained by Earth's atmosphere (EPA 2017).

The greenhouse effect is the trapping and buildup of heat in the atmosphere (troposphere) near the Earth's surface. The greenhouse effect traps heat in the troposphere through a three-part process as follows: (1) short-wave radiation emitted by the Sun is absorbed by the Earth, (2) the Earth emits a portion of this energy in the form of long-wave radiation, and (3) GHGs in the upper atmosphere absorb this long-wave radiation and emit it both into space and back toward the Earth. The greenhouse effect is a natural process that contributes to regulating the Earth's temperature and creates a pleasant, livable environment on the Earth. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and causing the Earth's surface temperature to rise.

The scientific record of the Earth's climate shows that the climate system varies naturally over a wide range of time scales and that, in general, climate changes prior to the Industrial Revolution in the 1700s can be explained by natural causes, such as changes in solar energy, volcanic eruptions, and natural changes in GHG concentrations. However, recent climate changes, in particular the warming observed over the past century, cannot be explained by natural causes alone. Rather, it is extremely likely that human activities have been the dominant cause of warming since the mid-twentieth century, and are the most significant driver of observed climate change (IPCC 2013; EPA 2017). Human influence on the climate system is evident from the increasing GHG concentrations in the atmosphere, positive radiative forcing, observed warming, and improved understanding of the climate system (IPCC 2013). The atmospheric concentrations of GHGs have increased to levels unprecedented in the last 800,000 years, primarily from fossil fuel emissions and secondarily from emissions associated with land use changes (IPCC 2013). Continued emissions of GHGs will cause further warming and changes in all components of the climate system.

### 4.6.1.2 Greenhouse Gases

A GHG is any gas that absorbs infrared radiation in the atmosphere; in other words, GHGs trap heat in the atmosphere. As defined in California Health and Safety Code Section 38505(g), for purposes of administering many of the State's primary GHG emissions reduction programs, GHGs include carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride ($SF_6$), and nitrogen trifluoride (see also see also 14 California Code of Regulations [CCR] Section 15364.5).[1] Some GHGs, such as $CO_2$, $CH_4$, and $N_2O$, occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, $CO_2$ and $CH_4$ are the predominant GHGs emitted from human activities. Manufactured GHGs, which have a much greater heat-absorption potential than $CO_2$, include fluorinated gases, such as HFCs, PFCs, and $SF_6$, which are associated with certain industrial products and processes. The following paragraphs provide a summary of the most common GHGs and their sources.[2]

#### Carbon Dioxide

$CO_2$ is a naturally occurring gas and a by-product of human activities; it is the principal anthropogenic GHG that affects the Earth's radiative balance. Natural sources of $CO_2$ include respiration of bacteria, plants, animals, and fungus; evaporation from oceans; volcanic out-gassing; and decomposition of dead organic matter. Human activities that generate $CO_2$ include the combustion of fuels such as coal, oil, natural gas, and wood, and changes in land use.

#### Methane

$CH_4$ is produced through both natural and human activities. $CH_4$ is a flammable gas and is the main component of natural gas. $CH_4$ is produced through anaerobic (i.e., without oxygen) decomposition of waste in landfills, flooded rice fields, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

#### Nitrous Oxide

$N_2O$ is produced through natural and human activities, mainly through agricultural activities and natural biological processes, although fuel burning and other processes also create $N_2O$. Sources of $N_2O$ include soil cultivation practices (microbial processes in soil and water), especially the use of commercial and organic fertilizers, manure management, industrial processes (such as in nitric acid production, nylon production, and fossil-fuel-fired power plants), vehicle emissions, and using $N_2O$ as a propellant (such as in rockets, racecars, and aerosol sprays).

#### Fluorinated Gases

Fluorinated gases (also referred to as F-gases) are synthetic powerful GHGs emitted from many industrial processes. Fluorinated gases are commonly used as substitutes for stratospheric ozone ($O_3$)-depleting substances (e.g., chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and halons). The most prevalent fluorinated gases include the following:

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1 Climate-forcing substances include GHGs and other substances such as black carbon and aerosols. This discussion focuses on the seven GHGs identified in California Health and Safety Code, Section 38505. Impacts associated with other climate-forcing substances are not evaluated herein.

2 The descriptions of GHGs are summarized from the Intergovernmental Panel on Climate Change's Second Assessment Report and Fourth Assessment Report (IPCC 1995, 2007), CARB's Glossary of Terms Used in GHG Inventories (CARB 2020b), and EPA's Glossary of Climate Change Terms (EPA 2016).

- **Hydrofluorocarbons:** HFCs are compounds containing only hydrogen, fluorine, and carbon atoms. HFCs are synthetic chemicals used as alternatives to $O_3$-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are used in manufacturing.
- **Perfluorocarbons:** PFCs are a group of human-made chemicals composed of carbon and fluorine only. These chemicals were introduced, along with HFCs, as alternatives to the $O_3$-depleting substances. The two main sources of PFCs are primarily aluminum production and semiconductor manufacturing. Since PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere, these chemicals have long lifetimes, ranging between 10,000 and 50,000 years.
- **Sulfur Hexafluoride:** $SF_6$ is a colorless gas soluble in alcohol and ether and slightly soluble in water. $SF_6$ is used for insulation in electric power transmission and distribution equipment, semiconductor manufacturing, the magnesium industry, and as a tracer gas for leak detection.
- **Nitrogen Trifluoride:** Nitrogen trifluoride is used in the manufacture of a variety of electronics, including semiconductors and flat panel displays.

### Chlorofluorocarbons

CFCs are synthetic chemicals that have been used as cleaning solvents, refrigerants, and aerosol propellants. CFCs are chemically unreactive in the lower atmosphere (troposphere), and the production of CFCs was prohibited in 1987 due to the chemical destruction of stratospheric $O_3$.

### Hydrochlorofluorocarbons

HCFCs are a large group of compounds whose structure is very close to that of CFCs—containing fluorine, chlorine, and carbon atoms—but also including one or more hydrogen atoms. Like HFCs, HCFCs are used in refrigerants and propellants. HCFCs were also used in place of CFCs for some applications; however, their use in general is being phased out.

### Black Carbon

Black carbon is a component of fine particulate matter ($PM_{2.5}$), which has been identified as a leading environmental risk factor for premature death. It is produced from the incomplete combustion of fossil fuels and biomass burning, particularly from older diesel engines and forest fires. Black carbon warms the atmosphere by absorbing solar radiation; influences cloud formation; and darkens the surface of snow and ice, which accelerates heat absorption and melting. Black carbon is a short-lived substance that varies spatially, which makes it difficult to quantify its global warming potential (GWP). Diesel particulate matter emissions are a major source of black carbon and are toxic air contaminants that have been regulated and controlled in California for several decades to protect public health. In relation to declining diesel particulate matter as a result of the California Air Resources Board's (CARB's) regulations pertaining to diesel engines, diesel fuels, and burning activities, CARB estimates that annual black carbon emissions in California have decreased by 70% between 1990 and 2010, with 95% control expected by 2020 (CARB 2014).

### Water Vapor

The primary source of water vapor is evaporation from the ocean, with additional vapor generated by sublimation (change from solid to gas) from ice and snow, evaporation from other water bodies, and transpiration from plant leaves. Water vapor is the most important, abundant, and variable GHG in the atmosphere and maintains a climate necessary for life.

### Ozone

Tropospheric $O_3$, which is created by photochemical reactions involving gases from both natural sources and human activities, acts as a GHG. Stratospheric $O_3$, which is created by the interaction between solar ultraviolet radiation and molecular oxygen, plays a decisive role in the stratospheric radiative balance. Depletion of stratospheric $O_3$, which occurs due to chemical reactions that may be enhanced by climate change, results in an increased ground-level flux of ultraviolet-B radiation.

### Aerosols

Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.

## 4.6.1.3 Global Warming Potential

Gases in the atmosphere can contribute to climate change both directly and indirectly. Direct effects occur when the gas itself absorbs radiation. Indirect radiative forcing occurs when chemical transformations of the substance produce other GHGs, when a gas influences the atmospheric lifetimes of other gases, and/or when a gas affects atmospheric processes that alter the radiative balance of the Earth (e.g., affect cloud formation or albedo) (EPA 2017). The Intergovernmental Panel on Climate Change (IPCC) developed the GWP concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram of a trace substance relative to that of 1 kilogram of a reference gas (IPCC 2014). The reference gas used is $CO_2$; therefore, GWP-weighted emissions are measured in metric tons of $CO_2$ equivalent (MT $CO_2e$).

The current version of the California Emissions Estimator Model (CalEEMod) (Version 2016.3.2) assumes that the GWP for $CH_4$ is 25 (so emissions of 1 MT of $CH_4$ are equivalent to emissions of 25 MT of $CO_2$), and the GWP for $N_2O$ is 298, based on the IPCC's Fourth Assessment Report (IPCC 2007).

## 4.6.1.4 Greenhouse Gas Inventories and Climate Change Conditions

### Greenhouse Gas Inventories

#### Global Inventory

Anthropogenic GHG emissions worldwide in 2018 (the most recent year for which data is available) totaled approximately 51,800 million metric tons (MMT) of $CO_2e$, excluding land use change and forestry (PBL 2019). Six countries—China, the United States, the Russian Federation, India, Japan, and Brazil—and the European community accounted for approximately 65% of the total global emissions, or approximately 33,700 MMT $CO_2e$ (PBL 2019). Table 4.6-1 presents the top GHG-emissions-producing countries.

## Table 4.6-1. Six Top Greenhouse-Gas-Producer Countries and the European Union

| Emitting Countries (listed in order of emissions) | Greenhouse Gas Emissions (MMT $CO_2e$) |
|---|---|
| China | 13,600 |
| United States | 6,700 |
| European Union | 4,500 |
| India | 3,700 |
| Russian Federation | 2,500 |
| Japan | 1,400 |
| Brazil | 1,300 |
| **Total** | **33,700** |

**Source:** PBL 2019.
**Note:** MMT $CO_2e$ = million metric tons of carbon dioxide equivalent.

### National Inventory

Per the Environmental Protection Agency (EPA) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2018 (EPA 2020), total United States GHG emissions were approximately 6,676.6 MMT $CO_2e$ in 2018 (EPA 2020). The primary GHG emitted by human activities in the United States was $CO_2$, which represented approximately 81.3% of total GHG emissions (5,428.1 MMT $CO_2e$). The largest source of $CO_2$, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 92.8% of $CO_2$ emissions in 2018 (5,031.8 MMT $CO_2e$). Relative to 1990, gross United States GHG emissions in 2018 were 3.7% higher; however, the gross emissions were down from a high of 15.2% above 1990 levels in 2007. GHG emissions increased from 2017 to 2018 by 2.9% (188.4 MMT $CO_2e$) and overall, net emissions in 2018 were 10.2% below 2005 levels (EPA 2020).

### State Inventory

According to California's 2000–2018 GHG emissions inventory (2020 edition), California emitted 425 MMT $CO_2e$ in 2018, including emissions resulting from out-of-state electrical generation (CARB 2020a). The sources of GHG emissions in California include transportation, industry, electric power production from both in-state and out-of-state sources, residential and commercial activities, agriculture, high-GWP substances, and recycling and waste. Table 4.6-2 presents California GHG emission source categories and their relative contributions to the emissions inventory in 2018.

## Table 4.6-2. Greenhouse Gas Emissions Sources in California

| Source Category | Annual GHG Emissions (MMT $CO_2e$)[a] | Percent of Total[a] |
|---|---|---|
| Transportation | 169.5 | 40% |
| Industrial | 89.2 | 21% |
| Electric power[b] | 63.1 | 15% |
| Agriculture | 32.6 | 8% |
| Commercial and Residential | 41.4 | 10% |
| High global-warming potential substances | 20.5 | 5% |
| Recycling and waste | 9.1 | 2% |
| **Total** | **425.3** | **100%** |

**Source:** CARB 2020a.
**Notes:** GHG = greenhouse gas; GWP = global warming potential; MMT $CO_2e$ = million metric tons of carbon dioxide equivalent. Emissions reflect 2018 California GHG inventory.
[a] Totals may not sum due to rounding.
[b] Includes emissions associated with imported electricity.

Between 2000 and 2018, per-capita GHG emissions in California have dropped from a peak of 14.1 MT per person in 2001 to 10.7 MT per person in 2018, representing a 24% decrease. In addition, total GHG emissions in 2018 were approximately 1 MMT $CO_2e$ higher than 2017 emissions (CARB 2020a).

### Local Inventories

The City of Santa Cruz (City) developed a GHG inventory for multiple years as part of its *Climate Action Plan* (CAP) (City of Santa Cruz 2012). The most recent year included is 2008, with citywide GHG emissions estimated at 351,321 MT $CO_2e$. The County of Santa Cruz also developed a countywide GHG inventory, which estimated that approximately 791,278 MT $CO_2e$ were emitted during 2009 (County of Santa Cruz 2013).

## Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The 2014 IPCC Synthesis Report (IPCC 2014) indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. Signs that global climate change has occurred include warming of the atmosphere and ocean, diminished amounts of snow and ice, rising sea levels, and ocean acidification (IPCC 2014).

In California, climate change impacts have the potential to affect sea-level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, frequency of severe weather events, and electricity demand and supply. The primary effect of global climate change has been a rise in average global tropospheric temperature. Reflecting the long-term warming trend since pre-industrial times, observed global mean surface temperature for the decade 2006–2015 was 0.87°C (1.6°F) (likely between 0.75°C [1.4°F] and 0.99°C [1.8°F]) higher than the average over the 1850–1900 period (IPCC 2018). Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the twentieth century. Human activities are estimated to have caused approximately 1.0°C (1.8°F) of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C (1.4°F to 2.2°F) (IPCC 2018). Global warming is likely to reach 1.5°C (2.7°F) between 2030 and 2052 if it continues to increase at the current rate (IPCC 2018).

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The Office of Environmental Health Hazard Assessment identified various indicators of climate change in California, which are scientifically based measurements that track trends in various aspects of climate change. Many indicators reveal discernible evidence that climate change is occurring in California and is having significant, measurable impacts in the state. Changes in the state's climate have been observed, including an increase in annual average air temperature with record warmth from 2012 to 2016, more frequent extreme heat events, more extreme drought, a decline in winter chill, an increase in cooling degree days and a decrease in heating degree days, and an increase in variability of statewide precipitation (OEHHA 2018).

Warming temperatures and changing precipitation patterns have altered California's physical systems—the ocean, lakes, rivers, and snowpack—upon which the state depends. Winter snowpack and spring snowmelt runoff from the Sierra Nevada and southern Cascade Mountains provide approximately one-third of the state's annual water supply. Impacts of climate on physical systems have been observed such as high variability of snow-water content (i.e., amount of water stored in snowpack), decrease in snowmelt runoff, glacier change (loss in area), rise in sea levels, increase in average lake water temperature and coastal ocean temperature, and a decrease in dissolved oxygen in coastal waters (OEHHA 2018).

Impacts of climate change on biological systems, including humans, wildlife, and vegetation, have also been observed, including climate change impacts on terrestrial, marine, and freshwater ecosystems. As with global observations, species responses include those consistent with warming: elevational or latitudinal shifts in range, changes in the timing of key plant and animal life cycle events, and changes in the abundance of species and in community composition. Humans are better able to adapt to a changing climate than plants and animals in natural ecosystems. Nevertheless, climate change poses a threat to public health as warming temperatures and changes in precipitation can affect vector-borne pathogen transmission and disease patterns in California as well as the variability of heat-related deaths and illnesses. In addition, since 1950, the area burned by wildfires each year has followed an increasing trend overall.

The California Natural Resources Agency (CNRA) has released four California Climate Change Assessments (2006, 2009, 2012, and 2018), which have addressed the following: acceleration of warming across the state, more intense and frequent heat waves, greater riverine flows, accelerating sea level rise, more intense and frequent drought, more severe and frequent wildfires, more severe storms and extreme weather events, shrinking snowpack and less overall precipitation, and ocean acidification, hypoxia, and warming. To address local and regional governments' need for information to support action in their communities, the Fourth Assessment (2018) includes reports for nine regions of the state. Key projected climate changes for the Central Coast Region (which includes Santa Cruz County where the Proposed Project is located) include the following (CNRA 2018a):

- Maximum and minimum temperatures for the Central Coast will continue to increase through the next century, with greater increases in the inland region relative to the coast. Precipitation is expected to increase slightly, but precipitation variability will increase substantially.
- The future of fog is uncertain because system feedbacks and their response to climate change are not well characterized. Fog can be intercepted by coastal zone flora (which obtain up to one-third of their moisture from fog) and can also prevent low stream flows, which can keep salmonids from desiccating during dry periods.
- Periodic El Niño events dominate coastal hazards across the Central Coast while atmospheric rivers, expected to increase, are the dominant drivers of locally extreme rainfall events.
- Recently observed and projected acceleration in sea-level rise poses a significant threat to the regions' coastal communities. Future flooding is also a serious concern.
- Estuarine systems will be affected by accelerated sea-level rise, warming of water and air, ocean acidification, and changes in runoff. Some Central Coast marshes may drown or become shallow mudflats, leading to a loss of the ecosystem services that marshes provide, including carbon sequestration.
- Many beaches will narrow considerably. As many as two-thirds will be completely lost over the next century, along with the ecosystems supported by those beaches. The landward erosion of beaches will be driven by accelerating sea-level rise combined with a lack of ample sediment, effectively drowning the beaches between the rising ocean and the backing cliffs and/or urban hardscape.
- Projected future droughts are likely to be a serious challenge to the region's already stressed water supplies.
- Water supply shortages, already common during drought, will be exacerbated. Higher temperatures may result in increases in water demand for agriculture and landscaping. Reduced surface water will lead to increases in groundwater extractions that may result in increased saltwater intrusion. Lower surface flows will lead to higher pollutant concentrations and will impact aquatic species.
- Frequent and sometimes large wildfires will continue to be a major disturbance and post-fire recovery time may be lengthened.
- Central Coast native plants are a large part of the world's floristic provinces. Plant species' responses to climate change will in general depend on the climate in which a population evolved and its own unique

climate tolerances. Coastal shrubland resilience depends on climate effects to physiological responses that are modified by biotic interactions and the extent of anthropogenic land use. Grasslands closer to the coast will be less affected than interior grasslands where warming is already documented.

- Climate change outcomes for forests will depend largely on multiple abiotic drivers (increased air temperatures, altered fog patterns, changes in winter precipitation), and biotic factors (invasive species and insect and pest outbreaks).
- Terrestrial wildlife is already experiencing local extinctions. Species may have robust climate refugia in the region's mountains characterized by cooler temperatures and higher levels of precipitation.
- The aquatic life of streams and rivers is threatened by projected extreme swings from drought to floods, and exacerbated by fire and erosion that buries habitat in sediments. Climate impacts can threaten the survival of already endangered steelhead and coho salmon, and further reduce the diversity and abundance of sensitive aquatic insects.
- Impacts to the region's public health include increases in heat-related illnesses for agricultural workers, harmful particulate matter from wildfires, and an increase in ground-level $O_3$. Infectious/vector-borne diseases such as Valley Fever and Pacific Coast tick fever are expected to increase, and an increase in harmful algal blooms will have detrimental effects on animals and people exposed to toxins released from the algae.
- Residential electricity demand is likely to be affected by more frequent heat waves due to increases in cooling requirements, and warming temperatures are likely to affect electricity supply from gas-fired plants.
- Agricultural production is highly sensitive to climate change, including amounts, forms, and distribution of precipitation, changes in temperatures, and increased frequency and intensity of climate extremes.

## 4.6.2 Regulatory Framework

### 4.6.2.1 Federal

#### Energy Independence and Security Act

The Energy Independence and Security Act of 2007 (Public Law 110-140), among other key measures, would do the following, which would aid in the reduction of national GHG emissions:

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020, and directs National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy-efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

#### Federal Vehicle Standards

In *Massachusetts v. EPA* (April 2007), the U.S. Supreme Court directed the EPA administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In

December 2009, the administrator signed a final rule with the following two distinct findings regarding GHGs under section 202(a) of the federal Clean Air Act:

- The administrator found that elevated concentrations of GHGs—$CO_2$, $CH_4$, $N_2O$, HFCs, PFCs, and $SF_6$—in the atmosphere threaten the public health and welfare of current and future generations. This is the "endangerment finding."
- The administrator further found that the combined emissions of GHGs—$CO_2$, $CH_4$, $N_2O$, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act (42 United States Code Section 7401).

In 2007, in response to the *Massachusetts v. EPA* U.S. Supreme Court ruling, the Bush Administration issued Executive Order (EO) 13432 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012 through 2016 (75 Federal Register [FR] 25324–25728).

In 2010, President Obama issued a memorandum directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017 through 2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of $CO_2$ in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017 through 2021 (77 FR 62624–63200). On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014 through 2018. The standards for $CO_2$ emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6% to 23% over the 2010 baselines (76 FR 57106–57513).

In August 2016, the EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all sizes of buses and work trucks. The final standards are expected to lower $CO_2$ emissions by approximately 1.1 billion MT and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (EPA and NHTSA 2016).

On April 2, 2018, the EPA, under administrator Scott Pruitt, reconsidered the final determination for light-duty vehicles and withdrew its previous 2017 determination, stating that the current standards may be too stringent and therefore should be revised as appropriate (EPA 2019).

In August 2018, EPA and NHTSA proposed to amend certain fuel economy and GHG standards for passenger cars and light trucks and establish new standards for model years 2021 through 2026. Compared to maintaining the post-2020 standards then in place, the 2018 proposal would increase U.S. fuel consumption by about half a million barrels per day (2% to 3% of total daily consumption, according to the Energy Information Administration) and would impact the global climate by 3/1000th of one degree Celsius by 2100 (EPA and NHTSA 2018). California and other states have stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures and have committed to cooperating with other countries to implement global climate change initiatives.

On September 27, 2019, the EPA and NHTSA published the SAFE Vehicles Rule Part One: One National Program (84 FR 51310), which became effective November 26, 2019. The Part One Rule revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. On March 31, 2020, the EPA and NHTSA issued the Part Two Rule, which went into effect 60 days after being published in the Federal Register. The Part Two Rule sets $CO_2$ emissions standards and corporate average fuel economy standards for passenger vehicles and light-duty trucks for model years 2021 through 2026. On January 20, 2021, President Joe Biden issued an EO on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, which includes review of Part One Rule by April 2021 and review of the Part Two Rule by July 2021 (The White House 2021).

### 4.6.2.2 State

The statewide GHG emissions regulatory framework is summarized in this subsection by category: state climate change targets, building energy, renewable energy and energy procurement, mobile sources, water, solid waste, and other state actions. The following text describes EOs, Assembly Bills (ABs), Senate Bills (SBs), and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues.

#### State Climate Change Targets

The state has taken a number of actions to address climate change. These actions are summarized below, and include EOs, legislation, and CARB plans and requirements.

##### Assembly Bill 32

In furtherance of the goals established in EO S-3-05, the Legislature enacted AB 32, the California Global Warming Solutions Act of 2006 (California Health and Safety Code Sections 38500-38599 et seq.). AB 32 provided initial direction on creating a comprehensive multiyear program to limit California's GHG emissions at 1990 levels by 2020, and initiate the transformations required to achieve the state's long-range climate objectives.

##### Senate Bill 32 and Assembly Bill 197

SB 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions-reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40% below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, in order to provide ongoing oversight over implementation of the state's climate policies. AB 197 also added two members of the Legislature to the Board as nonvoting members; requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and toxic air contaminants from reporting facilities; and requires CARB to identify specific information for GHG emissions-reduction measures when updating the scoping plan.

### Executive Order S-3-05

EO S-3-05 (June 2005) established California's GHG emissions-reduction targets and laid out responsibilities among the state agencies for implementing the EO and for reporting on progress toward the targets. This EO established the following targets:

- By 2010, reduce GHG emissions to 2000 levels
- By 2020, reduce GHG emissions to 1990 levels
- By 2050, reduce GHG emissions to 80% below 1990 levels

EO S-3-05 also directed the California Environmental Protection Agency to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry.

### Executive Order B-30-15

EO B-30-15 (April 2015) identified an interim GHG-reduction target in support of targets previously identified under S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050, as set forth in S-3-05. To facilitate achieving this goal, EO B-30-15 called for CARB to update the Scoping Plan to express the 2030 target in terms of MMT $CO_2e$. The EO also called for state agencies to continue to develop and implement GHG emission-reduction programs in support of the reduction targets.

### Executive Order B-55-18

EO B-55-18 (September 2018) establishes a statewide policy for the state to achieve carbon neutrality as soon as possible (no later than 2045), and achieve and maintain net negative emissions thereafter. The goal is an addition to the existing statewide targets of reducing the state's GHG emissions. CARB will work with relevant state agencies to ensure that future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal.

### California Air Resources Board's Climate Change Scoping Plan

One specific requirement of AB 32 is for CARB to prepare a "scoping plan" for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (California Health and Safety Code Section 38561[a]), and to update the plan at least once every 5 years. In 2008, CARB approved the first scoping plan: The *Climate Change Proposed Scoping Plan: A Framework for Change* (Scoping Plan). The Scoping Plan included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission-reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state's long-range climate objectives.

In 2014, CARB approved the first update to the Scoping Plan. The *First Update to the Climate Change Scoping Plan: Building on the Framework* (First Update) defined the state's GHG emission reduction priorities for the next 5 years and laid the groundwork to start the transition to the post-2020 goals set forth in EOs S-3-05 and B-16-2012 (CARB 2014). The First Update concluded that California was on track to meet the 2020 target, but recommended a 2030 mid-term GHG reduction target be established to ensure a continuum of action to reduce emissions. The First Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050 including energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies.

In December 2017, CARB released the *2017 Climate Change Scoping Plan Update* (Second Update) for public review and comment (CARB 2017a). The Second Update builds on the successful framework established in the initial Scoping Plan and First Update, while identifying new technologically feasible and cost-effective strategies that will serve as the framework to achieve the 2030 GHG target and define the state's climate change priorities to 2030 and beyond. The strategies' "known commitments" include implementing renewable energy and energy efficiency (including the mandates of SB 350), increased stringency of the Low Carbon Fuel Standard, measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant Plan, and increased stringency of SB 375 targets. To fill the gap in additional reductions needed to achieve the 2030 target, the Second Update recommends continuing the Cap-and-Trade Program and a measure to reduce GHGs from refineries by 20%. The Second Update was approved by CARB's Governing Board on December 14, 2017.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32, SB 32, and the EOs; it also establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. A project is considered consistent with the statutes and EOs if it would meet the general policies in reducing GHG emissions in order to facilitate the achievement of the state's goals and would not impede attainment of those goals.

### California Air Resources Board's Regulations for the Mandatory Reporting of Greenhouse Gas Emissions

CARB's Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (17 CCR Sections 95100–95157) incorporated by reference certain requirements that EPA promulgated in its Final Rule on Mandatory Reporting of Greenhouse Gases (40 Code of Federal Regulations Section 98). Specifically, section 95100(c) of the Mandatory Reporting Regulation incorporated those requirements that EPA promulgated in the *Federal Register* on October 30, 2009; July 12, 2010; September 22, 2010; October 28, 2010; November 30, 2010; December 17, 2010; and April 25, 2011. In general, entities subject to the Mandatory Reporting Regulation that emit over 10,000 MT $CO_2e$ per year are required to report annual GHGs through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 MT $CO_2e$ per year threshold are required to have their GHG emissions report verified by a CARB-accredited third party.

### Executive Order B-18-12

EO B-18-12 (April 2012) directed state agencies, departments, and other entities under the Governor's executive authority to take action to reduce entity-wide GHG emissions by at least 10% by 2015 and 20% by 2020, as measured against a 2010 baseline. EO B-18-12 also established goals for existing state buildings for reducing grid-based energy purchases and water use.

### Senate Bill 605 and Senate Bill 1383

SB 605 (2014) requires CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants (SLCPs) in the state (California Health and Safety Code Section 39730); and SB 1383 (2016) requires CARB to approve and implement that strategy by January 1, 2018 (California Public Resources Code Section 42652-43654). SB 1383 also establishes specific targets for the reduction of SLCPs (40% below 2013 levels by 2030 for $CH_4$ and HFCs, and 50% below 2013 levels by 2030 for anthropogenic black carbon), and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, and as mentioned above, CARB adopted its *Short-Lived Climate Pollutant Reduction Strategy* (SLCP Reduction Strategy) in March 2017. The SLCP Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, methane, and fluorinated gases (CARB 2017b).

## Building Energy

### California Code of Regulations, Title 24, Part 6

The California Building Standards Code were established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure that new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed every few years by the Building Standards Commission and the California Energy Commission (CEC), and revised if necessary (Public Resources Code Section 25402[b][(1]). The regulations receive input from members of industry, as well as the public, in order to "reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (Public Resources Code Section 25402). These regulations are carefully scrutinized and analyzed for technological and economic feasibility (Public Resources Code Section 25402[d]) and cost effectiveness (Public Resources Code Section 25402[b][2–3]). As a result, these standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment. The current Title 24 standards are the 2019 Title 24 building energy efficiency standards, which became effective January 1, 2020.

### California Code of Regulations, Title 24, Part 11

In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as California's Green Building Standards (CALGreen), and establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential and state-owned buildings and schools and hospitals. The 2019 CALGreen standards are the current applicable standards. For nonresidential projects, some of the key mandatory CALGreen 2019 standards involve requirements related to bicycle parking, designated parking for clean air vehicles, electric vehicle (EV) charging stations, shade trees, water conserving plumbing fixtures and fittings, outdoor potable water use in landscaped areas, recycled water supply systems, construction waste management, excavated soil and land clearing debris, and commissioning (24 CCR Part 11).

### California Code of Regulations, Title 20

Title 20 of the California Code of Regulations requires manufacturers of appliances to meet state and federal standards for energy and water efficiency (20 CCR Sections 1401-1410 et seq.). The CEC certifies an appliance based on a manufacturer's demonstration that the appliance meets the standards. New appliances regulated under Title 20 include: refrigerators, refrigerator-freezers and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of appliance covered under the regulations and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

### Senate Bill 1

SB 1 (2006) established a $3 billion rebate program to support the goal of the state to install rooftop solar energy systems with a generation capacity of 3,000 megawatts through 2016. SB 1 added sections to the Public Resources Code, including Chapter 8.8 (California Solar Initiative), that require building projects applying for ratepayer-funded incentives for photovoltaic systems to meet minimum energy efficiency levels and performance requirements (Public Resources Code Sections 25780-25784 et seq.). Section 25780 established that it is a goal of the state to establish a self-sufficient solar industry. The goals included establishing solar energy systems as a viable mainstream option for both homes and businesses within 10 years of adoption, and placing solar energy systems on 50% of new homes within 13 years of adoption. SB 1, also termed "Go Solar California," was previously titled "Million Solar Roofs."

### Assembly Bill 1470 (Solar Water Heating)

This bill established the Solar Water Heating and Efficiency Act of 2007 (California Public Utilities Code Sections 2851-2869 et seq.). The bill makes findings and declarations of the Legislature relating to the promotion of solar water heating systems and other technologies that reduce natural gas demand.

### Assembly Bill 1109

Enacted in 2007, AB 1109 required the CEC to adopt minimum energy efficiency standards for general-purpose lighting to reduce electricity consumption by 50% for indoor residential lighting and by 25% for indoor commercial lighting (Public Resources Code Section 25402.5.4).

## Renewable Energy and Energy Procurement

### Senate Bill 1078

SB 1078 (2002) (California Public Utilities Code Section 399.11 et seq.) established the Renewables Portfolio Standard (RPS) program, which required an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107, EO S-14-08, and EO S-21-09).

### Senate Bill 1368

SB 1368 (2006), required the CEC to develop and adopt regulations for GHG emission performance standards for the long-term procurement of electricity by local publicly owned utilities (California Public Utilities Code Section 8340-8341 et seq.). These standards must be consistent with the standards adopted by the California Public Utilities Commission (CPUC).

### Executive Order S-14-08

EO S-14-08 (2008) focused on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. This EO required that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the EO directed state agencies to take appropriate actions to facilitate reaching this target. The CNRA, through collaboration with CEC and the California Department of Fish and Wildlife, was directed to lead this effort.

### Executive Order S-21-09 and Senate Bill X1-2

EO S-21-09 (2009) directed CARB to adopt a regulation consistent with the goal of EO S-14-08 by July 31, 2010. CARB was further directed to work with CPUC and CEC to ensure that the regulation builds upon the RPS program and was applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB was to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health, and those that can be developed the most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB initially approved regulations to implement a Renewable Electricity Standard; however, this regulation was not finalized because of subsequent legislation (SB X1-2) signed by Governor Brown in April 2011.

SB X1-2 expanded RPS by establishing a renewable energy target of 20% of the total electricity sold to retail customers in California per year by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation (30 megawatts or less), digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location.

SB X1-2 applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must meet the renewable energy goals listed above.

### Senate Bill 350

SB 350 (2015) further expanded the RPS program by establishing a goal of 50% of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 included the goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses on which an energy-efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires the CPUC, in consultation with the CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal.

### Senate Bill 100

SB 100 (2018) increased the standards set forth in SB 350, establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California. This bill requires that the achievement of 100% zero-carbon electricity resources do not increase the carbon emissions elsewhere in the western grid and that the achievement not be achieved through resource shuffling.

## Mobile Sources

### State Vehicle Standards (Assembly Bill 1493 and Executive Order B-16-12)

AB 1493 (July 2002) was enacted in a response to the transportation sector accounting for more than half of California's $CO_2$ emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles that are primarily used for noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. EO B-16-12 (March 2012)

required that state entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emissions vehicles. It ordered CARB, CEC, CPUC, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve benchmark goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050. This directive did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare. As explained under the "Federal Vehicle Standards" description above, EPA and NHTSA approved the SAFE Vehicles Rule Part One and Two, which revoked California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. As the EPA rule is the subject of pending legal challenges and no GHG adjustment factors have been issued for EMFAC by CARB, this analysis continues to utilize the best available information at this time, as set forth in EMFAC.

### Heavy-Duty Diesel

CARB adopted the final Heavy-Duty Truck and Bus Regulation on December 31, 2014 to reduce diesel particulate matter, a major source of black carbon, and oxides of nitrogen emissions from heavy-duty diesel vehicles (13 CCR Section 2025). The rule requires diesel particulate matter filters be applied to newer heavier trucks and buses by January 1, 2012, with older vehicles required to comply by January 1, 2015. The rule will require nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an Airborne Toxic Control Measure to limit idling of diesel-fueled commercial vehicles on December 12, 2013. This rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than 5 minutes at any location (13 CCR Section 2485).

### Executive Order S-1-07

EO S-1-07 (January 2007, implementing regulation adopted in April 2009) sets a declining Low Carbon Fuel Standard for GHG emissions measured in $CO_2e$ grams per unit of fuel energy sold in California. The target of the Low Carbon Fuel Standard is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020 (17 CCR Section 95480 et seq.). The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel—including extraction/feedstock production, processing, transportation, and final consumption—per unit of energy delivered.

### Senate Bill 375

SB 375 (California Government Code Section 65080) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG-reduction targets for the automobile and light-truck sector for 2020 and 2035, and to update those targets every 8 years. SB 375 requires the state's 18 regional metropolitan planning organizations (MPOs) to prepare a Sustainable Communities Strategy (SCS) as part of their Regional Transportation Plan that will achieve the GHG-reduction targets set by CARB. If an MPO is unable to devise an SCS to achieve the GHG-reduction target, the MPO must prepare an Alternative Planning Strategy demonstrating how the GHG-reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

A SCS does not: (i) regulate the use of land; (ii) supersede the land use authority of cities and counties; or (iii) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it (California Government Code Section 65080[b][2][K]). Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process. See Section 4.6.2.3, Regional, for information about the implementation of SB 375 in the Monterey Bay Area.

### Advanced Clean Cars Program and Zero-Emissions Vehicle Program

The Advanced Clean Cars program (January 2012) is an emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars (CARB 2012). To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that in 2025, cars will emit 75% less smog-forming pollution as compared to 2014 levels. To reduce GHG emissions, CARB, in conjunction with the EPA and the NHTSA, adopted new GHG standards for model year 2017 to 2025 vehicles; the new standards are estimated to reduce GHG emissions by 34% in 2025. The zero-emission vehicle program will act as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of zero-emission vehicles and plug-in hybrid EVs in the 2018 to 2025 model years. However, as detailed previously, EPA and NHTSA published the SAFE Vehicles Rule, which revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. The effect of the SAFE Rule on the Advanced Clean Cars program is still to be determined pending the ruling of ongoing litigation.

## Water

### Senate Bill X7-7

SB X7-7, or the Water Conservation Act of 2009, required that all water suppliers increase their water use efficiency with an overall goal of reducing per capita urban water use by 20% by December 31, 2020. Each urban water supplier was required to develop water use targets to meet this goal.

### Executive Order B-29-15

In response to the ongoing drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25% relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives have become permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the state. In response to EO B-29-15, the California Department of Water Resources has modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency and broadens its applicability to include new development projects with smaller landscape areas.

### Executive Order B-37-16

Issued May 2016, EO B-37-16 directs the State Water Resources Control Board (SWRCB) to adjust emergency water conservation regulations through the end of January 2017 to reflect differing water supply conditions across the state. The SWRCB must also develop a proposal to achieve a mandatory reduction of potable urban water usage that builds off the mandatory 25% reduction called for in EO B-29-15. The SWRCB and Department of Water Resources will develop new, permanent water use targets that build upon the existing state law requirements that the state achieve a 20% reduction in urban water usage by 2020. EO B-37-16 also specifies that the SWRCB will permanently prohibit water-wasting practices such as hosing off sidewalks, driveways, and other hardscapes; washing automobiles with hoses not equipped with a shut-off nozzle; using non-recirculated water in a fountain or other decorative water feature; watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and irrigating ornamental turf on public street medians.

#### Executive Order B-40-17

EO B-40-17 (April 2017) lifted the drought emergency in all California counties except Fresno, Kings, Tulare, and Tuolumne. It also rescinds EO B-29-15, but expressly states that EO B-37-16 remains in effect and directs the SWRCB to continue development of permanent prohibitions on wasteful water use.

### Solid Waste

#### Assembly Bill 939, Assembly Bill 341, and Assembly Bill 1826

In 1989, AB 939, known as the Integrated Waste Management Act (Public Resources Code Section 40000 et seq.), was passed because of the increase in waste stream and the decrease in landfill capacity. The statute established the California Integrated Waste Management Board (replaced in 2010 by the California Department of Resources Recycling and Recovery, or CalRecycle), which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25% by 1995 and 50% by the year 2000.

AB 341 (2011) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75% of solid waste generated be source-reduced, recycled, or composted by the year 2020, and annually thereafter. In addition, AB 341 required CalRecycle to develop strategies to achieve the state's policy goal. CalRecycle has conducted multiple workshops and published documents that identify priority strategies that it believes would assist the state in reaching the 75% goal by 2020.

AB 1826 (Chapter 727, Statutes of 2014, effective 2016) requires businesses to recycle their organic waste (i.e., food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste) depending on the amount of waste they generate per week. This law also requires local jurisdictions across the state to implement an organic waste recycling program to divert organic waste generated by businesses, including multi-family residential dwellings that consist of five or more units. The minimum threshold of organic waste generation by businesses decreases over time, which means an increasingly greater proportion of the commercial sector will be required to comply.

### Other State Actions

#### Senate Bill 97

SB 97 (2007) directed the Governor's Office of Planning and Research and the CNRA to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, the Governor's Office of Planning and Research issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents. The advisory indicated that the lead agency should identify and estimate a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities (OPR 2008). The advisory further recommended that the lead agency determine significance of the impacts and impose all mitigation measures necessary to reduce GHG emissions to a level that is less than significant. The CNRA adopted the CEQA Guidelines amendments in December 2009, which became effective in March 2010.

Under the amended CEQA Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR Section 15064.4[a]). The CEQA Guidelines require a lead agency to consider the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan

for the reduction or mitigation of GHG emissions (14 CCR Section 15064.4[b]). The CEQA Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures (14 CCR Section 15126.4[c]). The adopted amendments do not establish a GHG emission threshold, instead allowing a lead agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts. The CNRA also acknowledged that a lead agency could consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions (CNRA 2009b).

With respect to GHG emissions, CEQA Guidelines Section 15064.4(a), as subsequently amended in 2018, states that lead agencies "shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions. The CEQA Guidelines now note that an agency "shall have discretion to determine, in the context of a particular project, whether to: (1) [q]uantify greenhouse gas emissions resulting from a project; and/or (2) [r]ely on a qualitative analysis or performance based standards" (14 CCR Section 15064.4[a]). Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent a project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR Section 15064.4[b]).

#### Executive Order S-13-08

EO S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. Therefore, the EO directs state agencies to take specified actions to assess and plan for such impacts. The final *2009 California Climate Adaptation Strategy* report was issued in December 2009 (CNRA 2009a), and an update, *Safeguarding California: Reducing Climate Risk*, followed in July 2014 (CNRA 2014). To assess the state's vulnerability, the report summarizes key climate change impacts to the state for the following areas: Agriculture, Biodiversity and Habitat, Emergency Management, Energy, Forestry, Ocean and Coastal Ecosystems and Resources, Public Health, Transportation, and Water. Issuance of the *Safeguarding California: Implementation Action Plans* followed in March 2016 (CNRA 2016). In January 2018, the CNRA released the *Safeguarding California Plan: 2018 Update,* which communicates current and needed actions that state government should take to build climate change resiliency (CNRA 2018b).

### 4.6.2.3 Regional

#### Association of Monterey Bay Area Governments

The Association of Monterey Bay Area Governments (AMBAG) is the designated MPO for the Monterey Bay region. The AMBAG region includes Monterey, San Benito, and Santa Cruz counties. As of 2009, many of the cities and counties in the AMBAG jurisdiction had not quantified their baseline GHG inventories, due to lack of staff and funding. The AMBAG Energy Watch designed a program to assist member jurisdictions in a variety of climate action planning support services. Additionally, in 2008, AMBAG adopted the *Monterey Bay Regional Energy Plan* (Regional Energy Plan) (AMBAG 2008). The Regional Energy Plan provides a framework that local cities and counties can adopt or use as guidelines to reduce energy use.

Additionally, CARB set SB 375 GHG-reduction targets for the Monterey Bay Area at 0% increase from 2005 per capita emissions by 2020, and 5% below 2005 per capita emissions by 2035. In June 2014, AMBAG adopted the *Moving Forward 2035 Monterey Bay – Metropolitan Transportation Plan/Sustainable Communities Strategy* (2035 MTP/SCS) (AMBAG 2014). The 2035 MTP/SCS demonstrated that, if implemented, the region would achieve over

a 3%-per-capita GHG reduction in passenger vehicle emissions by 2020, and an approximately 6% reduction in 2035. These reductions meet the GHG targets for AMBAG, as discussed above.

In June 2018, AMBAG adopted an update to the 2035 MTP/SCS, *Moving Forward Monterey Bay 2040* (2040 MTP/SCS), the implementation of which was anticipated to achieve a 4%-per-capita reduction in GHG emissions from passenger vehicles by 2020, as well as a projected reduction in GHG emissions of nearly 7%-per-capita from passenger vehicles by 2035 (AMBAG 2018). The 2040 MTP/SCS outlines the region's proposed transportation network, emphasizing multimodal system enhancements, system preservation, and improved access to high quality transit, as well as land use development that complements this transportation network (AMBAG 2018).

#### Monterey Bay Air Resources District

California has 35 Air Pollution Control Districts and Air Quality Management Districts, many of which are currently addressing climate change issues by developing significance thresholds, performance standards, and mitigation measures. The Monterey Bay Air Resources District (MBARD) is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the North Central Coast Air Basin, where the Proposed Project is located. In February 2016, the MBARD adopted the staff-recommended significance threshold of 10,000 MT of $CO_2e$ for stationary source projects (MBARD 2016).

### 4.6.2.4 Local

#### City of Santa Cruz Climate Action Plan

In October 2012, the City adopted a CAP that outlines the actions the City will take over 10 years to reduce GHGs by 30% and to implement the policies and actions identified in the *General Plan 2030*. The CAP addresses citywide GHG reduction strategies. The CAP provides City emissions inventories, identifies an emissions reduction target for the year 2020, and includes measures to reduce energy use, reduce vehicle trips, implement water conservation programs, reduce emissions from waste collection, increase use of solar systems, and develop public partnerships to aide sustainable practices. Measures are outlined for the following sectors: municipal, residential, commercial, and community programs. None of the recommended measures are applicable to the Proposed Project. The City is currently in the process of updating the CAP.

#### City of Capitola Climate Action Plan

The Capitola City Council adopted the City's *Climate Action Plan* on October 22, 2015. The CAP fulfills several General Plan goals and brought the City into conformance with AB 32, SB 375, and EO S-3-05. The CAP includes an inventory of existing GHG emissions, a forecast of future GHG emissions, identification of GHG reduction targets, and a list of GHG reduction measures necessary to achieve identified reduction targets. The CAP includes actions and strategies to reduce GHG emissions generated by transportation and mobile sources, residential and non-residential energy consumption, water and wastewater treatment and conveyance, solid waste generation, and open space, parks, and agriculture (City of Capitola 2015). None of the recommended measures are applicable to the Proposed Project.

#### County of Santa Cruz Climate Action Strategy

The County of Santa Cruz Board of Supervisors approved the Climate Action Strategy (CAS) on February 26, 2013 (County of Santa Cruz 2013). The CAS reports the results of the GHG emissions inventory for Santa Cruz County, proposes targets for GHG reduction, outlines strategies and implementing actions to achieve the targets, and

provides a vulnerability assessment and strategies for adapting to the types of impacts that are likely to occur in Santa Cruz County. Eight "climate adaptation goals" are articulated as a guide for evaluating adaptation strategies. Specific adaptation strategies are proposed that include new actions as well as acknowledgement of existing plans and programs, which, while not explicitly about climate change, address the salient issues. There are no goals, strategies, or recommendations applicable to the Proposed Project.

## 4.6.3 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to GHG emissions. 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.

### 4.6.3.1 Standards of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to GHG emissions 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. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
B. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

As described previously in Section 4.6.2.3, Regional, the Proposed Project is located within the North Central Coast Air Basin under the jurisdiction of the MBARD, which, to date, has not adopted significance criteria or thresholds for land use projects. The MBARD-adopted significance threshold of 10,000 MT of $CO_2e$ for stationary source projects (MBARD 2016), does not apply to the Proposed Project, as no new stationary sources of GHG emissions are proposed. Nor has the City of Santa Cruz adopted a threshold of significance for generally applicable use. In the absence of a numeric threshold adopted by either the MBARD or the City, the City exercised its discretion to assess the significance of the Proposed Project's GHG-related impacts by considering whether GHG emissions of the Proposed Project meet the 900 MT $CO_2e$ per year screening level threshold identified by the California Air Pollution Control Officers Association (CAPCOA) (CAPCOA 2008). The 900 MT $CO_2e$ per year threshold was developed based on various land use densities and future discretionary project types to determine the size of projects that would likely have a less than cumulatively considerable contribution to climate change. The CAPCOA threshold was developed to ensure capture of 90% or more of likely future discretionary developments with the objective to set the emissions threshold low enough to capture a substantial fraction of future development while setting the emission threshold high enough to exclude small development projects that would contribute a relatively small fraction of cumulative statewide GHG emissions.

CAPCOA's 900 MT $CO_2e$ per year threshold was developed to meet the target identified by AB 32 of reducing emissions to 1990 levels by year 2020. Subsequent to CAPCOA identifying the 900 MT $CO_2e$ per year threshold, SB 32 was passed and set a revised statewide reduction target to reduce emissions to 40% below 1990 levels by year 2030. Though the CAPCOA threshold does not consider the reduction targets set by SB 32, the CAPCOA threshold was developed with an aggressive project-level GHG emission capture rate of 90%. Due to the aggressive GHG emission capture rate, the CAPCOA threshold has been determined to be a viable threshold to reduce project GHG emissions and meet SB 32 targets beyond 2020. Furthermore, more stringent state legislative requirements such

as Building Energy Efficiency Standards and transportation-related efficiency measures will act to reduce future project GHG emissions and help in meeting State emissions reduction targets. Projects that generate emissions beyond the 900 MT $CO_2e$ per year screening level threshold are required to implement feasible on-site mitigation measures to reduce their impacts on climate change. Projects that meet or fall below CAPCOA's screening level threshold of 900 MT $CO_2e$ per year of GHG emissions require no further analysis and are not required to implement mitigation measures to reduce GHG emissions. As such, the CAPCOA threshold of 900 MT $CO_2e$ per year is used as a quantitative threshold for the analysis of impacts related to GHG emissions generated by the Proposed Project.

### 4.6.3.2 Analytical Methods

This section evaluates the potential greenhouse gas emissions impacts associated with construction and operation of the Proposed Project. The analysis of potential impacts addresses the various project and programmatic components listed in Table 4.6-3, which are described in detail in Chapter 3, Project Description.

**Table 4.6-3. 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 | | ✓ |

#### Construction

Emissions from the construction phase of the Proposed Project were estimated using California Emissions Estimator Model (CalEEMod) Version 2016.3.2. Construction of the Proposed Project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. The analysis of GHG emissions used the same methodology and modeling inputs assumptions as the analysis of air quality impacts in Section 4.2, Air Quality, of this EIR. All details for construction criteria air pollutants discussed in Section 4.2.3.2, Analytical Methods, are also applicable for the estimation of construction-related GHG emissions. See Section 4.2.3.2 for a discussion of construction emissions calculation methodology and modeling inputs assumptions used in the GHG emissions analysis.

### Operation

Once Proposed Project construction is complete, operations would entail a minimal increase in on-road vehicle trips associated with routine inspection and maintenance of the new facilities by City staff. It is anticipated that up to three new staff would be needed: one for the Agreed Flows implementation and two for the new ASR facility maintenance. An additional daily vehicle trip was included for Beltz ASR facility maintenance. As a conservative estimate, these new daily vehicle trips were assumed to occur seven days a week, 365 days per year. On-road vehicle emissions were estimated using CalEEMod.

The Proposed Project would also result in increased GHG emissions associated with electricity demand for water system operation under project conditions. As provided by the City, the Proposed Project is anticipated to require an additional 1,326,350 kilowatt-hours (kWh) per year as compared to the City's 10-year average electricity demand (2009 to 2018). This net increase in electricity and indirect GHG emission factors from electricity generation were incorporated into a spreadsheet model to estimate GHG emissions.

### Application of Relevant Standard Practices

The Proposed Project does not include any standard operational or construction practices that are relevant to GHG emissions.

## 4.6.3.3 Project Impact Analysis

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

| | |
|---|---|
| **Impact GHG-1:** | **Greenhouse Gas Emissions (Significance Standard A).** Construction and operation of the Proposed Project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. ***(Less than Significant)*** |

### Construction Emissions

#### Water Rights Modifications

Water rights modifications would not directly result in construction GHG emissions. As such, this project component would result in no direct impacts.

The following analysis evaluates the potential indirect impacts related to construction GHG emissions 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

Aquifer Storage and Recovery Facilities

**New ASR Facilities.** GHG emissions associated with the new ASR facilities were estimated for each year of construction and are depicted in Table 4.6-4. As shown in Table 4.6-4, the total estimated GHG emissions that would be generated during construction of new ASR facilities are approximately 1,378 MT $CO_2e$.

### Table 4.6-4. Estimated Annual Construction Greenhouse Gas Emissions – New Aquifer Storage and Recovery Facilities

| Project | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|
| | *Metric Tons per Year* | | | |
| *2024* | | | | |
| New ASR Monitoring Wells[1] | 401.96 | 0.09 | 0.00 | 404.29 |
| New ASR Supply Wells[1] | 275.83 | 0.06 | 0.00 | 277.36 |
| *2024 Total* | *677.79* | *0.15* | *0* | *681.65* |
| *2025* | | | | |
| New ASR Facilities[1] | 694.07 | 0.10 | 0.00 | 696.51 |
| *2025 Total* | *694.07* | *0.10* | *0.00* | *696.51* |
| *Total* | | | | |
| **Total for New ASR Facility Construction** | **1,371.86** | **0.25** | **0** | **1,378.16** |

**Notes:** ASR = aquifer storage and recovery; $CH_4$ = methane; $CO_2$ = carbon dioxide; $CO_2e$ = carbon dioxide equivalent; $N_2O$ = nitrous oxide. See Appendix E for details.

1 The CalEEMod modeling included in Appendix E accounted for one representative monitoring well, one supply well, and one treatment facility. However, since up to four new ASR facilities are anticipated, the emissions outputs for the new ASR facilities were multiplied by four for inclusion in this table, which conservatively assumes that four new ASR facilities would be constructed concurrently.

**Beltz ASR Facilities.** GHG emissions associated with Beltz ASR facilities were estimated for each year of construction and are depicted in Table 4.6-5. As shown in Table 4.6-5, the total estimated GHG emissions that would be generated during construction of the Beltz ASR facilities are approximately 160 MT $CO_2e$.

### Table 4.6-5. Estimated Annual Construction Greenhouse Gas Emissions – Beltz Aquifer Storage and Recovery Facilities

| Project | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|
| | *Metric Tons per Year* | | | |
| *2021* | | | | |
| Beltz 9 ASR Monitoring Well | 22.32 | 0.01 | 0.00 | 22.45 |
| *2021 Total* | *22.32* | *0.01* | *0.00* | *22.45* |
| *2022* | | | | |
| Beltz 8 ASR Facility Upgrades | 56.18 | 0.01 | 0.00 | 56.44 |
| Beltz 12 ASR Facility Upgrades | 32.86 | 0.01 | 0.00 | 33.02 |
| *2022 Total* | *89.04* | *0.02* | *0* | *89.46* |
| *2023* | | | | |
| Beltz 8 ASR Facility Upgrades | 3.81 | 0.00 | 0.00 | 3.84 |
| Beltz 9 ASR Facility Upgrades | 22.32 | 0.01 | 0.00 | 22.45 |
| Beltz 10 ASR Facility Upgrades | 22.11 | 0.00 | 0.00 | 22.22 |
| *2023 Total* | *48.24* | *0.01* | *0* | *48.51* |
| *Total* | | | | |
| **Total for Beltz ASR Facility Construction** | **159.6** | **0.04** | **0** | **160.42** |

**Notes:** ASR = aquifer storage and recovery; $CH_4$ = methane; $CO_2$ = carbon dioxide; $CO_2e$ = carbon dioxide equivalent; $N_2O$ = nitrous oxide. See Appendix E for details.

Water Transfers and Exchanges and Intertie Improvements

GHG emissions associated with the intertie improvements were estimated for each year of construction and are depicted in Table 4.6-6.

## Table 4.6-6. Estimated Annual Construction Greenhouse Gas Emissions – Intertie Improvements

| Project | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|
| | *Metric Tons per Year* | | | |
| *2022* | | | | |
| City/SqCWD/CWD[1] Intertie – Pipeline | 273.69 | 0.07 | 0.00 | 275.56 |
| City/SqCWD/CWD[1] Intertie – New Pump Stations | 67.71 | 0.01 | 0.00 | 67.93 |
| City/SqCWD/CWD[1] Intertie – Pump Station Upgrade | 23.57 | 0.00 | 0.00 | 23.66 |
| *2022 Total* | *364.97* | *0.08* | *0* | *367.15* |
| *2027* | | | | |
| City/SVWD Intertie - Pipeline | 132.00 | 0.04 | 0.00 | 132.90 |
| City/SVWD Intertie - New Pump Station | 33.66 | 0.00 | 0.00 | 33.76 |
| *2027 Total* | *165.66* | *0.04* | *0* | *166.66* |
| *Total* | | | | |
| **Total for Intertie Improvement Construction** | **530.63** | **0.12** | **0** | **533.81** |

**Notes:** $CH_4$ = methane; $CO_2$ = carbon dioxide; $CO_2e$ = carbon dioxide equivalent; CWD = Central Water District; $N_2O$ = nitrous oxide; SqCWD = Soquel Creek Water District; SVWD = Scotts Valley Water District.
See Appendix E for details.

1 The CalEEMod modeling included in Appendix E for the City/SqCWD/CWD intertie connections and new pump stations accounted for one representative intertie connection and one new pump station. However, since two intertie connections and two new pump stations are anticipated for the City/SqCWD/CWD intertie, the emissions outputs for these components were multiplied by two for inclusion in this table, which conservatively assumes concurrent construction.

As shown in Table 4.6-6, total estimated GHG emissions generated during construction of the intertie improvements are approximately 534 MT $CO_2e$.

Felton Diversion Improvements

GHG emissions associated with the Felton Diversion improvements were estimated and are depicted in Table 4.6-7.

## Table 4.6-7. Estimated Annual Construction Greenhouse Gas Emissions – Felton Diversion Improvements

| Project | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|
| | *Metric Tons per Year* | | | |
| *2027* | | | | |
| Felton Diversion Improvements | 21.55 | 0.00 | 0.00 | 21.64 |
| *Total* | | | | |
| **Total for Felton Diversion Improvement Construction** | **21.55** | **0.00** | **0.00** | **21.64** |

**Notes:** $CH_4$ = methane; $CO_2$ = carbon dioxide; $CO_2e$ = carbon dioxide equivalent; $N_2O$ = nitrous oxide.
See Appendix E for details.

As shown in Table 4.6-7, total estimated GHG emissions generated during construction of the Felton Diversion improvements are approximately 22 MT $CO_2e$.

Tait Diversion and Coast Pump Station Improvements

GHG emissions associated with the Tait Diversion and Coast Pump Station improvements were estimated and are depicted in Table 4.6-8.

### Table 4.6-8. Estimated Annual Construction Greenhouse Gas Emissions – Tait Diversion and Coast Pump Station Improvements

| Project | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|
| | *Metric Tons per Year* | | | |
| *2028* | | | | |
| Coast Pump Station Improvements | 24.92 | 0.00 | 0.00 | 25.01 |
| Tait Diversion Improvements | 233.46 | 0.02 | 0.00 | 234.05 |
| *2028 Total* | *258.38* | *0.02* | *0* | *259.06* |
| *Total* | | | | |
| **Total for Tait Diversion and Coast Pump Station Improvement Construction** | **258.38** | **0.02** | **0** | **259.06** |

**Notes:** $CH_4$ = methane; $CO_2$ = carbon dioxide; $CO_2e$ = carbon dioxide equivalent; $N_2O$ = nitrous oxide.
See Appendix E for details.

As shown in Table 4.6-8, the total estimated GHG emissions that would be generated during construction of the Tait Diversion and Coast Pump Station improvements are approximately 259 MT $CO_2e$.

#### Construction Summary

Table 4.6-9 summarizes the estimated GHG emissions that would be generated during construction of all project and programmatic infrastructure components of the Proposed Project in each year, as discussed above.

## Operational Emissions

For long-term operations, it was conservatively estimated that an increase of up to eight daily one-way trips would be generated in support of the project and programmatic components, primarily associated with routine inspection and maintenance activities by City staff. Indirect GHG emissions associated with electricity generation to supply the anticipated increase in demand was also estimated for the Proposed Project. Operational emissions associated with these on-road vehicles and electricity generation were estimated and are depicted in Table 4.6-10.

## Table 4.6-9. Estimated Annual Construction Greenhouse Gas Emissions – Proposed Project Total

| Project | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|
| | *Metric Tons per Year* | | | |
| *2021* | | | | |
| Beltz 9 ASR Monitoring Well | 22.32 | 0.01 | 0.00 | 22.45 |
| ***2021 Total*** | ***22.32*** | ***0.01*** | ***0.00*** | ***22.45*** |
| *2022* | | | | |
| Beltz 8 ASR Facility Upgrades | 56.18 | 0.01 | 0.00 | 56.44 |
| Beltz 12 ASR Facility Upgrades | 32.86 | 0.01 | 0.00 | 33.02 |
| City/SqCWD/CWD[1] Intertie - Pipeline | 273.69 | 0.07 | 0.00 | 275.56 |
| City/SqCWD/CWD[1] Intertie - New Pump Stations | 67.71 | 0.01 | 0.00 | 67.93 |
| City/SqCWD/CWD[1] Intertie - Pump Station Upgrade | 23.57 | 0.00 | 0.00 | 23.66 |
| ***2022 Total*** | ***454.01*** | ***0.1*** | ***0*** | ***456.61*** |
| *2023* | | | | |
| Beltz 8 ASR Facility Upgrades | 3.81 | 0.00 | 0.00 | 3.84 |
| Beltz 9 ASR Facility Upgrades | 22.32 | 0.01 | 0.00 | 22.45 |
| Beltz 10 ASR Facility Upgrades | 22.11 | 0.00 | 0.00 | 22.22 |
| ***2023 Total*** | ***48.24*** | ***0.01*** | ***0*** | ***48.51*** |
| *2024* | | | | |
| New ASR Monitoring Wells[2] | 401.96 | 0.09 | 0.00 | 404.29 |
| New ASR Supply Wells[2] | 275.83 | 0.06 | 0.00 | 277.36 |
| ***2024 Total*** | ***677.79*** | ***0.15*** | ***0*** | ***681.65*** |
| *2025* | | | | |
| New ASR Treatment Facilities[2] | 694.07 | 0.10 | 0.00 | 696.51 |
| ***2025 Total*** | ***694.07*** | ***0.10*** | ***0.00*** | ***696.51*** |
| *2027* | | | | |
| City/SVWD Intertie - Pipeline | 132.00 | 0.04 | 0.00 | 132.90 |
| City/SVWD Intertie - New Pump Station | 33.66 | 0.00 | 0.00 | 33.76 |
| Felton Diversion Improvements | 21.55 | 0.00 | 0.00 | 21.64 |
| ***2027 Total*** | ***187.21*** | ***0.04*** | ***0*** | ***188.3*** |
| *2028* | | | | |
| Coast Pump Station Improvements | 24.92 | 0.00 | 0.00 | 25.01 |
| Tait Diversion Improvements | 233.46 | 0.02 | 0.00 | 234.05 |
| ***2028 Total*** | ***258.38*** | ***0.02*** | ***0*** | ***259.06*** |
| *Total* | | | | |
| **Total for All Years of Construction** | **2,342.02** | **0.43** | **0.00** | **2,353.09** |
| | | | **Amortized Over 30 Years** | **78.44** |

**Notes:** ASR = aquifer storage and recovery; $CH_4$ = methane; $CO_2$ = carbon dioxide; $CO_2e$ = carbon dioxide equivalent; CWD = Central Water District; $N_2O$ = nitrous oxide; SqCWD = Soquel Creek Water District; SVWD = Scotts Valley Water District.
See Appendix E for details.

1 The CalEEMod modeling included in Appendix E for the City/SqCWD/CWD intertie connections and new pump stations accounted for one representative intertie connection and one new pump station. However, since two intertie connections and two new pump stations are anticipated for the City/SqCWD/CWD intertie, the emissions outputs for these components were multiplied by two for inclusion in this table, which conservatively assumes concurrent construction.

2 The CalEEMod modeling included in Appendix E accounted for one representative monitoring well, one supply well, and one treatment facility. However, since up to four new ASR facilities are anticipated, the emissions outputs for the new ASR facilities were multiplied by four for inclusion in this table, which conservatively assumes that four new ASR facilities would be constructed concurrently.

## Table 4.6-10. Estimated Annual Operational Greenhouse Gas Emissions with Amortized Construction Greenhouse Gas Emissions

| Emission Source | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|
| | *Metric Tons per Year* | | | |
| Electricity Generation | 126.34 | 0.44 | 1.11 | 127.88 |
| Mobile | 13.34 | <0.01 | 0.00 | 13.35 |
| ***Combined Total*** | 139.68 | 0.44 | 1.11 | 141.23 |
| *Amortized Construction GHGs* | | | | *78.44* |
| **Total Operational + Amortized Construction GHGs** | | | | **219.67** |
| ***GHG Emissions Threshold*** | | | | ***900*** |
| **Threshold Exceeded?** | | | | **No** |

**Notes**: $CH_4$ = methane; $CO_2$ = carbon dioxide; $CO_2e$ = carbon dioxide equivalent; GHG = greenhouse gas; $N_2O$ = nitrous oxide. See Appendix B for details. Of note, only the emissions associated with the incremental increase in operations (i.e., net increase in electricity and new employees) were included in the table in order to represent the overall net increase in GHG emissions.

As shown in Table 4.6-10, the Proposed Project would result in an increase of approximately 141 MT $CO_2e$ per year as a result of Proposed Project operations. This comparatively small number reflects the fact that, compared with most projects requiring EIRs under CEQA, the Proposed Project would generate relatively little vehicular traffic and would consume relatively limited amounts of electricity. After summing the Proposed Project's amortized temporary construction emissions, total GHGs generated by the Proposed Project would be approximately 220 MT $CO_2e$ per year. As such, increased annual operational GHG emissions with amortized construction emissions would not exceed the applied threshold of 900 MT $CO_2e$ per year. Therefore, the Proposed Project's GHG emissions would be less than significant.

### Mitigation Measures

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

**Impact GHG-2: Conflict with an Applicable Greenhouse Gas Reduction Plan (Significance Standard B).** Construction and operation of the Proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. ***(Less than Significant)***

While there are no mandatory GHG plans, policies, or regulations or finalized agency guidelines that would apply to implementation of the Proposed Project, an analysis of the potential for the Proposed Project to conflict with relevant plans that include GHG reduction strategies is provided below.[3]

### Climate Action Plans

The overall goals and GHG reduction strategies of the City of Santa Cruz Climate Action Plan, City of Capitola Climate Action Plan, and County of Santa Cruz Climate Action Strategy are described in Section 4.6.2.4. The Proposed Project would not conflict with any of these City or County plans.

[3] As described previously in Section 4.6.2.4, Local, no recommended measures in the City of Santa Cruz CAP, City of Capitola CAP, or County of Santa Cruz CAS are applicable to the Proposed Project.

### AMBAG's Metropolitan Transportation Plan/Sustainable Communities Strategy

AMBAG's 2040 MTP/SCS is a regional growth-management strategy that targets per-capita GHG reduction from passenger vehicles and light-duty trucks within the Monterey Bay Area. The 2040 MTP/SCS incorporates local land use projections and circulation networks in city and county general plans. Typically, a project would be consistent with the MTP/SCS if the project does not exceed the underlying growth parameters within the MTP/SCS. As discussed in Chapter 5, Growth Inducement, the Proposed Project would generate negligible new employment. Therefore, the Proposed Project would not result in significant population growth that would exceed AMBAG growth projections for the County. Furthermore, as described in Table 4.6-11, the Proposed Project would not conflict with the major goals of the 2040 MTP/SCS.

**Table 4.6-11. Review of the Association of Monterey Bay Area Governments' 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy Goals and Proposed Project**

| MTP/SCS Goal | Project Consistency |
|---|---|
| Provide convenient, accessible, and reliable travel options while maximizing productivity for all people and goods in the region. | **No conflict.** The Proposed Project would not inhibit AMBAG from strengthening the regional transportation network for goods movement. |
| Raise the region's standard of living by enhancing the performance of the transportation system. | **No conflict.** The Proposed Project would not inhibit AMBAG from preserving and expanding the existing regional transit system. |
| Promote environmental sustainability and protect the natural environment. | **No conflict.** The Proposed Project would not inhibit AMBAG from promoting sustainability within the Monterey Bay Area region. |
| Protect the health of our residents; foster efficient development patterns that optimize travel, housing, and employment choices and encourage active transportation. | **No conflict.** The Proposed Project would not inhibit AMBAG from preserving and expanding the existing regional transit system. |
| Provide an equitable level of transportation services to all segments of the population. | **No conflict.** The Proposed Project would not inhibit AMBAG from strengthening the regional transportation network for all segments of the population. |
| Preserve and ensure a sustainable and safe regional transportation system. | **No conflict.** The Proposed Project would not inhibit AMBAG from providing a sustainable and safe transportation system. |

**Source:** AMBAG 2018.
**Notes:** AMBAG = Association of Monterey Bay Area Governments; MTP/SCS = Metropolitan Transportation Plan/Sustainable Communities Strategy.

### California Air Resources Board's Scoping Plan

The Scoping Plan, approved by CARB on December 12, 2008 and updated in 2014 and 2017, provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. As such, the Scoping Plan is not directly applicable to specific projects. Relatedly, in the Final Statement of Reasons for the Amendments to the State CEQA Guidelines, the CNRA observed that "[t]he [Scoping Plan] may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (CNRA 2009b). Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., Low Carbon Fuel Standard), among others. The

Proposed Project would comply with all regulations adopted in furtherance of the Scoping Plan to the extent applicable and required by law.

Regarding consistency with SB 32 (goal of reducing GHG emissions to 40% below 1990 levels by 2030) and EO S-3-05 (goal of reducing GHG emissions to 80% below 1990 levels by 2050), there are no established protocols or thresholds of significance for those future-year analyses. However, CARB has expressed optimism with regard to both the 2030 and 2050 goals. It states in the *First Update to the Climate Change Scoping Plan* that California is "well positioned to maintain and continue reductions beyond 2020 as required by AB 32" (CARB 2014). With regard to the 2050 target for reducing GHG emissions to 80% below 1990 levels, the *First Update to the Climate Change Scoping Plan* states the following (CARB 2014):

> This level of reduction is achievable in California. In fact, if California realizes the expected benefits of existing policy goals (such as 12,000 megawatts of renewable distributed generation by 2020, net zero energy homes after 2020, existing building retrofits under Assembly Bill 758, and others) it could reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80 [percent] below 1990 levels by 2050. Additional measures, including locally driven measures and those necessary to meet federal air quality standards in 2032, could lead to even greater emission reductions.

In other words, CARB believes that California is on a trajectory to meet the 2030 and 2050 GHG reduction targets set forth in AB 32, SB 32, and EO S-3-05. This is confirmed in the 2017 Scoping Plan, which states, "This Plan draws from the experiences in developing and implementing previous plans to present a path to reaching California's 2030 GHG reduction target. The Plan is a package of economically viable and technologically feasible actions to not just keep California on track to achieve its 2030 target, but stay on track for a low- to zero-carbon economy by involving every part of the state" (CARB 2017a). The 2017 Scoping Plan also states that although "the Scoping Plan charts the path to achieving the 2030 GHG emissions reduction target, we also need momentum to propel us to the 2050 statewide GHG target (80 [percent] below 1990 levels). In developing this Scoping Plan, we considered what policies are needed to meet our mid-term and long-term goals" (CARB 2017a).

With regard to EO B-55-18 (statewide goal of carbon neutrality by no later than 2045), which is a more aggressive statewide goal than EO S-3-05, the EO notes that CARB will work with relevant state agencies to ensure that future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. With respect to future GHG targets under SB 32 and EO B-55-18, CARB has made clear its legal interpretation that it has the requisite authority to adopt whatever regulations are necessary, beyond the AB 32 horizon year of 2020, to meet the long-term statewide goals; this legal interpretation by an expert agency provides evidence that future regulations will be adopted to continue the state on its trajectory toward meeting these future GHG targets.

As described in Impact GHG-1, amortized construction and operational GHG emissions from the Proposed Project would not exceed the applied threshold of 900 MT $CO_2e$ per year, which was established based on the goal of AB 32 to reduce statewide emissions to 1990 levels by 2020. Though the CAPCOA threshold does not consider the reduction targets set by SB 32 for 2030, the CAPCOA threshold was developed with an aggressive project-level GHG emission capture rate of 90% and therefore is a viable threshold to reduce project GHG emissions and meet SB 32 targets beyond 2020. As such, the Proposed Project would also be considered consistent with implementation of any of the above-described GHG-reduction goals for 2030 and beyond.

Based on the above considerations, the Proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. This impact would be less than significant.

**Mitigation Measures**

As described above, the Proposed Project would not result in significant impacts related to conflicts with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases, and therefore, no mitigation measures are required.

### 4.6.3.4 Cumulative Impacts Analysis

This section provides an evaluation of cumulative GHG 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 area for the analysis of cumulative impacts resulting from GHG emissions is the Earth as GHG emissions are a global concern.

**Impact GHG-3: Cumulative Greenhouse Gas Impacts (Significance Standards A and B).** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would result in a significant cumulative impact related to greenhouse gas emissions, but the Proposed Project's contribution to this impact would not be cumulatively considerable. ***(Less than Significant)***

Cumulative development throughout the North Central Coast Air Basin region and beyond would generate GHG emissions that could have a significant cumulative impact on the environment. Accordingly, the analysis above considers the potential for the Proposed Project to contribute to a cumulative impact related to global climate change. As shown in Table 4.6-10, the Proposed Project's GHG emissions would not exceed the applied threshold of 900 MT $CO_2e$ per year. In addition, as described in Impact GHG-2 above, the Proposed Project would not conflict with an applicable plan, policy, or regulation adopted to reduce GHG emissions. As such, the Proposed Project's contribution to significant cumulative GHG impacts would not be cumulatively considerable and therefore would be less than significant.

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# 4.7 Hazards, Hazardous Materials, and Wildfire

This section describes the existing hazards and hazardous materials 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 of the Santa Cruz Water Rights Project (Proposed Project). This analysis is based on a review of online hazardous material site databases and fire hazard severity zone (FHSZ) maps.

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. There were no comments related to hazards and hazardous materials.

## 4.7.1 Existing Conditions

### 4.7.1.1 Study Area

The Proposed Project involves the water system and the areas served of the City of Santa Cruz (City) and 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). The Proposed Project is located within Santa Cruz County and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Figure 3-1 in Chapter 3, Project Description). While the project area is much broader, the study area for hazards and hazardous materials is focused on the proposed infrastructure component sites where construction and ground disturbance could occur and where new or upgraded facilities would be located (see Figure 3-4 in Chapter 3, Project Description). These sites include the following: aquifer storage and recovery (ASR) sites where known, intertie improvement sites, the Felton Diversion fish passage improvement site, and the Tait Diversion and Coast Pump Station improvement 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. The regulatory records review was conducted on the defined infrastructure component sites. The results of this review is discussed in Section 4.7.1.2, Hazardous Materials. For wildfire hazards, a broader study area encompassing the Santa Cruz Mid-County and Santa Margarita Groundwater Basins, where up to four new ASR facilities would be constructed is discussed in Section 4.7.1.4, Wildfire Hazards and Emergency Response.

### 4.7.1.2 Hazardous Materials

#### Definition and Overview

As defined in the California Health and Safety Code Section 25501, "hazardous material" means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant hazard to human health and safety, or to the environment, if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons, or harmful to the environment if released into the workplace or the environment. Hazardous wastes are hazardous

substances that no longer have a practical use, such as material that has been abandoned, discarded, spilled, or contaminated, or is being stored prior to proper disposal.

California Code of Regulations (CCR), Title 22, Chapter 11, Article 2, Section 66261.10 provides the following definition for hazardous waste:

> [A] waste that exhibits the characteristics may: (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed or otherwise managed.

According to CCR Title 22, substances having a characteristic of toxicity, ignitability, corrosivity, or reactivity are considered hazardous waste. Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability or death. For example, toxic substances can cause eye or skin irritation, disorientation, headache, nausea, allergic reactions, acute poisoning, chronic illness, or other adverse health effects if human exposure exceeds certain levels (levels depend on the substance involved). Carcinogens, substances known to cause cancer, are a special class of toxic substances. Examples of toxic substances include most heavy metals, pesticides, and benzene (a carcinogenic component of gasoline). Ignitable substances, such as gasoline, hexane, and natural gas, are hazardous because of their flammable properties. Corrosive substances (e.g., strong acids and bases such as sulfuric battery acid or lye) are chemically active and can damage other materials or cause severe burns upon contact. Reactive substances (e.g., explosives, pressurized canisters, and pure sodium metal, which react violently with water) may cause explosions or generate gases or fumes.

## Regulatory Records Review

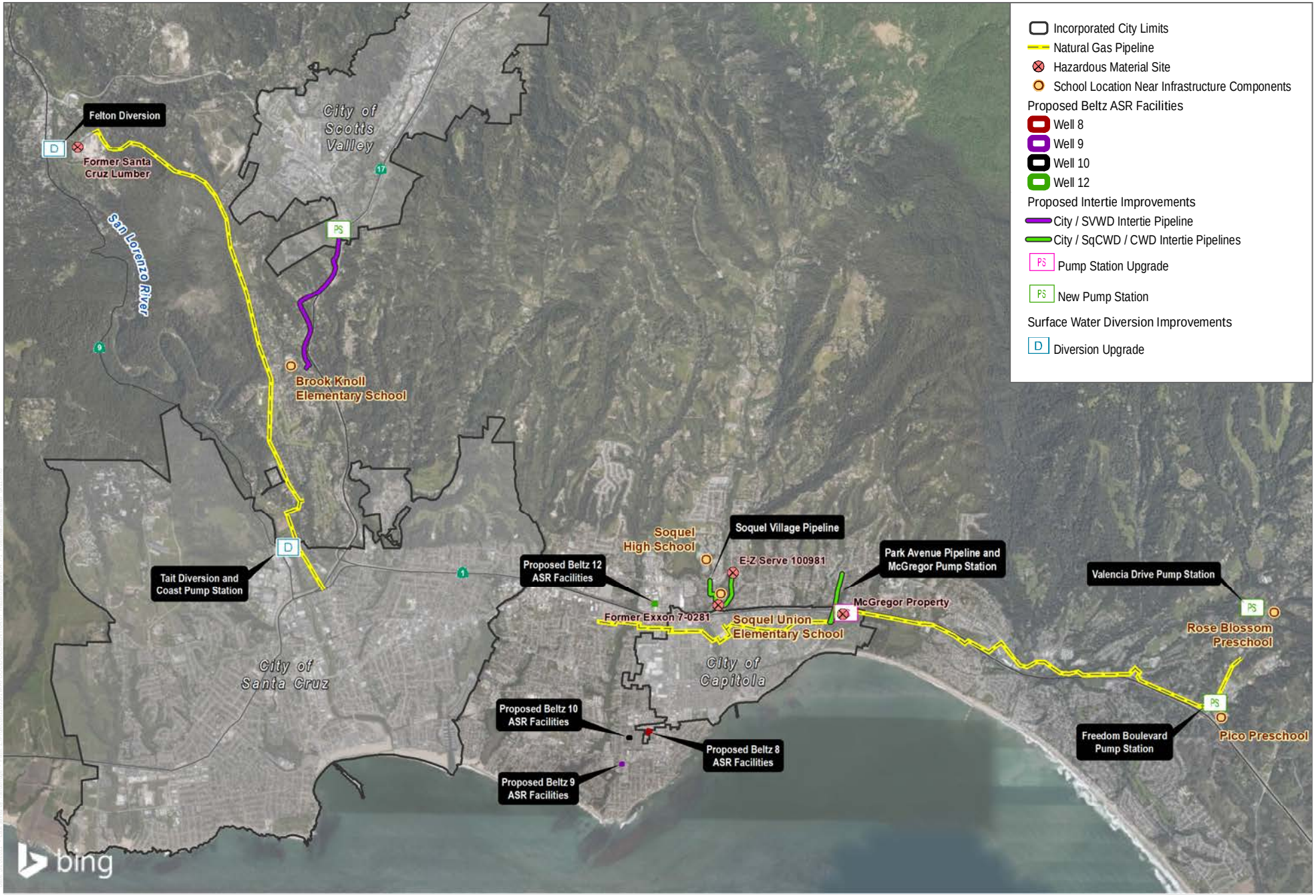
### Site History

Historical aerial photographs and topographic maps were reviewed as available for each of the proposed infrastructure component sites (NETR 2020). Online historical aerial photographs were generally available from 1952, 1968, 1981, 1982, 1991, 1993, 2005, 2009, 2010, 2012, 2014, and 2016. Online historical topographic maps were generally available from 1961, 1969, 1975, 1986, 1995, 2002, 2012, 2015, and 2018. The site history, based on this review, is discussed further in Infrastructure Component Site Conditions below.

### Pipelines and Oil Drilling Features

A search was conducted for oil drilling features within the study area that could affect the infrastructure component sites. The search included the National Pipeline Mapping System (NPMS 2020) and the California Geologic Energy Management Division (CalGEM) Well Mapping database (CalGEM 2020). Approximate locations of pipeline features are shown on Figure 4.7-1, and are discussed in Infrastructure Component Site Conditions.

According to the CalGEM database, there are no active oil and gas wells located in the study area. Multiple plugged core holes are sparsely located throughout the study area; however, none are located within 1 mile of any of the infrastructure component sites. These core holes were completed between the 1930s and 1960s as exploratory borings for oil and gas. The holes were subsequently plugged when no oil nor gas were produced. Therefore, oil and gas wells are not considered a potential hazard to the Proposed Project.




SOURCE: Bing Maps 2020, Santa Cruz County 2020

DUDEK

0 3,250 6,500 Feet

FIGURE 4.7-1

Potential Site Hazards

Santa Cruz Water Rights Project

### Hazardous Material Sites

Government Code Section 65962.5 requires the California Environmental Protection Agency (CalEPA) to compile a list of hazardous waste and substances sites (Cortese List). While the Cortese List is no longer maintained as a single list, the following databases provide information that meet the Cortese List requirements:

- List of hazardous waste and substance sites from the Department of Toxic Substances Control's (DTSC's) EnviroStor database (Health and Safety Codes 25220, 25242, 25356, and 116395).
- List of leaking underground storage tank (LUST) sites from the State Water Resources Control Board (SWRCB) GeoTracker database (Health and Safety Code 25295).
- List of solid waste disposal sites identified by SWRCB with waste constituents higher than hazardous waste levels outside the waste management unit (Water Code Section 13273 subdivision [e] and 14 CCR Section 18051).
- List of active cease and desist orders and cleanup and abatement orders from SWRCB (Water Code Sections 13301 and 13304).
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the California Health and Safety Code, as identified by DTSC.

A search of these Cortese List databases was conducted on May 27, 28, and 29, 2020, to identify any sites within 1 mile of the infrastructure component sites, except LUST sites, which were searched within 0.50 miles of each site. In addition to Cortese List databases, a search of other environmental databases was conducted for non-Cortese hazardous materials sites within 0.50 miles of the study area. The database search included DTSC EnviroStor (EnviroStor 2020), SWRCB GeoTracker (GeoTracker 2020a), and CalRecycle Solid Waste Information System (SWIS) (CalRecycle 2020). While these non-Cortese hazardous materials sites do not meet the definition of a Cortese List site, they may have records indicating environmental contamination that could affect construction of the infrastructure components. For example, a site may be undergoing cleanup under a Voluntary Cleanup Program, which is not defined as a Cortese List site under Government Code Section 65962.5.

A search of these databases found multiple Cortese List sites within 1 mile of the proposed infrastructure component sites, and multiple non-Cortese hazardous materials sites within 0.50 miles of these sites. Upon review, most of these sites, given the distance from the proposed infrastructure improvement site, regulatory status of the site, and/or extent of contamination, would not likely affect conditions at the infrastructure component sites. However, the database search identified four hazardous material sites that are within close proximity to the infrastructure component sites. These sites are further evaluated in the Infrastructure Component Site Conditions section below.

## Infrastructure Component Site Conditions

This section provides the hazards and hazardous materials conditions at each of the infrastructure component sites for which improvements and new facilities are proposed. Site history sections are based on a review of historical aerial photographs and topographic maps (NETR 2020), as well as the Cultural Resources Inventory, Evaluation, and Finding of Effect Report (Dudek 2020 [Appendix G]).

### Aquifer Storage and Recovery Sites

New ASR Sites

The Proposed Project could potentially result in new ASR facilities in 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. No definitive sites have been identified to date, so the hazardous materials setting of such facility sites is unknown.

Beltz ASR Sites

**Site History.** The Beltz ASR sites have the following site history:

- The Beltz 8 site was undeveloped with a creek running adjacent to the west side of the site until 1971. Development of the site began in 1971, with two small structures along the eastern side. The site was modified in 1985 and 1991. The surrounding residential development began in the 1980s.
- The Beltz 9 site was a grass-covered site with an elevated water tank from at least 1952 until approximately 1981. The site remained a grass-covered lot until approximately 1998 when it was paved with a production well located in the center of the site. The surrounding area was mainly undeveloped until residential development began in the 1960s.
- The Beltz 10 site was a grass-covered site with a single structure along the southern side from at least 1952 until approximately 1981. In 1981, a second structure and concrete pad were observed in historical aerial photos at the location of the current monitoring well. The water supply well was developed in 2004. Surrounding residential development began in the 1960s.
- The Beltz 12 site was occupied by a large warehouse building in 1952, which covered the entire site and extended southward offsite. In the 1980s, the northern portion of the building was removed, and the site was used for outdoor material storage. In 1993 the site was graded, and the surrounding sites redeveloped for commercial/industrial use. The well and tanks were installed in 2012. The surrounding area has been industrially developed since the 1950s.

Pipelines

One natural gas pipeline was identified approximately 0.21 mile south of the Beltz 12 site. The pipeline is owned by Pacific Gas & Electric and runs east west south of State Route 1. No other pipelines were identified within 0.50 miles of the Beltz sites.

Hazardous Material Sites

No hazardous materials sites were identified on or adjacent to the Beltz sites. Multiple LUST and cleanup program sites were identified within 0.50 miles of the Beltz sites. However, these sites have all received regulatory closure, and residual contamination, if any, is not likely to affect the environmental conditions at the Beltz sites.

Hazardous Materials Use

Beltz 12 site includes a chemical storage building and storage area for the generation of sodium hypochlorite (typically 350 gallons or less) (Chambers Group, Inc. 2011). Sodium hypochlorite is used as a disinfectant for the

finished water and for pretreatment in the removal of iron and manganese. Sodium hypochlorite and other treatment chemicals are stored and used on site.

### Intertie Improvement Sites

#### Site History

**City/SVWD Intertie Site.** The proposed intertie pipeline would be located within existing public rights-of-way. The City/SVWD intertie pipeline site runs along La Madrona Drive from Sims Road to a new pump station site just south of Altenitas Drive. La Madrona Drive was constructed in the 1960s. Prior to development it was primarily undeveloped land adjacent to sparse residential housing. The City/SVWD intertie pump station site has been undeveloped land since at least 1953.

**City/SqCWD/CWD Intertie Site.** The Soquel Village pipeline site runs along Daubenbiss Avenue, Porter Street, and Main Street south of Soquel Drive, and the Park Avenue pipeline site runs along Park Avenue and McGregor Drive south of Soquel Drive. The McGregor Drive pump station upgrade site is located southeast of the intersection of Park Avenue and State Route 1 on McGregor Drive. The existing pipeline is likely over 45 years old (Dudek 2020 [Appendix G]). Daubenbiss Avenue and Porter Street have been paved roads since at least the 1950s; Main Street was orchards prior to being developed as a road in the 1960s. Park Avenue and State Route 1 have been paved since the 1950s; Park Avenue has been a public road since at least 1914. The location of the pump station upgrade site was apparent orchards in the 1950s, followed by undeveloped land adjacent to a park, which was then developed as a pump station by SqCWD in approximately 2015.

The Freedom Boulevard pump station site is located on or near Freedom Boulevard, northwest of State Route 1. This site, at the west intersection of Freedom Boulevard and Soquel Drive, was within the public right-of-way from at least 1914 until the intersection was redesigned and repaved in the 1970s. This site is currently vacant land, which has been undeveloped since the road improvements occurred. The Valencia Road pump station site is located at the intersection of Huntington Drive and Valencia Road. Valencia Road has been in place since at least 1914, while Huntington Drive was constructed in approximately 1968. The surrounding area was orchards in the 1950s and 1960s, changing to undeveloped land over time until present day.

#### Pipelines

One natural gas pipeline was identified running north-south along Graham Hill Road, approximately 0.37 miles west of the City/SVWD intertie site at its nearest point. A second natural gas pipeline was identified running east-west just south of State Route 1, approximately 0.23 miles south of the Soquel Village pipeline site. The same pipeline runs along a portion of the same route as the Park Avenue pipeline site and pump station upgrade site, along McGregor Drive. The same pipeline also crosses the Freedom Boulevard pump station site, at the intersection of Soquel Drive and Freedom Boulevard. The pipelines are owned by Pacific Gas & Electric.

#### Hazardous Material Sites

The McGregor Drive pump station upgrade site is located on a portion of an active cleanup site called the “McGregor Property,” discussed below. In addition, three adjacent LUST sites are located at the intersection of Porter Street and S Main Street, two adjacent LUST sites are located at the intersection of S Main Street and Soquel Drive, and one adjacent LUST site is located at the southwest corner of Soquel Drive and Park Avenue. All six LUST sites have received regulatory closure.

Two of the LUST sites received low-threat closure with contamination remaining in place which, along with the McGregor Property, could affect environmental conditions at the Soquel Village pipeline site and the McGregor Drive pump station upgrade site, as described below. Figure 4.7-1 shows the location of these three sites. The remaining closed LUST sites do not appear to have residual contamination that would affect environmental conditions at these sites.

**McGregor Property, 1560 McGregor Drive, Capitola, CA** is located south of McGregor Drive and State Route 1, east of Park Avenue. The existing McGregor Drive pump station, owned and operated by SqCWD, is located on the west side of the larger McGregor Property; the east side of the McGregor Property is a public park (the Monte Family Skateboard Park). According to GeoTracker (GeoTracker 2020), the site is currently undergoing site assessment under the SWRCB Cleanup Program; however, the last regulatory documents and activities posted on GeoTracker were in 2016, and the site is now developed with the park and pump station. According to a 2016 Remedial Action Plan (RAP; WHA 2016), soils along the eastern side of the McGregor Drive pump station site (APN 03634104) were sampled in 2012 by SqCWD, and were found to contain elevated concentrations of lead above risk-based environmental screening levels (ESLs) (SFBRWQCB 2019) and arsenic above naturally-occurring background concentrations. The contamination was attributed to previous fill activities conducted on the larger McGregor Property. Two of the soil samples were found to also contain lead above California hazardous waste levels (soluble threshold limit concentration [STLC] greater than 5.0 mg/L) (SCWD 2012). Samples were also collected in native soils beneath what is now the paved pump station; no contaminants of concern (pesticides, herbicides, metals, or polyaromatic hydrocarbons) were identified in these native soils above environmental screening levels or background concentrations. Additional sampling was conducted on the Monte Family Skateboard Park, east of the McGregor Drive pump station, which also revealed isolated areas of soil with concentrations of lead and arsenic above applicable screening levels. Mitigation measures are in place at Monte Family Skateboard Park to limit public exposure to remaining contaminated soils, such as asphalt capping and fencing. The eastern portion of the SqCWD parcel remains bare dirt, where the elevated concentrations of lead and arsenic were identified; the McGregor Drive pump station was placed on native soils and is asphalt-paved and surrounded by fencing.

**Former Exxon 7-0281, 2501 Main Street S, Soquel, CA,** is located adjacent to the Soquel Village pipeline site. The site had a former LUST case that is now closed. The site closure report (CCRWQCB 2011) states remaining concentrations of methyl tert-butyl ether (MTBE) (6.6 micrograms per liter [µg/L]) and tert-butyl alcohol (TBA) (6.8 µg/L) are present in groundwater. The remaining MTBE concentrations are above the maximum contaminant level (MCL) (SWRCB 2019) for tap water, but below the ESLs for MTBE. The remaining TBA concentrations are below the MCL and ESLs. Detected concentrations were observed south of the gas station, within the S Main Street right-of-way. Groundwater depths were reported as shallow as 17 feet below ground surface (bgs). The site received low-risk closure in 2011, stating that remaining contamination was not migrating, and remaining contamination would meet water quality objectives through natural attenuation. Additionally, there is residual soil contamination on the site that could impact future development activities that disturb onsite soils. Notifications to the Central Coast Regional Water Quality Control Board (CCRWQCB), Santa Cruz County Environmental Health Services, and the local planning and building departments must be conducted prior to ground-disturbance activities at the Soquel Village pipeline site (GeoTracker 2020b).

**E-Z Serve #100981, 4901 Soquel Drive, Soquel, CA** is located adjacent to the Soquel Village pipeline site. The site had a former LUST case that is now closed. The most recent available groundwater monitoring report (Delta 2005) states that there are remaining concentrations of benzene, MTBE, and gasoline-range hydrocarbons (TPHg) on both sides of Soquel Drive, adjacent to the Soquel Village pipeline site. Maximum reported concentrations were 2.7 µg/L, 2.8 µg/L and 14,000 µg/L, respectively. These maximum reported concentrations of benzene and TPHg are above the ESLs for direct exposure.

Hazardous Materials Use

The existing McGregor Drive pump station uses small quantities of diesel fuel and other motor lubricants during operation (URS 2013).

### Felton Diversion Site

Site History

The Felton Diversion was constructed in 1976. Prior to construction, the site was undeveloped land.

Pipelines

The natural gas pipeline that runs north-south along Graham Hill Road, as discussed above, terminates at a large lumberyard approximately 0.40 miles east of the Felton Diversion site.

Hazardous Material Sites

No hazardous materials sites were identified on or adjacent to the Felton Diversion site. Three LUST and two cleanup program sites were identified within 0.5 miles of the Felton Diversion site. The LUST sites and one cleanup site have received regulatory closure, and residual contamination, if any, is not likely to affect the environmental condition at the Felton Diversion site. The open cleanup site, Former Santa Cruz Lumber, 5843 Graham Hill Road (Figure 4.7-1) is located on the east side of the San Lorenzo River. Data from 2011 to 2016 for a water supply well on the cleanup site (Author Unknown 2017) indicated that arsenic and iron concentrations in groundwater were above the MCL and secondary MCL, respectively (California 2018). Email comments from the CCRWQCB (Sellinger 2018) stated these elevated concentrations of iron and arsenic were not consistent with surrounding wells, and therefore the results should not be assumed to be due to naturally occurring background concentrations. Therefore, the elevated concentrations appeared to be connected to the releases at the site.

Hazardous Materials Use

The existing Felton Diversion uses and stores propane for the emergency generator locate at the site.

### Tait Diversion and Coast Pump Station Site

Site History

The Tait Diversion was originally constructed in 1961, with modifications completed in 1984. Aerial photographs and topographic maps (NETR 2020) show a check dam at the river at this location as early as 1952. The Coast Pump Station was completed in 1929 (Dudek 2020 [Appendix G]).

Pipelines and Oil Drilling Features

The natural gas pipeline that runs north-south along Graham Hill Road, as discussed above, runs past the Tait Diversion site approximately 0.13 miles to the west.

Hazardous Material Sites

Hazardous materials sites were not identified on or adjacent to the Tait Diversion and Coast Pump Station site. Ten LUST sites and two cleanup program sites were identified within 0.50 miles of the Tait Diversion site. The LUST sites have all received regulatory closure and are not likely to affect the environmental conditions at the site. The open cleanup sites, Salz Leather at 1040 River Street (WHA 2014), and Plantronics at 345 Encinal Street (Ramboll 2019), are undergoing verification monitoring for remaining groundwater contamination. Neither site appears to have offsite contamination that has affected the environmental conditions at the Tait Diversion and Coast Pump Station site.

Hazardous Materials Use

The existing Tait Diversion and Coast Pump Station uses and stores nitrogen, oxygen, antifreeze, motor oil, and diesel fuel for the emergency generator on the site.

### 4.7.1.3 Airport Hazards

The study area is not located within an Airport Land Use Plan, nor is it located within 2 miles of a public use airport.

### 4.7.1.4 Wildfire Hazards and Emergency Response

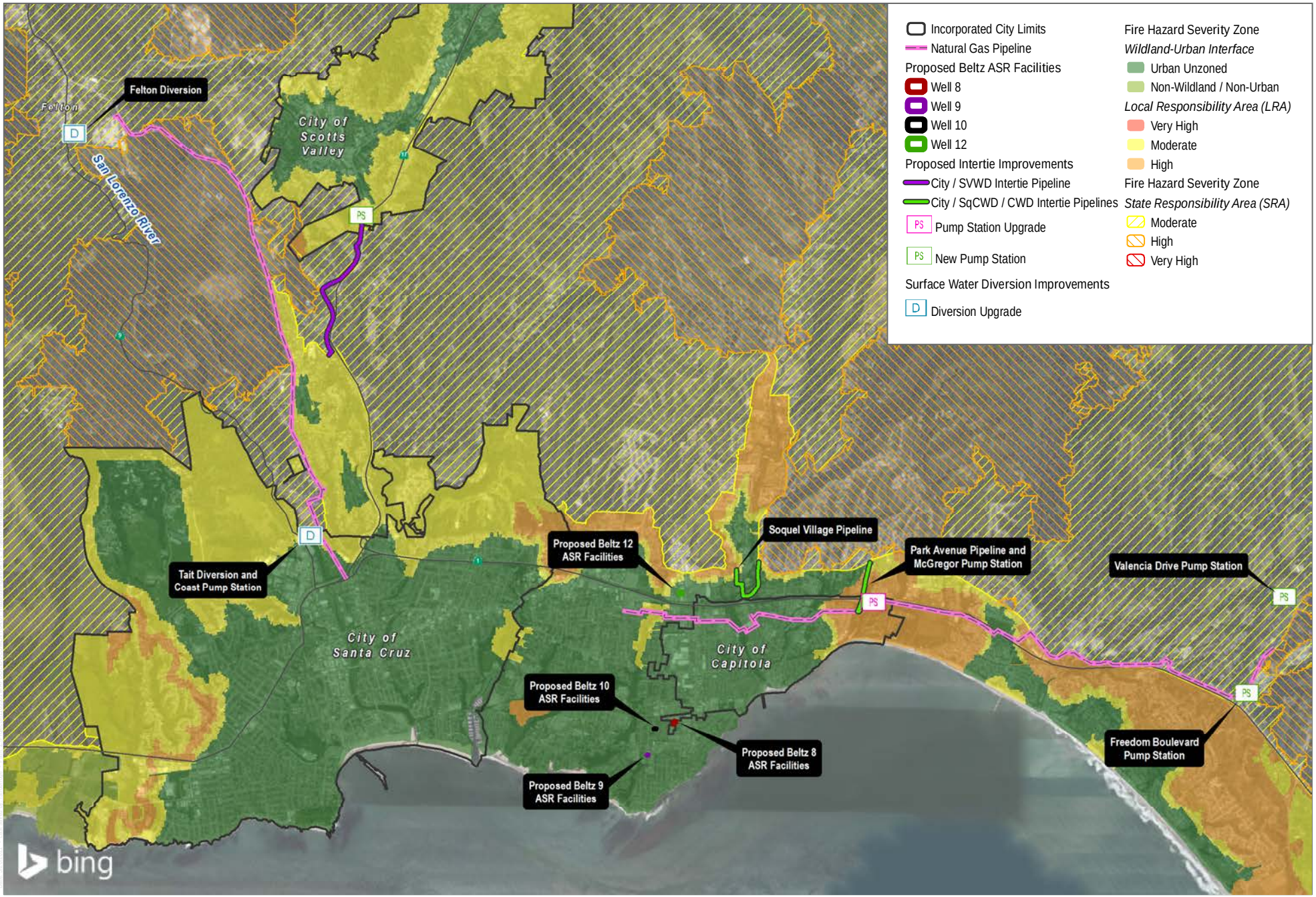
#### Wildfire Risk

The risk of significant wildfire exists in Santa Cruz County. Due to local topography, fuels (forest, chaparral, and grasslands) and certain weather conditions, Santa Cruz County is prone to periodic large wildfire events. The County experiences annual cycles of elevated fire danger, with the wildfire season typically extending from roughly May into late October or early November. The boundary between residential/commercial development and wildland in the County is not clearly demarcated, and the County has substantial area in the wildland-urban interface (WUI) where wildfire risks are elevated (CAL FIRE CZU 2018).

#### Mapped Fire Hazards

The California Department of Forestry and Fire Protection (CAL FIRE) maps areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors, pursuant to Public Resources Code 4201-4204 and Government Code 51175-51189. These areas are referred to as Fire Hazard Severity Zones (FHSZs) and are identified for areas where the state has financial responsibility for wildland fire protection (i.e., state responsibility areas, or SRAs), and areas where local governments have financial responsibility for wildland fire protection (i.e., local responsibility areas, or LRAs). CAL FIRE maps three FHSZs for SRAs (moderate, high, and very high), while only lands zoned as very high are identified in LRAs.

The study area for the proposed infrastructure component sites lies predominantly within the LRA for wildfire response designated by CAL FIRE. All proposed infrastructure component sites lie within urban unzoned or moderate FHSZs, except the Park Avenue pipeline site and McGregor Drive pump station upgrade site, which lie within a high FHSZ (CAL FIRE 2007). The FHSZs as they relate to the infrastructure component sites are shown on Figure 4.7-2. 3 shows CAL FIRE's mapped FHSZs for Santa Cruz County, encompassing the Santa Cruz Mid-County and Santa Margarita Groundwater Basins where some project and programmatic infrastructure components may be located.




SOURCE: Bing Maps 2020, CAL FIRE 2020, Santa Cruz County 2020

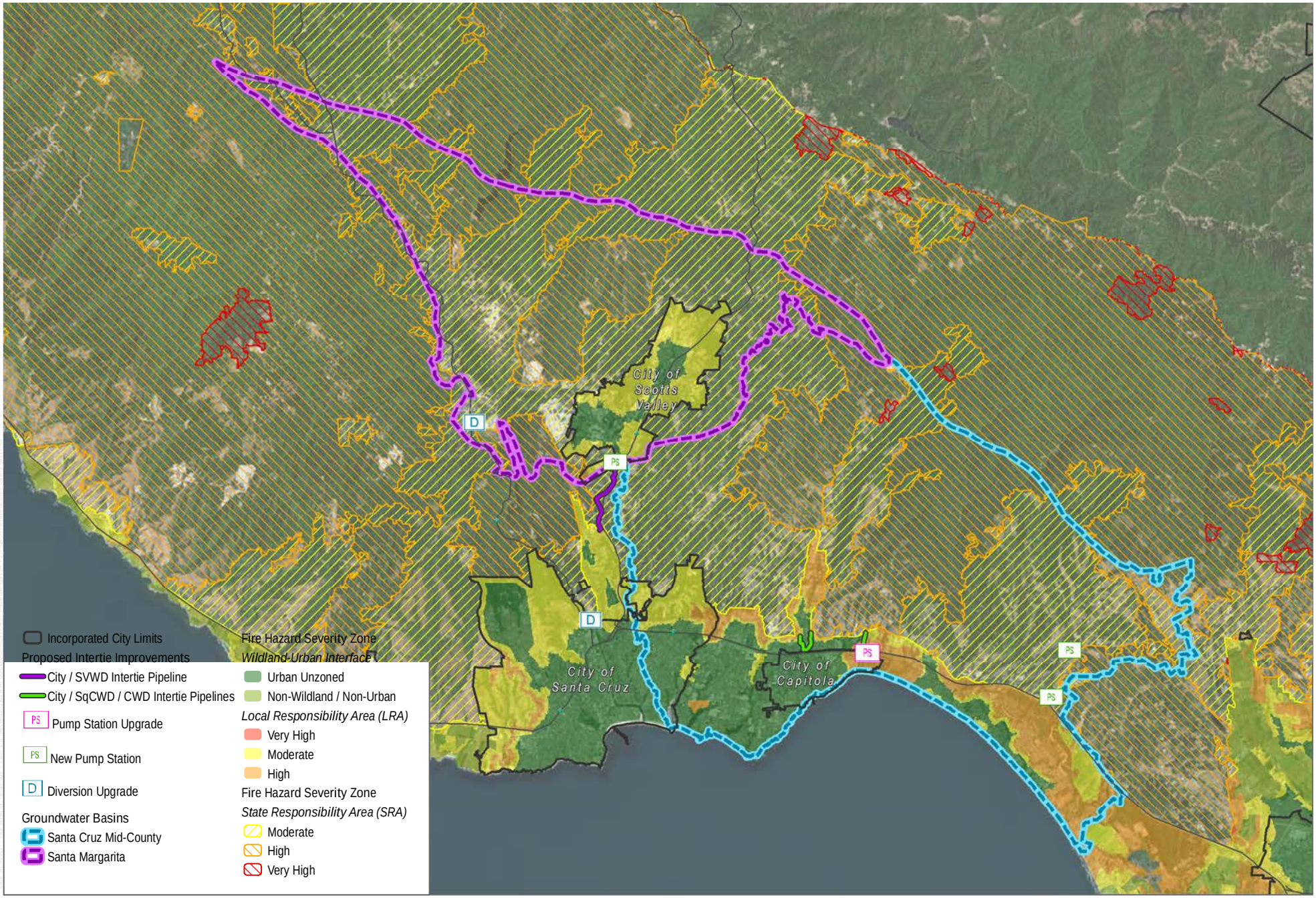
DUDEK

0 3,200 6,400 Feet

FIGURE 4.7-2

Project Fire Hazard Zones

Santa Cruz Water Rights Project




SOURCE: Bing Maps 2020, CAL FIRE 2020, Santa Cruz County 2020

DUDEK

0 6,500 13,000 Feet

FIGURE 4.7-3

Project Fire Hazard Zones and Proximity to Groundwater Basins

Santa Cruz Water Rights Project

As shown on 3, fire hazards are generally greatest in the North Coast and Mountain regions of the county, with more moderate fire hazard areas in the Urban and South County regions. According to CAL FIRE's FHSZ mapping, most of the County is designated as moderate to high fire hazard severity, while a small area of Bonny Doon, small areas in the hills above Soquel, and areas along the eastern boundary of the County are designated as being very high FHSZs. The majority of the land area overlying the two groundwater basins is located within the SRA. Both groundwater basins encompass areas designated as moderate and high FHSZs, with one small area within the Santa Cruz Mid-County Groundwater Basin designated as a very high FHSZ. Fire protection in LRAs is provided by the County, a city, or a designated fire protection district. Within SRAs, fire protection is provided by CAL FIRE. Emergency response, including wildfire response, would be under local jurisdiction for most infrastructure component sites. The infrastructure component sites fall within multiple jurisdictions, including Felton Fire District (Felton Diversion site), Scotts Valley Fire District (City/SVWD intertie site), City of Santa Cruz (Tait Diversion site), Central Fire District (Beltz sites, Park Avenue pipeline site and McGregor Drive pump station upgrade site), and Aptos/La Selva Fire District (Freedom Boulevard pump station site and the Valencia Road pump station site) (LAFCO 2020). Local regulations pertaining to these jurisdictions are discussed in Section 4.7.2, Regulatory Framework.

#### 4.7.1.5 Sensitive Receptors

Three public schools are located within 0.25 miles of the infrastructure component sites (CSCD 2020). The schools are shown on Figure 4.7-1.

- Brook Knoll Elementary, 151 Brook Knoll Drive, located approximately 0.13 miles west of the proposed City/SVWD intertie.
- Soquel Union Elementary, 2700 Porter Street, is located in the center of the Soquel Village pipeline site.
- Soquel High School, 401 Soquel San Jose Road, is located approximately 0.08 miles northwest of the Soquel Village pipeline site.

Two private preschools are located within 0.25 miles of the infrastructure component sites. The schools are also shown on Figure 4.7-1.

- Rose Blossom Preschool, 6401 Freedom Blvd, is located approximately 0.20 miles east of the Valencia Road pump station site.
- Pico Preschool, 10707 Soquel Drive, is located approximately 0.17 miles southeast of the Freedom Boulevard pump station site.

### 4.7.2 Regulatory Framework

#### 4.7.2.1 Federal

##### Toxic Substances Control Act

The Toxic Substances Control Act of 1976 provides the U.S. Environmental Protection Agency (EPA) with authority to require reporting, record-keeping, and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from the Toxic Substances Control Act, including food, drugs, cosmetics, and pesticides.

## Hazardous Materials Transportation Act

Transportation of hazardous materials is regulated by the U.S. Department of Transportation's Office of Hazardous Materials Safety. The office formulates, issues, and revises hazardous materials regulations under the Federal Hazardous Materials Transportation Law. The hazardous materials regulations cover hazardous materials definitions and classifications, hazard communications, shipper and carrier operations, training and security requirements, and packaging and container specifications. The hazardous materials transportation regulations are codified in 49 Code of Federal Regulations (CFR) Parts 100–185.

The hazardous materials transportation regulations require carriers transporting hazardous materials to receive training in the handling and transportation of hazardous materials. Training requirements include pre-trip safety inspections, use of vehicle controls and equipment including emergency equipment, procedures for safe operation of the transport vehicle, training on the properties of the hazardous material being transported, and loading and unloading procedures. All drivers must possess a commercial driver's license as required by 49 CFR Part 383. Vehicles transporting hazardous materials must be properly placarded. In addition, the carrier is responsible for the safe unloading of hazardous materials at the site, and operators must follow specific procedures during unloading to minimize the potential for an accidental release of hazardous materials.

## Occupational and Safety Health Act

The Occupational Safety and Health Administration (OSHA) is responsible at the federal level for ensuring worker safety. OSHA sets federal standards for implementing workplace training, exposure limits, and safety procedures for the handling of hazardous substances and hazardous materials (as well as other hazards). OSHA also establishes criteria by which each state can implement its own health and safety program.

## Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled the EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. The Federal Hazardous and Solid Waste Amendments are the 1984 amendments to RCRA that focused on waste minimization and phasing out land disposal of hazardous waste, as well as corrective action for releases. Some of the other mandates of this law include increased enforcement authority for EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program.

## Regional Screening Levels

The federal EPA provides regional screening levels for chemical contaminants to provide comparison values for residential and commercial/industrial exposures to soil, air, and tap water (drinking water). Regional screening levels (RSLs) are available on the EPA's website and provide a screening level calculation tool to assist risk assessors, remediation project managers, and others involved with risk assessment and decision-making. RSLs are also used when a site is initially investigated to determine if potentially significant levels of contamination are present to warrant further investigation. In California, the DTSC Human and Ecological Risk Office (HERO) incorporated the EPA RSLs into the HERO human health risk assessment. HERO created Human Health Risk Assessment Note 3, which incorporates HERO recommendations and DTSC-modified screening levels (DTSC-SLs)

based on review of the EPA RSLs. The DTSC-SL should be used in conjunction with the EPA RSLs to evaluate chemical concentrations in environmental media at California sites and facilities.

### Federal Response Plan

The Federal Response Plan of 1999, as amended in 2003 (FEMA 2003) is a signed agreement among 27 federal departments and agencies, including the American Red Cross, that (1) provides the mechanism for coordinating delivery of federal assistance and resources to augment efforts of state and local governments overwhelmed by a major disaster or emergency; (2) supports implementation of the Robert T. Stafford Disaster Relief and Emergency Act, as well as individual agency statutory authorities; and (3) supplements other federal emergency operations plans developed to address specific hazards. The Federal Response Plan is implemented in anticipation of a significant event likely to result in a need for federal assistance or in response to an actual event requiring federal assistance under a presidential declaration of a major disaster or emergency.

### International Fire Code

The International Fire Code (IFC), created by the International Code Council, is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The IFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The IFC and the International Building Code use a hazard classification system to determine what measures are required to protect against structural fires. These measures may include construction standards, separations from property lines, and specialized equipment. To ensure that these safety measures are met, IFC employs a permit system based on hazard classification. The IFC is updated every 3 years.

## 4.7.2.2 State

### Certified Unified Program

The California Environmental Protection Agency (CalEPA) implements and enforces a statewide hazardous materials program known as the Certified Unified Program, established by Senate Bill 1802 to consolidate, coordinate, and make consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental and emergency management programs for hazardous materials:

- Hazardous Materials Release Response Plans and Inventories (Business Plans)
- California Accidental Release Prevention Program
- Underground Storage Tank Program
- Aboveground Petroleum Storage Act Requirements for Spill Prevention, Control, and Countermeasure Plans
- Hazardous Waste Generator and On-Site Hazardous Waste Treatment Programs
- California Uniform Fire Code, Hazardous Materials Management Plans, and Hazardous Material Inventory Statements

CalEPA certifies local government agencies as Certified Unified Program Agencies (CUPA) to implement hazardous waste and materials standards. The Santa Cruz County Environmental Health Services is designated as the local CUPA in Santa Cruz County.

### California Safe Drinking Water and Toxic Enforcement Act of 1986

California Health and Safety Code Division 20, Chapter 6.6 establishes regulation on the prohibition of contaminating drinking water. This includes discharges or release onto land which may pass into a drinking water source.

### California Unified Agency Review of Hazardous Materials Release Sites

California Health and Safety Code Division 20 Chapter 6.65 establishes regulation on identification of hazardous material release sites and agency overview of remedial actions on these sites. The regulation also provides agency oversight on all aspects of site investigation and remedial action. Monitoring, testing, and site conditions, restrictions, and limitations can be required and enforced by the overseeing agency.

### Petroleum Underground Storage Tank Cleanup

California Health and Safety Code Division 20. Chapter 6.75 establishes regulation that requires corrective action for petroleum releases from underground storage tanks.

### California Hazardous Waste Control Law

California Health and Safety Code Division 20, Chapter 6.5 establishes regulations to protect the public health and the environment by assisting generators of hazardous waste in meeting the responsibility for the safe disposal of hazardous waste. The California Hazardous Waste Control Law is administered by CalEPA and pertains to administering a state hazardous waste program in lieu of the federal RCRA program, pursuant to Section 3006 of Public Law 94-580, as amended. The Hazardous Waste Control Law lists 791 chemicals and approximately 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

### California Accidental Release Prevention Program

Similar to the Federal Risk Management Program, the California Accidental Release Prevention Program includes additional state requirements and an additional list of regulated substances and thresholds. The regulations of the program are contained in CCR Title 19, Division 2, Chapter 4.5. The intent of the California Accidental Release Prevention Program is to provide first responders with basic information necessary to prevent or mitigate damage to public health, safety, and the environment from the release or threatened release of hazardous materials.

### California Department of Toxic Substances Control and California Highway Patrol Hazard Transportation Program

The California DTSC administers the transportation of hazardous materials throughout the state. Regulations applicable to the transportation of hazardous waste include Title 22, Division 4.5, Chapter 13 and Chapter 29 of the CCR, as well as Division 20, Chapter 6.5, Articles 6.5, 6.6, and 13 of the California Health and Safety Code. The DTSC requires that drivers transporting hazardous wastes obtain a certificate of driver training that shows the driver has met the minimum requirements concerning the transport of hazardous materials, including proper labeling and marking procedures, loading/handling processes, incident reporting and emergency procedures, and appropriate driving and parking rules. The California Highway Patrol also requires shippers and carriers to complete hazardous materials employee training before transporting hazardous materials.

## California Health and Safety Code

The handling and storage of hazardous materials is regulated by Division 20, Chapter 6.95 of the California Health and Safety Code. Under Sections 25500–25543.3, facilities handling hazardous materials are required to prepare a Hazardous Materials Business Plan (HMBP), which contain basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the state.

Chapter 6.95 of the Health and Safety Code establishes minimum statewide standards for HMBPs. Each business shall prepare a HMBP if that business uses, handles, or stores a hazardous material (including hazardous waste) or an extremely hazardous material in quantities greater than or equal to 500 pounds of a solid substance, 55 gallons of a liquid, 200 cubic feet of compressed gas, a hazardous compressed gas in any amount (highly toxic with a Threshold Limit Value of 10 parts per million or less), or extremely hazardous substances in threshold planning quantities. In addition, in the event that a facility stores quantities of specific acutely hazardous materials above the thresholds set forth by California code, facilities are also required to prepare a Risk Management Plan and California Accidental Release Plan.

## California Occupational Safety and Health Administration Hazard Handling Procedures

The California Division of Occupational Safety and Health Administration (Cal/OSHA) is the primary agency responsible for worker safety in the handling and use of chemicals in the work place. Cal/OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR 337–340). The regulations specify requirements for employee training, availability of safety equipment, accident prevention programs, and hazardous substance exposure warnings.

## California Department of Transportation/California Highway Patrol

Under Title 13 CCR, Division 2, Chapter 6, California regulates the transportation of hazardous waste originating or passing through the state. The California Highway Patrol (CHP) and the California Department of Transportation (Caltrans) have primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies. CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provides detailed information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of CHP. CHP conducts regular inspections of licensed transporters to ensure regulatory compliance. Caltrans has emergency chemical spill identification teams at locations throughout the state. Hazardous waste must be regularly removed from generating sites by licensed hazardous waste transporters. Transported materials must be accompanied by hazardous waste manifests.

## Environmental Screening Levels

ESLs provide conservative screening levels for over 100 chemicals found at sites with contaminated soil and groundwater. They are intended to help expedite the identification and evaluation of potential environmental concerns at contaminated sites. The ESLs were developed by San Francisco Bay Regional Water Quality Control Board; however, they are used throughout the state. While ESLs are not intended to establish policy or regulation, they can be used as a conservative screening level for sites with contamination. Other agencies in California currently use the ESLs (as opposed to RSLs). In general, the ESLs could be used at any site in the State of California, provided all stakeholders agree (SFBRWQCB 2019). In recent experience, regulatory agencies in various regions

use ESLs as regulatory cleanup levels. The ESLs are not generally used at sites where the contamination is solely related to a LUST; those sites are instead subject to the Low-Threat Underground Storage Tank Closure Policy.

### California Fire Code

The California Fire Code (CFC), contained in Title 24, Part 9 of the California Code of Regulations, was created by the California Building Standards Commission and incorporates by adoption the International Fire Code of the International Code Council, with California amendments. The CFC establishes regulations to safeguard against the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises. The Fire Code also establishes requirements intended to provide safety for and assistance to firefighters and emergency responders during emergency operations. The provisions of the Fire Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure throughout California. The Fire Code includes regulations regarding fire-resistance-rated construction, fire protection systems such as alarm and sprinkler systems, fire services features such as fire apparatus access roads, means of egress, fire safety during construction and demolition, and wildland-urban interface areas. The CFC is updated every 3 years. The 2019 CFC was published July 1, 2019 and became effective January 1, 2020.

### California Forestry and Fire Protection

Public Resources Code Sections 4114 and 4130 authorize the State Board of Forestry to establish a fire plan (The 2018 Strategic Fire Plan for California) that establishes the levels of statewide fire protection services. These levels of service recognize other fire protection resources at the federal and local level that collectively provide a regional and statewide emergency response capability. In addition, California's integrated mutual aid fire protection system provides fire protection services through automatic and mutual aid agreements for fire incidents across all ownerships. The California Fire Plan is the state's road map for reducing the risk of wildfire through planning and prevention to reduce firefighting costs and property losses, increase firefighter safety, and to contribute to ecosystem health.

## 4.7.2.3 Local

### County of Santa Cruz Environmental Health

As previously discussed, Santa Cruz County Environmental Health Services is designated by CalEPA as the CUPA within the geographic boundaries of the County and is responsible for enforcing the local ordinance and state laws pertaining to use and storage of hazardous materials, including the issuance and administration of HMBPs and HMMPs. The various fire departments work in conjunction with County Environmental Health in responding to reports of hazardous materials spills and accidents, enforcing hazardous materials regulations, and enforcing the fire codes as it relates to the use and storage of hazardous materials.

### Local General Plans and Local Coastal Programs

The study area for the Proposed Project includes the jurisdictions of the City of Santa Cruz, City of Capitola, City of Scotts Valley, and County of Santa Cruz. The general plans, and where relevant, the local coastal programs of these jurisdictions include policies and programs related to hazards and hazardous materials. Section 4.9, Land Use, Agriculture and Forestry, and Mineral Resources, discusses applicable general plan and local coastal program policies related to hazards and hazardous materials, as relevant to the Proposed Project.

## Local Encroachment Permit Requirements

The County of Santa Cruz and the cities of Santa Cruz, Capitola and Scotts Valley require that projects that will conduct construction activities in the public right-of-way obtain encroachment permits, as further described below.

### County of Santa Cruz

For any construction in the public right-of-way, the County requires an encroachment permit. The associated fee and permit process are described in the Santa Cruz County Code, Chapter 9.70, Streets and Roads. As part of the encroachment permit process, if pedestrian, bicycle, or vehicle traffic would be impacted, a traffic control plan must be provided. Several provisions are provided on the encroachment permit application (County of Santa Cruz 2021).

### City of Santa Cruz

For any construction in the public right-of-way, the City requires an encroachment permit. The associated fee and permit process are described in the City's Municipal Code, Chapter 15.34, Encroachment Permits. Permits for construction in the public right of way require a City-approved traffic control plan showing the intended placement of all necessary signage and traffic control devices used to direct traffic around the site. The traffic control plan should accomplish the following (City of Santa Cruz 2021):

- Conform to the California Manual on Uniform Traffic Control Devices (see Part 6 - Temporary Traffic Control).
- Be designed by a responsible representative of the permit applicant knowledgeable in the principles of proper temporary traffic control.
- Clearly show the work area.
- Include traffic control provisions to accommodate pedestrian, bicycle, and vehicular traffic that may be affected.
- Show any "no parking" areas needed to accommodate traffic and work in the work zone.
- If construction requires multiple phased traffic control configurations, a traffic control plan for each phase should be submitted.

### City of Capitola

For any person, firm or corporation encroaching into the public right-of-way, or water course to do work, store materials, erect or place any structure, the City of Capitola requires an encroachment permit. The associated fee and permit process are described in the City of Capitola Municipal Code, Section 12.56, Privately Installed Improvements on Public Property or Easements. As part of the encroachment permit process, the following are conditions of the permit (City of Capitola 2020):

- Notify the Public Works Department 24 hours prior to the start of work.
- Contractor shall implement traffic control plan.
- Full road closure is not permitted without prior authorization by the City Engineer.
- Restore all damaged curb, gutter, sidewalk, paving per city standard detail.
- Storage of materials in the public roadway is prohibited.
- Keep work site clear of debris and be aware of tracking mud, dirt, gravel into the street, cover all stockpiles and excavation spoils.
- Practice good housekeeping.

#### City of Scotts Valley

For any improvements located in the public right-of-way, the City of Scotts Valley requires an encroachment permit. The associated fee and permit process are described in the City of Scotts Valley Municipal Code, Chapter 12.08, Encroachments. As part of the encroachment permit process, all street improvements must abide by the City of Scotts Valley Standard Details and Specification (City of Scotts Valley 2017), including policies requiring that whenever lane closures or any form of traffic diversions are in place, a 6-foot-wide lane for pedestrian and bicycle traffic must be provided. During times of heavy pedestrian traffic (i.e., school children, etc.), the use of a flag person for public safety is necessary. A traffic control plan shall be submitted for review if required by the Public Works Director/City Engineer (City of Scotts Valley 2021).

## 4.7.3 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to hazards and hazardous materials. 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.

### 4.7.3.1 Standards of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to hazards and hazardous materials 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. Create a significant hazard to the public or the environment through the routine transport, use, production, or disposal of hazardous materials.
B. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
C. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school.
D. Be located on a site that is included on a list of hazardous materials sites, compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
E. Result in a safety hazard or excessive noise for people residing or working in the project area, for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport.
F. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
G. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

H. If located in or near state responsibility areas or lands classified as very high fire hazards severity zones:
   - Substantially impair an adopted emergency response plan or emergency evacuation plan.
   - Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
   - Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
   - Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

### 4.7.3.2 Analytical Methods

This section evaluates the potential hazards and hazardous materials impacts associated with construction and operation of the Proposed Project. The analysis of potential impacts addresses the various project and programmatic components listed in Table 4.7-1, which are described in detail in Chapter 3, Project Description.

**Table 4.7-1. 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 | | ✓ |

Construction-related impacts are considered for each component of the Proposed Project that would require construction. Specifically, the components of the Proposed Project that require construction include the proposed infrastructure components. Operational-related impacts of the proposed infrastructure components are considered in the context of long-term hazardous materials use and storage. The impact analysis assumes the Proposed Project would be constructed and operated in compliance with the most current regulations related to specified hazards and hazardous materials, as described in Section 4.7.2, Regulatory Framework. Impacts have been evaluated with

respect to the standards of significance, as described above. In the event adverse environmental impacts would occur subsequent to consideration of applicable regulations and Proposed Project standard operational and construction practices described in Chapter 3, Project Description, impacts would be potentially significant and mitigation measures would be provided to reduce impacts to less-than-significant levels.

### Application of Relevant Standard Practices

The Proposed Project includes standard construction practices (see Section 3.4.5.2, Standard Construction Practices) that the City would implement to avoid or minimize effects related to hazards and hazardous materials. These practices and their effectiveness in avoiding and minimizing effects are described below.

Standard Construction Practice #5 requires stabilization of spoil disposal sites and other debris areas, as well as implementation of sediment control measures, so that sediment is not conveyed to waterways. This practice would minimize the potential for contaminated soils to enter waterways.

Standard Construction Practice #6 prohibits storing equipment or fueling within a minimum of 65 feet of any active stream channel or water body unless approved by permitting agencies, as well as implementation of additional spill prevention methods such as secondary containment and inspection. This practice would minimize the potential for hazardous materials to enter waterways in conjunction with other practices. To prevent hazardous substances from contaminating soils or waters, Standard Construction Practice #7 requires that gas, oil, and other hazardous substances be stored within an established containment area; that vehicles and equipment have spill kits that are available, checked daily for leaks, and properly maintained; that hazardous substances be stored in water-tight containers with secondary containment; and that emergency spill kits be on site at all times. These practices would minimize potential effects caused by unintended spills of hazardous materials by preventing any hazardous spills that might occur from contaminating soils or entering waterways.

Standard Construction Practice #8 requires regular equipment inspections to prevent equipment fluid leaks. By ensuring that equipment is maintained in good working order, this practice would reduce the potential for impacts associated with equipment fluid leaks. Additionally, Standard Construction Practice #9 would ensure that waste and trash would be properly managed, which would further minimize the potential for contamination to enter waterways and the environment in general.

Standard Construction Practice #27 requires that, for construction on undeveloped sites or sites with surrounding trees and other vegetation, internal combustion engine equipment shall include spark arrestors; that fire suppression equipment (e.g., fire extinguishers and shovels) be stored on site during use of such mechanical equipment; and that construction activities may not be conducted during red flag warnings issued by CAL FIRE. This multi-part practice would reduce fire hazards during construction in areas of potential increased fire hazard severity.

If the Proposed Project would have potentially significant impacts even with the implementation of the above standard construction practices, the impact analysis identifies mitigation measures.

## 4.7.3.3 Project Impact Analysis

### Areas of No Impact

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

- **Cortese List Hazards (Significance Standard D).** The Proposed Project would not be located on a hazardous materials site that is included on a list compiled pursuant to Government Code Section 65962.5, as described in Section 4.7.1, Existing Conditions, and therefore would not create a significant hazard to the public or the environment related to such a site. Therefore, the Proposed Project would have no impact related to Cortese List hazards. Impacts associated with nearby hazardous materials sites are evaluated in Impact HAZ-2 below.
- **Airport Hazards (Significance Standard E).** The Proposed Project would not result in a safety hazard or excessive noise for people working or residing in the study area due to airports because the Proposed Project site is not located within 2 miles of a public use airport nor is it located within an airport land use plan. Therefore, the Proposed Project would have no impact related to airport hazards.

## Impacts

This section provides a detailed evaluation of hazards and hazardous materials impacts associated with the Proposed Project.

**Impact HAZ-1: Routine Transport, Use, Production, or Disposal of Hazardous Materials (Significance Standard A).** Construction and operation of the Proposed Project would require use and transportation of petroleum products and small quantities of hazardous materials but would not result in a significant hazard to the public or environment. (***Less than Significant***)

### Water Rights Modifications

The water rights modifications of the Proposed Project would not directly result in construction or operation of new facilities and would not create a hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Therefore, this project component would have no direct impacts.

The following analysis evaluates the potential indirect impacts related to hazards associated with the routine transport, use, or disposal of hazardous materials 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

#### Construction

The project and programmatic infrastructure components, including ASR (ASR facilities and Beltz ASR facilities), intertie improvements, and the surface water diversion improvements (Felton Diversion improvements and Tait Diversion and Coast Pump Station improvements) would result in hazardous materials use during construction of these facilities. Construction activities of these project and programmatic components would include the use of commonly used hazardous substances such as gasoline, diesel fuel, lubricating oil, adhesive materials, grease, solvents, and architectural coatings. These materials are not considered extremely hazardous and are used routinely for both construction projects and structural improvements. These materials would be used and stored in designated construction staging areas within the boundaries of the component sites and would be used, transported, handled, and stored in accordance with all applicable federal, state, and local laws and regulations, which are intended to minimize health risk to the public associated with hazardous materials. The use of these materials for their intended purpose would not pose a significant risk to the public or environment. Wastes, both hazardous and non-hazardous, accumulated during demolition, rehabilitation, and construction activities would be

handled, documented, and disposed of in accordance with federal, state, and local laws regulating the management and use of hazardous materials. Additionally, Standard Construction Practices would further reduce the risk of use, transportation, and disposal of hazardous materials, as described in Section 4.7.3.2, Analytical Methods.

Consequently, use of these construction materials for their intended purpose would not pose a significant risk to the public or environment. Once construction has been completed, construction fuels and other hazardous materials would no longer remain within the work areas of the component sites. Therefore, the project and programmatic components would not create a significant hazard to the public or the environment during construction through the routine transport, use, or disposal of hazardous materials, and impacts would be less than significant.

Operation

The project and programmatic infrastructure components, including ASR (ASR facilities and Beltz ASR facilities), intertie improvements, and the surface water diversion improvements (Felton Diversion improvements and Tait Diversion and Coast Pump Station improvements) would also result in hazardous materials use during operation of these facilities. The facilities that would be upgraded with the Proposed Project, including Beltz ASR, McGregor Drive pump station, Felton Diversion improvements and the Tait Diversion and Coast Pump Station improvements, would involve similar use of hazardous materials, as under existing conditions. Any new ASR facility would include a new pump control and chemical storage building for the storage of chemicals, which are likely similar to those currently being used at the Beltz sites.

Hazardous materials used for the operation of all proposed project and programmatic infrastructure components would be in accordance with requirements and recommendations in the applicable Safety Data Sheet(s) and would be managed in accordance with federal, state, and local laws and regulations. Hazardous materials required for operation and maintenance of the proposed infrastructure components would be stored in secured, covered areas with secondary containment. The City submits HMBPs to the local CUPA (via the California Environmental Reporting System) as required by local state and law and will continue to update HMBPs as required. Hazardous wastes which are generated by proposed project and programmatic infrastructure components would be generated, stored, manifested, and transported in accordance with federal, state, and local regulations. Therefore, the project and programmatic components would not create a significant hazard to the public or the environment during operation through the routine transport, use, or disposal of hazardous materials, and impacts would be less than significant.

**Impact HAZ-2: Upset and Release of Hazardous Materials (Significance Standards B).** Construction of the Proposed Project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (***Less than Significant with Mitigation***)

As discussed under Impact HAZ-1, relatively small amounts of commonly used hazardous materials would be used for construction and operation of the project and programmatic components, and these materials would be handled, stored, transported, and disposed of in accordance with manufacturer's recommendations and federal, state, and local laws and regulations and in accordance with the Standard Construction Practices, which reduce the risk of use, transportation, and disposal of hazardous materials and associated hazards from upset and accident conditions. Therefore, the analysis below considers the potential that construction of project or programmatic components could result in reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment from existing contaminated media that may exist on or adjacent to project and programmatic component sites. Contaminated media is generally related to hazardous materials sites.

### Water Rights Modifications

The water rights modifications of the Proposed Project would not directly result in construction or operation of new infrastructure facilities and would not result in the potential for upset or accident conditions involving the release of hazardous materials into the environment. Therefore, this project component would have no direct impacts.

The following analysis evaluates the potential indirect impacts related to upset and release of hazardous materials 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

Aquifer Storage and Recovery Facilities

**New ASR Facilities.** There are currently no proposed infrastructure site locations for new ASR facilities. Therefore, no hazardous materials assessment was conducted for such sites. If contamination is present at potential future ASR sites this programmatic component could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, this programmatic component of the Proposed Project would have a potentially significant impact.

The implementation of MM HAZ-1 and MM HAZ-2 would avoid the creation of a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials by requiring: that prior to construction-related ground disturbance on new ASR facility sites a review of hazardous materials site databases be conducted within 0.5 miles of such sites to identify any contamination that could affect conditions at the site; that the development and implementation of a Hazardous Materials Contingency Plan (HMCP) if soil, soil vapor, and/or groundwater contamination is identified in the review; and that management and disposal of contaminated soils and/or groundwater in accordance with local and state regulations, as specified in the HMCP. The HMCP shall describe procedures for assessment, characterization, management, and disposal of hazardous constituents, materials, and wastes, in accordance with all applicable state and local regulations. The HMCP shall include health and safety measures, which may include, but are not limited to, periodic work breathing zone monitoring and monitoring for volatile organic compounds using a handheld organic vapor analyzer in the event impacted soils are encountered during excavation activities. Therefore, implementation of MM HAZ-1 and MM HAZ-2 would reduce potentially significant impacts of this programmatic component related to reasonably foreseeable upset and accident conditions involving the release of hazardous materials to a less-than-significant level.

**Beltz ASR Facilities.** As discussed in Section 4.7.1.2, Hazardous Materials, no hazardous materials sites were identified on or adjacent to the Beltz ASR facility sites. Multiple LUST and cleanup program sites were identified within 0.50 miles of the Beltz ASR facility sites. However, these sites have all received regulatory closure, and residual contamination, if any, is not likely to affect the environmental conditions at the Beltz ASR facility sites. Although Beltz 12 has a history of industrial use from the 1950s through the 1990s, the site has been redeveloped, graded, paved, and data from a groundwater supply well does not indicate any impacts due to historical industrial uses. Therefore, the potential for residual contamination to be present in site soils is low. With the lack of evidence of hazardous conditions on or within proximity of the Beltz ASR facility sites, impacts associated with potential upset or accident conditions associated with hazardous materials would be less than significant.

Water Transfers and Exchanges and Intertie Improvements

No hazardous materials sites were identified on or adjacent to the City/SVWD intertie. Three hazardous material sites were identified adjacent to portions of the City/SqCWD/CWD intertie near the currently proposed Soquel Village pipeline, Park Avenue pipeline and the McGregor Drive pump station upgrade sites: (1) McGregor Property, (2) Former Exxon 7-0281, and (3) E-Z Serve #100981. Contamination on these sites has impacted soils and shallow groundwater. Construction of these particular intertie improvement components may require ground disturbing activities, which could expose contaminated media, such as soil, soil vapor, and shallow groundwater, thereby exposing workers and the environment to hazardous materials associated with the site contamination. As discussed in Section 4.7.1.2, Hazardous Materials, based on sampling conducted in 2012 (SqCWD 2012; WHA 2016) the contaminated soils at the McGregor Drive pump station upgrade site are limited to the eastern bare dirt embankment, which is located outside of the fenced pump station site. Construction of the McGregor Drive pump station upgrades and associated connections to the Park Avenue pipeline would be limited to the existing pump station site, which was constructed on native soils that did not contain elevated levels of contamination. Construction would not be conducted on the bare soil hillside on the east side of the parcel; therefore, contaminated soils would not likely be encountered during construction. Impacts associated with the McGregor Drive pump station upgrade and associated connections to the Park Avenue pipeline would be less than significant.

The construction of the Soquel Village pipeline would occur adjacent to the Former Exxon 7-0281 and E-Z Serve #100981 sites (see Figure 4.7-1). Given that, construction of this pipeline could expose contaminated media, such as soil, soil vapor, and shallow groundwater, thereby exposing workers and the environment to hazardous materials associated with the site contamination. Impacts associated with the Soquel Village pipeline would be potentially significant.

Implementation of MM HAZ-2 would avoid the creation of a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials by requiring the development and implementation of a HMCP, which would provide measures and training for identification, management, transportation, and proper disposal of contaminated media in accordance with all applicable state and local regulations, should such contamination be identified during construction. The HMCP would be implemented in these areas of known or suspected contamination, based on the findings of this EIR. Once operational, the Soquel Village pipeline would be subsurface, and contaminated media would remain subsurface and would not expose workers or the environment to elevated levels of contamination. Therefore, implementation of MM HAZ-2 would reduce potentially significant impacts of the Soquel Village pipeline related to reasonably foreseeable upset and accident conditions involving the release of hazardous materials to a less-than-significant level.

Felton Diversion Improvements

As discussed in Section 4.7.1.2, Hazardous Materials, no hazardous materials sites were identified on or adjacent to the Felton Diversion site. Three LUST and two cleanup program sites were identified within 0.5 miles of the Felton Diversion site. The LUST sites and one cleanup site have received regulatory closure, and residual contamination, if any, is not likely to affect the environmental condition at the Felton Diversion site. An open cleanup site, Former Santa Cruz Lumber, is located on the east side of the San Lorenzo River, opposite of the Felton Diversion site. While groundwater data from this cleanup site indicates there is contaminated groundwater at the cleanup site, construction of the Felton Diversion improvements would not encounter groundwater. Future operation of the Felton Diversion would not substantively change, and water would continue to be drawn from the San Lorenzo River. With the lack of evidence of hazardous conditions on or within proximity of the Felton Diversion site, impacts associated with potential upset or accident conditions associated with hazardous materials would be less than significant.

Tait Diversion and Coast Pump Station Improvements

As discussed in Section 4.7.1.2, Hazardous Materials, no hazardous materials sites were identified on or adjacent to the Tait Diversion and Coast Pump Station site. Ten LUST sites and two cleanup program sites were identified within 0.50 miles of the Tait Diversion site. The LUST sites have all received regulatory closure and are not likely to affect the environmental conditions at the site. The open cleanup sites, Salz Leather at 1040 River Street, and Plantronics at 345 Encinal Street, are undergoing verification monitoring for remaining groundwater contamination. Neither site appears to have offsite contamination that has affected the environmental conditions at the Tait Diversion and Coast Pump Station site. With the lack of evidence of hazardous conditions on or within proximity of the Tait Diversion and Coast Pump Station site, impacts associated with potential upset or accident conditions associated with hazardous materials would be less than significant.

### Mitigation Measures

Implementation of the following mitigation measures would reduce potentially significant hazards and hazardous materials impacts of the Proposed Project related to potential upset or accident conditions involving the release of hazardous materials, as described in the sections above, to a less-than-significant level.

**MM HAZ-1:** **Review of Hazardous Materials Site Databases (Applies to New Aquifer Storage and Recovery Facilities).** Prior to construction where ground disturbance is required, a review of hazardous materials site databases will be conducted within 0.5 miles of the project site where the construction is proposed (project site). A search shall be conducted no more than six months prior to construction. In addition to sites identified in this environmental impact report, each new site identified within 0.5 miles of the project site will be reviewed for environmental contamination that could impact the project site, including soil, soil vapor, and groundwater contamination. If soil, soil vapor, and/or groundwater contamination is identified in the review, MM HAZ-2 will be implemented.

**MM HAZ-2:** **Hazardous Materials Contingency Plan (Applies to New Aquifer Storage and Recovery Facilities and City of Santa Cruz/Soquel Creek Water District/Central Water District Intertie – Soquel Village Pipeline).** Prior to commencement of any construction activities, a Hazardous Materials Contingency Plan (HMCP) shall be developed that addresses known and suspected impacts in soil, soil vapor, and groundwater from releases on or near the project sites. The HMCP shall include training procedures for identification of contamination. The HMCP shall describe procedures for assessment, characterization, management, and disposal of hazardous constituents, materials, and wastes, in accordance with all applicable state and local regulations. Contaminated soils and/or groundwater shall be managed and disposed of in accordance with local and state regulations. These regulations, as further described in Section 4.7.2, Regulatory Framework, include hazardous material transportation (California Department of Transportation and Department of Toxic Substances Control [DTSC]), hazardous waste regulations (U.S. Environmental Protection Agency and DTSC), worker health and safety during excavation of contaminated materials (California Division of Occupational Safety and Health Administration), and local disposal requirements (DTSC and landfill-specific). The HMCP shall include health and safety measures, which may include but are not limited to periodic work breathing zone monitoring and monitoring for volatile organic compounds using a handheld organic vapor analyzer in the event impacted soils are encountered during excavation activities.

**Impact HAZ-3: Hazardous Materials Near Schools (Significance Standard C).** Construction and operation of the Proposed Project could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. (***Less than Significant with Mitigation***)

### Water Rights Modifications

The water rights modifications of the Proposed Project would not directly result in construction or operation of new facilities and would not result in the potential emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. Therefore, this project component would have no direct impacts.

The following analysis evaluates the potential indirect impacts related to emission of hazardous emissions or handling of hazardous or acutely hazardous materials within 0.25 miles of schools 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

Aquifer Storage and Recovery Facilities

**New ASR Facilities.** There are currently no proposed site locations for this programmatic component. Should new ASR facilities be developed as part of this Proposed Project, these components could be located within 0.25 miles of a school. As discussed in Impact HAZ-1, hazardous materials would be handled, transported, stored, and disposed of in accordance with federal, state, and local laws and regulations. Hazardous materials used during construction would be stored within construction site boundaries. Additionally, the Standard Construction Practices described in Section 4.7.3.2, Analytical Methods, would further reduce the risk of use, transportation, and disposal of hazardous materials. As required, HMBPs, spill prevention plans, and emergency response plans would be developed. These regulations and requirements provide protection from emissions and releases of hazardous materials to the environment, including nearby schools, during construction and operation of this programmatic component. However, as discussed in Impact HAZ-2, if contamination is present at potential future new ASR facility sites this programmatic component could create a significant hazard to the public or the environment, including nearby schools. Therefore, this programmatic component would have a potentially significant impact.

Implementation of MM HAZ-1 and MM HAZ-2 would avoid hazardous emissions near existing or proposed schools by requiring: that prior to construction-related ground disturbance on new ASR facility sites, a review of hazardous materials site databases be conducted within 0.5 miles of such sites to identify any contamination that could affect conditions at the site; that the development and implementation of a HMCP if soil, soil vapor, and/or groundwater contamination be identified in the review; and that management and disposal of contaminated soils and/or groundwater be conducted in accordance with local and state regulations, as specified in the HMCP. Therefore, the implementation of these mitigation measures would reduce potentially significant impacts of this programmatic component related to hazardous emissions near schools to a less-than-significant level.

**Beltz ASR Facilities.** There are no existing or proposed schools located within 0.25 miles of the Beltz ASR sites. Therefore, this project component would have no impacts.

Water Transfers and Exchanges and Intertie Improvements

There are five schools and pre-schools located within 0.25 miles of the City/SVWD intertie and the City/SqCWD/CWD intertie components of the Proposed Project. As discussed in Impact HAZ-1, hazardous materials would be handled, transported, stored, and disposed of in accordance with federal, state, and local laws and regulations. Hazardous materials used during construction and operation would be properly stored within site boundaries. Additionally, the Standard Construction Practices described in Section 4.7.3.2, Analytical Methods, would further reduce the risk of use, transportation, and disposal of hazardous materials. As required, HMBPs, spill prevention plans, and emergency response plans would be developed. These regulations and requirements provide protection from emissions and releases of hazardous materials to the environment, including nearby schools, during construction and operation in the intertie programmatic components.

Two of the five nearby schools, Soquel High School and Soquel Union Elementary, are located within 0.25 miles of noted hazardous material sites that are adjacent to the Soquel Village pipeline site, as discussed in Impact HAZ-2. Construction of this pipeline could expose contaminated media, such as soil, soil vapor, and shallow groundwater, thereby exposing workers and the environment, including nearby schools to hazardous materials associated with the site contamination. As indicated in Impact HAZ-2, impacts associated with the Soquel Village pipeline would be potentially significant.

Implementation of MM HAZ-2 would avoid hazardous emissions near existing or proposed schools by requiring the development and implementation of a HMCP, which would provide measures and training for identification, management, transportation, and proper disposal of contaminated media in accordance with all applicable state and local regulations, should such contamination be identified during construction. The HMCP would be implemented in these areas of known or suspected contamination, based on the findings of this EIR. Therefore, implementation of this mitigation measure would reduce potentially significant impacts of the Soquel Village pipeline related to hazardous emissions near schools to a less-than-significant level.

Felton Diversion and Tait Diversion and Coast Pump Station Improvements

There are no existing or proposed schools located within 0.25 miles of the Felton Diversion and Tait Diversion and Coast Pump Station improvement sites. Therefore, these programmatic components would have no impacts.

### Mitigation Measures

Implementation of MM HAZ-2 discussed above would reduce potentially significant hazards and hazardous materials impacts of the Proposed Project related to use of hazardous materials near schools, as described in the sections above, to a less-than-significant level.

**Impact HAZ-4: Impair Emergency Response (Significance Standard F).** Construction of the Proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (***Less than Significant)***

As further explained in Section 4.13, Transportation, construction of some of the proposed project and programmatic infrastructure components could require partial road closures or access limitations in public rights-of-way on a temporary and periodic basis during the construction period. Where construction of proposed infrastructure components could take place in public roadways, encroachment permits would need to be obtained in most cases from the applicable local agency, as described in Section 4.7.2.3, Local. The issuance of

encroachment permits requires submission of traffic control plans in Santa Cruz County and the cities of Santa Cruz and Capitola. While the City of Scotts Valley specifies the need for a traffic control plan only if required by the Public Works Director/City Engineer, other requirements of encroachment permits include conducting all street improvements in accordance with the City of Scotts Valley Standard Details and Specification, which include policies for addressing lane closures or any form of traffic diversions. Therefore, construction impacts of the project and programmatic components would not physically interfere with an adopted emergency response plan or emergency evacuation plan and the impact would be less than significant.

Operation of the project and programmatic infrastructure components would be similar to current operations of water infrastructure in the study area. The upgrade of existing facilities would not impede emergency response. After construction, new or replacement intertie pipelines would be located subsurface such that existing rights-of-way would not be permanently impeded. New pump stations would not be in the public right-of-way and therefore would not permanently impede emergency response. Therefore, operational impacts of the project and programmatic components would be less than significant.

**Impact HAZ-5: Wildfire Hazards (Significance Standards G and H).** Construction and operation of the Proposed Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires; however, some programmatic components may be located in or near state responsibility areas. ***(Less than Significant)***

Construction and operation of the Proposed Project would not exacerbate wildfire risks or include habitable structures that could expose people or structures to wildfire. Construction of the project and programmatic components of the Proposed Project could include the use of welding equipment, torching, generators, chainsaws, and chippers, all of which could produce sparks. However, the City's standard construction practices, as described in Section 4.7.3.2, Analytical Methods, include fire safety measures that would be implemented during construction on undeveloped sites or sites with surrounding trees and other vegetation, specifically during use of such equipment (Standard Construction Practice #27). This practice could apply to new ASR facilities, depending on the ultimate sites selected, and would apply to the City/SqCWD/CWD Freedom Boulevard and Valencia Road pump stations and the Felton Diversion and Tait Diversion and Coast Pump Station improvements. Spark arrestors would be required for internal combustion engine equipment, fire suppression equipment would be required on site during use of such mechanical equipment, and construction activities would not be conducted during high fire hazard periods (i.e., red flag warnings).[1] Fire suppression equipment would include items such as fire extinguishers and shovels.

The known infrastructure component sites are not located within a SRA and are not in areas designated as a very high FHSZ, as described in Section 4.7.1.4, Wildfire Hazards and Emergency Response, and shown in Figure 4.7-2. However, up to four new ASR facilities may be constructed on lands overlying the Santa Margarita and Santa Cruz Mid-County Groundwater Basins on sites yet to be identified, which encompass lands within the SRA, including one isolated area designated as a very high FHSZ in the hills above Soquel (see ). While the specific locations of future new ASR facilities are not known at this time, new ASR facilities are likely to be located in areas that are not difficult to access and do not have particularly challenging terrain or steep slopes, due to the logistics of facility construction and operation. Facilities would likely be sited near existing roadways, where connections to existing infrastructure could be readily installed. Therefore, it is unlikely that new ASR facilities would be located in an area designated as a very high FHSZ, but could be located in or near SRA lands.

[1] Red flag warnings and fire weather watches are issued by CAL FIRE based on weather patterns (low humidity, strong winds, dry fuels, etc.) and listed on its website (https://www.fire.ca.gov/programs/communications/red-flag-warnings-fire-weather-watches/).

However, new ASR facilities would not include modifications to the existing roadway system that could impair emergency access or evacuation during construction or operation, as described in Impact HAZ-4. In addition to the City's standard construction fire safety practices described above, facilities would be designed in accordance with the California Fire Code and would be required to comply with all applicable regulations for fire safety, as described in Section 4.7.2.2, State. The Proposed Project would not include drainage changes or other features that could exacerbate wildfire risk or wildfire-related hazards such as flooding or landslides. Additionally, as the new ASR facilities would not be habitable structures, they would not expose project occupants to wildfire risks. Therefore, the Proposed Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, and would not be located in or near lands classified as very high fire severity zones and impacts would be less than significant.

### 4.7.3.4 Cumulative Impacts Analysis

This section provides an evaluation of cumulative hazards and hazardous materials 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 area for the analysis of cumulative impacts is described below.

The Proposed Project would not contribute to cumulative impacts related to **Cortese List sites pursuant to Government Code 65962.5 (Significance Standard D)** or **aircraft hazards (Significance Standard E)** , because it would have no impacts related to these standards, as described above. Therefore, these significance standards are not further evaluated.

**Impact HAZ-6: Cumulative Hazardous Materials and Emergency Response Impacts (Significance Standards A, B, C, F, and G).** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to routine transport, use, disposal, or accidental release of hazardous materials, or related to interference with an adopted emergency response plan or emergency evacuation plan. ***(Less than Significant)***

The geographic area for the analysis of cumulative impacts related to hazardous materials and emergency response consists of the proposed infrastructure component sites and areas immediately adjacent to these sites because impacts related to such hazards depend on the specific conditions on the particular project site and its immediate vicinity. Generally, these site-specific impacts would not combine with one another to create cumulative impacts, unless the cumulative development sites overlapped or were immediately adjacent to one another. The known cumulative projects planned within the geographic area of analysis for cumulative impacts related to hazardous materials and emergency response, which is the proposed infrastructure component sites and areas immediately adjacent to these sites, include the La Madrona Mixed-Use project; the Beltz 10 and 11 Rehabilitation and Development project; the Coastal Rail Trail Segment 12 project; Highway 1, Bay Avenue/Porter Street to State Park Drive Auxiliary Lanes project; the Felton Diversion Pump Station Assessment at the Felton Diversion; and the Riverbank Filtration Study (see Table 4.0-2 in Section 4.0, Introduction to Analyses). Additionally, other cumulative projects may be in proximity new ASR facilities, which would be located on sites yet to be identified.

It is not known for certain whether construction of the above cumulative projects would overlap with construction of the proposed infrastructure components identified above. However, as for the Proposed Project, the cumulative projects would be required to comply with all federal, state, and local laws and regulations regarding the use,

transport, handling, storage, disposal, and release of hazardous materials, and include project-specific BMPs or Stormwater Pollution Prevention Plans (as discussed in Section 4.8, Hydrology and Water Quality), as applicable. Such compliance would reduce the potential for a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or reasonably foreseeable upset or accident conditions. Cumulative projects may also be required to implement similar mitigation measures to those identified for the proposed infrastructure components to help further reduce potential impacts; however, some of those projects are under the jurisdiction of other agencies and therefore the identification and implementation of appropriate mitigation measures cannot be guaranteed. Therefore, it is possible that one or more cumulative projects could result in significant impacts related to release of hazardous materials to the environment. While that is the case, due to the site-specific nature of this type of impact, it is unlikely that such impacts would combine with the impacts of the Proposed Project or other cumulative projects. Additionally, as indicated in Impacts HAZ-2 and HAZ-3, with the implementation of MM HAZ-1 and MM HAZ-2 the Proposed Project would avoid hazardous materials impacts. Therefore, the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to routine transport, use, disposal, or accidental release of hazardous materials and therefore the impact would be less than significant.

Cumulative projects located at or near the infrastructure component sites could be under construction during the same period of time. Table 4.0-2 displays the estimated construction schedule for cumulative projects, where known. Construction of the project and programmatic infrastructure components in combination with other cumulative projects would not be expected to result in inadequate emergency access or interference with such access given the temporary nature of construction and the implementation of traffic control plans and/or other requirements of encroachment permits, as described in Impact HAZ-4. As such, cumulative impacts related to emergency access would be less than significant.

**Impact HAZ-7: Cumulative Wildfire Impacts (Significance Standard H).** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to exposing people or structures to a significant risk of loss, injury, or death involving wildland fires, but the Proposed Project's contribution would be less than cumulatively considerable. ***(Less than Significant)***

The geographic area for the analysis of cumulative impacts related to wildfire consists of the known infrastructure component sites and areas adjacent to these sites, which are not located within SRA lands and are not in areas designated as a very high FHSZ. Additionally, new ASR facilities may be constructed on lands overlying the Santa Margarita and Santa Cruz Mid-County Groundwater Basins on sites yet to be identified, which encompass lands within the SRA and contain lands designated as high and very high FHSZ.

Some of the cumulative projects identified in Table 4.0-2, Section 4.0, Introduction to Analyses would be located in the SRA, but not on lands designated as very high FHSZ. Regardless, it is possible that one or more of these projects could expose people or structures to a significant risk of loss, injury, or death involving wildland fires. While it is expected that these projects would be reviewed during the discretionary review process and properly designed and mitigated to reduce impacts, some of those projects are under the jurisdiction of other agencies and therefore the identification and implementation of appropriate mitigation measures cannot be guaranteed. Therefore, it is possible that one or more cumulative projects could result in potentially significant cumulative impacts related to wildfire.

However, as described in Impact HAZ-5, the Proposed Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, and would not be located in or near lands classified as very high FHSZs. As indicated above, known infrastructure component sites and areas adjacent to these sites

are not located within SRA lands and are not in areas designated as a very high FHSZ. While new ASR facilities could be located within SRA lands, such facilities would not include modifications to the existing roadway system that could impair emergency access or evacuation during construction or operation and would not include drainage changes or other features that could exacerbate wildfire risk or wildfire-related hazards such as flooding or landslides. Further, all infrastructure components, including new ASR facilities, would include the implementation of the City's standard construction fire safety practices described in Section 4.7.3.2, Analytical Methods, and would be designed in accordance with the California Fire Code to comply with all applicable regulations for fire safety. Therefore, the Proposed Project would not have a considerable contribution to the potentially significant cumulative impact. As such, the Proposed Project would result in a less-than-significant cumulative impact related to wildfire.

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# 4.8 Hydrology and Water Quality

This section describes the existing hydrology and water quality 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 section is based on review of the Santa Cruz Mid-County Groundwater Sustainability Plan (GSP) (MGA 2019), the Santa Cruz Integrated Regional Water Management Plan (County of Santa Cruz 2014), the City of Santa Cruz Urban Water Management Plan (City of Santa Cruz 2016), the City of Santa Cruz General Plan 2030 Draft Environmental Impact Report (EIR) (City of Santa Cruz 2011), the Central Coast Regional Water Quality Control Board (RWQCB) Basin Plan (Central Coast RWQCB 2017), the Draft City of Santa Cruz Anadromous Salmonids Habitat Conservation Plan (ASHCP) (City of Santa Cruz 2021b), and other relevant documents regarding hydrology and water quality in the study area.

A summary of the comments received during the scoping period for this EIR is provided in Table 2-1 in Chapter 2, Introduction, and a complete list of comments is provided in Appendix A. Comments were received from the State Water Resources Control Board (SWRCB), Soquel Creek Water District (SqCWD), Water for Santa Cruz County, and numerous 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.

## 4.8.1 Existing Conditions

### 4.8.1.1 Study Area

The Proposed Project involves the water system and the areas served by the City of Santa Cruz (City) and the water service areas of San Lorenzo Valley Water District (SLVWD), Scotts Valley Water District (SVWD), SqCWD, and Central Water District (CWD); and the remainder of the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin. The Proposed Project is located within Santa Cruz County and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Figure 3-1). The study area for hydrology and water quality includes the City's surface and groundwater sources[1] (see Figure 4.8-1 and Figure 4.8-2) and the proposed project and programmatic infrastructure component sites where construction and ground disturbance could occur and where new or upgraded facilities would be located (see Figure 3-4 in Chapter 3, Project Description). These sites include the following: aquifer storage and recovery (ASR) sites where known, intertie improvement sites, Felton Diversion fish passage improvement site, and the Tait Diversion and Coast Pump Station improvement site. In addition, this section focuses on injection and extraction from ASR facilities within the Santa Cruz Mid-County Groundwater Basin, and in the Santa Margarita Groundwater Basin. 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.

[1] For purposes of the Proposed Project, the City's groundwater sources include the Santa Cruz Mid-County Groundwater Basin, where the City's exiting Beltz system is located, and the Santa Margarita Groundwater Basin, where new ASR facilities could potentially be located in the future with the Proposed Project.

### 4.8.1.2 Regional Setting

The City is located on the central coast of California, along the northern shore of Monterey Bay. The City is in the northern portion of the Central Coast Hydrologic Region of the Central Coast RWQCB. Water service is provided to an area approximately 20 square miles in size, including the entire City, adjoining unincorporated areas of Santa Cruz County, a small part of the City of Capitola, and coastal agricultural lands north of the City. The City climate is characterized by warm, mostly dry summers and mild, wet winters. Rainfall in the City averages 31 inches annually but varies considerably from year to year. The bulk of seasonal rainfall occurs between November and March. In the watershed, topographically above the City's Loch Lomond Reservoir in the Santa Cruz Mountains, rainfall averages nearly 50 inches per year. Like other coastal communities, the marine influence on local air temperature, humidity, and cloud cover helps keep demand for water relatively low in the areas served by the City. The presence of summer fog moderates outdoor water use during peak summer season compared to inland locations within Santa Cruz County and elsewhere (City of Santa Cruz 2016).

The City water system relies predominantly on local surface water supplies, which include the North Coast sources, the San Lorenzo River, Newell Creek, and Loch Lomond Reservoir. Together, these surface water sources represent approximately 95% of the City's total annual water production. The balance of the City's supply is derived from groundwater, which is extracted primarily from wells in the Purisima Formation in the mid-County area, primarily during dry summer months. The City does not import water either from outside the Central Coast Hydrologic Region or outside the Santa Cruz County boundaries. In addition, the City does not anticipate importing water in the future. All water resources are obtained from local sources. The system relies entirely on rainfall, surface runoff, and groundwater infiltration occurring within watersheds located in Santa Cruz County (City of Santa Cruz 2016).

### 4.8.1.3 Surface Water Resources

City surface water system supplies are located both within and outside of the City, with a mix of flowing sources and the Loch Lomond Reservoir, located on Newell Creek. The following is a summary of the primary surface water features utilized by the City for water supply and/or potentially impacted by the Proposed Project.

illustrates the watersheds and other surface water features in the Santa Cruz region.

#### Hydrology/Watersheds

**San Lorenzo River Watershed**

The San Lorenzo River, located within a 138-square mile watershed in northern Santa Cruz County, is the City's largest source of water supply. Originating in the Santa Cruz Mountains, the watershed consists of a 25-mile long main stem and nine principal tributaries that include primary creeks Branciforte, Carbonera, Zayante, Bean, Fall, Newell, Bear, Boulder, Lompico, and Kings Creeks. The watershed includes the cities and communities of Santa Cruz, Scotts Valley, Felton, Ben Lomond, and Boulder Creek. Much of the watershed is forested except for these pockets of urban areas. The watershed is comprised predominantly of open space lands (41%) in the northern portion and residential neighborhoods (26%) and paved roads (13%) as the river flows south through the City. Land uses in the remaining 20% of the watershed include commercial businesses and a portion of the University of California, Santa Cruz (UCSC) campus (City of Santa Cruz 2011; County of Santa Cruz 2014).

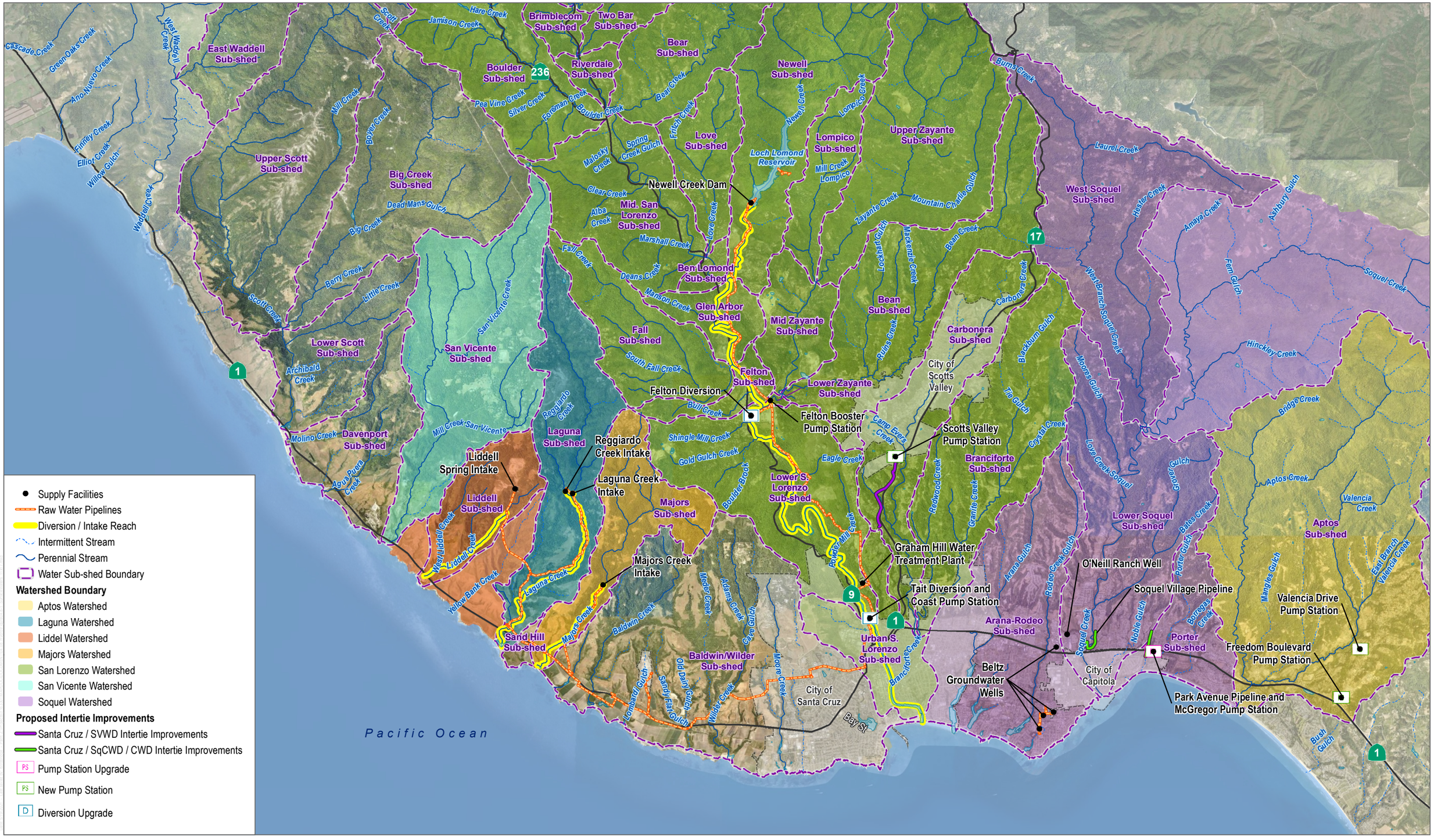
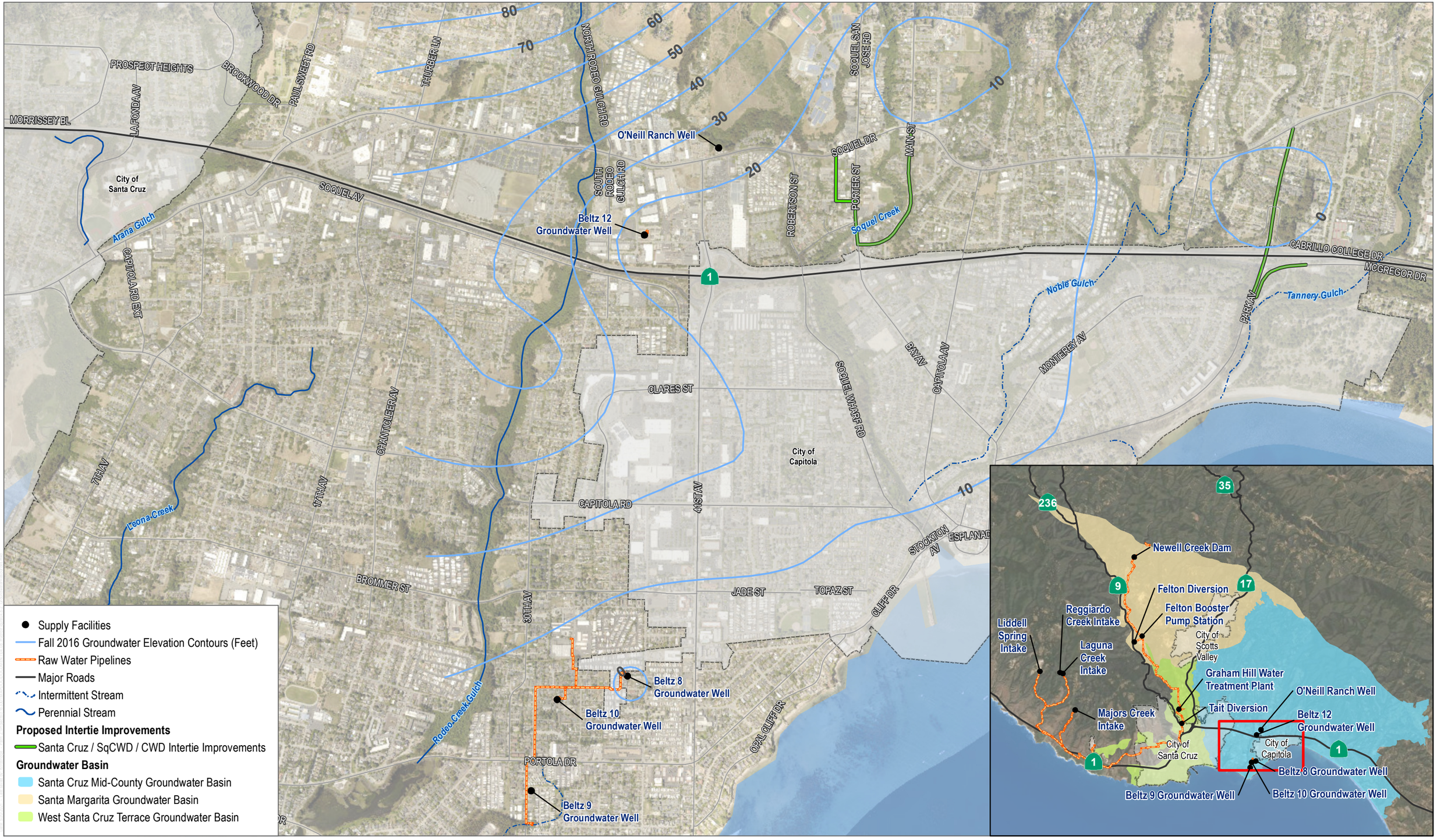



**FIGURE 4.8-1**

Surface Waters

Santa Cruz Water Rights Project




SOURCE: ESRI 2020, City of Santa Cruz 2020

DUDEK

0 500 1,000 Feet

**FIGURE 4.8-2**

Groundwater Resources

Santa Cruz Water Rights Project

Surface water flows within tributary creeks in the watershed are characterized as flashy with periodic high flow events that coincide with winter storms and low summer baseflows. This results in high-energy systems that have the potential to move a significant quantity of sediment. Stream base flow levels, sustained by groundwater flow, rise in the winter, and decline steadily through the spring and early summer months. The lowest flows occur in the late summer and fall months before winter rains. Zayante Creek is the largest tributary to the San Lorenzo River (City of Santa Cruz Water Department 2013).

Since approximately 1960, the San Lorenzo River has been impacted by increasing development within the watershed and the channelization of the lower 2.5 miles into a levee flood control structure, following a damaging flood in Santa Cruz in 1955. This flood control project, developed in cooperation with the U.S. Army Corps of Engineers (USACE), included rip-rap levee banks, removal of all vegetation from the banks, and dredging of the river channel bottom. During construction of the levee project, Jessie Street Marsh was filled, and the lower Branciforte Creek was channelized in a cement culvert. The USACE completed another levee improvement project in 2000 that improved and raised the levees (City of Santa Cruz 2011).

The Felton Diversion and Tait Diversion and Coast Pump Station are located on the San Lorenzo River. In addition, the proposed City/SVWD intertie site is located within the Branciforte Creek Subwatershed of the San Lorenzo River Watershed.

Newell Creek and Loch Lomond Reservoir

Newell Creek and the Loch Lomond Reservoir, which is impounded by Newell Creek Dam, are located within the San Lorenzo River Watershed. Loch Lomond Reservoir is located near the town of Ben Lomond in the Santa Cruz Mountains. The reservoir was constructed in 1960 and has a maximum capacity of 2,810 million gallons. The Newell Creek watershed upstream of the reservoir is about 9 square miles (City of Santa Cruz 2016). The City-owned tract, which is predominantly upstream of the Newell Creek Dam, comprises approximately 46% of the total watershed. Newell Creek is the largest drainage within this tract, entering the reservoir at the north end. Three other tributaries, including McFarland Creek and two unnamed tributaries (northern tributary and southern tributary), enter the reservoir from the west. Terrain within the watershed consists of rugged, ridge and valley terrain, including narrow crested, steep-sided ridges and deeply incised, v-shaped valleys (City of Santa Cruz Water Department, 2013). The Newell Creek Dam impounds water to support the City's water supply production and it does not act as flood control.

Liddell Creek Watershed

Liddell Creek is a second order stream that flows into the Pacific Ocean at Bonny Doon Beach, along the North Coast area of Santa Cruz County, directly south of Davenport. Liddell Creek drains in a southwest direction off Ben Lomond Mountain. The watershed comprises approximately 4 square miles. The elevation of the watershed ranges from 0 feet at the creek mouth to approximately 1,300 feet at its headwaters near Smith Grade. Liddell Creek consists of three distinct forks, including the Middle, East, and West branches. The approximate stream channel length from the mouth of Liddell Creek to the mainstem headwaters is 3.2 miles. The Liddell Spring feeds the watershed and is the location of the City's intake in this watershed. The intake is located on a tributary to the East Branch of Liddell Creek, near its headwaters, approximately 2.5 miles upstream from the creek mouth. The channel gradient from the diversion to the creek mouth is approximately 3% along the East Branch of the creek. Debris jams form multiple partial barriers and a complete anadromous fish migration barrier 1.29 miles upstream from the creek mouth, just downstream of the confluence of the Middle and East branches (City of Santa Cruz 2020, 2021). Former CEMEX quarry operations in the upper portion of the Liddell Creek Watershed have locally affected the hydrology and water quality in the upper watershed. In addition, the CEMEX quarry operated a stream diversion on

a tributary to East Liddell Creek to support quarry operations (City of Santa Cruz 2020) and the current landowner continues to operate the diversion.

Laguna Creek Watershed

The Laguna Creek watershed drains an area of approximately 8 square miles and is comprised of Laguna Creek, Reggiardo Creek, and several unnamed streams. Laguna Creek is a second order stream that drains in a southwest direction off Ben Lomond Mountain and flows into the Pacific Ocean along the North Coast area of Santa Cruz County. The elevation of the watershed ranges from 0 feet at the creek mouth to approximately 2,420 feet at the headwaters near Empire Grade. The approximate stream length from the mouth of Laguna Creek to its headwaters is 8.5 miles. The City diversion on the creek is directly upstream (0.1 mile) of the Reggiardo Creek confluence, which is approximately 4.2 miles upstream from the mouth of Laguna Creek. The channel gradient from the diversion to the creek mouth is about 3%, and the channel gradient upstream of the diversion to the headwaters is approximately 6% (City of Santa Cruz 2020, 2021). Approximately 50% of the land use in the watershed is agriculture, with the remaining area comprised of residential and resource conservation uses (County of Santa Cruz 2014).

Majors Creek Watershed

The Majors Creek Watershed, located between the Laguna and Baldwin Wilder Watersheds, drains an area of approximately 5 square miles and is comprised of Majors Creek and three unnamed tributaries. Majors Creek is a second order stream that drains off Ben Lomond Mountain and flows into the Pacific Ocean along the North Coast area of Santa Cruz County. The elevation of the watershed ranges from 0 feet at the creek mouth to approximately 1,800 feet at its headwaters near Felton Peak. The approximate stream channel length from the creek mouth to the creek headwaters is 5.9 miles. The City diversion on Majors Creek is located approximately 2.2 miles upstream from the mouth of Majors Creek. The channel gradient from the diversion to the creek mouth is about 3%, and the channel gradient upstream of the diversion to the headwaters is approximately 6% (City of Santa Cruz 2020, 2021). Land use is predominantly parkland, with the remainder comprised of rural residential and a small area of agricultural production (County of Santa Cruz 2014).

Soquel Creek Watershed

Located between the cities of Santa Cruz and Watsonville, the Soquel Creek Watershed drains an area of 42 square miles. Major tributaries include the West Branch and Main Branch Creeks. Principal land use in the watershed includes urban development, rural residential development, agriculture, parks and recreation, and mining and timber harvesting. The unincorporated town of Soquel and the City of Capitola are in the southern reaches of the watershed (County of Santa Cruz 2014). Beltz 12 ASR site is located within the Rodeo Creek Subwatershed of the Soquel Creek Watershed and Beltz 8, 9, and 10 ASR sites are located within the subwatershed of short intermittent Stream 472, located upstream of Moran Lake, within the Soquel Creek Watershed. However, Rodeo Creek and Stream 472 do not actually drain into Soquel Creek. Rather, these creeks drain directly into Monterey Bay. The proposed Soquel Village pipeline would traverse Soquel Creek. In addition, the proposed Park Avenue pipeline and McGregor Drive pump station upgrade sites are located within the Tannery Gulch Creek Subwatershed of the Soquel Creek Watershed. However, Tannery Gulch Creek does not drain toward Soquel Creek, but rather flows directly into Monterey Bay.

Aptos Creek Watershed

The Aptos Creek Watershed drains an area of approximately 25 square miles in southern Santa Cruz County. Aptos Creek and Valencia Creek are the principal tributaries in the watershed. Aptos Creek converges with Valencia Creek approximately 1 mile inland of Monterey Bay. Land use in this watershed is comprised of forested lands, state parks, and some rural residential areas. More than half of the Aptos Creek portion of the watershed is forested, with most of the creek running through the southern portion of the Nisene Marks State Park. Land use in the Valencia Creek portion of the watershed is primarily rural residential and urban development. Historical and modern-day logging sites are in both subwatersheds (County of Santa Cruz 2014). The proposed Valencia Drive Pump Station and Freedom Boulevard Pump Station are located within the Aptos Creek Watershed.

### Water Quality

The RWQCB establishes beneficial uses and characterizes the water quality of surface water bodies based on watershed boundaries. A watershed identifies an area of land that contains a common set of streams and rivers that all drain into a single larger body of water, such as a larger creek, river, lake, or an ocean. Stormwater pollutants present in all five City watersheds include metals, solvents, paint, concrete, masonry products, detergents, vehicle fuels and fluids, oil and grease, pesticides and herbicides (organic compounds and nutrients), debris and litter, bacteria, pathogens and oxygen demanding compounds, and sediment and silt. However, the primary pollutants of concern in the City watersheds are sediment, silt, and fecal indicator bacteria. The City has targeted these primary pollutants of concern in the City's Stormwater Management Plan (SWMP) (see Section 4.8.2.3, Local, for more information) because certain water bodies within the City are listed on the Clean Water Act (CWA) Section 303(d) list of Impaired Water Bodies (City of Santa Cruz 2011).

Turbidity, a measure of the ability of light to pass through water, which is affected by the amount of fine sediment suspended within the water column, is high during peak flow events for streams in the Santa Cruz Mountains, even in areas that have not been affected by development and ground disturbance. Existing and new development activity occurring in steep and remote areas of the watersheds increase runoff and erosion, leading to increases in sedimentation and persistent turbidity in water supply streams. The resulting water quality issues also impact riparian corridors and can thus be attributed both to activities at the level of individual lots, with respect to grading and land clearing, as well as cumulative impacts of widespread development. Similarly, activities and development in the riparian areas can also impact water quality in a manner like those in steep and remote areas. Turbidity can also have an impact on the availability and treatment cost of municipal water (City of Santa Cruz 2013; City of Santa Cruz and SLVWD 2018).

The Porter-Cologne Water Quality Control Act of 1969 is California's statutory authority for the protection of water quality. Under the Act, the State must adopt water quality policies, plans, and objectives that protect the State's waters for the use and enjoyment of the people. The Act sets forth the obligations of the SWRCB and RWQCBs to adopt and periodically update water quality control plans for all the waters of an area. The water quality control plan is defined as having three components: beneficial uses which are to be protected, water quality objectives which protect those uses, and an implementation plan which accomplishes those objectives. See Section 4.8.2, Regulatory Framework, for additional information about the Porter-Cologne Water Quality Control Act.

The September 2017 Water Quality Control Plan for the Central Coastal Basin (Basin Plan) is the Central Coast RWQCB's current master water quality control planning document (Central Coast RWQCB 2017). The Basin Plan establishes beneficial uses for each of the water bodies in the Central Coast Region. Table 4.8-1 lists the beneficial uses of the primary surface water features utilized by the City for water supply or potentially impacted by the Proposed Project.

## Table 4.8-1. Beneficial Uses

| Beneficial Use Designation | Water Bodies | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | *San Lorenzo River* | *Newell Creek* | *Loch Lomond Reservoir* | *Liddell Creek* | *Laguna Creek* | *Majors Creek* | *Rodeo Creek Gulch* | *Soquel Creek* | *Aptos Creek* |
| Municipal and Domestic Supply (MUN) | E | E | E | E | E | E | E | E | E |
| Agricultural Supply (AGR) | E | E | E | E | E | E | E | E | E |
| Industrial Process Supply (PROC) | — | — | — | — | — | — | — | — | — |
| Industrial Service Supply (IND) | E | E | E | E | E | E | E | E | E |
| Groundwater Recharge (GWR) | E | E | E | E | E | E | E | E | E |
| Water Contact Recreation (REC-1) | E | E | E | E | E | E | E | E | E |
| Non-contact Water Recreation (REC-2) | E | E | E | E | E | E | E | E | E |
| Wildlife Habitat (WILD) | E | E | E | E | E | E | E | E | E |
| Cold Freshwater Habitat (COLD) | E | E | E | E | E | E | E | E | E |
| Warm Freshwater Habitat (WARM) | — | — | E | — | — | — | — | — | — |
| Migration of Aquatic Organisms (MIGR) | E | E | E | E | E | E | – | E | E |
| Spawning, Reproduction, and/or Early Development (SPWN) | E | E | E | E | E | E | E | E | E |
| Preservation of Biological Habitats of Special Significance (BIOL) | E | — | — | — | — | — | — | E | E |
| Rare, Threatened, or Endangered Species (RARE) | E | — | E | — | — | E | — | — | — |
| Estuarine Habitat (EST) | — | — | — | — | — | E | — | — | E |
| Fresh Water Replenishment (FRSH) | E | E | — | — | E | E | E | E | E |
| Navigation (NAV) | — | — | E | — | — | — | — | — | — |
| Hydropower Generation (POW) | — | E | — | — | — | — | — | — | — |
| Commercial and Sport Fishing (COMM) | E | E | E | E | E | E | E | E | E |
| Aquaculture (AQUA) | — | — | — | — | — | — | — | — | — |
| Inland Saline Water Habitat (SAL) | — | — | — | — | — | — | — | — | — |
| Shellfish Harvesting (SHELL) | — | — | — | — | — | — | — | — | — |

**Source:** Central Coast RWQCB 2017.
**Note:** E = Existing Beneficial Uses.

The Basin Plan includes numerous water quality objectives that apply to all inland surface waters. The objectives that would apply to the Proposed Project include those related to turbidity, suspended material, and sediment, as project-related construction could result in erosion induced sedimentation of adjacent or downstream water bodies. Sediment- and turbidity-related surface water quality objectives are specified on pages 30 and 39 of the Basin Plan. In addition, water quality objectives for oil and grease, toxicity, chemical constituents, organic chemicals, and inorganic chemicals would apply to the Proposed Project as project-related construction and operation could result in incidental releases of petroleum products and hazardous materials to the environment. Surface water quality objectives associated with these chemicals are specified on pages 30-31 and 37-39 of the Basin Plan. While the Porter-Cologne Water Quality Control Act requires the State to adopt water quality policies, plans, and objectives that protect the State's waters, the federal CWA establishes basic guidelines for regulating discharges of both point and non-point sources of pollutants into the waters of the United States.[2] The CWA requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the CWA. CWA Section 303(d) requires states to identify and prepare a list of water bodies that do not meet water quality objectives, and to establish Total Maximum Daily Loads (TMDLs) for each water body to ensure attainment of water quality objectives. These TMDLs are updated every two years in the SWRCB Integrated Report, also known as the Section 305(b) report, which assigns an Integrated Report Condition Category to all assessed water body segments. Water body segments that exceed protective water quality standards are placed on the 303(d) list of impaired waters. Water quality impairments for the water bodies potentially affected by the Proposed Project are identified in Table 4.8-2. These impaired bodies are listed as Category 5 in the SWRCB Integrated Report, which includes waters where at least one beneficial use is not supported, and a TMDL is required.

### Table 4.8-2. Water Quality Impairments

| Water Body | 2014 and 2016 303(d) List of Water Quality Impairments (Included under SWRCB Integrated Report Category 5) |
|---|---|
| San Lorenzo River | Chlordane, chloride, chlorpyrifos, enterococcus, *Escherichia coli*, fecal coliform, nitrate, polychlorinated biphenyls (PCBs), sedimentation/siltation, sodium, water temperature, |
| Newell Creek | pH, sedimentation/siltation |
| Loch Lomond Reservoir | None |
| Liddell Creek | None |
| Laguna Creek | None |
| Majors Creek | None |
| Soquel Creek/Lagoon | Enterococcus, *Escherichia coli*, fecal coliform, indicator bacteria, sedimentation/siltation |
| Aptos Creek | Indicator bacteria, sedimentation/siltation |

**Source:** Central Coast RWQCB 2017.
**Notes:** PCBs = polychlorinated biphenyls; SWRCB = State Water Resources Control Board.

#### 4.8.1.4 Groundwater Resources

The scope of this groundwater resources section focuses mainly on the existing conditions related to the proposed Beltz ASR facilities that would be located in the Santa Cruz Mid-County Groundwater Basin to support the project-level impact analysis for this component. More generalized information is also provided about the Santa Margarita Groundwater Basin to support the programmatic impact analysis for new ASR facilities.

[2] Point-source discharges are those emanating from a pipe or discrete location/process, such as an industrial process or wastewater discharge. Non-point source pollutants are those that originate from numerous diffuse sources and land uses, and which can accumulate in stormwater runoff or in groundwater.

## Santa Cruz Mid-County Groundwater Basin

### Background

The Santa Cruz Mid-County GSP was completed and adopted by the Santa Cruz Mid-County Groundwater Agency (MGA) in November 2019 and submitted to the Department of Water Resources (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 Santa Cruz Mid-County GSP was mandated in accordance with the Sustainable Groundwater Management Act (SGMA) of 2014 (see Section 4.8.2, Regulatory Framework, for information about SGMA). The GSP is a collaborative effort between local water agencies, technical experts, land use agencies, environmental managers, and community members to manage the groundwater basin sustainably. The intent of the GSP is to guide long-term management of the shared groundwater resources in the Santa Cruz Mid-County Groundwater Basin to ensure a stable groundwater basin and therefore a reliable water supply to meet community needs now and into the future.

MGA member agencies began studying groundwater and managing the Santa Cruz Mid-County Groundwater Basin long before SGMA was passed into law. The City and SqCWD acquired interests in groundwater pumping in the basin, and together with Santa Cruz County commissioned the first hydrogeologic study of the basin in the mid-1960s. Seawater intrusion identified in the Santa Cruz Mid-County Groundwater Basin in the 1980s required water managers to develop an extensive monitoring network of wells to monitor the basin groundwater and to help improve understanding of the basin, as well as implement water conservation and groundwater management strategies to balance groundwater demand with the basin groundwater budget. In accordance with Assembly Bill 3030, also known as the Groundwater Management Act, a Groundwater Management Plan was developed for the Mid-County Groundwater Basin. The MGA subsequently formed in 2016 as a Joint Powers Authority, with four member agencies, including the City, Central Water District, County of Santa Cruz, and SqCWD. These four agencies have been actively working together and reaching out to private well owners on Santa Cruz Mid-County Groundwater Basin management since the 1990s, in accordance with the Groundwater Management Plan. This plan has been replaced by the GSP, which currently serves as the groundwater management planning document for the basin (MGA 2019). The City and SqCWD also have a cooperative monitoring/adaptive groundwater management agreement and a private well monitoring agreement. This section focuses on groundwater resources of the SqCWD and the City because of the focus on the Beltz ASR facilities, although there are three other management authorities in the Santa Cruz Mid-County Groundwater Basin: the County of Santa Cruz, the Central Water District, and the Santa Cruz Mid-County Groundwater Agency (MGA 2019).

The area within and surrounding the Beltz system is urbanized and mostly connected to the City's municipal water system. Within this area, there are no agricultural or industrial users of groundwater in the immediate vicinity of the Beltz system; the only other groundwater wells in the vicinity are identified as remediation/monitoring wells (DWR 2020b). Additionally, there are private domestic wells in the vicinity of Beltz 12. An existing cooperative groundwater management agreement (see Chapter 3, Project Description) between the City and SqCWD provide for monitoring of the effects of operating the City's Beltz 12 well and the SqCWD's O'Neill Ranch well on nearby private domestic wells and Soquel Creek.

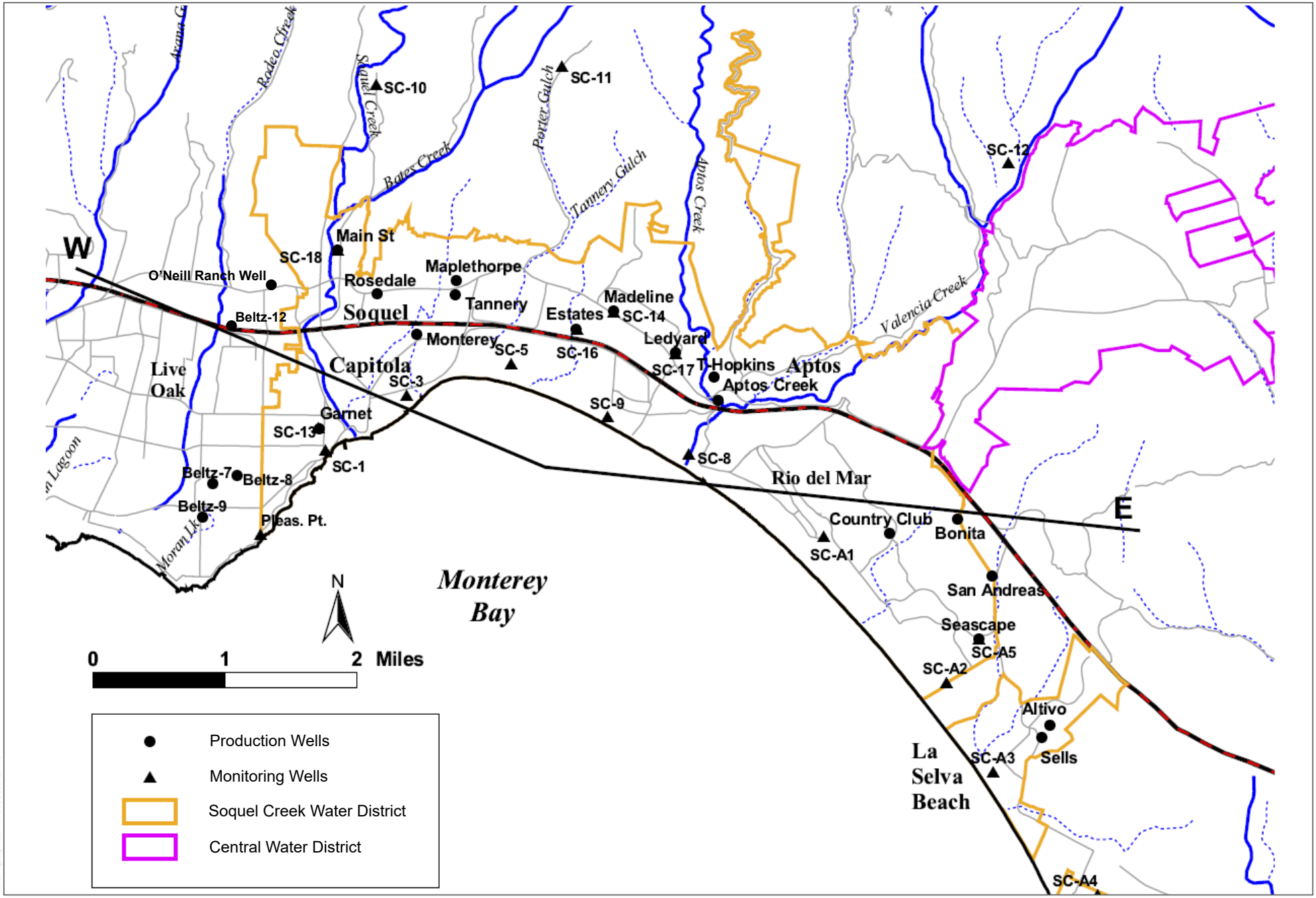
### Groundwater Conditions

Located near the southeastern boundary of the areas served by the City, close to the western boundary of the SqCWD (see Figure 4.8-2), the Beltz ASR facility sites include a collection of four production wells spread throughout 2 miles of the Pleasure Point and Live Oak neighborhoods (i.e., Beltz 8, 9, 10 and 12). The Beltz ASR facility sites are located within the Santa Cruz Mid-County Groundwater Basin (see Figure 4.8-2). This basin is the primary water supply for approximately 50,000 people in the Santa Cruz Mid-County Region, including the City of Capitola and unincorporated parts of Santa Cruz County, including Live Oak, Soquel, Aptos, Sea Cliff, Seascape, and La Selva Beach. In addition, the City of Santa Cruz pumps approximately 5% of its water supply from the Beltz wells.

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 lateral boundaries of the basin generally follow the definable limits of the stacked Purisima Formation aquifer system, the Aromas Red Sands, and other Tertiary-aged units that occur between the base of the Purisima Formation and the granitic basement of the basin. The Santa Cruz Mid-County Groundwater Basin is bound on the west by the West Santa Cruz Terrace Basin; on the north by the Zayante-Vergeles Fault and the Purisima Highlands Subbasin of the Corralitos Basin; on the east by the Pajaro Valley Subbasin of the Corralitos Basin, and on the south by Monterey Bay (MGA 2019).

The Purisima Formation underlies the entire Santa Cruz Mid-County Groundwater Basin and consists of moderately consolidated, fine- to medium-grained sandstone, with siltstone and claystone interbeds (Figure 4.8-3 and Figure 4.8-4). The Purisima Formation has been divided into hydrostratigraphic units including, from oldest to youngest (i.e., deepest to shallowest), Purisima-AA Aquifer, Purisima-A Aquifer, Purisima-B Aquitard, Purisima-BC Aquifer, Purisima-D Aquitard, Purisima-DEF Aquifer, and Purisima-F Aquifer. An aquitard is a relatively impermeable layer of clay that generally prevents upward and downward movement of groundwater, thus separating aquifers. These geologic units are tilted to the east, which has resulted in some of the younger units being eroded away in the western portion of the basin (i.e., vicinity of the Beltz ASR site), leaving only the older units as aquifers. Also present in the western portion of the basin is the Tu unit, which consists of undifferentiated Tertiary sandstone. This unit is a localized productive aquifer that includes all non-Purisima water-bearing units between the poorly defined base of the AA aquifer unit and the top of the granitic basement (MGA 2019).

The Purisima Formation is blanketed by the Aromas Red Sands in the eastern third of the basin, and by relatively shallow, localized alluvial and terrace deposits. The Aromas Red Sands, which overlie the Purisima Formation in the hills and coastal terraces east of Valencia Creek, consist of consolidated fine- to coarse-grained sands with lenses of silt and clay. The Aromas Red Sands are divided into an upper and lower unit. The upper unit is generally unsaturated, especially where the water table is drawn down to near sea level. The hydraulic conductivity of the lower unit ranges from 6 to 50 feet per day, whereas the hydraulic conductivity of the upper unit is 3 to 40 feet per day. There is no continuous aquitard between the Aromas Red Sands and uppermost Purisima unit (Purisima F-unit) (MGA 2019).



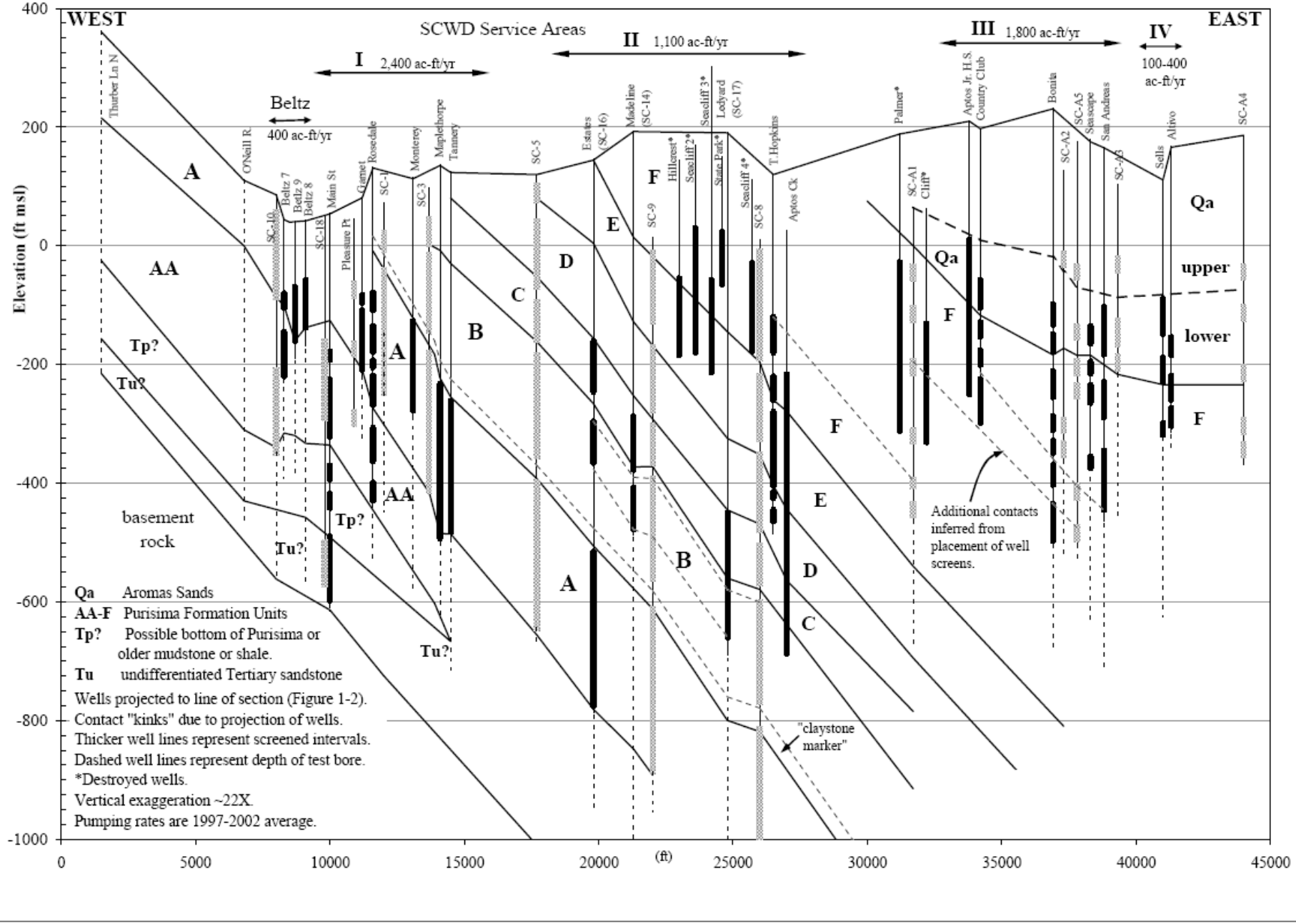

SOURCE: SqCWD 2004

**FIGURE 4.8-3**

West-East Geologic Cross Section Location

Santa Cruz Water Rights Poject

DUDEK




SOURCE: SqCWD 2004

**FIGURE 4.8-4**

West-East Geologic Cross-Section

Santa Cruz Water Rights Poject

DUDEK

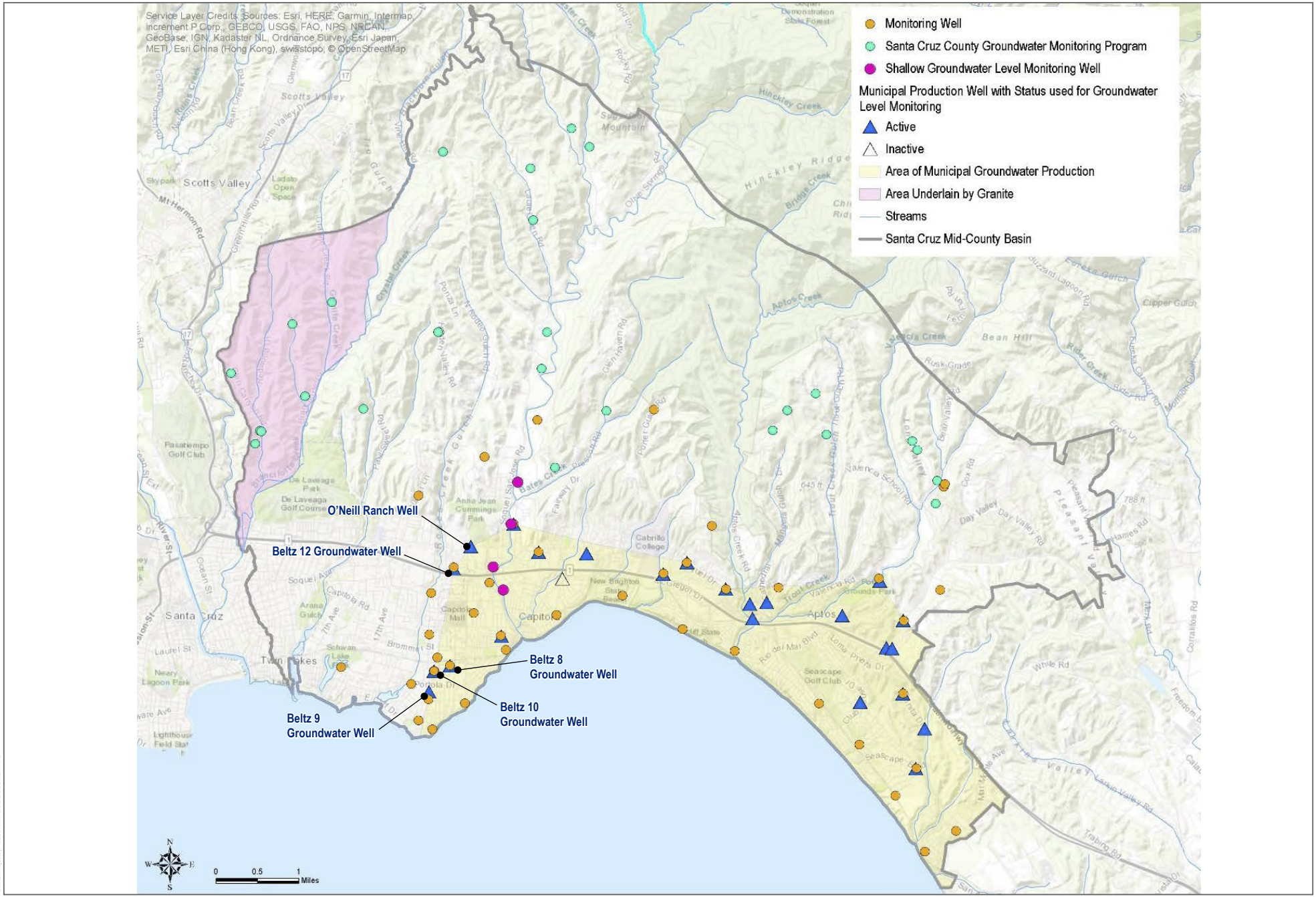
The City receives nearly all its municipal water supply from surface sources but supplements a small percentage (approximately 5%) of this supply with groundwater resources during the summer dry months/peak season. Based on average annual basin groundwater production, City pumping accounts for approximately 7% of the total annual pumping that occurs in the Santa Cruz Mid-County Groundwater Basin. The Beltz ASR facility sites are located within the areas served by the City, but the City works with neighboring water districts in groundwater supply and conservation efforts, as the districts in the Santa Cruz Mid-County Groundwater Basin do not import water from any surface water sources outside of the basin. The SqCWD relies solely on the groundwater basin for its municipal supply of water and accounts for 62% of the average annual pumping that occurs in the basin. The CWD is also entirely dependent on groundwater from the Santa Cruz Mid-County Groundwater Basin and accounts for approximately 6% of the average annual pumping that occurs in the basin (MGA 2019).

Historically, the Soquel Valley Basin and encompassing Santa Cruz Mid-County Groundwater Basin were identified by the state as a groundwater basin subject to critical conditions of overdraft and at risk of seawater intrusion, which is the movement of seawater intro freshwater aquifers due to natural processes or human activities. Seawater intrusion is caused by decreases in groundwater levels, typically due to groundwater extraction, or by a rise in seawater levels. For many years, the amount of groundwater extracted from the basin exceeded the amount naturally recharging groundwater through rainfall. Despite extensive water conservation efforts and reductions in groundwater pumping in recent years compared to prior decades (see Chapter 3, Project Description, for additional information), the long-term overdraft of the basin lowered groundwater elevations along portions of the coast. Some production wells have historically declined to −30 feet below mean sea level (bmsl). Lowered groundwater levels have allowed seawater intrusion into coastal portions of the groundwater aquifers and pose the threat of more widespread seawater contamination of groundwater. Once a portion of a groundwater basin is contaminated with seawater, the seawater intrusion can be irreversible (Marina, A. 2017; Oude Essink, G.H. 2001; SqCWD 2016) and can result in either abandoning water supply wells or requiring costly treatment to remedy the poor water quality. Based on the seawater intrusion risk, the basin is considered a high priority groundwater basin in critical overdraft, as defined under SGMA. As a result, the GSP has been prepared for the basin (MGA 2019).

The City maintains a series of monitoring wells that monitor groundwater levels (Figure 4.8-5) and groundwater quality (Figure 4.8-6). The City maintains 34 monitoring wells and 4 production wells in their groundwater level monitoring network. Of these wells, seven have been chosen as Representative Monitoring Points (RMPs) during SGMA-derived GSP implementation (Figure 4.8-7). Similarly, the City maintains 28 monitoring wells and 4 production wells for groundwater quality purposes, with 18 of those chosen as RMPs with respect to SGMA-derived GSP implementation (Figure 4.8-8). In addition, a series of 13 monitoring wells have been established in the basin to assess the risk of seawater intrusion. Eight of these monitoring wells lie within the areas served by the City and the SqCWD service area, from Moran Lake to Aptos Creek. These monitoring wells, which are located adjacent to the coastline, are depicted on Figure 4.8-8 as Protective Groundwater Elevation Monitoring Wells and Chloride Monitoring Wells (MGA 2019).

Groundwater Levels

As previously discussed, long-term overdraft of the Santa Cruz Mid-County Groundwater Basin has led to ongoing seawater intrusion. The greatest groundwater level declines in the basin were measured in the Purisima BC unit in 1984, when declines up to 140 feet occurred. In 1988, groundwater level declines peaked in the Purisima A and DEF units, with declines of 80 feet and 100 feet, respectively. By 2005, basin groundwater levels in the Purisima aquifers had recovered somewhat but were still characterized by a broad and persistent pumping trough that was below sea level surrounding municipal production wells. Groundwater elevation contours in the most productive Purisima aquifer units in fall 2005 showed depressed groundwater levels at the coast still ranged from sea level to −30 feet bmsl.




SOURCE: SCMGA 2019

**FIGURE 4.8-5**

Santa Cruz Mid-County Groundwater Basin Groundwater Level Monitoring

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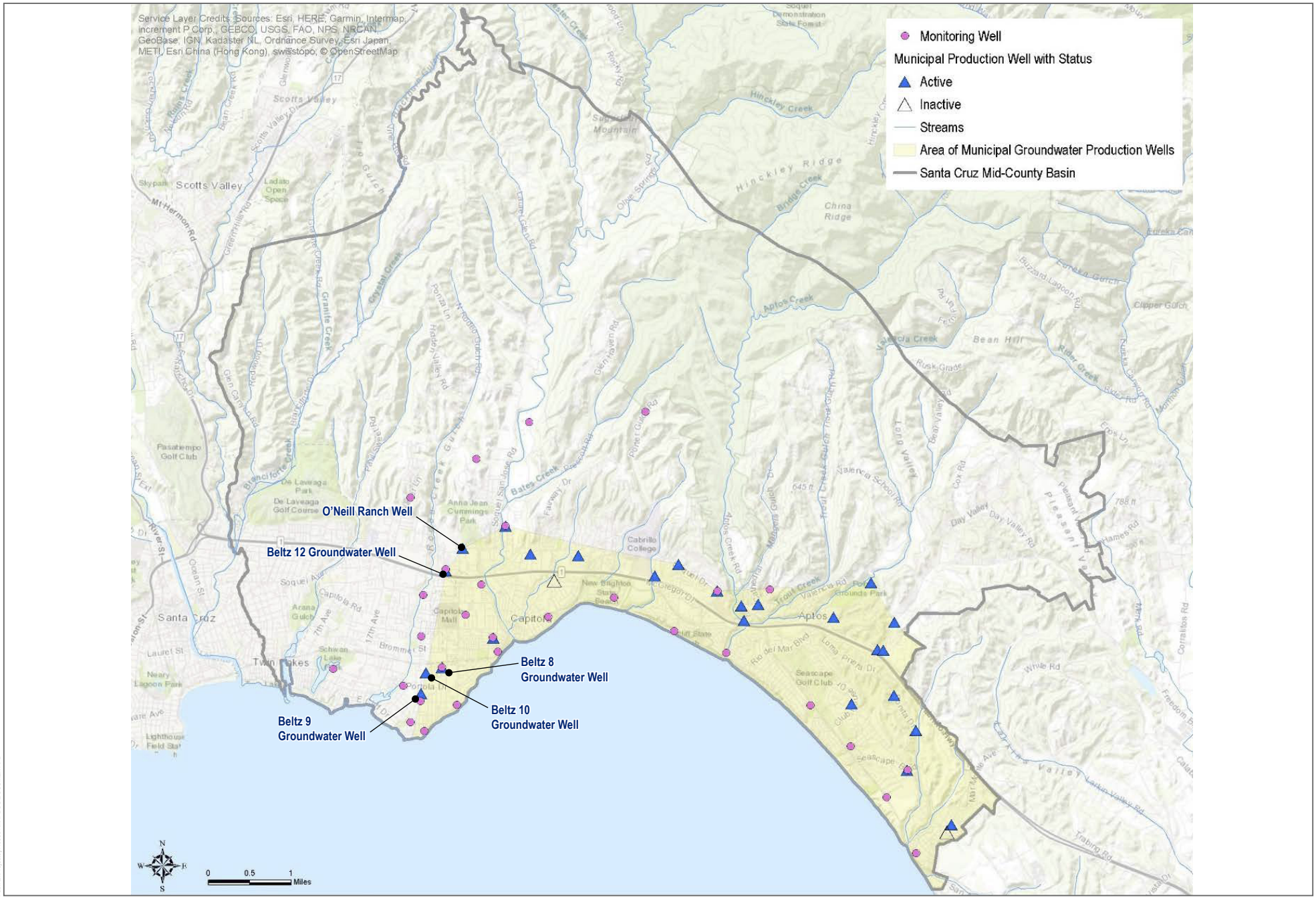


SOURCE: SCMGA 2019

**FIGURE 4.8-6**

Santa Cruz Mid-County Groundwater Basin Groundwater Quality Monitoring

Santa Cruz Water Rights Poject

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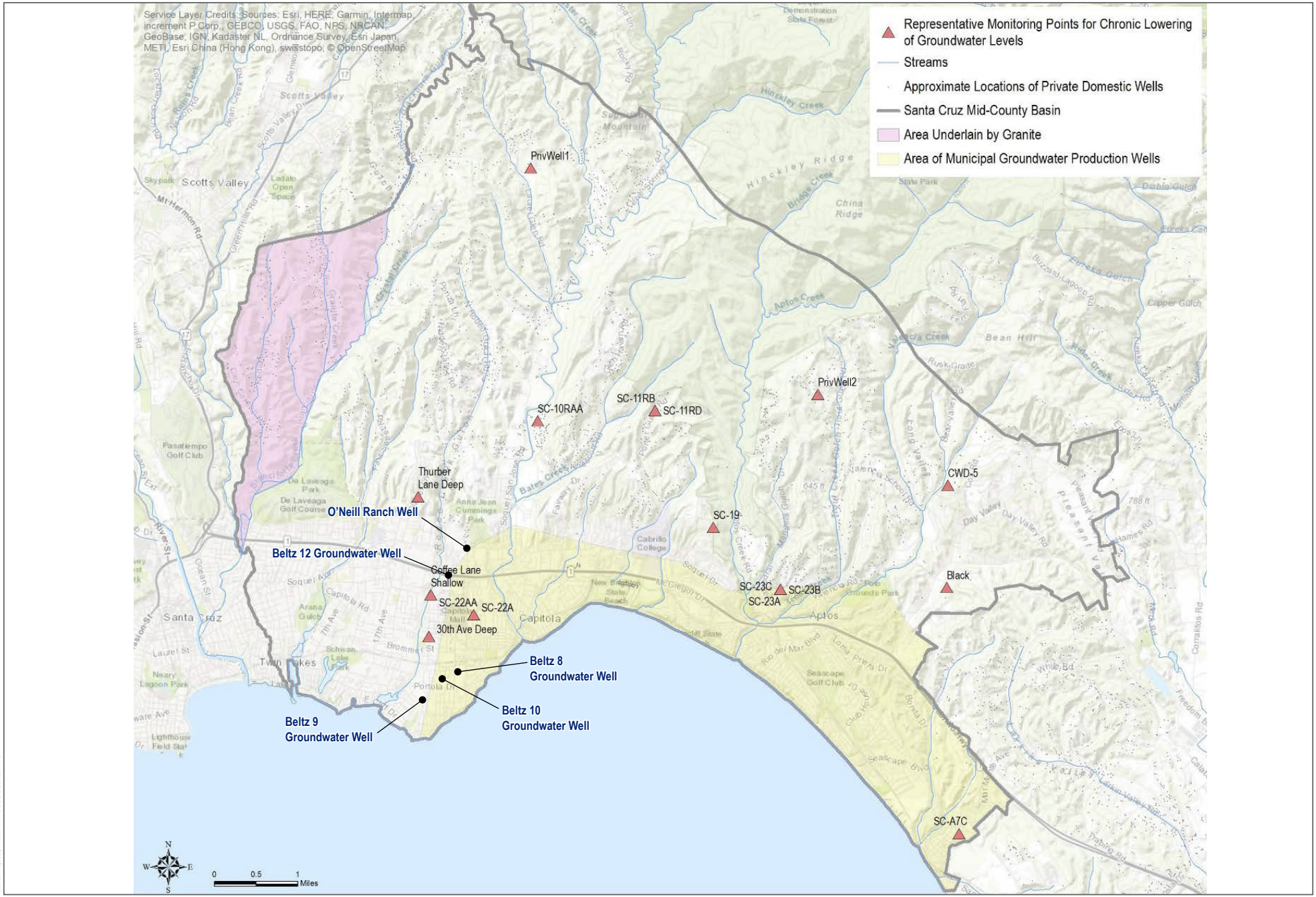


SOURCE: SCMGA 2019

**FIGURE 4.8-7**

Representative Monitoring Network for Measuring Chronic Lowering of Groundwater Levels

Santa Cruz Water Rights Poject

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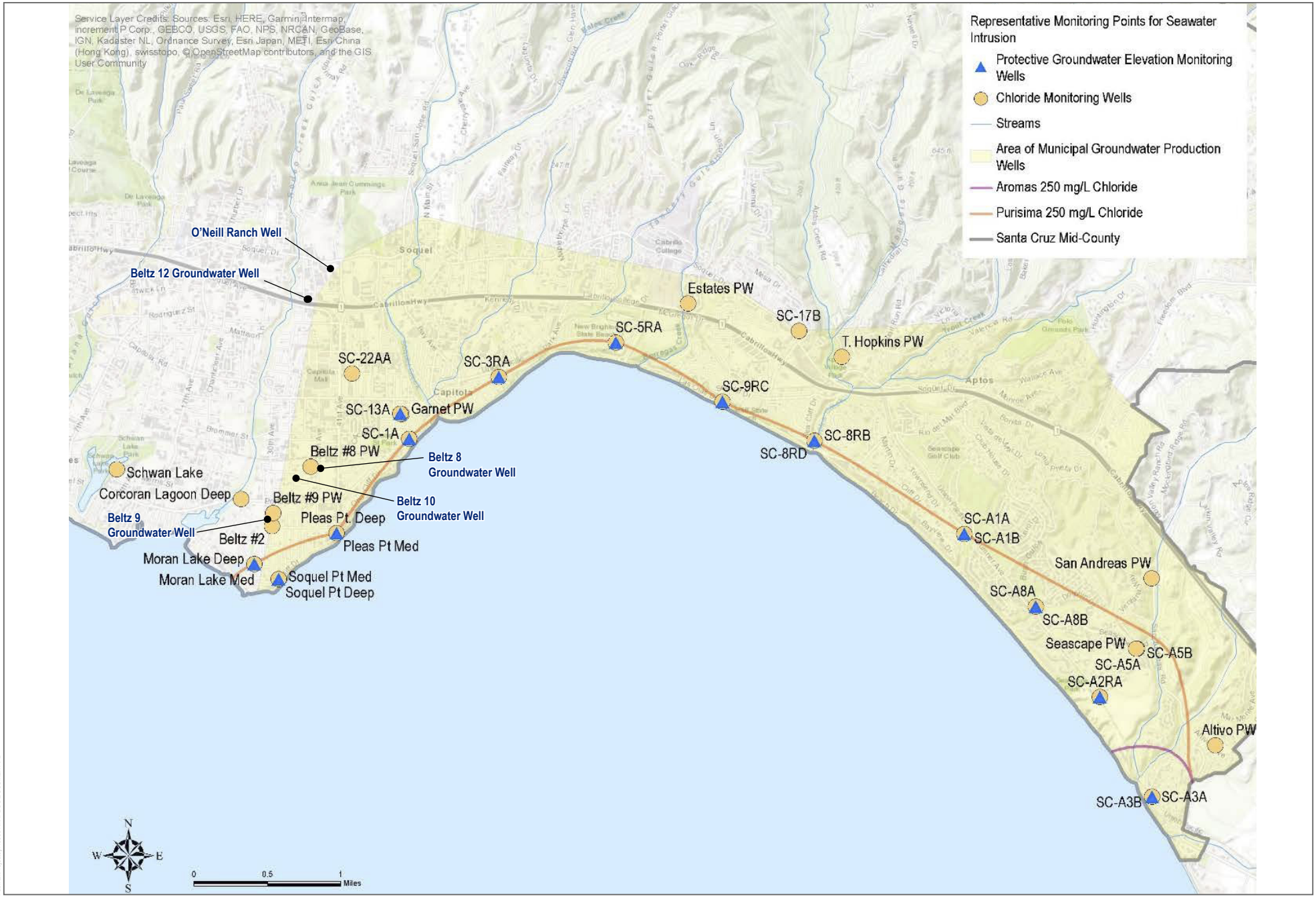



SOURCE: SCMGA 2019

**FIGURE 4.8-8**

Representative Monitoring Network for Measuring Seawater Intrusion

Santa Cruz Water Rights Poject

DUDEK

After 2005, groundwater demand decreased and remained constant until 2009. Groundwater recovery started with two consecutive years of above average rainfall in 2005/2006. An economic recession, starting around 2008, further reduced water demand, possibly contributing to recovering groundwater levels during the period of below average rainfall from 2007 to 2009. A further decrease in groundwater demand occurred from 2010 to 2011.

From 2012 to 2013, groundwater demand increased because of drought conditions, resulting in lower groundwater levels. This drop in groundwater levels was followed by groundwater recovery from 2014 to 2017, because of decreased demand. The 2014/2015 decrease in demand and associated increase in groundwater levels corresponds with increased statewide water restrictions due to the 2012-2015 drought. As a result, the overall water levels in the Purisima Formation were at their highest recorded elevations during water year 2016 (October 1, 2015 through September 30, 2016) since the monitoring well network was established (MGA 2019; DWR 2020a). In the Purisima A/AA and Tu aquifers, those most relevant to Beltz ASR, an overall decrease in groundwater elevation (ranging from 0 feet to −0.9 feet bmsl) was measured from 2012 to 2016. Despite this net decrease in water levels at these wells, average water levels in 8 out of the 13 monitoring wells met established protective elevations against seawater intrusion during Water Year 2016 (MGA 2019).

Operational changes in the basin show that the most influential factor in changing coastal groundwater levels is changing the amount of groundwater pumping in high yielding municipal supply wells. Recharge from rainfall generally has a less immediate effect on coastal groundwater levels because most aquifers are confined by less permeable layers, and areas where the aquifers are exposed at the surface and can be directly recharged are limited (MGA 2019).

As required by SGMA and associated regulations, the MGA is tasked with conserving groundwater in the Santa Cruz Mid-County Groundwater Basin and has developed groundwater level sustainability goals for the basin to ensure beneficial uses and a safe and reliable supply that meets current and future basin demand without causing "undesirable results," which is a statutory term from SGMA (see Section 4.8.2.2, State [Sustainable Groundwater Management Act] for a definition). With respect to groundwater levels, minimum thresholds and measurable objectives were defined. Each MGA member agency has its own network of dedicated monitoring wells and production wells that monitor groundwater elevations in its own service area or area of jurisdiction. These individual networks, many of which have been used to manage the basin since the 1980s, are combined for use in the GSP.

Almost all monitoring wells and all production wells have data loggers to continuously monitor groundwater levels. Shallow monitoring wells used to monitor surface water/groundwater interactions are also included in this GSP monitoring network. With 170 wells in the basin monitored at least twice a year, the network is demonstrably extensive and sufficient to evaluate short-term, seasonal, and long-term trends in groundwater for groundwater management purposes. Groundwater level data from many of the wells have been used since 2006 to generate fall and spring groundwater elevation contours for all the basin aquifers. As there are multiple well clusters with monitoring wells completed in different aquifers at the same location included throughout the basin, these clustered wells are used to understand changes in vertical gradients between aquifers. Several years of monitoring of clustered wells along Soquel Creek (Figure 4.8-5) indicate that there is an indirect influence where shallow groundwater levels mimic deeper regional groundwater trends, which have been influenced by municipal pumping. However, since these observations have only been observed within a few wells along lower Soquel Creek, further study as part of GSP implementation will revise the current understanding (MGA 2019).

Although the Beltz ASR facility wells are located within the greater Soquel Creek Watershed, these wells are located within the Rodeo Creek Gulch Subwatershed, west of the Lower Soquel Creek Subwatershed, in which the shallow monitoring wells are located (see Figure 4.8-1).

Groundwater Quality

Groundwater in the Purisima Formation regularly has iron and/or manganese concentrations above the secondary drinking water standards, 300 micrograms per liter (µg/L) and 50 µg/L, respectively. Production wells in the formation with elevated iron concentrations can reach 3,000 µg/L, and manganese can reach up to 600 µg/L. Both iron and manganese occur naturally in the Purisima Formation because of the dissolution of metals within the aquifer. Concentrations within a well can fluctuate greatly and may range by two orders of magnitude. Neither constituent poses a major health concern at the levels found within the basin; however, the SWRCB Drinking Water Division maintains a health-based Notification Level for manganese of 500 µg/L, based on neurotoxic risk. Because iron and manganese are naturally occurring, increasing concentration trends have not been observed. Groundwater pumped from the Purisima Formation for municipal purposes is treated to reduce iron and manganese levels prior to distribution (MGA 2019).

Currently, groundwater quality issues in the Santa Cruz Mid-County Groundwater Basin include one location with 1,2,3-trichloropropane (1,2,3-TCP) concentrations in groundwater, widespread nitrate in parts of the Aromas Red Sands aquifers, elevated ammonia concentrations in the western portion of the basin (in the vicinity of Beltz 12 ASR facility sites and adjoining SqCWD service area), and saline water associated with seawater intrusion in two areas along the coast. Otherwise, Santa Cruz Mid-County Groundwater Basin groundwater quality is good, with no poor groundwater quality present within productive aquifers. The 1,2,3-TCP concentrations have been detected in the SqCWD Country Club well, which is screened in Aromas Red Sands and Purisima F aquifers (MGA 2019). These concentrations of 1,2,3-TCP, nitrates, and chloride have either been detected in monitoring wells or in production wells prior to being treated to drinking water standards. Elevated concentrations (i.e., above drinking water standards) of these contaminants are not present in potable water supplies.

As previously discussed, seawater intrusion has been of great concern for the Santa Cruz Mid-County Groundwater Basin for many years. At times, groundwater elevations have been at −30 ft bmsl creating a gradient for seawater to intrude from Monterey Bay into coastal aquifers. In 2017, the MGA contracted the firms SkyTEM and Ramboll to conduct a geophysical survey of the coast and 1 mile offshore to accurately characterize the risk of seawater intrusion in the basin. The survey revealed that the Purisima A/AA subaquifer is at high risk for seawater intrusion. In addition, high chloride concentrations have been detected in two City monitoring wells along the coast. Although measured chloride levels in the existing Beltz facilities have been within standard range for the basin (10 to 100 milligrams per liter [mg/L]) and below the action threshold (700 mg/L), Beltz 8, 9, and 10 receive water from the Purisima A/AA formation, thus making seawater intrusion a concern (MGA 2019).

Like that described above for groundwater levels, each MGA member agency monitors a network of dedicated monitoring wells and production wells for groundwater quality in its service area or area of jurisdiction. These monitoring sites have also been used to manage the Santa Cruz Mid-County Groundwater Basin since the 1980s. The distribution and sampling frequency of monitoring and production wells used for sampling groundwater quality reflects locational and aquifer depth susceptibility to contamination, including seawater. The monitoring wells used to detect possible seawater intrusion are located immediately adjacent to the coastline. All coastal monitoring wells are sampled for chloride and total dissolved solids quarterly to ensure increases in salinity are identified quickly.

Ammonia

The SqCWD's O'Neill Ranch water supply well (Figure 4.8-2) has naturally occurring ammonia concentrations that are difficult to treat (SqCWD 2018). The O'Neill Ranch well and associated water treatment plant were initially placed online as a new water source in February 2015. Iron and manganese are treated at the treatment plant by

oxidation with sodium hypochlorite and filtration, through six greensand pressure filters. Naturally occurring ammonia is also oxidized during this process. After the well was first placed online, ammonia concentrations increased from 0.24 milligrams per liter (mg/L) in 2015 to 1.40 mg/L in September 2018, and in June 2018 the well was taken offline as the treatment dose had reached the maximum use allowed for sodium hypochlorite. In addition to the ammonia level increasing over time, it also fluctuated upon startup of the well (SqCWD 2018; Corona Environmental Consulting 2020). The SqCWD requested a temporary waiver of the sodium hypochlorite maximum use level to further evaluate the ammonia conditions at the O'Neill Ranch well and to consider future options (SqCWD 2018). This request was approved by the SWRCB, Division of Drinking Water, and the SqCWD will experiment with a bleach management solution, including dilution, which is pending initiation (Corona Environmental Consulting 2020).

Ammonia is also present at various, albeit lesser, concentrations in the SqCWD's and City's other Purisima Formation-area production and monitoring wells. For example, ammonia in groundwater increased substantially at the Beltz 12 well, which is approximately 1,800 feet southwest of the O'Neill Ranch well, from 0.18 mg/L to 0.57 mg/L, from August to October 2020 (City of Santa Cruz 2021a). The highest levels of ammonia have been found in the Tu (unnamed Tertiary unit) aquifer, underlying the Purisima Formation and overlying the granitic basement rock. This unit provides a substantial amount of groundwater flow to the O'Neill Ranch well. Testing in February 2017 indicated that ammonia was present in all the depth intervals tested, but the highest concentrations were largely restricted to two inflow zones, including one between 400 and 420 feet below ground surface and one between 510 and 540 feet below ground surface (SqCWD 2018).

### Santa Margarita Groundwater Basin

The Santa Margarita Groundwater Basin is a primary source of water supply for Scotts Valley and the San Lorenzo Valley. It covers over 30 square miles in the Santa Cruz Mountains foothills, forming a triangular area that extends from Scotts Valley to the east, Boulder Creek to the northwest, and Felton to the southwest. The Santa Margarita Basin is a geologically complex area that was formed by the same tectonic forces that created the Santa Cruz Mountains (Kennedy/Jenks Consultants 2016). The major water purveyors that directly rely on the supply from Santa Margarita Groundwater Basin are SVWD, SLVWD, and Mount Hermon Association (MHA). Santa Margarita Groundwater Basin is also the sole supply source for 13 small water systems and over 1,100 private well users. In addition, the City derives a major portion of its supply from the San Lorenzo River watershed that overlaps the basin (SVWD 2020).

Since the early 1980s, SVWD has actively managed groundwater resources. In 1994, the agency formally adopted a Groundwater Management Plan in accordance with Assembly Bill 3030, also known as the Groundwater Management Act under California Water Code Section 10750 (Kennedy/Jenks Consultants 2016). The main goal of the Groundwater Management Plan is to better manage the aquifers providing the community's drinking water through the management of quantity and quality of the groundwater supply. The Santa Margarita Groundwater Agency (SMGWA) is a groundwater sustainability agency that was more recently formed as a Joint Powers Authority to comply with SGMA, and the GSP for the Santa Margarita Groundwater Basin is underway. The SMGWA has three member agencies—SVWD, SLVWD, and the County of Santa Cruz—and is governed by a Board of Directors comprising two representatives from each member agency, one representative from the City of Scotts Valley, one from the City of Santa Cruz, one from Mount Hermon Association, and two private well owner representatives (SMGWA 2020). The SMGWA is overseeing the preparation of the Santa Margarita GSP, which must be completed and submitted to the 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.

Precipitation is the primary source of groundwater recharge in the basin in the form of direct percolation of precipitation through the soil to groundwater, as well as infiltration from streams. The major groundwater outflows include discharge to streams and springs and groundwater pumping (Kennedy/Jenks Consultants 2016). The decline of groundwater levels in many parts of the basin occurred during 1985 to 2004, representing a loss in groundwater storage in Santa Margarita Groundwater Basin by an estimated 28,000 acre-feet. This loss in groundwater storage resulted in diminished local water supply and reduced sustaining baseflows to local streams that support fishery habitats. As a result of conservation and other management efforts at local water agencies, the total pumping from Santa Margarita Groundwater Basin has decreased by 45% since 1997 (SVWD 2020).

### 4.8.1.5 Hydrologic Hazards

This section provides the potential flooding conditions at each of the project and programmatic infrastructure component sites for which improvements and new facilities are proposed.

#### Aquifer Storage and Recovery Sites

As there are no definitive sites identified to date for new ASR facilities, no site conditions are provided. Based on Federal Emergency Management Agency (FEMA) flood zone maps, none of the Beltz ASR facility sites are located within 100-year floodplains (Zone A or AE). The Beltz ASR sites are located within Zone X, Area of Minimal Flood Hazard (FEMA 2020).

#### Intertie Improvement Sites

**City/SVWD Intertie Site**

Based on FEMA flood zone maps, the proposed City/SVWD intertie pipeline and pump station sites are not located within a 100-year flood plain (Zone A or AE). The pipeline site is located within Zone X, Area of Minimal Flood Hazard (FEMA 2020).

**City/SqCWD/CWD Intertie Site**

Soquel Village Pipeline Site

Based on FEMA flood zone maps, the Soquel Village pipeline site traverses the 100-year flood plain of Soquel Creek (Zone AE) (FEMA 2020).

Park Avenue Pipeline and McGregor Drive Pump Station Upgrade Sites

Based on FEMA flood zone maps, the Park Avenue pipeline and McGregor Drive pump station upgrade sites are not located within a 100-year flood plain (Zone A or AE). The pipeline and pump station sites are located within Zone X, Area of Minimal Flood Hazard (FEMA 2020).

Freedom Boulevard and Valencia Drive Pump Station Sites

Based on FEMA flood zone maps, the Freedom Boulevard and Valencia Drive pump station sites are not located within a 100-year flood plain (Zone A or AE). The pump station sites are located within Zone X, Area of Minimal Flood Hazard (FEMA 2020).

### Surface Water Diversion Sites

#### Felton Diversion Site

Based on FEMA flood zone maps, the Felton Diversion site is located within the 100-year flood plain of the San Lorenzo River (Zone AE) (FEMA 2020).

#### Tait Diversion and Coast Pump Station Site

Based on FEMA flood zone maps, the Tait Diversion and Coast Pump Station site is located within the 100-year flood plain of the San Lorenzo River (Zone AE) (FEMA 2020).

## 4.8.2 Regulatory Framework

### 4.8.2.1 Federal

### Clean Water Act

The CWA, as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality (33 United States Code Section 1251 et seq.). The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The CWA establishes basic guidelines for regulating discharges of both point and non-point sources of pollutants into the waters of the United States.[3] The CWA requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the CWA. Commonly relevant sections of the act are as follows:

- **Sections 303 and 304** provide for water quality standards, criteria, and guidelines. Under Section 303(d) of the CWA, the State of California is required to develop a list of impaired water bodies that do not meet water quality standards and objectives. California is required to establish TMDLs for each pollutant/stressor. A TMDL defines how much of a specific pollutant/stressor a given water body can tolerate and still meet relevant water quality standards. Once a water body is placed on the Section 303(d) List of Water Quality Limited Segments, it remains on the list until a TMDL is adopted and the water quality standards are attained, or there is sufficient data to demonstrate that water quality standards have been met and delisting from the Section 303(d) list should take place. TMDLs applicable to the Proposed Project are listed in Table 4.8-2.
- **Section 401 (Water Quality Certification)** indicates that a federal agency may not issue a permit or license to conduct any activity that may result in any discharge into waters of the United States unless a Section 401 water quality certification is issued, verifying compliance with water quality requirements, or waiving such a certification. States where the discharge would originate are generally responsible for issuing water quality certifications. CWA Section 404 permits (see description below) are subject to Section 401 certification.
- **Section 402 (National Pollutant Discharge Elimination System)** establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the United States. This permit program is administered by the SWRCB and the nine RWQCBs, who have several programs that implement individual and general permits related

[3] Point-source discharges are those emanating from a pipe or discrete location/process, such as an industrial process or wastewater discharge. Non-point source pollutants are those that originate from numerous diffuse sources and land uses, and which can accumulate in stormwater runoff or in groundwater.

to construction activities, stormwater runoff quality, and various kinds of non-stormwater discharges. The NPDES General Construction Permit is discussed in Section 4.8.2.2, State. In general, in California, a NDPES permit also provides waste discharge requirements, although waste discharge requirements can be issued for discharges that are not within the coverage of the Section 402 NPDES program.

The Municipal Stormwater Permitting Program under CWA Section 402 regulates stormwater discharges from municipal separate storm sewer systems (MS4s). MS4 permits are issued in two phases: Phase I, for medium and large municipalities, and Phase II for small municipalities. The Phase II Small MS4 General Permit requires the discharger to develop and implement best management practices through a coordinated storm water program with the goal of reducing the discharge of pollutants to the maximum extent practicable, which is the performance standard specified in Section 402(p) of the CWA. See Section 4.8.2.3, Local for the City's Stormwater Management Program.

- **Section 404 (Discharge of Dredged or Fill Material into Waters of the United States)** establishes a permit program for the discharge of dredged or fill material into waters of the United States. This permit program is jointly administered by the USACE and U.S. Environmental Protection Agency (EPA). Section 4.3, Biological Resources, addresses this requirement in greater detail. A Section 401 water quality certification generally is necessary for a Section 404 permit.

Numerous agencies have responsibilities for administration and enforcement of the CWA. At the federal level, this includes the EPA, USACE, and the major federal land management agencies such as the U.S. Forest Service and Bureau of Land Management. At the state level, with the exception of tribal lands, the California Environmental Protection Agency (CalEPA) and its sub-agencies, including the SWRCB and the nine RWQCBs, have been delegated primary responsibility for administering and enforcing certain provisions of the CWA. At the local level, the Central Coast RWQCB and the County both have enforcement and implementation responsibilities under the CWA.

#### Federal Antidegradation Policy

The federal Antidegradation Policy (40 Code of Federal Regulations 131.12), first included in EPA's regulations in 1983, is designed to protect water quality and water resources. The policy requires states to develop statewide antidegradation policies and identify methods for implementing those policies. State antidegradation policies and implementation measures must include the following provisions: (1) existing instream uses and the water quality necessary to protect those uses shall be maintained and protected; (2) where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and (3) where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected. State permitting actions must be consistent with the federal Antidegradation Policy.

### 4.8.2.2 State

#### Porter–Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act (first codified in the California Water Code Section 13000 et seq. in 1969) is the primary water quality control law for California. Whereas the CWA applies to all waters of the United States, the Porter–Cologne Act applies to waters of the state, which includes isolated wetlands and groundwater in

addition to federal waters.[4] The act requires a Report of Waste Discharge for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. For discharges directly to surface water (waters of the United States) from a point source, an NPDES permit is required, which is issued under both state and federal law; for other types of discharges, such as waste discharges to land (e.g., spoils disposal and storage), erosion from soil disturbance, or discharges to waters of the state (e.g., groundwater and isolated wetlands), waste discharge requirements are required and are issued exclusively under state law. Waste discharge requirements typically require many of the same best management practices (BMPs) and pollution control technologies as NPDES permits.

### California Antidegradation Policy

The California Antidegradation Policy, otherwise known as the Statement of Policy with Respect to Maintaining High Quality Water in California, was adopted by the SWRCB (State Board Resolution No. 68-16) in 1968. Unlike the federal Antidegradation Policy, the California Antidegradation Policy applies to all waters of the state, not just surface waters. The policy requires that, with limited exceptions, whenever the existing quality of a water body is better than the quality established in individual basin plans, such high-quality water must be maintained and discharges to that water body must not unreasonably affect any present or anticipated beneficial use of the water resource. As stated in the Central Coast RWQCB Basin Plan, "discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State."

### Water Quality Control Plan for the Central Coastal Basin

The Porter–Cologne Water Quality Control Act sets forth the obligations of the SWRCB and RWQCBs to adopt and periodically update water quality control plans (Basin Plans), in which beneficial uses and water quality objectives are established, and which include implementation programs and policies to achieve those objectives (California Water Code Sections 13240 through 13247). Beneficial uses applicable to the Proposed Project are listed in Table 4.8-1. Of particular importance to the Proposed Project is the Basin Plan's water quality objective for turbidity, which states that an "increase in turbidity attributable to controllable water quality factors shall not exceed the following limits:

1. Where natural turbidity is between 0 and 50 nephelometric turbidity units (NTU), increases shall not exceed 20%.
2. Where natural turbidity is between 50 and 100 NTU, increases shall not exceed 10 NTU.
3. Where natural turbidity is greater than 100 NTU, increases shall not exceed 10%" (Central Coast RWQCB 2019).

### Construction General Permit (SWRCB Order No. 2009-0009-DWQ, as Amended)

For stormwater discharges associated with construction activity in the State of California, the SWRCB has adopted and administers the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) to avoid and minimize water quality impacts attributable to such activities. The Construction General Permit applies to all projects in which construction activity disturbs 1 acre or more of soil. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling and excavation. The Construction General Permit requires development and implementation of a stormwater pollution prevention plan (SWPPP), which would specify water quality BMPs designed to reduce or

[4] "Waters of the state" are defined in the Porter–Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state" (California Water Code Section 13050[e]).

eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the construction site. Routine inspection of all BMPs is required under the provisions of the Construction General Permit, and the SWPPP must be prepared and implemented by qualified individuals as defined by the SWRCB.

To receive coverage under the Construction General Permit, the project proponent must submit a Notice of Intent and permit registration documents to the SWRCB and applicable RWQCB. Permit registration documents include completing a construction site risk assessment to determine appropriate coverage level; detailed site maps showing disturbance area, drainage area, and BMP types/locations; the SWPPP; and, where applicable, post-construction water balance calculations and active treatment systems design documentation.

### Post-Construction Stormwater Management Requirements

The Central Coast RWCQB adopted Resolution No. R3-2013-0032, which approved post-construction stormwater management requirements for development projects in the Central Coast region. The requirements apply to small MS4s subject to post-construction requirements of the Phase II Municipal General Permits and are intended to apply to development projects, in order to protect watershed processes so that beneficial uses of receiving waters affected by stormwater management are maintained and, where applicable, restored. The requirements focus on Low Impact Development (LID) and other types of control measures. LID treatment systems implement harvesting and use, infiltration, and evapotranspiration. LID is an effective approach to managing stormwater to minimize the adverse effects of urbanization and development on watershed processes and beneficial uses resulting from changes in stormwater runoff conditions. LID strategies can achieve significant reductions in pollutant loading and runoff volumes as well as greatly enhanced groundwater recharge rates. The proper implementation of LID techniques results in greater benefits than single purpose stormwater and flood control infrastructure.

### 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 and the development and implementation of GSPs. GSPs were 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.

A groundwater sustainability plan shall include all of the following:

a. A description of the physical setting and characteristics of the aquifer system underlying the basin that includes the following:
    1. Historical data, to the extent available.
    2. Groundwater levels, groundwater quality, subsidence, and groundwater-surface water interaction.
    3. A general discussion of historical and projected water demands and supplies.
    4. A map that details the area of the basin and the boundaries of the groundwater sustainability agencies that overlie the basin that have or are developing groundwater sustainability plans.
    5. A map identifying existing and potential recharge areas for the basin. The map or maps shall identify the existing recharge areas that substantially contribute to the replenishment of the groundwater basin.

b.

1. Measurable objectives, as well as interim milestones in increments of five years, to achieve the sustainability goal in the basin within 20 years of the implementation of the plan.
2. A description of how the plan helps meet each objective and how each objective is intended to achieve the sustainability goal for the basin for long-term beneficial uses of groundwater.
3. An extension may be granted of up to 5 years beyond the 20-year sustainability timeframe upon a showing of good cause.
4. The plan may address undesirable results[5] that occurred before, and have not been corrected by, January 1, 2015. A ground has discretion as to whether to set measurable objectives and the timeframes for achieving any objectives for undesirable results that occurred before, and have not been corrected by, January 1, 2015.

c. A planning and implementation horizon.

d. Components relating to the following, as applicable to the basin:

1. The monitoring and management of groundwater levels within the basin.
2. The monitoring and management of groundwater quality, groundwater quality degradation, inelastic land surface subsidence, and changes in surface flow and surface water quality that directly affect groundwater levels or quality or are caused by groundwater extraction in the basin.
3. Mitigation of overdraft.
4. How recharge areas identified in the plan substantially contribute to the replenishment of the basin.
5. A description of surface water supply used or available for use for groundwater recharge or in-lieu use.

e. A summary of the type of monitoring sites, type of measurements, and the frequency of monitoring for each location monitoring groundwater levels, groundwater quality, subsidence, streamflow, precipitation, evaporation, and tidal influence. The plan shall include a summary of monitoring information such as well depth, screened intervals, and aquifer zones monitored, and a summary of the type of well relied on for the information, including public, irrigation, domestic, industrial, and monitoring wells.

f. Monitoring protocols that are designed to detect changes in groundwater levels, groundwater quality, inelastic surface subsidence for basins for which subsidence has been identified as a potential problem, and flow and quality of surface water that directly affect groundwater levels or quality or are caused by groundwater extraction in the basin. The monitoring protocols shall be designed to generate information that promotes efficient and effective groundwater management.

g. A description of the consideration given to the applicable county and city general plans, a description of the various adopted water resources-related plans and programs within the basin, and an assessment of how the groundwater sustainability plan may affect those plans.

[5] Undesirable results means one or more of the following effects caused by groundwater conditions occurring throughout the basin: (1) chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon (overdraft during a period of drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and groundwater recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods); (2) significant and unreasonable reduction of groundwater storage; (3) significant and unreasonable seawater intrusion; (4) significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies; (5) significant and unreasonable land subsidence that substantially interferes with surface land uses; and/or (6) depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

The approved and pending GSPs in the study area are summarized below. See Section 4.8.1.4, Groundwater Resources, for additional information about existing and pending GSPs that apply to the project area.

#### Santa Cruz Mid-County Groundwater Sustainability Plan

As indicated in Section 4.8.1.4, Groundwater Resources, the MGA oversaw the preparation of a cooperative 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; DWR approved the GSP on June 3, 2021. 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. Baseline projects and management actions (Group 1), in conjunction with other projects and management actions planned to reach sustainability (Group 2), include water conservation and demand management, installation and redistribution of municipal groundwater pumping, Pure Water Soquel, ASR in the Beltz system (Beltz ASR) and elsewhere, water transfers/in lieu groundwater recharge and distributed stormwater managed aquifer recharge. Additional potential future projects and management actions may be evaluated in the future (Group 3). 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).

#### Santa Margarita Groundwater Sustainability Plan

As indicated in Section 4.8.1.4, Groundwater Resources, the SMGWA is overseeing the preparation of the Santa Margarita GSP, which must be completed and submitted to the 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

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 project and programmatic components evaluated in this EIR relate to operation, utilization, and storage of water resources; therefore, these facilities are legally exempt from County of Santa Cruz, City of Scotts Valley, City of Santa Cruz, and City of Capitola building and zoning ordinances. However, these facilities are not exempt from the California Coastal Act or relevant Local Coastal Program (LCP), as described below.

### California Coastal Act

In 1976, the California State Legislature enacted the California Coastal Act (Public Resources Code 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 California Coastal Act provides for the management of lands within California's coastal zone boundary, as established by the Legislature and defined in the California Coastal Act (Section 30103). The boundary of the coastal zone varies across the state. The boundary 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 zone boundary also extends approximately 3 miles offshore.

The goals of the California Coastal Act, per Public Resources Code Section 30001.5, are to:

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 California Coastal Act includes specific policies to achieve these goals within the coastal zone (see Division 20 of the Public Resources Code). These policies include the legal standards applied to coastal planning and regulatory decisions made by the California Coastal Commission (CCC) pursuant to the California Coastal Act. The California Coastal Act requires that individual jurisdictions adopt a LCP to implement the California Coastal Act at the local level. After the CCC certifies a LCP, the local government becomes the coastal development permit (CDP) permitting authority, subject to appeals to the CCC. See Section 4.8.2.3, Local, for information about Santa Cruz County's LCP and the City of Capitola's LCP.

### Aquifer Storage and Recovery General Order

On September 19, 2012, the SWRCB adopted Water Quality Order 2012-0010, which includes waste discharge requirements for ASR projects that recharge groundwater with treated drinking water (General Order). The purpose of the General Order is to streamline the permitting process and to ensure consistent requirements for these projects.

## 4.8.2.3 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 City stormwater programs and regulations, 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 policies and regulations, including stormwater regulations.

Based on the above, this section provides local programs, policies and regulations related to hydrology and water quality 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.

### City of Santa Cruz Stormwater Management Program

The City has developed a comprehensive Stormwater Management Program (SWMP) to fulfill the requirements for the Phase II NPDES General Permit for Discharges of Stormwater from Municipal Separate Storm Sewer Systems (MS4s) (i.e., MS4 General Permit) and to reduce the amount of pollutants discharged in urban runoff. The SWMP is a comprehensive program to reduce the amount of pollutants discharged in urban runoff and to improve and protect water quality. The SWMP includes six required control programs and two recommended control programs for industrial and commercial facilities and BMPs. The City SWMP was approved by the Central Coast RWQCB on April 14, 2009 and thus the City is granted coverage under the statewide NPDES MS4 General Permit.

### City of Santa Cruz Municipal Codes Regarding Stormwater

In 1998, the City adopted an ordinance, entitled "Stormwater and Urban Runoff Pollution Control," which is Chapter 16.19 of the City's Municipal Code. The ordinance established the legal authority to prohibit illicit connections and pollutant discharges to the City storm drain system. The ordinance also provides the City with the legal authority to conduct inspections and sampling. In addition, the ordinance contains a provision requiring the implementation of BMPs, as published by the Public Works Department, by certain types of facilities. The City also has the authority to terminate illicit connections and discharges, and to initiate enforcement actions for violations of the code. Potential enforcement actions include written notices, citations, termination of discharge, and monetary penalties. The ordinance prohibits non-stormwater discharges to the storm drain system with a few exceptions. The City revised the Stormwater Ordinance in July 2003 to update the ordinance and incorporate new Phase II stormwater regulations. Municipal Code Section 16.19.140 requires that any construction project, including those undertaken under any permit or approval granted pursuant to Titles 15 (Streets and Sidewalks), 18 (Buildings and Construction), and 24 (Zoning) of the City Code, shall implement BMPs, including the City's mandatory BMPs as detailed in the latest BMP manual published by the City's Public Works Department. BMPs are required to be maintained in full force and effect throughout the life of a project.

Title 24 of the Municipal Code includes provisions to ensure that new developments or remodeled sites are designed and constructed in a manner that limits alteration of drainage patterns, prevents erosion, and minimizes long-term impacts on water quality. Chapter 24.14, Environmental Resource Management, contains a section on Conservation Regulations that includes general provisions for drainage and erosion controls. These provisions include requirements that a drainage plan be submitted for projects, both large and small, when existing drainage patterns would be altered by new construction. A drainage plan must be submitted and reviewed as part of the project approval. In addition, the ordinance requires that stormwater runoff resulting from project development be

minimized, and if a proposed project includes the discharge of runoff into a natural watercourse, the drainage plan shall include methods to safeguard or enhance the existing water quality. Devices such as detention basins, percolation ponds, or sediment traps may be required by the City, where appropriate or as specified in an adopted plan or wetlands management plan. Provisions pertaining to erosion control include requirements that a site development be fitted to the topography and soil to create the least potential for erosion. Vegetation removal is limited to the amount necessary and according to the project approved erosion control plan.

The Grading Ordinance is a subset of Title 18, Buildings and Construction, of the City's Municipal Code and is included in Chapter 18.45 – Excavation and Grading Regulations. This ordinance provides technical regulations of grading and excavation, in conjunction with the Environmental Resource Management provisions (Municipal Code, Title 24, Chapter 24.14), in order to safeguard life, health, safety and the public welfare; protect fish and wildlife, riparian corridors and habitats, water supplies, and private and public property, and to protect the environment from the effects of flooding, accelerated erosion and/or deposition of silt. The ordinance accomplishes this by providing guidelines, regulations, and minimum standards for clearing, excavation, cuts, fills, earth moving, grading operations (including cumulative grading), water runoff, and sediment control. In addition, the ordinance includes provisions regarding administrative procedures for issuance of permits and approval of plans and inspections during construction and subsequent maintenance. The City revised the Grading Ordinance in April 2004 to strengthen the ordinance regarding implementation of BMPs, including those for erosion and sediment control.

### County of Santa Cruz General Plan and Local Coastal Program

The County of Santa Cruz 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. The County General Plan and LCP provides policies and programs to establish guidelines for future growth and all types of physical developments.

The County's certified LCP that applies to activities within the coastal zone is administered by the County Planning Department, pursuant to the California Coastal Act, and includes: (1) the LCP land use plan consisting of the policies and adopted land use, resource, constraint and shoreline access maps and charts contained in the General Plan/LCP document; and (2) the implementing ordinances.

As the Proposed Project contains some infrastructure components within the coastal zone in unincorporated Santa Cruz County (i.e., Beltz 8, 9, and 10 ASR facilities) those components are not exempt from the LCP and would require compliance with the LCP, including LCP policies and standards contained in the LCP implementing ordinances, where relevant, through the issuance of CDPs from Santa Cruz County. Additionally, it is possible that new ASR facilities could also be located within the coastal zone in unincorporated Santa Cruz County and would require compliance with the LCP. The LCP implementing ordinances in Santa Cruz County Code (SCCC) Chapter 13.03 include the following sections that are relevant to the hydrology and water quality and related LCP policies are provided and analyzed in Section 4.9, Land Use, Agriculture and Forestry, and Mineral Resources:

- Zoning Regulations (Chapter 13.10)
- Coastal Zone Regulations (Chapter 13.20)
- Geologic Hazards (Chapter 16.10)
- Grading Regulations (Chapter 16.20)
- Erosion Control (Chapter 16.22)
- Riparian Corridor and Wetlands Protection (Chapter 16.30)
- Permit and Approval Procedures (Chapter 18.10)

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].

### County of Santa Cruz Runoff and Pollution Control Ordinance

Chapter 7.79 of the SCCC addresses runoff and pollution control to protect the health, safety, and welfare of the public by protecting the surface and groundwater quality, groundwater recharge, beneficial uses, marine habitats, watershed health, and ecosystems of the receiving waters of the County, including the Monterey Bay, from discharge of pollutants and the adverse effects of hydromodification, and to comply with Federal and State laws concerning stormwater. This chapter requires compliance with industrial and construction NPDES discharge permits, where relevant. Additionally, prior to issuing a County permit under Title 16, Environmental and Resource Protection, a stormwater pollution control plan must be prepared addressing the use of BMPs during construction, including appropriate BMPs from the County Construction Site Stormwater Pollution Control BMP Manual. New development and redevelopment shall also mitigate impacts due to development and implement BMPs per the County Design Criteria, adopted by the County of Santa Cruz and included in Chapters 16.20 (Grading Regulations) and 16.22 (Erosion Control) of the SCCC. These BMPs include measures to control the volume, runoff rate, and potential pollutant load of stormwater runoff from new development and redevelopment projects; to minimize the generation, transport, and discharge of pollutants; to prevent runoff in excess of predevelopment conditions; and to maintain predevelopment groundwater recharge.

### City of Capitola Local Coastal Program and Design Standards for Drainage

Development and conservation in Capitola's coastal areas is also regulated by Capitola's LCP (City of Capitola 2005), which was originally certified by the CCC in 1981 and amended in 2001 and 2005. An update to Capitola's LCP is currently in progress. 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. Related LCP policies are provided and analyzed in Section 4.9, Land Use, Agriculture and Forestry, and Mineral Resources.

Section 15.28.120 of the Capitola Municipal Code addresses design standards for drainage. However, these standards would not apply to the infrastructure components of the Proposed Project as they are included in the City's building regulations, which the Proposed Project is exempt from under California Government Code Section 53091 (d) and (e), as described previously.

#### City of Scotts Valley Design Standards for Drainage

Section 15.28.120 of the Scotts Valley Municipal Code addresses design standards for drainage. However, these standards would not apply to the infrastructure components of the Proposed Project as they are included in the City's building regulations, which the Proposed Project is exempt from under California Government Code Section 53091 (d) and (e), as described previously.

## 4.8.3 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to hydrology and water quality. 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.

### 4.8.3.1 Standards of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to hydrology and water quality 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. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.
B. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
C. Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river or through the addition of impervious surface, in a manner which would: (i) result in substantial erosion or siltation on or off site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (iv) impede or redirect flood flows.
D. In flood hazards, tsunami, or seiche zones, risk release of pollutants due to project inundation.
E. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

### 4.8.3.2 Analytical Methods

This section evaluates the potential hydrology and water quality impacts associated with construction and operation of the Proposed Project. The analysis of potential impacts addresses the various project and programmatic components listed in Table 4.8-3, which are described in detail in Chapter 3, Project Description.

## Table 4.8-3. 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 | | ✓ |

Construction-related impacts are considered for each project and programmatic infrastructure component of the Proposed Project. Operational-related impacts associated with the water rights modifications, including Agreed Flows, and the infrastructure components are also evaluated, as further described below.

As indicated in Chapter 3, Project Description, the Proposed Project would include various water rights modifications that would directly affect the City's water system operations. Specifically, direct impacts associated with the water rights modifications include those related to changes in hydrology of the San Lorenzo River and North Coast streams. The Proposed Project would modify the hydrology of the San Lorenzo River and the North Coast streams by both increasing and reducing streamflows at different times, in different seasons and in different water-year types. For example, surface water diversions that would support ASR operations could reduce streamflows somewhat in wetter times. On the other hand, those ASR operations would increase streamflows in Newell Creek, and therefore the San Lorenzo River, indirectly at other times because the groundwater storage resulting from those ASR operations would allow Loch Lomond Reservoir to be full more often, which would increase reservoir spills into Newell Creek.

This section of the EIR therefore analyzes the Proposed Project's effects on streamflows and reservoir levels and the resulting effects on surface water hydrology conditions, where relevant to the CEQA standards of significance in Section 4.8.3.1, Standards of Significance. These analyses are supported by hydrologic and water supply modeling conducted for the Proposed Project and included in Appendix D and further described below. To ensure comprehensive evaluation of these operational impacts the hydrologic and water supply modeling assesses operations with the implementation of the water rights modifications and all infrastructure components of the Proposed Project.

To understand the implications of the Proposed Project, the City developed baseline and Proposed Project modeling to serve as the basis of Proposed Project analysis. The baseline represents the current system as modeled for City water supply planning, as of the 2018 Notice of Preparation for the Proposed Project. The Proposed Project modeling provides the best possible representation of the Proposed Project within the framework of the modeling system. While the model includes water transfers, it does not include water exchanges, as described in Chapter 3, Project Description. This modeling approach provides a worst-case analysis of water quality 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 indicates 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.

The modeling results were used in this section to assess whether the water rights modifications and other elements of the Proposed Project could potentially impact residual stream flows (also referred to as residual flows). Residual flows are the stream flows downstream of the City's diversions. In the event that stream diversions resulted in a substantial decrease in residual flows, water quality impacts could occur (Significance Standard C), including increased temperature (i.e., due to shallower water) and altered salinity, dissolved oxygen, and pH concentrations. Changes in Loch Lomond Reservoir levels and spill characteristics as a result of the Proposed Project are also considered to address potential water quality impacts that could occur.

In addition, potential impacts to groundwater levels and groundwater quality have been evaluated with respect to proposed stream diversions for ASR injection and extraction, and for water transfers to neighboring water agencies (Significance Standard B). Impacts have been evaluated with respect to maintaining sustainable groundwater management, compliance with the Santa Cruz Mid-County GSP, and compliance with the pending Santa Margarita Basin GSP that is being prepared.

The impact analysis assumes the Proposed Project would be constructed and operated in compliance with the most current and applicable regulations related to water quality and stormwater runoff, as described in Section 4.8.2, Regulatory Framework. Impacts have been evaluated with respect to the standards of significance, as described above. In the event adverse environmental impacts would occur subsequent to consideration of applicable regulations and of Proposed Project standard operational and construction practices described in detail in Chapter 3, Project Description and evaluated below, impacts would be potentially significant and mitigation measures would be provided to reduce impacts to less-than-significant levels, where feasible.

## 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 water quality impacts during construction and operations. These practices and their effectiveness in avoiding and minimizing impacts are described below.

### Standard Operational Practices

The operational practices include the following: 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 from surface streams 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 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 water quality 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. These measures 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 or could be a benefit to water quality, since protective bypass flow requirements may be relaxed to less than optimal levels 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 water quality effects due to potential temperature increases.

### Standard Construction Practices

The construction practices that address indirect impacts on water quality resulting from uncontrolled erosion and fugitive dust, uncontrolled runoff and sedimentation in waterways, 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 channels 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); 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); and using appropriate equipment to minimize disturbance to channels (Standard Construction Practice #12).

These practices would minimize the potential for indirect effects on water quality 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. Construction

in or near streams would avoid the 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 and related water quality effects. 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.

### 4.8.3.3 Project Impact Analysis

This section provides a detailed evaluation of hydrology and water quality impacts associated with the Proposed Project.

**Impact HYD-1: Surface Water Quality Standards and Waste Discharge Requirements (Significance Standards A and E).** Construction and operation of the Proposed Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality. In addition, the Proposed Project would not conflict with or obstruct implementation of a water quality control plan related to surface water. ***(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 water rights modifications of the Proposed Project would not directly result in construction or operation of new infrastructure facilities and would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. Therefore, this project component would have no direct impacts.

The following analysis evaluates the potential indirect impacts related to surface water quality 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

Impacts to water quality through exceedance of water quality standards, non-conformance with waste discharge requirements, or by other means can potentially result from the short-term effects of construction activities (e.g., erosion and sedimentation due to land disturbances, uncontained material and equipment storage areas, improper handling of hazardous materials) and the long-term effects of operation of the new or upgraded facilities (e.g., use/handling of hazardous materials). This impact also covers the portion of Significance Standard E regarding conflicts with or obstruction of the implementation of a water quality control plan, with respect to surface water quality. This analysis addresses the applicable Basin Plan objectives provided above. Groundwater quality is addressed in Impact HYD-2. Impact HYD-3 addresses the alteration of drainage patterns and/or increases in impervious surfaces.

ASR Facilities

**New ASR Facilities.** The Proposed Project includes the City installing and operating new 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. Grading and construction associated with new ASR

facilities could result in short-term erosion of exposed soils. Environmental factors that affect erosion rates include topographic, soil, and rainfall characteristics. Although the soil types at these new ASR facility sites are not known due to currently undefined locations, well sites are typically located on relatively flat to gently sloping topography, thus minimizing the potential for high stormwater runoff rates and associated erosion.

Erosion and sedimentation affect water quality and interfere with aquatic species feeding, respiration, reproduction (due to embeddedness), and rearing (due to pool filling). In addition to sediment, other pollutants associated with construction activity could include heavy metals, oil/grease, fuels, debris/trash from construction-related materials, and concrete curing compounds. Sediment can also be a carrier for these pollutants in the event that contaminants leak into onsite soils and are subsequently transported off site as a result of erosion. Basin Plan objectives for organic contaminants (e.g., fuels, paints, solvents) are generally the same as the respective drinking water quality standards (i.e., maximum contaminant levels), and the Basin Plan objectives for debris and certain other compounds are qualitative in nature, requiring that release of such pollutant sources not adversely impact the beneficial uses of downstream water bodies. Without adequate precautions, wind and rain events that occur during construction activities could generate pollutants or mobilize sediment such that those pollutants contribute to the water quality degradation of receiving waters or violate Basin Plan objectives.

SWPPPs, which would specify water quality BMPs designed to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from construction sites, would not likely apply given the anticipated size of these facilities (0.25 acres). However, as indicated in Section 4.8.3.2, Analytical Methods, the City has identified standard construction practices that would be implemented by the City or its contractors during construction activities associated with all project and programmatic infrastructure components, where relevant. With implementation of these standard construction practices, grading and construction at new ASR facilities would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality of nearby creeks and the Monterey Bay during construction.

As discussed in Section 4.7, Hazards, Hazardous Materials, and Wildfire, new ASR operations would require hazardous materials use. The new ASR facilities would use and store hazardous materials in the pump control room and chemical storage building, similar to existing operations at Beltz facilities. Hazardous materials used for the operation of the new ASR facilities would be in accordance with requirements and recommendations in the applicable Safety Data Sheet(s) and would be managed in accordance with federal, state, and local laws and regulations. Hazardous materials required for operation and maintenance of the proposed infrastructure components would be stored in secured, covered areas with secondary containment. The City submits Hazardous Materials Business Plans to Santa Cruz County Environmental Health Services (EHS), which is the Certified Unified Program Agency within the geographic boundaries of the County (including all four cities). EHS is responsible for enforcing State statutes and regulations, as well as the local ordinance (County Code Chapter 7.100) pertaining to the storage, use, and disposal of hazardous materials and waste. Compliance with standard spill prevention and containment regulations would minimize the potential for spills of hazardous materials impacting nearby water bodies during new ASR operations. As a result, construction and operations of new ASR facilities would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality of nearby creeks and the Monterey Bay. Therefore, this programmatic component would have a less-than-significant impact.

**Beltz ASR Facilities**. This project component involves the installation of upgrades to the existing Beltz facilities at Beltz 8, 9, 10, and 12 to allow for injection of treated water from the City's Graham Hill Water Treatment Plant (GHWTP) and subsequent recovery (referred to below as extraction). Figures 3-4a through 3-4d (see Chapter 3, Project Description) illustrate the site boundaries and proposed improvements at each of the well sites. Proposed ASR upgrades to the Beltz system would include new connection pipelines within each well infrastructure; wellhead

modifications; new submersible pump and motor assembly; new valves and electrical conduit; and as part of a treatment plant upgrade, a second backwash tank might be installed at Beltz 8. Additionally, up to three monitoring wells, approximately 400 feet deep, could be installed at Beltz 9.

As discussed in Section 4.5, Geology and Soils, Beltz wells are located on relatively flat to gently sloping topography. Beltz 8, 9, and 12 are located on Watsonville loam soils, which occur on terraces and alluvial fans, on 0% to 15% slopes. Beltz 10 is located on Elkhorn sandy loam, which occurs on terraces and alluvial fans, on 2% to 9% slopes. The relatively flat topography would minimize stormwater runoff rates and associated erosion. Watsonville loam soils, which include loam, clay loam, and sandy clay loam, are somewhat poorly drained and have a very low to moderately low capacity to transmit water. Elkhorn sandy loam and clay loam are well drained and have a moderately high capacity to transmit water. The well-drained soils reduce erosion rates by enhancing stormwater infiltration into on-site soils.

Excavations and construction associated with the Beltz ASR facility upgrades could result in short-term erosion of exposed soils. Construction-related activities that result in sediment releases are related to exposing previously stabilized soils to potential mobilization by rainfall/runoff and wind. Such activities include the removal of impervious surfaces, excavations, and soil stockpiling at the site, including soil stockpiles associated with facility upgrades and monitoring well drilling. Erosion could result in sedimentation of downstream drainages, resulting in adverse water quality impacts. Beltz 12 ASR facility site is located within the Rodeo Creek Gulch Watershed and Beltz 8, 9, and 10 ASR facility sites are located within the small watershed of intermittent Stream 472, located upstream of Moran Lake.

However, as indicated in Section 4.8.3.2, Analytical Methods, the City has identified standard construction practices that would be implemented by the City or its contractors during construction activities associated with all of the project and programmatic infrastructure components, where relevant. In addition, compliance with standard spill prevention and containment regulations would minimize the potential for spills of hazardous materials impacting nearby water bodies during Beltz ASR facility operations. As a result, construction and operations at the Beltz ASR facilities would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality of Rodeo Creek Gulch and intermittent Stream 472, located upstream of Moran Lake. Therefore, this project component would have a less-than-significant impact.

Water Transfers and Exchanges and Intertie Improvements

New or improved intertie facilities between the water systems of the City and neighboring water agencies are proposed to facilitate future water transfers and exchanges once City water rights are modified and operational agreements have been negotiated. The facilities may include the City/SVWD intertie, which includes a new pipeline and pump station; and the City/SqCWD/CWD intertie, which includes the Soquel Village and Park Avenue pipeline replacements, the McGregor Drive pump station upgrade, and the new Freedom Boulevard and Valencia Road pump stations.

The City's water supply system could be interconnected to the SVWD's system through installation of approximately 8,000 linear feet of new 12-inch-diameter intertie piping from Sims Road in the south, along La Madrona Drive to the north, to the City of Scotts Valley where a new pump station would be constructed (see Figure 3-4f in Chapter 3, Project Description). As discussed in Section 4.5, Geology and Soils, the topography along the City/SVWD intertie pipeline alignment is generally gently to moderately sloping, but the alignment also traverses the banks of a creek subsidiary to Carbonera Creek. Steeper sections of the alignment are underlain by Ben Lomond-Felton complex soils, which are located on 50% to 75% mountain slopes. Other sections of the intertie alignment are underlain by Pfeiffer gravelly sandy loam, on 15% to 30% slopes; Zayante coarse sand, on 5% to 30% slopes; and Watsonville loam, on 2% to 15% slopes. Most of these soil types are well-drained to somewhat excessively well drained, thus

enhancing stormwater infiltration and reducing erosion. However, excavations and construction on or at the base of steep slopes could potentially result in excessive erosion during precipitation events.

As described in Section 4.5, Geology and Soils, the Soquel Village pipeline site is located on variable topography, including relatively flat to gently sloping areas, with localized steep slopes (30% to 50%) adjacent to and in the vicinity of Soquel Creek. Similarly, the southern portion of the Park Avenue pipeline site traverses slopes associated with Tannery Gulch, on 15% to 30% slopes. The steeper hillside areas of the Soquel Village pipeline site are underlain by Elkhorn-Pfeiffer Complex soils, which are well-drained and would enhance stormwater infiltration and reduce runoff rates. However, excavations and construction on these slopes could potentially result in excessive erosion during precipitation events.

As indicated in Section 4.7, Hazards, Hazardous Materials, and Wildfire, residual soil contamination is present in soil at a former Exxon gas station site located adjacent to the Soquel Village pipeline site, at 2501 Main Street in Soquel. The site received low-risk closure in 2011, stating that remaining contamination was not migrating, and remaining contamination would meet water quality objectives through natural attenuation. However, notifications to the Central Coast RWQCB, Santa Cruz County EHS, and the local planning and building departments must be conducted prior to ground-disturbance activities at the Soquel Village pipeline site to ensure proper oversight of trench dewatering, if necessary.

The proposed Freedom Boulevard pump station site is relatively flat to gently sloping and underlain by Baywood loamy sand, which is somewhat excessively drained, on 15% to 30% slopes. The Valencia Drive pump station site is gently sloping and is also underlain by Baywood loamy sand. The somewhat excessively drained soils would enhance stormwater infiltration and reduce runoff rates.

As indicated in Section 4.8.3.2, Analytical Methods, the City has identified standard construction practices that would be implemented by the City or its contractors during construction activities associated with all project and programmatic infrastructure components, where relevant, to reduce erosion during construction. Additionally, dewatering would be required if trenching for pipeline installation intercepts shallow groundwater and such activities would be subject to permitting approval by the Central Coast RWQCB. Water removed from the excavation would be pumped into temporary portable tanks to allow sediment to drop out and meet NPDES dewatering permit (Order No. R3-2017-0042, NPDES Permit No. CAG993001, Waste Discharge Requirements, NPDES General Permit for Discharges with Low Threat to Water Quality) water quality standards before being discharged into storm drains or area drainages. Any potentially contaminated groundwater in dewatering wells would not be discharged into storm drains or area drainages, as temporarily stored water would also be tested for pollutants prior to discharge.

No water quality impacts are anticipated with operation of the proposed pipelines, as no pollutants would be used within the pipelines. As discussed in Section 4.7, Hazards, Hazardous Materials, and Wildfire, operation of the pump stations would result in hazardous materials use during operation of these facilities. Hazardous materials used for the operation of all proposed project and programmatic infrastructure components would be in accordance with requirements and recommendations in the applicable Safety Data Sheet(s) and would be managed in accordance with federal, state, and local laws and regulations. Hazardous materials required for operation and maintenance of the proposed infrastructure components would be stored in secured, covered areas with secondary containment. Hazardous wastes which are generated by project and programmatic infrastructure components would be generated, stored, manifested, and transported in accordance with federal, state, and local regulations. Therefore, operation of the proposed pump stations would not result in spills that could affect adjacent water bodies or underlying groundwater.

As a result, construction and operation of potential future intertie improvements would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality of City and County creeks. Therefore, this programmatic component would have a less-than-significant impact.

Felton Diversion Improvements

Minor modifications to the existing Felton Diversion may include fish screen replacement, installation of a traveling brush system to keep the fish screens operating at optimum efficiency, and construction of a continuous downstream outmigration bypass route within the existing bypass channel with downstream opening slide gate. These improvements would be constructed on the west side of the Felton Diversion entirely within the existing concrete diversion facility structure. These improvements would not require any construction activities or disturbance in the riverbed. The existing concrete bypass channel and fish ladder would be dewatered, if needed, and closed during construction. Dewatering would be accomplished through the hand placement of sandbags on either side of the concrete bypass channel. Once construction is completed, any construction debris would be removed from the bypass channel and fish ladder prior to reopening them. Figure 3-4h in Chapter 3, Project Description shows the worst-case area of disturbance associated with construction of the Felton Diversion improvements.

As indicated in Section 4.5, Geology and Soils, the topography at the Felton Diversion site is relatively flat to gently sloping, except for the bank of the San Lorenzo River, most of which has been modified for the existing intake structure and fish ladder. In addition, the Felton Diversion site is underlain by Soquel loam, which is moderately well drained, thus enhancing infiltration of stormwater runoff and reducing the potential for erosion. However, excavations and construction associated with these diversion improvements immediately adjacent to the San Lorenzo River, including the riverbank, could potentially result in erosion and sedimentation of the San Lorenzo River. As indicated in Section 4.8.3.2, Analytical Methods , the City has identified standard construction practices that would be implemented by the City or its contractors during construction activities associated with the programmatic components, where relevant, thus minimizing the potential for erosion-induced siltation of the river.

Dewatering of the existing bypass channel and fish ladder during diversion modifications would be subject to permitting approval by the Central Coast RWQCB. Any potentially contaminated groundwater in dewatering wells associated with incidental spills from heavy equipment would not be discharged into the San Lorenzo River. No water quality impacts are anticipated with diversion modifications, as no new potential pollutants (other than currently used minor quantities of oil, grease, degreasers, etc.) would be used to operate the diversion structure. As a result, construction and operations at the Felton Diversion site would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality of the San Lorenzo River. Therefore, this programmatic component would have a less-than-significant impact.

Tait Diversion and Coast Pump Station Improvements

Improvements at the Tait Diversion could include, but would not be limited to: (1) a new or modified intake design, (2) upstream and/or downstream hydraulic modifications, (3) improvements to the check dam, and (4) any required fish passage upgrades. Upgrades would be implemented to meet current state and federal fisheries protection criteria. The River Pumps at the Coast Pump Station facility would also require improvements, which could include, but would not be limited to, (1) new pumps and motors, (2) primary and backup power upgrades, which could include upgrades to the Pacific Gas & Electric substation, (3) a new or modified concrete wet well, and (4) a solids handling system. The Tait Diversion improvements would likely require construction activities and disturbance in the riverbed. Figure 3-4i in Chapter 3, Project Description shows the worst-case area of disturbance associated with construction of the Tait Diversion and Coast Pump Station Facility Improvements.

As indicated in Section 4.5, Geology and Soils, topography at the Tait Diversion and Coast Pump Station site is relatively flat to gently sloping and the site is underlain by Baywood loamy sand, which is somewhat excessively drained, and the Soquel loam, which is moderately well drained. The combination of well-drained soils and relatively flat topography would minimize the potential for erosion during precipitation events. However, excavations and construction associated with these diversion and pump station improvements immediately adjacent to the San Lorenzo River, including the riverbank, could potentially result in erosion and sedimentation of the San Lorenzo River. As indicated in Section 4.8.3.2, Analytical Methods, the City has identified standard construction practices that would be implemented by the City or its contractors during construction activities associated with all project and programmatic infrastructure components, where relevant, thus minimizing the potential for erosion induced siltation of the river.

Because the Tait Diversion improvements would likely require construction activities and disturbance in the riverbed, dewatering would likely be required. Dewatering would be subject to permitting approval by the Central Coast RWQCB. Any potentially contaminated groundwater in dewatering wells associated with incidental spills from heavy equipment would not be discharged into the San Lorenzo River. No water quality impacts are anticipated with diversion modifications, as no new potential pollutants (other than currently used minor quantities of oil, grease, degreasers, etc.) would be used to operate the diversion structure. As a result, construction and operations at the Tait Diversion and Coast Pump Station sites would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality of the San Lorenzo River. Therefore, this programmatic component would have a less-than-significant impact.

#### Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to violation of any water quality standards or waste discharge requirements, and therefore, no mitigation measures are required.

**Impact HYD-2: Decrease Groundwater Supplies, Interfere with Groundwater Recharge, or Conflict with Groundwater Plan (Significance Standards B and E).** Construction and operation of the Proposed Project would not decrease groundwater supplies or interfere substantially with groundwater recharge such that sustainable groundwater management of the basin would be impeded. However, the Proposed Project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan by potentially affecting local groundwater quality or causing restrictive effects in nearby wells. ***(Less than Significant with Mitigation)***

### 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 for all North Coast streams, Newell Creek, and the San Lorenzo River. The water rights modifications of the Proposed Project would not directly result in construction or operation of new infrastructure facilities and therefore would not directly decrease groundwater supplies or interfere substantially with groundwater recharge such that sustainable groundwater management of the basin would be impeded or conflicts with a water quality control plan or sustainable groundwater management plan would result. Therefore, this project component would result in no direct impacts.

The following analysis evaluates the potential indirect impacts to groundwater 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

### Aquifer Storage and Recovery

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. ASR would include new ASR facilities at unidentified locations and Beltz ASR facilities at the existing Beltz well facilities. Overall, ASR is a programmatic component of the Proposed Project; however, as a subcomponent of ASR, Beltz ASR facilities is a project component of the Proposed Project.

To the extent ASR facilities and operations would occur outside of the City's existing water-right place of use, they would be enabled by the Proposed Project's expansion of the POU of the City's appropriative water rights. The Proposed Project includes the addition of underground storage supplements to the City's post-1914 appropriative permits and licenses only for the Beltz ASR facilities because those are the only proposed ASR facilities whose locations and proposed capacities are currently known. While additional underground storage supplements to those permits and licenses would have to be submitted to and approved by the SWRCB to implement new ASR facilities, the Proposed Project could ultimately result in the possible installation of ASR facilities in both groundwater basins to allow for injection of treated water from the City's GHWTP and possible subsequent extraction.

The total ASR capacity is intended to provide sufficient capacity to address the City's agreed-upon worst-year water supply gap of 1.2 billion gallons per year during modeled worst-year conditions identified during the WSAC planning process, described in Section 3.2.1, Water Supply Planning Background. ASR would have a total proposed injection infrastructure capacity of 4.5 mgd and a proposed extraction infrastructure capacity of 8.0 mgd, to meet this worst-year gap. The injection infrastructure sizing is smaller than the extraction infrastructure sizing because, generally, diverted surface water could be injected for groundwater storage over multiple years to be available for extraction over a shorter timeframe during dry periods. It is estimated that with this infrastructure capacity, an average of approximately 233 mgy, with a maximum of up to approximately 702 mgy, of treated surface water could be injected into the groundwater basin(s), and an average of approximately 176 mgy, with a maximum of approximately 1,064 mgy, of injected water could be extracted. To contribute to groundwater sustainability of the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin, estimated annual operations show that in aggregate extraction volumes would be lower than injection volumes. However, maximum annual extraction volumes could exceed annual injection volumes during dry periods when access to more stored water supply is needed to meet City demands. Table 4.8-4 summarizes the ASR programmatic component of the Proposed Project and provides a conservative worst-case estimate of the proposed capacity and operational volumes for ASR.

As a subcomponent of ASR, Beltz ASR would provide only a portion of the total ASR capacity and operations, as shown in Table 4.8-4. The remainder of the total capacity and estimated annual operations would be provided at new ASR facilities. Further planning and analysis are required to determine locations for any potential new ASR facilities. Actual capacity and operational characteristics for new ASR facilities and Beltz ASR facilities would be based on completion of ASR pilot programs, design-level groundwater modeling, and the ASR design process.

## Table 4.8-4. Proposed Aquifer Storage and Recovery Capacity and Estimated Operation

| | Proposed Capacity (mgd) | | Estimated Operation (mgy) | | | |
|---|---|---|---|---|---|---|
| | *Injection* | *Extraction* | *Average* | | *Maximum* | |
| | | | *Injection* | *Extraction* | *Injection* | *Extraction* |
| Total Aquifer Storage and Recovery (ASR) | 4.5 | 8.0 | 233 | 176 | 702 | 1,064 |
| New ASR Facilities at Unidentified Locations | TBD | TBD | TBD | TBD | TBD | TBD |
| Beltz ASR Facilities at Existing Beltz Well Facilities | 2.10 | 2.17[1] | 188 | 137 | 358 | 315 |

**Source:** Gary Fiske and Associates 2021a, 2021b.
**Notes:** mgd = million gallons per day; mgy = million gallons per year; TBD = to be determined.
[1] Based on the physical limitations of the Beltz well facilities, the maximum extraction capacity at Beltz 8, 9, 10, and 12 is 3.27 mgd. Given that the existing groundwater system at these facilities extracts 1.1 mgd, 2.17 mgd of the total capacity is available for the proposed ASR facilities at these Beltz facilities.

Standard operational practices for ASR facilities described in Section 4.8.3.2, Analytical Methods, would be implemented during development and operation of ASR facilities. Operation of ASR facilities would be consistent with applicable adopted existing or future GSPs and could contribute to groundwater sustainability of the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin, depending on the facilities' location. Contribution to groundwater sustainability of the Santa Cruz Mid-County Groundwater Basin would also contribute to the protection of groundwater quality from seawater intrusion per the Santa Cruz Mid-County GSP in support of the proposed water quality beneficial use.

New ASR Facilities

**Groundwater Storage.** As indicated above, new ASR facilities would include injection of surface water subject to the City's appropriative rights, but in excess of its instantaneous needs, into the natural structure of basin aquifers for use as an underground storage reservoir. The City's ASR project modeled for the Santa Cruz Mid-County Groundwater Basin GSP optimizes existing City infrastructure at the Beltz well system as a more efficient use of available resources to inject excess drinking water into basin aquifers. The GSP acknowledges, however, that eventual implementation of the City's ASR project may include new infrastructure, such as that identified for new ASR facilities in the Proposed Project. Drinking water stored in the Santa Cruz Mid-County Groundwater Basin from an ASR project would provide a supply during dry periods for the areas served by the City and any new ASR project could be designed with sustainability benefits to contribute to the restoration of the basin, according to the GSP. The GSP further indicates that information generated by pilot test evaluations will provide a basis for new ASR facility placement (i.e., locations), such that existing gaps in ASR facilities can be filled.

No proposed infrastructure site locations have been identified for new ASR facilities. Overall, ASR facilities would include sufficient capacity to address the City's agreed-upon worst-year water supply gap of 1.2 billion gallons per year during modeled worst-year conditions; however, as indicated in Table 4.8-4 the sizing for new ASR facilities has yet to be identified. As previously discussed, to contribute to groundwater sustainability of the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin, estimated annual operations overall show that in aggregate extraction volumes would be lower than injection volumes, resulting in a net increase in

groundwater storage in the basins. A net increase in storage would result in beneficial impacts to the groundwater basins. As a result, the impact of new ASR facility operations on groundwater storage would be less than significant.

**Groundwater Quality.** As discussed in more detail below for Beltz ASR facilities, groundwater quality impacts related to seawater intrusion would similarly be beneficial, as new ASR facilities would be operated to achieve and maintain sustainability objectives of the GSP in terms of an overall raising of groundwater levels. In general, chronic lowering of groundwater levels could potentially cause poor quality groundwater to flow towards supply wells that would otherwise not have been impacted.

Currently, groundwater quality issues in the Santa Cruz Mid-County Groundwater Basin include one location with 1,2,3-TCP concentrations in groundwater, widespread nitrate in parts of the Aromas Red Sands aquifers, elevated ammonia concentrations in the western portion of the basin (i.e., in the vicinity of Beltz 12 ASR facilities and adjoining SqCWD service area), and saline water associated with seawater intrusion in two areas along the coast. Otherwise, Santa Cruz Mid-County Groundwater Basin groundwater quality is good, with no non-native poor groundwater quality present within productive aquifers. The 1,2,3-TCP concentrations have been detected in the SqCWD Country Club well, which is screened in Aromas Red Sands and Purisima F aquifers. Like the Beltz ASR facility wells (see below), new ASR facility wells in the Santa Cruz Mid-County Groundwater Basin would likely be screened in Purisima A/AA and Tu units. Although ASR is anticipated to occur in the Santa Margarita Groundwater Basin, the SCWD is pursuing an ASR project in the Mid-County Groundwater Basin first. As a result, the focus to-date has been on the Santa Cruz Mid-County Groundwater Basin, as described in the GSP (MGA 2019).

Each project implemented as part of the GSP, including new ASR facilities, would have its own unique water quality constituents of concern that would apply to monitoring and production wells. As detailed in Standard Operational Practice #3 (Section 4.8.3.2, Analytical Methods), groundwater quality monitoring plans would be included in use permits granted by the SWRCB with respect to injecting and storing treated drinking water in groundwater aquifers (i.e., SWRCB WQ Order 2012-0010, General Waste Discharge Requirements For Aquifer Storage And Recovery Projects That Inject Drinking Water Into Groundwater). New ASR facilities would be required to complete at least four quarters of background groundwater quality data to characterize groundwater quality in each aquifer that would receive injected treated water. The Notice of Intent application package associated with the SWRCB ASR order would include a technical report that identifies and describes target aquifers, delineates Areas of Hydrologic Influence, identifies all land uses within the delineated Areas of Hydrologic Influence, identifies project-specific constituents of concern, and assesses groundwater degradation (MGA 2019). As a result, the impact of new ASR facility operations on groundwater quality would be less than significant.

**Groundwater Recharge.** New ASR facilities, located on sites of approximately 0.25 acres, would result in small areas of paving that would be inconsequential with respect to recharge. As previously discussed, it is estimated that an average of approximately 233 mgy, with a maximum of up to approximately 702 mgy, of treated surface water could be injected into the groundwater basin(s). Such injections would augment natural groundwater recharge. Beneficial impacts would occur with respect to groundwater recharge because by design, new ASR facilities would, in aggregate, result in more groundwater injection than groundwater extraction. New ASR facilities would simply use one or both of the groundwater basins as a reservoir for treated surface water. New ASR facility-related extractions would not deplete the pre-existing groundwater in storage, but instead would contribute to the protection of groundwater quality from seawater intrusion in the Santa Cruz Mid-County Groundwater Basin and provide for sustainability benefits in both groundwater basins in compliance with the Santa Cruz Mid-County Groundwater Basin GSP and the pending Santa Margarita Groundwater Basin GSP. As a result, the impact of new ASR facility operations on groundwater recharge would be less than significant.

**Impact Summary.** New ASR facilities would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, as new ASR facilities would be completed in compliance with the Santa Cruz Mid-County Groundwater Basin GSP and, when it is adopted, the Santa Margarita Groundwater Basin GSP, as relevant to the potential site locations for new ASR facilities, per Operational Practice #2 described in Section 4.8.3.2, Analytical Methods.

ASR facilities and associated injections and extractions in the Santa Margarita Groundwater Basin would be planned to be installed and operated after the Santa Margarita Groundwater Basin GSP is prepared, adopted, and submitted to DWR in January 2022. The proposed timing will provide for new ASR facility injections and extractions in the Santa Margarita Groundwater Basin consistent with the sustainable management criteria, and avoidance of any undesirable results to be identified in the ultimately adopted Santa Margarita Groundwater Basin GSP and in any future revisions to that GSP.

As required by SGMA, both of these GSPs include or would include quantifiable minimum thresholds related to groundwater levels, groundwater quality (including seawater intrusion), surface/groundwater connection, subsidence, and changes in storage, such that undesirable effects would not occur, and groundwater basin sustainability would be achieved and maintained.

Based on compliance with the Santa Cruz Mid-County Groundwater Basin GSP and Santa Margarita Groundwater Basin GSP, including the associated groundwater monitoring programs, new ASR facilities would not decrease groundwater supplies or interfere substantially with groundwater recharge such that the sustainable groundwater management of the relevant basin would be impeded. Similarly, based on compliance with these GSPs, new ASR facilities would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Therefore, this programmatic component would result in a less-than-significant impact.

Beltz ASR Facilities

The Beltz ASR project component would involve injecting surface water, treated to drinking water standards, into the Santa Cruz Mid-County Groundwater Basin, which would act as an underground storage reservoir, consistent with the GSP for this basin (MGA 2019). This project component involves the installation of upgrades to the existing Beltz system at the existing Beltz 8, 9, 10, and 12 facilities to allow for injection of treated water from the City's GHWTP and subsequent extraction. Figures 3-4a through 3-4d in Chapter 3, Project Description illustrate the site boundaries and proposed improvements at each of the Beltz ASR facility sites.

**Groundwater Recharge.** The Beltz ASR facilities would not have an appreciable effect on natural aquifer recharge because additional impervious surfaces would not be created at any of these sites. The Beltz ASR facility sites are currently developed and paved and would not require additional areas of pavement. As shown in Table 4.8-4, it is estimated that an average of approximately 188 mgy, with a maximum of up to approximately 358 mgy, of treated surface water could be injected into the groundwater basin. Such injections would augment natural groundwater recharge. Beneficial impacts would occur with respect to groundwater recharge, because by design, Beltz ASR facilities would, in aggregate, result in more groundwater injection than groundwater extraction. Beltz ASR facilities would simply use the Santa Cruz Mid-County Groundwater Basin as a reservoir for treated surface water. Beltz ASR-related extractions would not deplete the pre-existing groundwater in storage, but instead would contribute to the protection of groundwater quality from seawater intrusion and provide for sustainability benefits in the groundwater basin, in compliance with the Santa Cruz Mid-County Groundwater Basin GSP. As a result, the impact of Beltz ASR operations on groundwater recharge would be less than significant.

**Decrease Groundwater Supplies or Conflict with Groundwater Plan.** Beltz ASR facilities would be completed in conformance with the Santa Cruz Mid-County Groundwater Basin GSP (see Operational Practice #2), which would contribute to the sustainability of the basin. A significant impact with respect to a decrease in groundwater supplies would occur if the Beltz ASR facilities resulted in the creation of or appreciable contribution to any "undesirable results", as defined in the Santa Cruz Mid-County Groundwater Basin GSP. Similarly, creation of or appreciable contribution to any undesirable results would occur if this project component impedes sustainable groundwater management of the groundwater basin, or conflicts with or obstructs implementation of a water quality control plan or sustainable groundwater management plan. Undesirable results are defined generally under SGMA (see Section 4.8.2.2, State, for additional information about SGMA), but more specifically and locally defined by the MGA as:

- **Chronic Lowering of Groundwater Levels**: A significant number of private, agricultural, industrial, and municipal production wells can no longer provide enough groundwater to supply beneficial uses.
- **Reduction of Groundwater in Storage**: A net volume of groundwater extracted (pumping minus annual volume of managed aquifer recharge) that will likely cause other sustainability indicators to have undesirable results.
- **Seawater Intrusion**: Seawater moving farther inland than has been observed from 2013 through 2017.
- **Degraded Groundwater Quality**: Groundwater quality, attributable to groundwater pumping or managed aquifer recharge, that fails to meet state drinking water standards.
- **Land Subsidence**: Any land subsidence caused by lowering of groundwater levels occurring in the basin would be considered significant and unreasonable.
- **Depletion of Interconnected Surface Water**: 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 discussed for new ASR facilities, the Proposed Project's groundwater quality impacts would be beneficial, as Beltz ASR facilities would be operated to achieve and maintain sustainability objectives of the Santa Cruz Mid-County Groundwater Basin GSP in terms of an overall raising of groundwater levels. In addition, Beltz ASR facilities would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, as Beltz ASR facilities would be completed in compliance with the Santa Cruz Mid-County Groundwater Basin GSP. The GSP includes quantifiable minimum thresholds related to (1) groundwater levels and groundwater quality (including seawater intrusion), (2) changes in storage, (3) subsidence, and (4) surface/groundwater connection, such that undesirable effects would not occur, and groundwater basin sustainability would be maintained, as further described below.

1. Chronic Lowering of Groundwater Levels, Seawater Intrusion, and Degraded Groundwater Quality.

   **Seawater Intrusion**. As indicated in Section 4.8.1.4, Groundwater Resources, based on the seawater intrusion risk, the Santa Cruz Mid-County Groundwater Basin is considered a high priority groundwater basin in critical overdraft, as defined under SGMA. As a result, the Santa Cruz Mid-County Groundwater Basin GSP has been prepared for the basin (MGA 2019). The GSP was submitted to DWR in January 2020.

   A series of 13 monitoring wells, within areas served by the City and the SqCWD, have been established in the basin to assess the risk of seawater intrusion (see Figure 4.8-8). Based on regional groundwater elevation contour maps prepared for the Santa Cruz Mid-County GSP, seawater intrusion near the Beltz system has improved substantially from 2005 through 2018. General groundwater gradient is toward the south and southeast, toward the ocean (see Figure 4.8-2).

The Santa Cruz Mid-County Groundwater Basin GSP has evaluated the basin in the context of historical, current, and anticipated future groundwater conditions, and has established minimum thresholds at RMPs which if exceeded, would indicate that an undesirable result (as defined above) is occurring. Minimum thresholds at RMPs for chronic lowering of groundwater levels are based on the groundwater elevation required to meet the typical overlying water demand in the shallowest well in the vicinity of the RMP. Measurable objectives for RMPs are the 75th percentile of historical groundwater elevations for the period of record of each monitoring point. These RMPs are shown on Figure 4.8-7. For seawater intrusion, the GSP establishes minimum thresholds for chloride concentrations, but has also established minimum thresholds for coastal monitoring well groundwater elevations that are generally several feet above sea level (i.e., that serve as a "barrier" to seawater intrusion). The seawater intrusion RMPs are shown on Figure 4.8-8. The existing monitoring network for the Santa Cruz Mid-County Groundwater Basin, which includes these RMPs, has been used for several decades to collect information to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions. Each MGA member agency has its own network of dedicated monitoring wells and production wells that monitor groundwater elevations in its own service area or area of jurisdiction. The City's monitoring well network includes 38 wells, including 34 monitoring wells and 4 production wells, of which 7 are RMPs. The City completes monthly measurements of groundwater levels within these monitoring wells. Multiple well clusters with monitoring wells completed in different aquifers at the same location are used to understand vertical changes in vertical gradients between aquifers. The groundwater level monitoring network relies on groundwater levels either directly or using groundwater levels as a proxy to determine groundwater basin sustainability with respect to chronic lowering of groundwater levels, seawater intrusion, and depletion of interconnected surface water (MGA 2019). Similarly, with respect to groundwater quality, the City monitoring well network includes 32 monitoring wells of which 18 are RMPs. The groundwater quality monitoring network relies on groundwater quality to determine groundwater basin sustainability with respect to degraded groundwater quality and seawater intrusion (MGA 2019).

ASR is identified in the GSP as one of several "projects and management actions" that would contribute to achieving sustainable groundwater management of the basin (i.e., avoiding seawater intrusion and other undesirable results). Therefore, Beltz ASR facilities operated in conformance with the GSP, per Standard Operational Practice #2, would likely have a beneficial impact with respect to the groundwater basin since it allows for the storage of treated surface water in the basin to avoid further seawater intrusion, while supplying the City with additional storage that can be used during dry periods. The GSP would be refined over time and RMPs would be monitored to verify that Beltz ASR-related extractions are not causing undesirable effects in the groundwater basin. As a result, operation of Beltz ASR facilities would be consistent with the adopted GSP and could contribute to restoration of the Santa Cruz Mid-County Groundwater Basin. Therefore, the impact of this project component with respect to seawater intrusion would be less than significant.

**Ammonia in Groundwater.** In addition to groundwater quality issues associated with seawater intrusion, the SqCWD's O'Neill Ranch water supply well has naturally occurring ammonia concentrations that are difficult to treat. These ammonia concentrations, which increase with depth from the ground surface, appear to be increasing in the Santa Cruz Mid-County Groundwater Basin due to natural causes. Ammonia concentrations increased from 0.24 mg/L in 2015 to 1.40 mg/L in September 2018 (SqCWD 2018; Corona Environmental Consulting 2020). Ammonia concentrations have also been detected in the Beltz 12 well, approximately 1,800 feet southwest of the O'Neill Ranch well. For example, ammonia in groundwater increased in the Beltz 12 well, from 0.18 gm/L to 0.57 mg/L, from August to October 2020 (City of Santa Cruz 2021a). Proposed ASR injection at the Beltz 12 well could potentially affect the high concentrations of ammonia, resulting in increased or decreased ammonia concentrations in SqCWD's O'Neill Ranch well.

Pilot testing was completed at the Beltz 12 ASR facility from December 2018 to July 2019. Initial pilot testing at the facility indicated dilution of ammonia concentrations during injection, followed by a return to baseline conditions after extraction operations. Based on sampling of monitoring wells during pilot tests, no detrimental effects related to ammonia were observed, including ammonia concentrations at the O'Neill Ranch well. Rather, ASR had a beneficial impact with respect to ammonia concentrations in groundwater (Pueblo Water Resources 2020). The O'Neill Ranch well may be drawing ammonia concentrations from up-gradient groundwater (i.e., to the north and away from the Beltz 12 well); therefore, ammonia concentrations may rise in the O'Neill Ranch well in the future independent of down-gradient Beltz 12 ASR operations. However, because it is unclear whether long-term Beltz 12 ASR operations would adversely affect the water quality of the SqCWD O'Neill Ranch well, localized water quality impacts related to elevated ammonia concentrations is considered a potentially significant impact.

Each project implemented as part of the GSP, including Beltz 12 ASR, would have its own unique water quality constituents of concern that would apply to monitoring and production wells. As detailed in Standard Operational Practice #3, groundwater quality monitoring plans would be included in use permits granted by the SWRCB with respect to injecting and storing treated drinking water in groundwater aquifers (i.e., SWRCB WQ Order 2012-0010, General Waste Discharge Requirements For Aquifer Storage And Recovery Projects That Inject Drinking Water Into Groundwater). The Beltz 12 ASR facility would be required to complete at least four quarters of background groundwater quality data to characterize groundwater quality in each aquifer that would receive injected treated water. The Notice of Intent application package associated with the SWRCB ASR order would include a technical report that identifies and describes target aquifers, delineates Areas of Hydrologic Influence, identifies all land uses within the delineated Areas of Hydrologic Influence, identifies project-specific constituents of concern, and assesses groundwater degradation (MGA 2019).

In addition, implementation of MM HYD-1, Ammonia Monitoring, would avoid conflicts with the Santa Cruz Mid-County GSP by requiring: monitoring for ammonia concentrations in groundwater at the Beltz 12 ASR facility well and the SqCWD O'Neill Ranch well, consistent with sampling and analysis completed for the initial Beltz 12 ASR piloting (Pueblo Water Resources 2020); implementation of a groundwater investigation to determine the source of the ammonia (i.e., associated with Beltz 12 ASR or due to unrelated upgradient groundwater conditions) if it is determined that ammonia concentrations appear to be increasing as a result of Beltz 12 ASR operations; and implementation of remedial measures, as applicable, based on the results of the groundwater investigation (e.g., modification of injection and/or extraction operations until ammonia concentrations decrease to baseline or lower levels). Therefore, with the implementation of this mitigation measure, the impact of this project component related to ammonia concentrations would be reduced to a less-than-significant level.

**Chronic Lowering of Groundwater Levels.** Beltz ASR injection and extraction activities would potentially have an influence on other beneficial users of groundwater in the Santa Cruz Mid-County Groundwater Basin. The long-term plan in the basin, including the projects and management actions in the GSP, is to move pumping further from the coast to minimize the threat of seawater intrusion. Redistribution of municipal pumping is designed to be paired with projects, such as Pure Water Soquel Groundwater Replenishment and Seawater Intrusion Prevention Project (Pure Water Soquel), In-Lieu Recharge, and ASR, as a way to: (1) rest and reduce pumping of coastal wells and be consistent with basin sustainability goals to protect the groundwater supply against seawater intrusion; (2) prevent overdraft within the basin and resolve problems resulting from prior overdraft; (3) support reliable groundwater supply and quality to promote public health and welfare; (4) maintain or enhance groundwater levels where groundwater dependent ecosystems exist; and (5) maintain or enhance groundwater contributions to streamflow (MGA 2019).

The location of the more recently installed Beltz 12 well is reflective of this plan to move pumping further from the coast to minimize the threat of seawater intrusion (MGA 2019). To-date, one pilot test has been completed at the Beltz 12 ASR facility, from December 2018 to July 2019. The primary purpose of the ASR pilot testing was to demonstrate injection well hydraulics and operational performance characteristics of Beltz 12 and to monitor the local aquifer hydraulic and geochemical responses to recharge and recovery operations. These data can then be used to assess and design ASR, and as a basis for environmental planning and permitting documentation for a long-term, full-scale ASR project (Pueblo Water Resources 2020). Information generated by additional pilot test evaluations will help inform the degree to which Beltz ASR can fulfill the City's strategy to improve the reliability of its water supply, along with helping to evaluate the extent to which an ASR project can be operated in a manner that will achieve both supply reliability and groundwater sustainability benefits. These additional pilot tests, in combination with design-level groundwater modeling and the ASR design process, would contribute to determining optimal ASR capacity and operational characteristics. For example, the exact size of individual pumps and motors would not be known until after pilot testing of individual wells.

The area within and surrounding the Beltz system is urbanized and mostly connected to the City's municipal water system. Within this area, there are no agricultural or industrial users of groundwater in the immediate vicinity; the only other groundwater wells in the vicinity are identified as remediation/monitoring wells (DWR 2020b). However, groundwater levels in nearby private domestic wells, northeast of the Beltz 12 ASR facility, may be affected by ASR operations given their proximity. Baseline assessments were completed on five of these nearby wells in 2015 that are currently being monitored under a private well monitoring program being implemented by SqCWD and the City, for select wells within 1,000 meters (approximately 3,300 feet) of the Beltz 12 ASR facility. (Hydro Metrics 2015a, 2015b, 2015c, 2015d, 2015e). Four follow-up restrictive assessments were completed on these private wells, through December 2019 (Montgomery & Associates 2019a, 2019b, 2019c, 2019d, 2019e).

Demonstrated restrictive effects are defined as damage to the private well or pump caused by groundwater levels falling below the top of the well screens, or diminution of well yield. When groundwater falls below the top of the screen, pumping causes water to fall through the screen and into the well. This occurs because the pump normally draws the groundwater level down inside the well faster than water can flow into the well. Freefalling water becomes aerated or entrains air, thus creating several potential problems, including pump cavitation effects, bacteriological growth, and corrosion. Diminution of well yield can occur when well screens are significantly dewatered, thereby causing the well production rate or capacity to be reduced such that the well is rendered incapable of meeting historically measured production (Hydro Metrics 2015a, 2015b, 2015c, 2015d, 2015e).

Consistent with the private well monitoring program being implemented by SqCWD and the City, and consistent with restrictive effects criteria established in the baseline assessments for five nearby private domestic wells, proposed Beltz 12 ASR extractions would result in potentially significant impacts if restrictive effects occur in domestic wells located within 1,000 meters (approximately 3,300 feet) of the Beltz 12 ASR facility. More specifically, potential restrictive effects on the private wells would be considered significant if:

1. Static groundwater levels in the private wells were above the well screen prior to Beltz 12 ASR operations, but below the top of the well screen following initiation of ASR operations.
2. Pumping groundwater levels in the private wells were above the well screen prior to Beltz 12 ASR operations, but below the top of the well screen following initiation of ASR operations.
3. There is an appreciable reduction in the quantity of groundwater produced by the private well. Appreciable in this case would be defined as rendering the private well incapable of meeting its historical measured maximum daily production level, measured dry-season production levels, or measured annual production levels under drought conditions.

Given the potential for one or more of the above potential restrictive effects on the nearby private domestic wells to occur as a result Beltz 12 ASR operations, the impact related to chronic lowering of groundwater levels in nearby private wells is considered to be a potentially significant impact.

Implementation of Mitigation Measure MM HYD-2, Groundwater Level Monitoring, would avoid conflicts with the Santa Cruz Mid-County GSP by requiring: continuation of a private well monitoring program already in place; implementation of a groundwater investigation to determine the source of restrictive effects (i.e., associated with Beltz 12 ASR or O'Neill Ranch well extractions), if it is determined that restrictive groundwater effects are occurring during future ASR pilot tests and operations; and implementation of remedial measures, as applicable, based on the results of the groundwater assessment (e.g., modification of injection and/or extraction operations until groundwater levels return to baseline levels). Therefore, with implementation of this mitigation measure, the impact of Beltz 12 ASR operations related to chronic lowering of groundwater levels at nearby private wells would be reduced to less-than-significant level.

Operation of the Beltz 8, 9, and 10 ASR injections and extractions anticipated by the Proposed Project would be consistent with the sustainable management criteria per Operational Practice #2, and would avoid any undesirable results as identified in the adopted Santa Cruz Mid-County Groundwater Basin GSP and in any future revisions to the GSP. Beltz ASR would contribute to restoration of the Santa Cruz Mid-County Groundwater Basin, per the GSP (MGA 2019). Contribution to restoration of the basin would also protect the basin from seawater intrusion in support of the proposed water quality beneficial use identified in Chapter 3, Project Description. As a result, groundwater level impacts associated with Beltz 8, 9, and 10 ASR operations would be less than significant.

2. Reduction in Groundwater Storage. Undesirable results related to reduction in groundwater storage would occur if the five-year average net extraction exceeds the sustainable yield (minimum threshold) for any one of the groups of aquifers, including the Aromas Red Sands, Purisima, and Tu aquifers. Although only a total volume for the entire basin is required as a metric for the reduction of groundwater in storage sustainability indicator, per SGMA regulations, the Santa Cruz Mid-County Groundwater Basin GSP includes separate sustainable management criteria for three separate aquifer groups, including: 1) Aromas Red Sands and Purisima F, 2) Purisima DEF, BC, A, and AA aquifers, and 3) the Tu aquifer. The sustainable management criteria metrics for determining reduction in groundwater storage are based on the sustainable yields for each of the three aquifer groups (MGA 2019).

   Developing reduction of groundwater storage sustainable management criteria for separate aquifer units reflects the stacked aquifer units of the groundwater basin, where groundwater supplies in different areas of the basin are provided by different aquifer units. To maximize capacity, municipal wells are often screened across multiple aquifers. For example, most municipal wells screened in the Aromas Red Sands aquifer are also screened in the deeper Purisima F-unit aquifer. Other typical multiple aquifer-screened wells include: the Purisima DEF and BC units; the Purisima BC and A units; and the Purisima A and AA units. Although municipal wells screened in the Tu unit are also screened in the Purisima AA-unit, a high percentage of the flow in these wells is observed to be from the Tu unit. Additionally, the vertical separation of flow between the Purisima AA and Tu units is observed to be greater than the vertical separation between the Purisima A and AA units, which further supports the Tu unit being in a separate group. Although sustainable yield can be estimated for individual aquifers, monitoring pumping quantities from individual aquifers is not possible because of production wells being screened through multiple aquifers. Therefore, the aquifer groupings account for the extraction from the typically screened aquifers in production wells (MGA 2019).

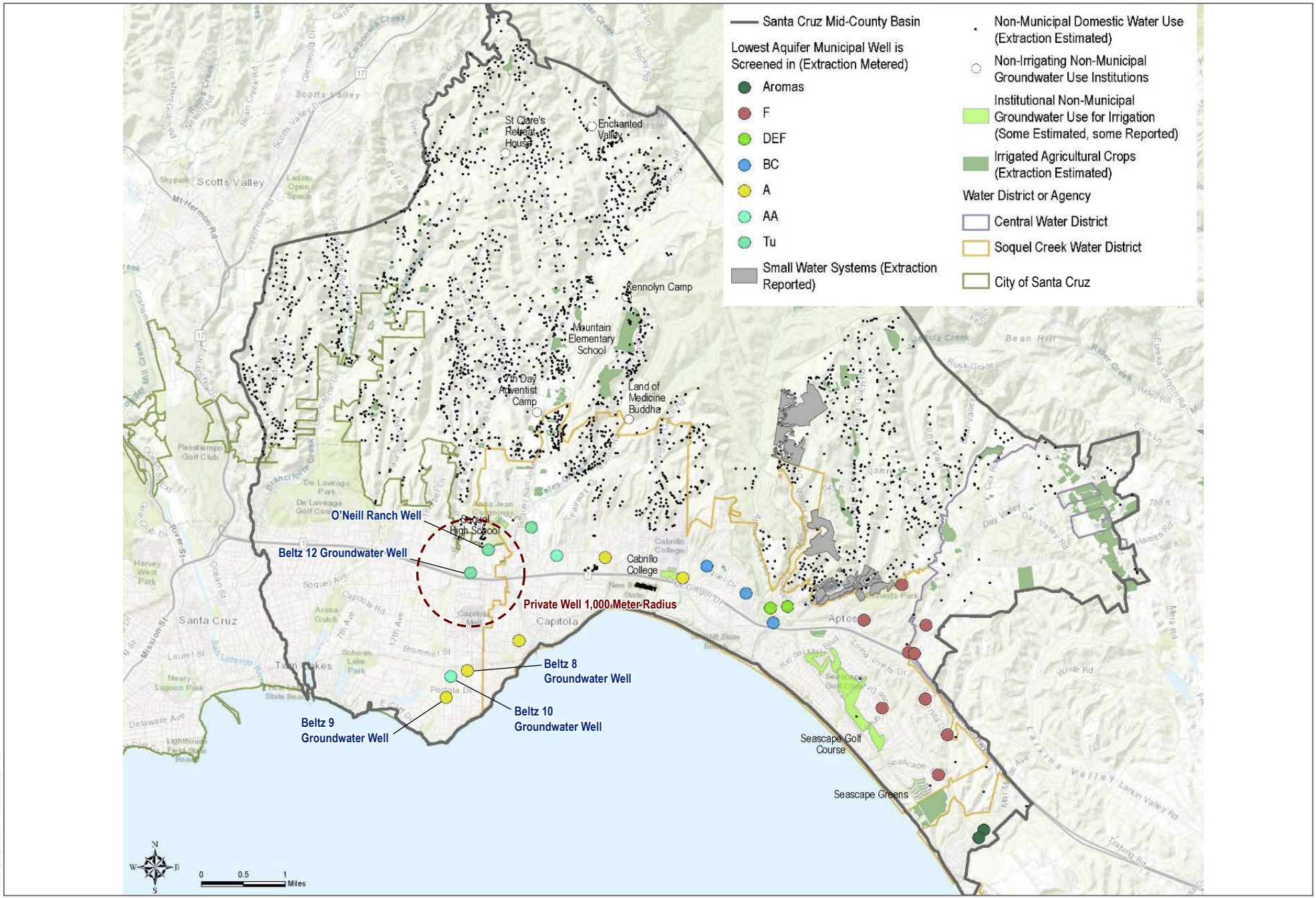
Beltz ASR would, in aggregate, result in less annual groundwater extraction than injection, but maximum annual extraction volumes could exceed injection volumes during dry periods when more water supply is needed to meet City demands (see above and Table 4.8-4). Undesirable results related to reduction in groundwater storage would only occur if the five-year average net extraction exceeds the sustainable yield (minimum threshold) for any one of the groups of aquifers. In addition, the GSP would be refined over time and RMPs would be monitored to verify that ASR-related extractions are not causing undesirable effects in the groundwater basin, including a reduction in groundwater in storage (MGA 2019). RMPs related to change in groundwater storage are shown on Figure 4.8-9.

The purpose of the reduction in storage sustainability indicator is to prevent undesirable results for other sustainability indicators. Each of these sustainability indicators are monitored by individual aquifer units. If undesirable results are observed in any aquifer unit or related to pumping from a specific aquifer unit, the most likely management action to eliminate the undesirable result is to change net pumping from the aquifer unit. The change in net pumping would be determined by that which is necessary to eliminate the undesirable result, not based on the reduction of groundwater in storage criteria (MGA 2019).

Localized pumping depressions and groundwater mounding would be part of normal operations during Beltz ASR operations and would be acceptable provided extractions remain within the zone of operational flexibility in maintaining aquifer volume above minimum thresholds over the five-year averaging period. Beltz ASR injection would add to the operational flexibility of the groundwater basin, allowing for increased withdrawals within individual aquifer groupings. Beltz ASR facilities would simply use the Santa Cruz Mid-County Groundwater Basin as a reservoir for treated surface water. Beltz ASR-related extractions would not deplete the pre-existing groundwater in storage, but instead would contribute to the protection of groundwater quality from seawater intrusion and provide for sustainability benefits in the groundwater basin in compliance with the Santa Cruz Mid-County Groundwater Basin GSP. Based on compliance with the Santa Cruz Mid-County Groundwater Basin GSP, including the associated groundwater monitoring program, Beltz ASR facilities would not result in a reduction in groundwater storage. As a result, the impact of Beltz ASR operations on groundwater storage would be less than significant.

3. Subsidence. As described in Section 4.5, Geology and Soils, land subsidence is a settling or sudden sinking of the ground surface due to subsurface compaction of earth materials. The principal causes of subsidence in California are aquifer-system compaction related to groundwater extraction, drainage and decomposition of organic soils, and oil and gas extraction. Effects of land subsidence include damage to buildings and infrastructure such as roads and canals, increased flood risk in low-lying areas, and lasting damage to groundwater aquifers and aquatic ecosystems. Based on a review of a U.S. Geological Survey subsidence map (USGS 2020), the study area is not in an area of regional ground subsidence. In addition, none of the conditions that typically result in subsidence is known to be present within the Santa Cruz Mid-County Groundwater Basin and no anecdotal evidence of subsidence related to groundwater extraction is known. No formal subsidence studies have been completed in the region (MGA 2019).

   Because historical declines in groundwater have been more than 50 feet, the possibility of aquifer-system compaction exists. However, based on available information, the likelihood of subsidence is low. Susceptibility to land subsidence from groundwater level declines requires aquitards (fine grained silts and clays) above or within which preconsolidation stress thresholds are exceeded. Preconsolidation stress is the maximum amount of past effective stress the soil has experienced. Aquitards in the Santa Cruz Mid-County Groundwater Basin are present between the aquifer units. However, in areas with pumping, the bottom elevations of aquitards are generally more than 100 feet below sea level, which is deeper than typical groundwater levels, resulting in a lack of aquitard dewatering and associated soil compaction (MGA 2019).




SOURCE: SCMGA 2019

**FIGURE 4.8-9**

Representative Monitoring Network for Measuring Reduction in Groundwater Storage

Santa Cruz Water Rights Poject

DUDEK

The greatest groundwater level declines since recording levels began in 1984 have been in the Purisima BC units of the Santa Cruz Mid-County Groundwater Basin, where declines of approximately 140 feet have occurred. The Purisima A and DEF units have also sustained substantial historical declines in groundwater levels. However, these groundwater levels have since recovered and no subsidence has been documented in the basin because of these declines. No subsidence monitoring has been completed in the basin; however, two continuous global positioning system (GPS) stations are in the vicinity of the basin. The GPS stations are in areas underlain by the Aromas Red Sands and Purisima F unit aquifers, which are hydraulically connected to the Santa Cruz Mid-County Groundwater Basin. Therefore, these station locations are somewhat representative of the basin, although no GPS stations are in areas of the basin where the main Purisima aquifers are being pumped and where historic long-term groundwater declines have occurred (MGA 2019).

However, the consolidated nature of the Purisima Formation, where groundwater level declines have historically occurred, has resulted in no land subsidence related to lowered groundwater levels. Similarly, subsidence is not anticipated in the future. Implementation of the GSP and avoiding undesirable results in the other five sustainability indicators would ensure that historic low groundwater levels would not occur in the future. In the highly unlikely event that land subsidence caused by lowered groundwater levels occurs in the basin and is identified as such by observational monitoring, the MGA would immediately regulate groundwater pumping in the area of subsidence. The identification of active land subsidence would trigger the need for dedicated subsidence monitoring and an amendment to the GSP that includes development of sustainable management criteria for the land subsidence sustainability indicator (MGA 2019).

In conclusion, the lack of evidence of subsidence linked to substantial groundwater declines, the lack of the susceptibility of the basin geology to subsidence, and existing regional subsidence monitoring near the Santa Cruz Mid-County Groundwater Basin indicates the inapplicability of the subsidence sustainability indicator for the basin. In addition, ASR operations augment a groundwater basin's natural recharge. As a result, the impact of Beltz ASR facilities with respect to ground subsidence would be less than significant.

4. Depletion of Interconnected Surface Water. The current shallow monitoring wells used to monitor and evaluate interactions between surface water and groundwater are focused on the lower stretch of Soquel Creek, where there are several municipal production wells, which are operated by SqCWD. In addition, multiple depth monitoring well clusters are located near Soquel Creek that are included in the evaluation of surface water and groundwater extractions (see Figure 4.8-5). No such shallow wells are near the Beltz ASR system, in the vicinity of Rodeo Creek Gulch and unnamed intermittent Stream 472, located upstream of Moran Lake. Under the GSP, eight new shallow monitoring wells would be added to complete the monitoring network and further evaluate the effects of groundwater extractions on streamflow in interconnected surface waters. It is expected that these wells will be installed prior to October 2022. The timing of installation of these new shallow monitoring wells would mean that they would be operational by the earliest time that Beltz ASR facilities become operational (Fall 2022). Currently, the proposed well location in the vicinity of the Beltz ASR wells is approximately ¾ mile upstream of the Beltz 12 ASR facility, along Rodeo Creek Gulch. This proposed shallow well site is a lower priority site that may require synoptic measurements to establish where the stream is gaining and losing, before finalizing this monitoring well site (MGA 2019).

   The locations of additional shallow wells would be selected based on whether groundwater is connected to surface waters, whether the area has a concentration of groundwater extraction wells, the suitability of nearby location for streamflow gauge, and potential for site access. Groundwater elevations as a proxy for surface water depletion are used as a measure of sustainability because no direct measurable change in streamflow from deep groundwater extraction has been detected in over 18 years of monitoring shallow groundwater levels adjacent to Soquel Creek. Based on monitoring along Soquel Creek, annual rainfall, flows from the upper Soquel Creek

Watershed outside of the Santa Cruz Mid-County Groundwater Basin, temperature, and evapotranspiration individually have a much greater measurable influence on streamflow than groundwater pumping. Even though there is no measurable direct change in streamflow from groundwater extraction, there is a demonstrable indirect influence on shallow groundwater connected to the creek from deeper aquifers pumped by municipal and private wells. As these observations are made from a few wells on Soquel Creek only, further study as part of GSP implementation would revise the current understanding of the relationship between streamflow and groundwater. Additional insight into this relationship might necessitate a future change in the GSP's sustainable management criteria for this sustainability criteria (MGA 2019). However, as noted above eight 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 Beltz ASR facilities could become operational.

Data obtained from future groundwater monitoring locations would inform the validity of 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. Groundwater level data collected would be evaluated annually with respect to streamflow, climate, groundwater usage, and biological responses. In addition, additional streamflow gauges to monitor changes in stream flow would be installed to correlate changes in streamflow from groundwater extraction (MGA 2019).

In conclusion, Beltz ASR would be completed in compliance with the Santa Cruz Mid-County Groundwater Basin GSP per Operational Practice #2. Sustainable management criteria established in the 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. Based on monitoring completed in Soquel Creek, municipal pumping does not appear to be diminishing streamflow in the basin. As a result, the impact of Beltz ASR facilities with respect to depletion of interconnected surface water would be less than significant.

**Impact Summary.** Based on the analysis above, the Beltz ASR project component would not interfere with groundwater recharge, or contribute to seawater intrusion, reduction in groundwater storage, ground subsidence, or depletion of interconnected surface water. As previously discussed, beneficial impacts would occur with respect to groundwater recharge because by design, Beltz ASR facilities would, in aggregate, result in more injection than extraction. Beltz ASR facilities would use the Santa Cruz Mid-County Groundwater Basin as a reservoir for treated surface water. Beltz ASR facility-related extractions would not deplete the pre-existing groundwater in storage, but instead would contribute to the protection of groundwater quality from seawater intrusion in the Santa Cruz Mid-County Groundwater Basin and provide for sustainability benefits in compliance with the Santa Cruz Mid-County Groundwater Basin GSP.

Because it is unclear whether long-term Beltz 12 ASR operations would adversely affect the localized water quality of the SqCWD O'Neill Ranch well, localized water quality impacts related to elevated ammonia concentrations is considered a potentially significant impact. Likewise, given the potential for localized restrictive effects to occur on the nearby private domestic wells within 1,000 meters (approximately 3,300 feet) as a result Beltz 12 ASR operations, the impact related to chronic lowering of groundwater levels is also considered to be a potentially significant impact. However, MM HYD-1 and MM HYD-2 would reduce these localized impacts to a less-than-significant level.

### Water Transfers and Exchanges and Intertie Improvements

The Santa Cruz Mid-County Groundwater Basin GSP identifies water transfers/in lieu groundwater recharge as one of the "projects and management actions" that would deliver excess City surface water, treated to drinking water standards, to SqCWD to reduce groundwater pumping and allow an increase in groundwater in storage in order to help prevent seawater intrusion. If water transfers benefit groundwater levels, are sustainable over time, and the

basin's performance consistently reaches sustainability targets, then the GSP indicates that the City could recover, via exchanges, some of the increase in groundwater in storage as a supplemental supply during dry periods. The GSP also acknowledges the pilot water transfer program agreement between the City and SqCWD to sell excess winter water supply from the City's GHWTP. Pilot transfers were provided to a limited portion of the SqCWD service area during the 2018/2019 and 2019/2020 winter and spring wet season. During this time, active water quality monitoring and operational constraints analyses were conducted to inform feasibility for future expanded water transfers or exchanges.

Modification of the City's appropriative water rights through the Proposed Project would facilitate the opportunity for potential future water transfers and exchanges with neighboring water agencies, including SVWD, SLVWD, SqCWD, and CWD. Such transfers and exchanges would likely be provided for via agreements with defined terms related to timing, volume of water, water year conditions, return of water, etc., that would be developed between the City and one or more of the neighboring agencies. New or improved interties between the water systems of the City and of neighboring water agencies may be needed to facilitate future water transfers and exchanges once City water rights are modified.

Chapter 3, Project Description, indicates that when water is available and conditions of future agreements are met, a range of water volumes of approximately 98 mgy to 277 mgy (0.5 mgd to 1.5 mgd from November 1 to April 30) could be transferred by the City to SqCWD and/or CWD via the proposed intertie facilities, with some volume of water potentially returned or exchanged to the City during dry periods. Additionally, up to approximately 163 mgy (0.9 mgd from November 1–April 30) of water could be transferred by the City to SVWD and/or SLVWD via the proposed intertie facilities, again with some volume of water potentially returned to or exchanged with the City during dry periods. The amount of water that may be returned through exchanges is unknown at this time and will be based on the conditions described in the Santa Cruz Mid-County GSP, as described above, and the pending Santa Margarita GSP.

As indicated for Impact HYD-1, dewatering would be required if trenching for pipeline installation intercepts shallow groundwater. However, such dewatering would be temporary and localized, and would result in a negligible quantity of groundwater being extracted with respect to the quantity of groundwater present in the aquifers. In addition, dewatering would occur in accordance with a dewatering discharge permit to be issued by the Central Coast RWQCB. Intertie pipelines would not require a net increase in paving and therefore would not result in a loss of recharge. Proposed pump stations would result in small areas of paving that would be inconsequential with respect to recharge.

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 the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin. As a result, this programmatic component would not decrease groundwater supplies or interfere substantially with groundwater recharge such that the sustainable groundwater management of the basin would be impeded. In addition, this programmatic component would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Therefore, this programmatic component would result in a less-than-significant impact.

Felton Diversion, and Tait Diversion and Coast Pump Station Improvements

As indicated for Impact HYD-1, dewatering would be required during diversion modifications. However, such dewatering would be temporary and localized, and would result in a negligible quantity of groundwater being extracted with respect to the quantity of groundwater present in the underlying aquifers. In addition, dewatering would occur in accordance with a dewatering discharge permit to be issued by the Central Coast RWQCB. Diversion and pump station improvements would not require a net increase in paving given that the sites are already developed and paved, and

therefore would not result in loss of recharge. As a result, these programmatic components would not decrease groundwater supplies or interfere substantially with groundwater recharge such that sustainable groundwater management of the basin would be impeded. In addition, these programmatic components would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Therefore, this programmatic component would result in a less-than-significant impact.

### Mitigation Measures

Implementation of the following mitigation measures would reduce potentially significant groundwater impacts of the Proposed Project, as described above, to a less-than-significant level.

**MM HYD-1: Ammonia Monitoring (Applies to Beltz 12 Aquifer Storage and Recovery [ASR] Facility).** Consistent with groundwater monitoring completed for the Beltz 12 ASR Pilot Test Project (Pueblo Water Resources 2020), monitoring for ammonia shall be completed in the Beltz 12 well and the Soquel Creek Water District (SqCWD) O'Neill Ranch well during future Beltz 12 ASR pilot tests and ASR operations. The City shall establish ammonia concentrations beginning at least 12 months prior to commencement of Beltz 12 ASR operations, by conducting quarterly sampling, and obtaining similar sampling data for the SqCWD's O'Neill Ranch well, as provided by SqCWD. During the first year of Beltz 12 ASR injection and extraction operations, the City shall conduct monthly monitoring of ammonia concentrations in groundwater. Following the first year of operations, monitoring of ammonia shall be quarterly. In the event that over a two-year sampling period after initiation of Beltz 12 ASR operations, City ammonia monitoring data, in combination with ammonia monitoring data from the SqCWD O'Neill Ranch well, indicates Beltz 12 ASR operations are not resulting in changes to ammonia concentrations that could adversely affect operations at the SqCWD's O'Neill Ranch well, ammonia sampling shall be discontinued in the Beltz 12 ASR well.

The City ammonia monitoring data, in combination with ammonia monitoring data from the SqCWD O'Neill Ranch well, shall be evaluated to determine if Beltz 12 ASR operations are resulting in changes to ammonia concentrations that could adversely affect operations at the SqCWD's O'Neill Ranch well. If ammonia levels increase above baseline, the City and SqCWD shall cooperatively develop, fund, and implement a hydrogeologic investigation to evaluate the source(s) and distribution of ammonia in the aquifer system and potential causes of the observed ammonia increases. The investigation shall include, if applicable, installation of a monitoring well cluster between the Beltz 12 ASR well and the O'Neill Ranch well to evaluate the gap in data between these two wells.

To the extent that the results of the hydrogeologic investigation indicate that Beltz 12 ASR operations are resulting in ammonia concentrations above baseline concentrations, ASR injection and/or extraction operations shall be modified until ammonia concentrations decrease to baseline (or lower) levels, as demonstrated with monthly (during the first year of operations) or quarterly monitoring data from the Beltz 12 ASR well, and the SqCWD's O'Neill Ranch well, as provided by SqCWD. The Beltz 12 ASR modifications shall be proportional to the degree of impact being caused by Beltz 12 ASR operations (versus O'Neill Ranch well operations). Quarterly monitoring reports shall be prepared to document monitoring results.

Additionally, during the next Mid-County Groundwater Sustainability Plan update process, the City shall work with other member agencies of the Mid-County Groundwater Sustainability Agency to address ammonia as a groundwater quality issue in the basin if warranted based on the outcome of monitoring and any hydrogeologic investigation performed, and incorporate the City's Beltz 12 ASR well and the SqCWD's O'Neill Ranch well into the plan update to allow for the ongoing assessment and monitoring of ammonia concentrations.

**MM HYD-2: Groundwater Level Monitoring (Applies to Beltz 12 Aquifer Storage and Recovery [ASR] Facility).** Consistent with restrictive effects criteria established in private well baseline assessment reports (Hydro Metrics 2015a, 2015b, 2015c, 2015d, 2015e), the private well monitoring program currently in place under the April 2015 cooperative monitoring/adaptive groundwater management agreement (cooperative groundwater management agreement) and the April 2015 stream flow and well monitoring agreement, between the City of Santa Cruz (City) and Soquel Creek Water District (SqCWD), shall be continued with respect to groundwater levels, and the City will contact and enroll any additional residents with private domestic wells within a 3,300-foot radius of the City's Beltz 12 ASR facility who want to join the program. Consistent with the existing cooperative groundwater management agreement, the City and SqCWD shall share monitoring and mitigating for impacts to third parties, such as private wells found in the area of overlap of 3,300-foot radius around SqCWD's O'Neill Ranch Well and 3,300-foot radius around the City's Beltz 12 well. Monitoring expenses shall be shared equally while mitigation expenses shall be shared proportionately. If private well monitoring reveals impacts to private wells due to the presence of restrictive effects, pump tests shall be conducted to determine proportionality. Monitoring and mitigation of impacts to private wells within a 3,300-foot radius of either the O'Neill Ranch well or Beltz 12 well, but not located in the overlap area, shall be the sole responsibility of the agency whose 3,300-foot radius encompasses the private well.

If demonstrated restrictive effects to nearby private domestic wells occur during ASR pilot testing or operations, the City and SqCWD shall cooperatively develop, fund, and implement a hydrogeologic investigation to evaluate the potential causes of the observed restricted effects in private wells. To the extent that the results of the hydrogeologic investigation indicates that Beltz 12 ASR operations are resulting in restrictive effects, ASR injection and/or extraction operations shall be modified until the corresponding undesirable effects are eliminated, as demonstrated with quarterly monitoring data from the private wells. The Beltz 12 ASR modifications shall be proportional to the degree of impact being caused by Beltz 12 ASR operations (versus O'Neill Ranch well operations). Annual monitoring reports shall be prepared to document monitoring results. In the event that restrictive effects to nearby private domestic wells does not occur during ASR pilot testing or operations, for a period of five years after initiation of Beltz 12 ASR operations, the City's participation in the private well monitoring program will be discontinued.

Additionally, during the next Mid-County Groundwater Sustainability Plan (GSP) update process, the City shall work with other member agencies of the Mid-County Groundwater Sustainability Agency to update information in the GSP related to private wells and the ongoing assessment and monitoring of groundwater levels at these wells, if warranted based on the outcome of monitoring and any hydrogeologic investigation performed.

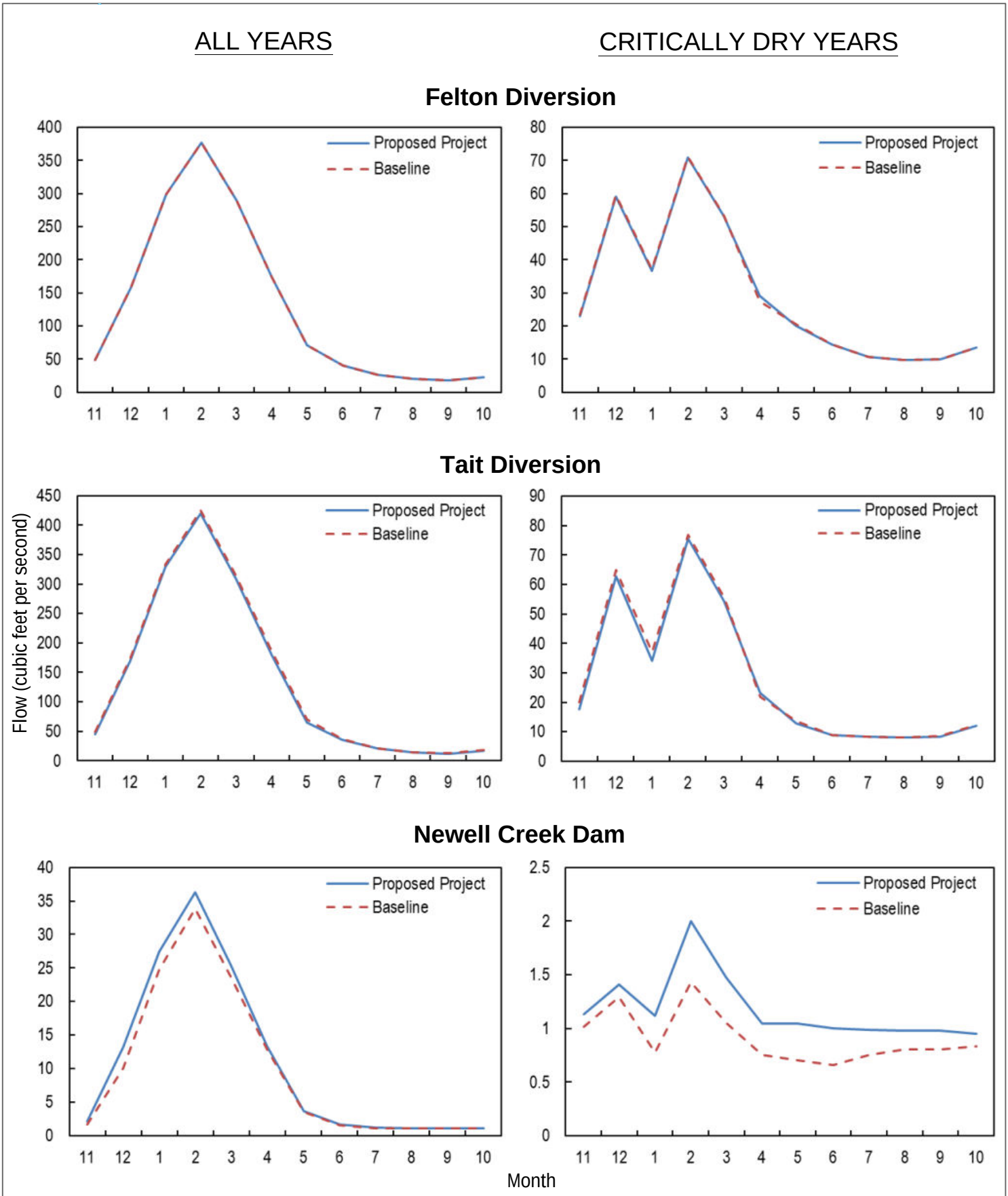
**Impact HYD-3: Alteration to the Existing Drainage Pattern of the Site Area (Significance Standard C).** Construction and operation of the Proposed Project could substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (a) result in substantial erosion or siltation on or off site; (b) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; (c) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (d) impede or redirect flood flows. ***(Less than Significant with Mitigation)***

### Water Rights Modifications

The water rights modifications of the Proposed Project would not directly result in construction or operation of new facilities and would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces. However, the water rights modifications could directly impact residual stream flows (i.e., flows downstream of the City's diversions). In the event that stream diversions resulted in a substantial decrease in stream flows or Loch Lomond Reservoir levels, water quality impacts could occur, including increased temperature due to shallower water, and altered salinity, dissolved oxygen, and pH concentrations.

As indicated Section 4.8.3.2, Analytical Methods, the City has utilized a modeling system comprised of a hydrologic model, a water supply model, and a biological effects model to both refine and analyze the Proposed Project. See Appendix D for a detailed description of these models. Based on this modeling, Figure 4.8-10 and Figure 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). This information is provided for the San Lorenzo River at the Felton Diversion and Tait Diversion, Newell Creek at the Newell Creek Dam, and the North Coast stream diversions at Laguna Creek, Liddell Spring, and Majors Creek. Figure 4.8-10 and Figure 4.8-11 indicate that the difference in residual flows 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. 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.

The Proposed Project would increase Loch Lomond Reservoir levels as shown in Table 4.8-5, which indicates that the reservoir would spill more frequently, based on an average of all years in the historical record. Operation of the Loch Lomond Reservoir (reservoir spill and the existing required 1 cfs fish release) is the only City activity associated with the Proposed Project that has the potential to influence water temperatures (see Appendix D-3). Reservoir spilling in late spring and summer will increase somewhat with the Proposed Project (see Table 4.8-5), which can increase water temperatures below the Newell Creek Dam in Newell Creek because the reservoir spills are from the reservoir surface, which are warmer, particularly as the temperatures warm in the spring and early summer. Under Operational Practice #6, as described in Section 4.8.3.2, Analytical Methods, when the 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.

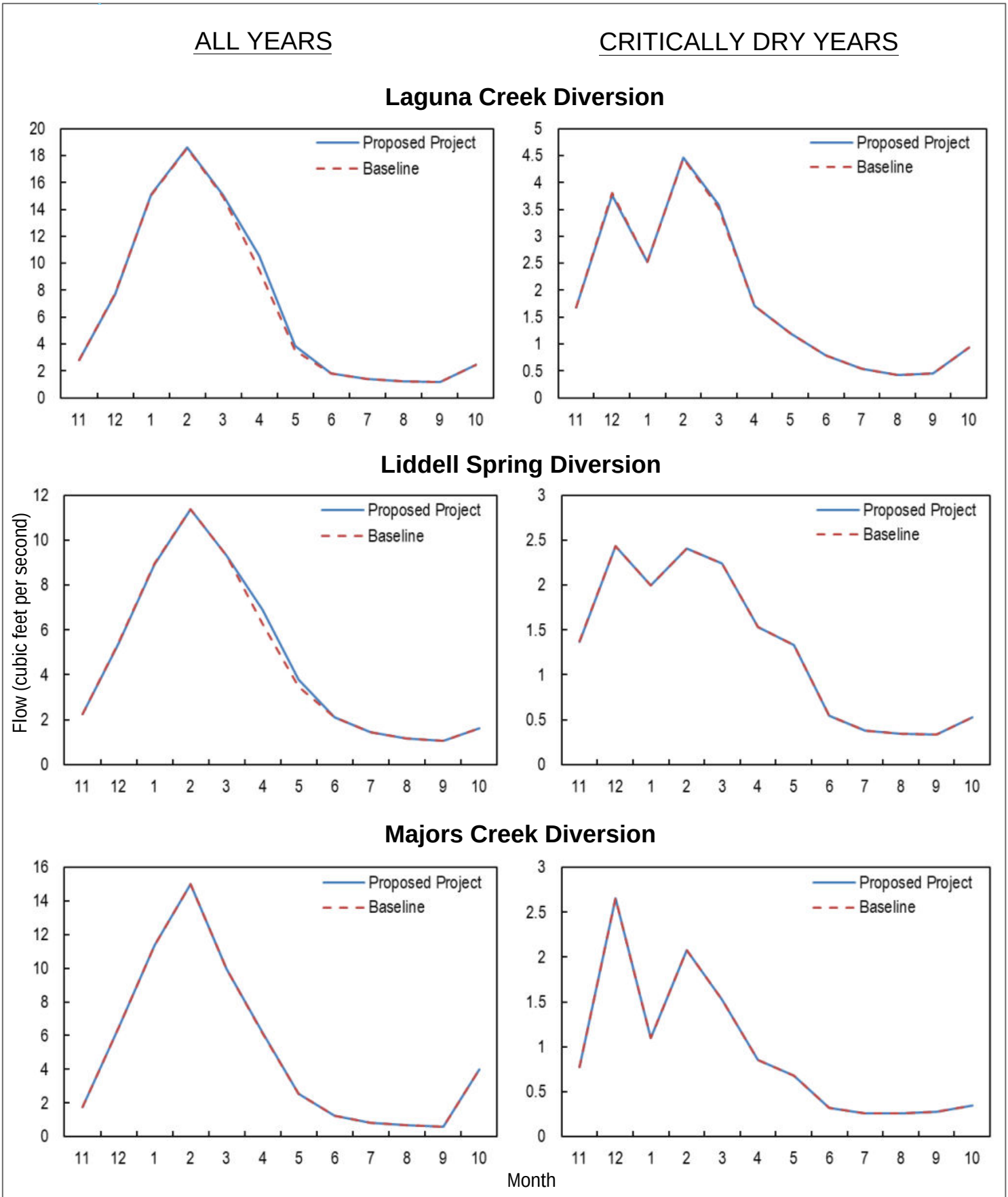



Note: Based on an average of all years and critically dry years in the historical record (1936 to 2015).

SOURCE: Gary Fiske and Associates 2021b

**FIGURE 4.8-10**

Average Monthly Residual Flows at Felton and Tait Diversions and Newell Creek Dam




Note: Based on an average of all years and critically dry years in the historical record (1936 to 2015).

SOURCE: Gary Fiske and Associates 2021b

**FIGURE 4.8-11**

Average Monthly Residual Flows at Laguna Creek, Liddell Spring, and Majors Creek Diversions

DUDEK

Table 4.8-5. Percent of Days that Loch Lomond Reservoir Spills

| Month | 2018 Existing Conditions | Proposed Project Conditions |
|---|---|---|
| Jan | 41.4% | 53.4% |
| Feb | 60.3% | 70.4% |
| Mar | 68.6% | 80.0% |
| Apr | 64.5% | 76.1% |
| May | 48.8% | 76.5% |
| Jun | 18.9% | 37.8% |
| Jul | 0.0% | 3.6% |
| Aug | 0.0% | 0.1% |
| Sep | 0.0% | 0.0% |
| Oct | 0.0% | 0.0% |
| Nov | 1.5% | 4.5% |
| Dec | 14.8% | 31.4% |

**Source:** Gary Fiske and Associates 2021b.

Therefore, this project component of the Proposed Project would not substantially alter the existing drainage patterns of the City's surface water sources such that potentially adverse water quality impacts would result. Additionally, as Newell Creek Dam does not function as a flood control impoundment, an increase in Loch Lomond Reservoir levels and spill frequency would not cause downstream flooding. Therefore, this project component would have a less-than-significant direct impact.

The following analysis evaluates the potential indirect impacts related to alteration of drainage patterns 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

The project and programmatic infrastructure components that could substantially alter the existing drainage patterns of the site or area are the new facilities that would result in new impervious surfaces, including the new ASR facilities and the new pump stations associated with the City/SVWD intertie and the City/SqCWD/CWD intertie, which are further described below.

The proposed upgrades to Beltz ASR facilities, the McGregor pump station upgrade, and the Felton Diversion and Tait Diversion and Coast Pump Station improvements would not result in a net increase in impervious surfacing given that these sites are already developed and paved. Additionally, once installed, the City/SVWD intertie pipeline and the City/SqCWD/CWD intertie pipeline would be located underground or within existing bridge crossings (i.e., Porter Street bridge crossing of Soquel Creek) and would not result in a net increase in paving or pipeline installation beneath riverbeds. Therefore, the Beltz ASR facilities, intertie pipelines, the McGregor pump station upgrade, and the Felton Diversion and Tait Diversion and Coast Pump Station improvements would not result in substantial erosion or siltation on- or off-site; substantially increase in the rate or amount of surface runoff in a manner which would result in flooding on-or offsite; create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flood flows and these components would result in a less-than-significant impact.

See Impact HYD-1 for construction and operational surface water quality impacts that are not related to alteration of existing drainage patterns.

New ASR Facilities

The Proposed Project includes the City installing and operating new ASR facilities within the Santa Cruz Mid-County Groundwater Basin, and in the Santa Margarita Groundwater Basin. New ASR facilities would be similar to some of the existing Beltz 8, 9, 10, and 12 facilities, as shown on Figures 3-4a through 3-4d in Chapter 3, Project Description. Following grading and construction, the new ASR facility sites would be paved. Assuming the existing sites for new ASR facilities are unpaved, an increase in impervious surfaces with this programmatic component would result in increased stormwater runoff rates, which in turn could result in off-site erosive scour, sedimentation or additional sources of polluted water in down-gradient water bodies, and potentially off-site flooding due to exceedance of existing storm drain capacity.

However, new ASR facilities would be constructed consistent with the City comprehensive SWMP and stormwater regulations, as it is assumed that these facilities would be owned and operated by the City. As discussed in Section 4.8.2, Regulatory Framework, the City has developed a comprehensive SWMP to fulfill the requirements for the NPDES MS4 General Permit and to reduce the amount of pollutants discharged in urban runoff. The SWMP is a comprehensive program to reduce the amount of pollutants discharged in urban runoff and to improve and protect water quality. Additionally, Title 24 of the City of Santa Cruz Municipal Code includes provisions to ensure that new developments or remodeled sites are designed and constructed in a manner that limits alteration of drainage patterns, prevents erosion, and minimizes long-term impacts on water quality. These provisions include requirements that a drainage plan be submitted for projects, when existing drainage patterns would be altered by new construction. In addition, the ordinance requires that stormwater runoff resulting from project development be minimized, and if a proposed project includes the discharge of runoff into a natural watercourse, the drainage plan shall include methods to safeguard or enhance the existing water quality. Devices such as detention basins, percolation ponds, or sediment traps may be required by the City, where appropriate or as specified in an adopted plan or wetlands management plan. Provisions pertaining to erosion control include requirements that a site development be fitted to the topography and soil to create the least potential for erosion and that vegetation removal is limited. In addition, Chapter 16.19 of the City's Municipal Code, the City Stormwater and Urban Runoff Pollution Control ordinance, prohibits illicit connections and pollutant discharges to the City storm drain system and requires the implementation of BMPs.

Additionally, any City facility in the coastal zone of unincorporated Santa Cruz County would be required to comply with County LCP policies and related coastal ordinances in the County Code related to drainage, grading, and erosion control, which are contained in County Code Chapter 13.20 (Coastal Zone Regulations), Chapter 16.20 (Grading Regulations), and Chapter 16.22 (Erosion Control).

With compliance with local stormwater regulations, this programmatic component of the Proposed Project would not substantially alter the existing drainage pattern of the new ASR facility sites or areas, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site; substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-or offsite; create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flood flows. Therefore, this programmatic component would have a less-than-significant impact.

Water Transfers and Exchanges and Intertie Improvements (New Pump Stations Only)

**City/SVWD Intertie Pump Station.** The City/SVWD intertie would require a new pump station on La Madrona Drive, near the intersection with Altenitas Road (see Figure 3-4e in Chapter 3, Project Description). This pump station would be constructed on relatively flat to gently sloping topography and would not substantially alter the drainage patterns of the area through the alteration of the course of a stream or river. However, the pump station could increase runoff associated with new paving as this site is currently undeveloped, which could cause associated erosion, contribution of runoff water which would exceed the capacity of drainage systems or result in substantial additional sources of polluted runoff.

Given that this facility is located outside of the coastal zone and is a water infrastructure facility exempt from local ordinances under California Government Code 53091 (d) and (e) (see Section 4.8.2, Regulatory Framework), the City of Scotts Valley's drainage design standards would not apply and these impacts would be potentially significant if the facilities are not properly designed.

Implementation of MM HYD-3 would avoid substantial erosion or siltation on- or off-site; substantial increases in the rate or amount of surface runoff; substantial additional sources of polluted runoff; or impeding or redirecting flood flows by requiring that: post-construction stormwater runoff rates be equal to or less than under existing conditions, to prevent off-site erosion, flooding, and exceedance of existing stormwater drainage capacities; and pollutants in stormwater runoff are minimized. Therefore, with the implementation of this mitigation measure, the impact of the new pump station element of this programmatic component related to alteration of drainage patterns would be reduced to a less-than-significant level.

**City/SqCWD/CWD Intertie Pump Stations.** The City/SqCWD/CWD intertie would require two new pump stations on Freedom Boulevard and Valencia Drive (see Figure 3-4g in Chapter 3, Project Description). These pump stations would be constructed on relatively flat to gently sloping topography and would not substantially alter the drainage patterns of the area through the alteration of the course of a stream or river. The pump stations could increase runoff associated with new paving as these sites are currently undeveloped, which could cause associated erosion, contribution of runoff water which would exceed the capacity of drainage systems or result in substantial additional sources of polluted runoff.

Given that these facilities are located outside of the coastal zone and are water infrastructure facilities exempt from local ordinances under California Government Code 53091 (d) and (e) (see Section 4.8.2, Regulatory Framework), the County of Santa Cruz's drainage, grading, and erosion control ordinances would not apply and these impacts would be potentially significant if the facilities are not properly designed.

Implementation of MM HYD-3 would avoid substantial erosion or siltation on- or off-site; substantial increases in the rate or amount of surface runoff; substantial additional sources of polluted runoff; or impeding or redirecting flood flows by requiring that: post-construction stormwater runoff rates be equal to or less than under existing conditions, to prevent off-site erosion, flooding, and exceedance of existing stormwater drainage capacities; and pollutants in stormwater runoff are minimized. Therefore, with the implementation of this mitigation measure, the impact of the new pump station elements of this programmatic component related to alteration of drainage patterns would be reduced to a less-than-significant level.

### Mitigation Measures

Implementation of the following mitigation measure would reduce potentially significant impacts related to alteration of drainage patterns of the Proposed Project, as described above, to a less-than-significant level.

**MM HYD-3:** **Drainage Improvements (Applies to City of Santa Cruz/Scotts Valley Water District Intertie Pump Station and City of Santa Cruz/Soquel Creek Water District/Center Water District New Intertie Pump Stations).** Final pump station designs shall include Low Impact Development features, which would: (1) reduce post-construction stormwater runoff rates to be less than or equal to existing conditions, for a 24-hour, 25-year storm event; and (2) minimize off-site runoff of stormwater pollutants through filtration features, such oil-water separators, vegetated swales, and bioretention basins. These features shall be inspected monthly to ensure functionality.

**Impact HYD-4:** **Flood, Tsunamis, and Seiche Zones (Significance Standard D).** Construction and operation of the Proposed Project in flood hazard, tsunami, or seiche zones would not risk release of pollutants due to project inundation. ***(Less than Significant)***

### Water Rights Modifications

The water rights modifications of the Proposed Project would not directly result in construction or operation of new facilities and would not (in flood hazard, tsunami, or seiche zone) risk release of pollutants due to project inundation. Therefore, this project component would have no direct impacts.

The following analysis evaluates the potential indirect impacts related to floods, tsunamis, and seiches 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

Aquifer Storage and Recovery

**New ASR Facilities.** To protect the long-term integrity of new ASR facilities, such facilities would not be constructed in a flood, tsunami, or flood zone. As a result, new ASR facilities would not risk release of pollutants due to project inundation. Therefore, this programmatic component would have no impacts.

**Beltz ASR Facilities.** None of the Beltz ASR facilities are in flood zones; therefore, any facility improvements would not be subject to risk of pollutants due to inundation. Therefore, this project component would have no impacts.

Water Transfers and Exchanges and Intertie Improvements

The proposed City/SVWD intertie and the City/SqCWD/CWD intertie facilities would not traverse any creeks or flood zones. Although the Soquel Village pipeline would traverse Soquel Creek, the pipeline would be located either above or below the existing creek. If above the creek, it would be located within or attached to the existing Porter Street bridge crossing. Tunneling would be used if the pipeline would be located below the existing creek. Either way, the pipeline would therefore not impact flood levels.

As a result, operation of these interties would not result in risk of pollutants due to inundation. Therefore, this programmatic component would have no impacts.

Felton Diversion, Tait Diversion, and Coast Pump Station Improvements

The Felton and Tait Diversion improvements would be completed within the 100-year flood zone of the San Lorenzo River. However, the proposed improvements would involve similar use of hazardous materials, as under existing conditions. As discussed in Section 4.7, Hazards, Hazardous Materials, and Wildfire, materials such as oil, grease, or degreasers would be used, stored, and disposed in accordance with all applicable state and local regulations. As a result, diversion improvements would not risk release of pollutants due to inundation. Therefore, this programmatic component would have less-than-significant impacts.

#### Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to flooding and risk of release of pollutants due to inundation, and therefore, no mitigation measures are required.

### 4.8.3.4 Cumulative Impacts Analysis

This section provides an evaluation of cumulative hydrology and water quality 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 Analysis, and as relevant to this topic. The geographic area for the analysis of cumulative impacts related to hydrology and water quality consists of the cumulative project site watersheds and underlying groundwater basins.

**Impact HYD-5: Cumulative Hydrology and Water Quality Impacts (Significance Standards A, B, C, D, and E).** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to hydrology and water quality. ***(Less than Significant)***

As shown in 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 study area. Additionally, development at the UCSC campus is proposed under the 2021 Long Range Development Plan (LRDP).

#### Surface Water Quality and Stormwater Runoff

The known cumulative projects planned within the geographic area of analysis for cumulative impacts related to surface water quality and stormwater runoff would be those projects located within the same watersheds as the project and programmatic components of the Proposed Project. Within the San Lorenzo River watershed, cumulative projects in the City Water Department Capital Improvement Program (CIP) include replacement of the entire Newell Creek Pipeline (NCP Rehab/Replacement Project), which runs from Loch Lomond Reservoir to the GHWTP and improvements at the GHWTP.[6] 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 Impact HYD-3 reflect the NCP Rehab/Replacement 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 (Conjunctive Use Plan) and the San Lorenzo River Lagoon

[6] 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.

Culvert Project. 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 conditions in the San Lorenzo River for fish by improving or controlling river water levels or baseflows, they would result in beneficial cumulative impacts during operation related to surface water quality in the San Lorenzo River watershed.

Potential soil erosion from all cumulative project sites could combine to cause potentially significant cumulative water quality impacts due to sedimentation of downstream water bodies. Cumulative development and redevelopment within the watersheds identified for the cumulative projects would potentially result in short-term erosion related impacts during construction and long-term erosion related to denuded soil, improper drainage, and lack of erosion control features at each cumulative project site. Similarly, incidental spills of petroleum products and hazardous materials during construction at each cumulative project site could occur during construction, resulting in cumulative water quality impacts. However, short-term and long-term erosion BMPs and spill control BMPs would be employed at each site consistent with NPDES stormwater quality regulations, including the Construction General Permit and local MS4 permits.

Cumulative project grading, construction, and operation for City facilities would be completed consistent with stormwater regulations established by the City of Santa Cruz and the County of Santa Cruz where facilities could be located in the coastal zone. As discussed in Section 4.8.2, Regulatory Framework, the City of Santa Cruz has developed a comprehensive SWMP to fulfill the requirements for the MS4 General Permit and to reduce the amount of pollutants discharged in urban runoff. In addition, the City Stormwater and Urban Runoff Pollution Control ordinance established the legal authority to require BMPs to be maintained in full force and effect throughout the life of a project. The City of Santa Cruz Municipal Code includes provisions to ensure that new developments or remodeled sites are designed and constructed in a manner that limits alteration of drainage patterns, prevents erosion, and minimizes long-term impacts on water quality. These provisions include requirements that a drainage plan be submitted for projects, both large and small, when existing drainage patterns would be altered by new construction. In addition, the ordinance requires that stormwater runoff resulting from project development be minimized, and if a proposed project includes the discharge of runoff into a natural watercourse, the drainage plan shall include methods to safeguard or enhance the existing water quality. Devices such as detention basins, percolation ponds, or sediment traps may be required by the City, where appropriate or as specified in an adopted plan or wetlands management plan. Provisions pertaining to erosion control include requirements that a site development be fitted to the topography and soil to create the least potential for erosion.

Other non-City cumulative projects would be required to comply with local stormwater regulations during cumulative project construction and operation related to stormwater quality, alteration of drainages, and increased runoff, as established in the local ordinances during cumulative project construction and operation. Additionally, UCSC development under the 2021 LRDP would be required to comply with UCSC Post-Construction Requirements which require compliance with SWRCB Phase II NPDES requirements to manage peak flow rates and reduce sediment flow in the LRDP area (UCSC 2021). Therefore, the Proposed Project, in combination with past, present, and reasonably foreseeable future projects, would result in less-than-significant cumulative impacts related to surface water quality and stormwater runoff within the San Lorenzo River, Liddell Creek, Laguna Creek, Majors Creek, Arana Gulch/Rodeo Creek Gulch, Soquel Creek, and Aptos Creek Watersheds.

### Groundwater

The known cumulative projects planned within the geographic area of analysis for cumulative impacts related to groundwater would be those projects located within the same groundwater basins as those project and programmatic components involving groundwater injection and/or extraction, including: Beltz 10 and 11 Rehab and Development, Pure Water Soquel, and Conjunctive Use Plan. The Beltz 10 and 11 Rehab and Development would include rehabilitation of Beltz 10 and the conversion of an existing monitoring well to a production well at Beltz 11. This project will shift pumping to different geologic layers of the Santa Cruz Mid-County Groundwater Basin. Pure Water Soquel would supplement natural recharge of the Santa Cruz Mid-County Groundwater Basin with purified water produced from a new tertiary treatment facility sited at the Santa Cruz Wastewater Treatment Facility and delivered to an advanced water treatment facility located in Live Oak in unincorporated Santa Cruz County. As described above, the Conjunctive Use Plan would provide for in-lieu recharge to the Santa Margarita groundwater aquifers, and injection of excess surface water during wet periods and extraction of groundwater during dry periods in the Olympia area. Recharge of groundwater aquifers would also occur with new ASR facilities and Beltz ASR facilities as part of the Proposed Project. Additionally, to the extent that water transfers as part of the Proposed Project 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 the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin.

Future groundwater extraction from Beltz 11, implementation of Pure Water Soquel, and implementation of the Conjunctive Use Plan for the San Lorenzo River Watershed would be completed in compliance with the Santa Cruz Mid-County Groundwater Basin GSP, or the pending Santa Margarita GSP, as relevant. As discussed for Impact HYD-2, operation of the new ASR facility and Beltz ASR facility injections and extractions anticipated by the Proposed Project in the Santa Cruz Mid-County Groundwater Basin would be consistent with the sustainable management criteria in the adopted Santa Cruz Mid-County Groundwater Basin GSP. In addition, with the implementation of MM HYD-1 and MM HYD-2, ASR operations would avoid any undesirable results related to groundwater quality, lowering of groundwater levels, groundwater recharge, change in groundwater storage, subsidence, or depletion of interconnected surface water as identified in the GSP. Potential new ASR facilities, Beltz ASR facilities and Pure Water Soquel would cumulatively contribute to restoration of the Santa Cruz Mid-County Groundwater Basin, per the GSP (MGA 2019) and ASR would also contribute to protecting the basin from seawater intrusion in support of the proposed water quality beneficial use identified in Section 3.4.2, Water Rights Modifications. Similarly, it is likely that the Conjunctive Use Plan, potential new ASR facilities in the Santa Margarita Groundwater Basin and other future projects identified in the pending Santa Margarita GSP, if pursued, would contribute to restoration of that basin. Therefore, based on compliance with the Santa Cruz Mid-County Groundwater Basin GSP and the pending Santa Margarita Groundwater Basin GSP, including the associated groundwater monitoring programs, cumulative projects related to groundwater listed above would not result in undesirable effects related to groundwater quality, lowering of groundwater levels, groundwater recharge, change in groundwater storage, subsidence, or depletion of interconnected surface water. Similarly, these cumulative projects would not result in conflict with a water quality control plan or groundwater sustainability plan. Conversely, aquifer recharge related to these cumulative projects would result in beneficial cumulative impacts related to groundwater supply and groundwater quality.

### Flooding

The known cumulative projects planned within the geographic area of analysis for cumulative impacts related to flooding would be those projects located within the same watersheds as those project and programmatic infrastructure components that are also located within a 100-year floodplain, including the following projects along the San Lorenzo River: Newell Creek Dam Inlet/Outlet Replacement Project, NCP Rehab/Replacement Project, Main

Replacements, and the San Lorenzo River Lagoon Culvert Project. The Newell Creek Dam Inlet/Outlet Replacement Project would replace the existing aging inlet/outlet works at the Newell Creek Dam and replace the northern segment of the NCP that transports water to/from the Reservoir and the GHWTP. As described above, the NCP Project would replace the remaining portion of the Newell Creek Pipeline to GHWTP. The Main Replacements would replace distribution system water mains that may be constructed within flood zones coinciding with watersheds in the study area located in 100-year floodplains. As described above, the San Lorenzo River Lagoon Culvert Project would lessen localized flooding in the San Lorenzo River lagoon at the mouth of the San Lorenzo River.

As discussed in Impact HYD-4, the Felton and Tait Diversion improvements would be completed within the 100-year flood zone of the San Lorenzo River. Although these programmatic components and cumulative projects identified above would be located within designated 100-year floodplains, construction and operation of these facilities would not increase the risk of downstream flooding, as no proposed structures would impede flooding and increase downstream flood flows. Additionally, any materials such as oil, grease, or degreasers that would continue to be used, stored, and disposed of during diversion operations would occur in accordance with all applicable state and local regulations and as a result, would not risk release of pollutants due to inundation.

Additionally, within the study area the 13 residential, commercial, or mixed-use projects identified and development at the UCSC campus proposed under the 2021 Long Range Development Plan could alter drainage patterns and increase the rate or amount of surface runoff, which could exceed the capacity of stormwater drainage systems, resulting in flooding on or off-site of these locations. However, as indicated above, the non-UCSC cumulative projects would be required to comply with local stormwater regulations during cumulative project construction and operation and UCSC 2021 LRDP development would be required to comply with UCSC Post-Construction Requirements which require compliance with SWRCB Phase II NPDES requirements to manage peak flow rates in the LRDP area. Therefore, the Proposed Project, in combination with past, present, and reasonably foreseeable future projects, would result in less-than-significant cumulative impacts related to flooding.

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# 4.9 Land Use, Agriculture and Forestry, and Mineral Resources

This section describes the existing land use, agriculture and forestry, and mineral 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 of the Santa Cruz Water Rights Project (Proposed Project). The analysis is based on a review of the Proposed Project's consistency with applicable plans, policies, and regulations, as well as on a review of the Proposed Project's potential to affect agriculture and forestry, and mineral resources.

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. There were no comments related to land use, agriculture and forestry, and mineral resources.

## 4.9.1 Existing Conditions

### 4.9.1.1 Study Area

The Proposed Project involves the water system and the areas served of the City of Santa Cruz (City) and 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). The Proposed Project is located within Santa Cruz County and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Chapter 3, Project Description, Figure 3-1, Regional Location). While the project area is much broader, the study area for land use and planning is focused on the proposed project and programmatic infrastructure component sites where construction and ground disturbance could occur and where new or upgraded facilities would be located (see Chapter 3, Project Description, Figure 3-4, Proposed New and Upgraded Infrastructure Components). These sites include the following: aquifer storage and recovery (ASR) sites where known, intertie improvement sites, the Felton Diversion fish passage improvement site, and the Tait Diversion and Coast Pump Station improvement 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. The study area for agriculture and forestry resources and mineral resources is described more broadly to encompass the Santa Cruz Mid-County and Santa Margarita Groundwater Basins, where new ASR facilities could be located in the future with project implementation, shown on Figure 3-3 in Chapter 3, Project Description. Section 4.9.1.2, Infrastructure Component Site Land Use Conditions, describes the site conditions for each infrastructure component site.

### 4.9.1.2 Infrastructure Component Site Land Use Conditions

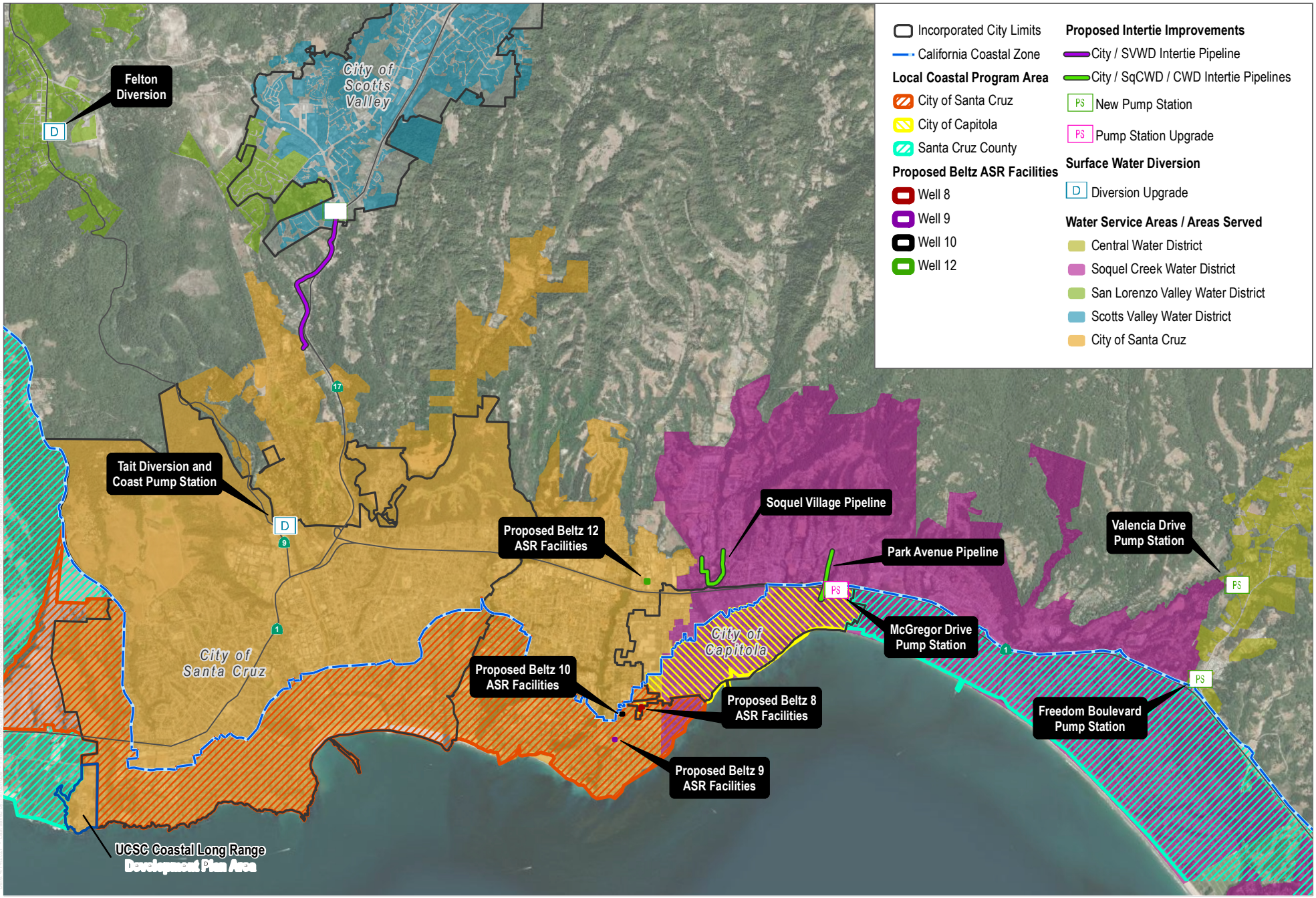
Land uses on and around each proposed infrastructure component site are described below, as identified in the County of Santa Cruz General Plan/Local Coastal Program (LCP) and on the County of Santa Cruz's GISWeb online tool General Plan and Zoning overlays (County of Santa Cruz 2020a, 2020b), as well as maps of general plan land use designations and zone districts for the cities of Santa Cruz, Capitola, and Scotts Valley (City of Santa Cruz 2020a, 2020b; City of Capitola 2018, 2019b; City of Scotts Valley 2007). Table 4.9-1 provides an overview of the locations,

jurisdictions, and predominant land uses in and near each proposed infrastructure component site. Figure 4.9-1 shows the locations of the proposed infrastructure component sites relative to the California coastal zone boundary. Those proposed infrastructure component sites located within the coastal zone are subject to regulation by the California Coastal Act or applicable LCP. In unincorporated Santa Cruz County, coastal permitting authority is administered by the County pursuant to its certified LCP, as further described in Section 4.9.2, Regulatory Framework.

## Table 4.9-1. Overview of Predominant Land Uses At and Near Proposed Facilities

| Proposed Facility | Location | Jurisdiction | Land Uses |
|---|---|---|---|
| *Aquifer Storage and Recovery Sites* | | | |
| New ASR Facility Sites | Santa Cruz Mid-County and Santa Margarita Groundwater Basins | Potentially any of the jurisdictions in these Basins | Unknown |
| Beltz 8 ASR Facility Site | 3701 Roland Drive | County of Santa Cruz (coastal zone) | Public facilities, multi-family residential, mobile homes |
| Beltz 9 ASR Facility Site | 740 30th Avenue | County of Santa Cruz (coastal zone) | Multi-family residential |
| Beltz 10 ASR Facility Site | 977 34th Avenue | County of Santa Cruz (coastal zone) | Single-family residential |
| Beltz 12 ASR Facility Site | 2750 Research Park Drive | County of Santa Cruz | Service commercial/light industrial |
| *Intertie Improvement Sites* | | | |
| City/SVWD Intertie Site | La Madrona Drive from Sims Road to south of Altenitas Road | County of Santa Cruz, City of Scotts Valley | Rural residential/agricultural, special use, service commercial, public facilities |
| City/SqCWD/CWD Intertie Site | *See components below* | *See components below* | *See components below* |
| *Soquel Village Pipeline Site* | Daubenbiss Avenue, West Walnut Street, Porter Street | County of Santa Cruz | Community commercial, single- and multi-family residential, public facilities, parks/open space |
| *Park Avenue Pipeline Site* | Main Street, Park Avenue, Soquel Drive, and McGregor Drive | County of Santa Cruz, City of Capitola (coastal zone) | Community commercial, office, single- and multi-family residential, public facilities, parks/open space |
| *McGregor Drive Pump Station Upgrade Site* | McGregor Drive | City of Capitola (coastal zone) | Parks/open space (visitor-serving) |
| *Freedom Boulevard Pump Station Site* | Soquel Drive and Freedom Boulevard | County of Santa Cruz | Public facilities, special use, single-family residential, mobile homes |
| *Valencia Road Pump Station Site* | Huntington Drive and Valencia Road | County of Santa Cruz | Agriculture, rural residential |
| *Surface Water Diversion Improvement Sites* | | | |
| Felton Diversion Site | 5800 Highway 9 | County of Santa Cruz | Public facilities, single-family/ mountain residential, residential agricultural, special use |
| Tait Diversion and Coast Pump Station Site | 1214 River Street | City of Santa Cruz | Industrial, public facilities, multi-family residential |

**Sources:** City of Capitola 2018, 2019b; City of Santa Cruz 2020a, 2020b; City of Scotts Valley 2007; County of Santa Cruz 2020b.




SOURCE: Bing Maps Accessed 2020, Kennedy/Jenks Consultants 2012 and 2014, URS 2013, County of Santa Cruz 2020

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**FIGURE 4.9-1**

California Coastal Zone Boundary and Infrastructure Component Sites

Santa Cruz Water Rights Project

## Aquifer Storage and Recovery Sites

### New ASR Facility Sites

New ASR facility sites would be located in the Santa Cruz Mid-County and Santa Margarita Groundwater Basins. As indicated above, there are no definitive sites identified to date for new ASR facilities, and therefore site-specific conditions are not available or described.

### Beltz ASR Facility Sites

#### Beltz 8 ASR Facility Site

The Beltz 8 ASR facility site is located in a developed urban residential area at 3701 Roland Drive within unincorporated Santa Cruz County. Beltz 8 ASR facility site is located on land designated as Public Facility/Institutional (P) within the Public and Community Facilities (PF) zone district. Beltz 8 ASR facility site is surrounded by land designated Urban High Density Residential (R-UH) and zoned Multi-Family Residential (RM) within unincorporated Santa Cruz County to the east, and land designated Mobile Home (R-MH) and zoned Mobile Home Exclusive (MHE) within the City of Capitola to the north, south, and west. As shown on Figure 4.9-1, Beltz 8 ASR facility site is located within the coastal zone.

#### Beltz 9 ASR Facility Site

The Beltz 9 ASR facility site is located in a developed urban residential area at 740 30th Avenue within unincorporated Santa Cruz County. Beltz 9 ASR facility site is located on land designated Urban High Density Residential (R-UH) in the General Plan/LCP and zoned Multi-Family Residential (RM). The lands surrounding Beltz 9 ASR facility site are within the same land use designation and zone district. As shown on Figure 4.9-1, Beltz 9 ASR facility site is located within the coastal zone.

#### Beltz 10 ASR Facility Site

The Beltz 10 ASR facility site is located in a developed residential area at 977 34th Avenue within unincorporated Santa Cruz County. Beltz 10 ASR facility site is located on land designated Urban Low Density Residential (R-UL) and zoned Single-Family Residential (R-1). The lands surrounding Beltz 10 ASR facility site are within the same land use designation and zone district. As shown on Figure 4.9-1, Beltz 10 ASR facility site is located within the coastal zone.

#### Beltz 12 ASR Facility Site

The Beltz 12 ASR facility site is located in a developed industrial and commercial area at 2750 Research Park Drive within unincorporated Santa Cruz County. Beltz 12 ASR facility site is located on land designated Service Commercial and Light Industrial (C-S) and zoned Light Industrial (M-1). The lands surrounding Beltz 12 ASR facility site are within the same land use designation and zone district.

## Intertie Improvement Sites

### City/SVWD Intertie Site

The City/SVWD intertie site is a linear site primarily located in a rural residential/agricultural area within unincorporated Santa Cruz County, while the northernmost portion enters a more developed commercial area of the City of Scotts Valley. The proposed intertie would consist of approximately 8,000 linear feet of new piping extending south to north along La Madrona Drive from Sims Road in unincorporated Santa Cruz County to a new pump station the City of Scotts Valley. The proposed alignment traverses lands designated Rural Residential (R-R) and zoned Residential Agricultural (RA), Special Use (SU), and Single-Family Residential (R-1) in unincorporated Santa Cruz County, before entering the City of Scotts Valley where it traverses lands designated and zoned Service Commercial (C-S) and Public/Quasi Public (P).

### City/SqCWD/CWD Intertie Site

The City/SqCWD/CWD intertie site consists of replacements of two distinct linear pipeline segments (the Soquel Village pipeline and the Park Avenue pipeline), upgrades to the existing McGregor Drive pump station, and construction of two new booster pump stations at Freedom Boulevard and Valencia Road.

The Soquel Village pipeline would consist of replacements along Daubenbiss Avenue, West Walnut Street, Porter Street, and Main Street in unincorporated Santa Cruz County. Predominant land uses along the proposed alignment consist of developed urban residential areas and urban parks/open space. The Soquel Village pipeline would traverse lands designated Community Commercial (C-C), Urban High Density Residential (R-UH), Urban Medium Density Residential (R-UM), Public Facility/Institutional (P), Urban Open Space (O-U), and Parks and Recreation (O-R), and zoned Community Commercial (C-2); Multi-Family Residential (RM); Single-Family Residential (R-1); Public and Community Facilities (PF); and Parks, Recreation, and Open Space (PR).

The Park Avenue pipeline would consist of replacements along Park Avenue south from the intersection with Soquel Drive to McGregor Drive south of Highway 1, and an upgrade to SqCWD's McGregor Drive pump station on McGregor Drive south of Highway 1. Predominant land uses along the proposed alignment consist of developed urban residential/commercial areas and parks/open space. The Park Avenue pipeline would traverse lands designated Community Commercial (C-C), Professional and Administrative Office (C-O), Urban High Density Residential (R-UH), Urban Medium Density Residential (R-UM), and Public Facility/Institutional (P) and zoned Neighborhood Commercial (C-1), Professional-Administrative Office (PA), Multi-Family Residential (RM), and Single-Family Residential (R-1) within unincorporated Santa Cruz County. South of Highway 1, the proposed alignment enters into the City of Capitola, where it would traverse lands designated Multi-Family Residential (R-M) and Parks and Open Space-Visitor Serving (P/OS-VS) and zoned Planned Development (PD) and Public Facility-Visitor Serving (PF-VS), where it would terminate at the McGregor Drive pump station. South of Highway 1, the proposed alignment and McGregor Drive pump station are within the coastal zone, as shown on Figure 4.9-1.

Two new booster pump stations would be constructed on SqCWD's two interties with the CWD, located on Soquel Drive near the intersection with Freedom Boulevard (Freedom Boulevard pump station), and on Huntington Drive near the intersection with Valencia Road (Valencia Road pump station). The Freedom Boulevard pump station site is generally located at or near the Soquel Drive/Freedom Boulevard intersection in a developed residential/ commercial area within unincorporated Santa Cruz County. Surrounding land use designations consist of Public Facility/Institutional (P), Urban Low Density Residential (R-UL), Urban Very Low Density Residential (R-UVL), Service Commercial and Light Industrial (C-S), and Urban Medium Density Residential (R-UM) and are zoned

Public Facilities (PF), Special Use (SU), Single-Family Residential (R-1-10), and Multi-Family Residential-Mobile Home (RM-3-MH). The Valencia Road pump station site is generally located at or near the intersection of Huntington Drive and Valencia Road in a rural residential/agricultural area within unincorporated Santa Cruz County on land designated as Agriculture (AG) or Rural Residential (R-R) and zoned Agriculture (A), depending on the precise site ultimately identified. Surrounding land uses consist of land designated as Agriculture (AG) and Rural Residential (R-R) and zoned Commercial Agriculture (CA), Agriculture (A), Residential Agricultural (RA) and Rural Residential (RR).

#### Felton Diversion Site

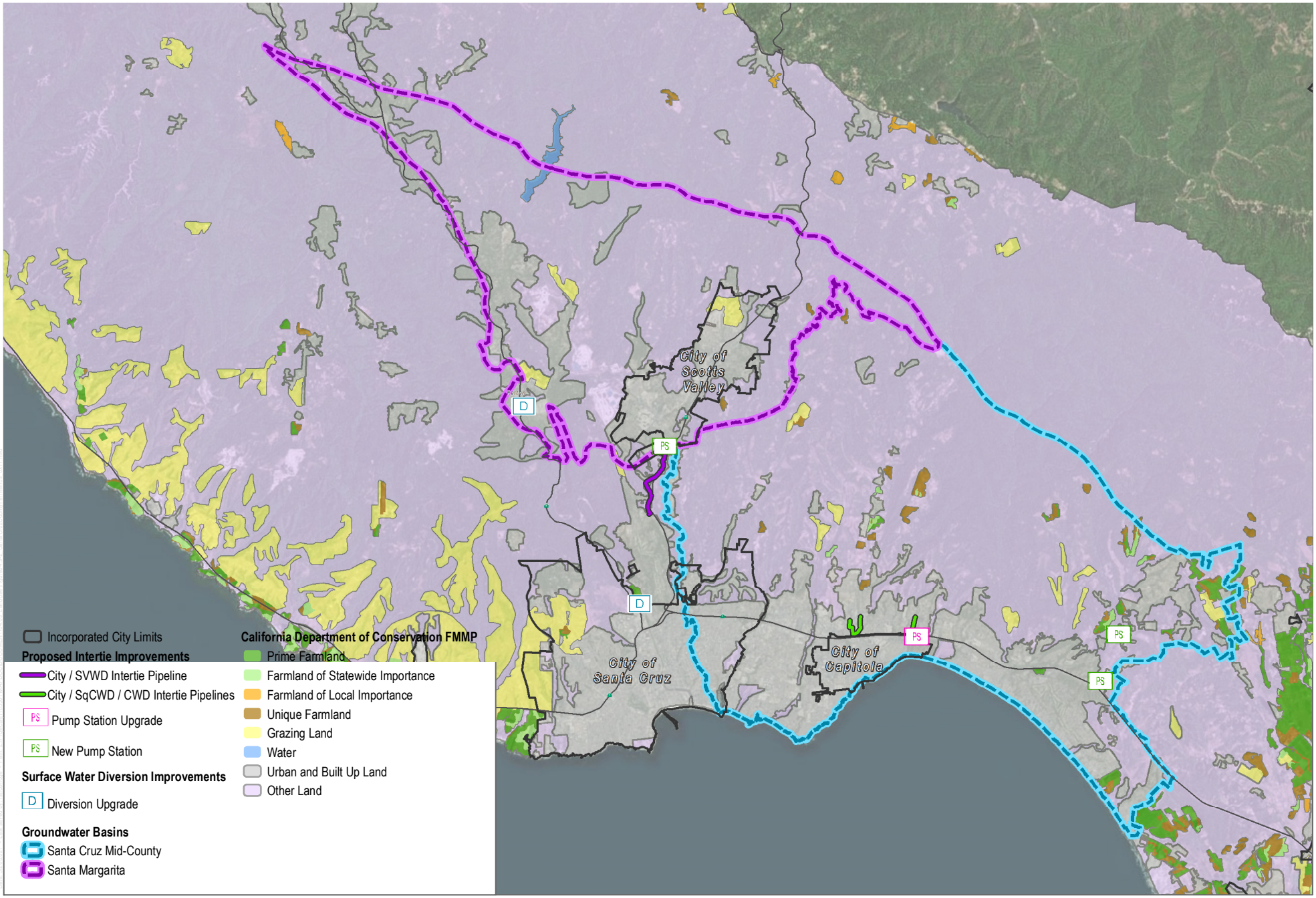
The Felton Diversion site is located at 5800 Highway 9 in a suburban residential area within unincorporated Santa Cruz County. The site is designated Public Facility/Institutional (P) and zoned Public Facilities-Geologic Hazards (PF-GH). Surrounding designations are Urban Low Density Residential (R-UL) to the west and north, Mountain Residential (R-M) to the north and east, and Suburban Residential (R-S) to the south. Surrounding zoning is Single-Family Residential (R-1) and Special Use (SU) to the north, Special Use (SU) to the east, Residential Agricultural (RA) to the south, and Special Use (SU) and Single-Family Residential (R-1-10) to the west. In addition, the site as well as the surrounding lands to the north, east, and south are within the Geologic Hazards (GH) overlay zone (as shown on Figure 4.5-3 in Section 4.5, Geology and Soils, the Felton Diversion site and surrounding lands are within a moderate liquefaction zone).

#### Tait Diversion and Coast Pump Station Site

The Tait Diversion and Coast Pump Station site is located at 1214 River Street in a developed industrial area within the City of Santa Cruz. The site's General Plan land use designation is Industrial and the zone district is General Industrial (IG). Surrounding lands are designated Natural Areas to the north and east, Community Facilities to the south, and Industrial and Low Medium Density Residential to the west. Surrounding zoning consists of Flood Plain (FP) to the north and east, Public Facilities (PF) to the south, and General Industrial (IG) and Multiple Residence Low Rise (RL) to the west.

### 4.9.1.3 Agricultural Resources

The City is largely developed and all lands within City limits and the City's existing Sphere of Influence are designated as Urban and Built-Up Land and Other Land in the State Farmland Mapping and Monitoring Program of the California Department of Conservation (City of Santa Cruz 2011). According to the California Department of Conservation, 38,711 acres of land in Santa Cruz County were classified as Agricultural Land in 2018, of which 19,150 acres were classified as Important Farmland. Important Farmland in Santa Cruz County is mapped on Figure 4.9-2. Of this land, 13,268 acres were classified as Prime Farmland, 2,263 acres were classified as Farmland of Statewide Importance, 3,374 acres were classified as Unique Farmland, and 245 acres were classified as Farmland of Local Importance (California Department of Conservation 2021). As shown on Figure 4.9-2, agricultural land within Santa Cruz County is concentrated primarily in the South County region, as well as along the North Coast. Lands enrolled in Williamson Act contracts are located throughout the County's unincorporated area.




SOURCE: Bing Maps 2020, County of Santa Cruz 2020, CA Dept. of Conservation 2012

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**FIGURE 4.9-2**

Santa Cruz County Farmland

Santa Cruz Water Rights Project

### 4.9.1.4 Forest and Timberland

The City is primarily developed, with open spaces within parks and City-owned greenbelt lands. There are no areas of protected timberland within the City or its existing Sphere of Influence, and there are no protected timberlands within the City's General Plan 2030 planning area (City of Santa Cruz 2011). However, forested lands and timberland occupy a substantial portion of Santa Cruz County, with large areas of timber production in the Santa Cruz Mountains and North Coast. Figure 4.9-3 shows timber resources in Santa Cruz County.

### 4.9.1.5 Mineral Resources

Mineral resources in Santa Cruz County are shown on Figure 4.9-4 and include four closed and four active quarries, five of which (three closed and two active) fall within the areas of the Santa Cruz Mid-County and Santa Margarita Groundwater Basins. The Felton Quarry, Bonny Doon Limestone and Shale Quarry, and Wilder Quarry are located outside of the two groundwater basins and are not discussed further. The quarries within the two groundwater basins are described below.

Olive Springs Quarry, operated by Olive Springs Quarry Inc., mines gneissic granodiorite (granitic rock) for construction aggregate. The mine contains a rock crushing and aggregate processing plant, and an asphaltic concrete plant. The permitted mining area encompasses approximately 48 acres. The mine is permitted to operate until at least 2044. The designated end use is open space. Reclamation of the mine will consist of establishment of a native species vegetative cover on the disturbed lands similar to naturally occurring habitats in the surrounding area. The mine is located west of Nisene Marks State Park and the Soquel Demonstration Forest (County of Santa Cruz 2021a).

Quail Hollow Quarry, operated by Granite Rock Company, mines sand from the Santa Margarita Sandstone for construction and industrial uses. The mine contains a sand processing plant and bulk sand dryer. The permitted area of the mine encompasses approximately 105 acres and mining is permitted to continue until the permitted reserves are exhausted. The designated end use is open space. Reclamation of the mine will consist of establishment of a native species vegetative cover on the disturbed lands similar to naturally occurring habitats in the surrounding area. Concurrent reclamation is in progress as mining ceases in some areas. The mine is located within the sensitive Sandhills habitat near Quail Hollow County Park (County of Santa Cruz 2021a).

Hanson Quarry (also known as Kaiser Quarry), operated by Hanson Aggregates, mined sand from the Santa Margarita Sandstone for construction sand. The mined area encompasses approximately 200 acres. The mine ceased operation in 2003. All former mineral processing facilities have been removed and disturbed areas are being reclaimed to open space with a native species vegetative cover on the disturbed lands similar to naturally occurring habitats in the surrounding area. The mine is located within the sensitive Sandhills habitat west of the City of Scotts Valley (County of Santa Cruz 2021a).

Olympia Quarry (also known as Lonestar Quarry), operated by CEMEX, mined sand from the Santa Margarita Sandstone for construction sand. The mined area encompasses approximately 70 acres. The mine ceased operation in 2002. All former mineral processing facilities have been removed and disturbed areas are being reclaimed to open space with a native species vegetative cover on the disturbed lands similar to naturally occurring habitats in the surrounding area. The mine is located within the sensitive Sandhills habitat west of the City of Scotts Valley (County of Santa Cruz 2021a).

Cabrillo Sand and Gravel, operated by Cabrillo Sand and Gravel, mined sand and gravel from the Aromas Formation for construction and landscape uses. The mined area encompasses approximately 4 acres. By 2005, all on-site excavation of sand had ceased. The Aptos Landscape Supply business has operated on the site since the mid-1960s and has become the primary activity on the parcel as mining activity has ceased. The mined areas are being reclaimed to open space with a native species vegetative cover on the disturbed lands similar to naturally occurring habitats in the surrounding area. The mine is located on Freedom Boulevard in Aptos (County of Santa Cruz 2021a).




SOURCE: Bing Maps 2020, County of Santa Cruz 2020

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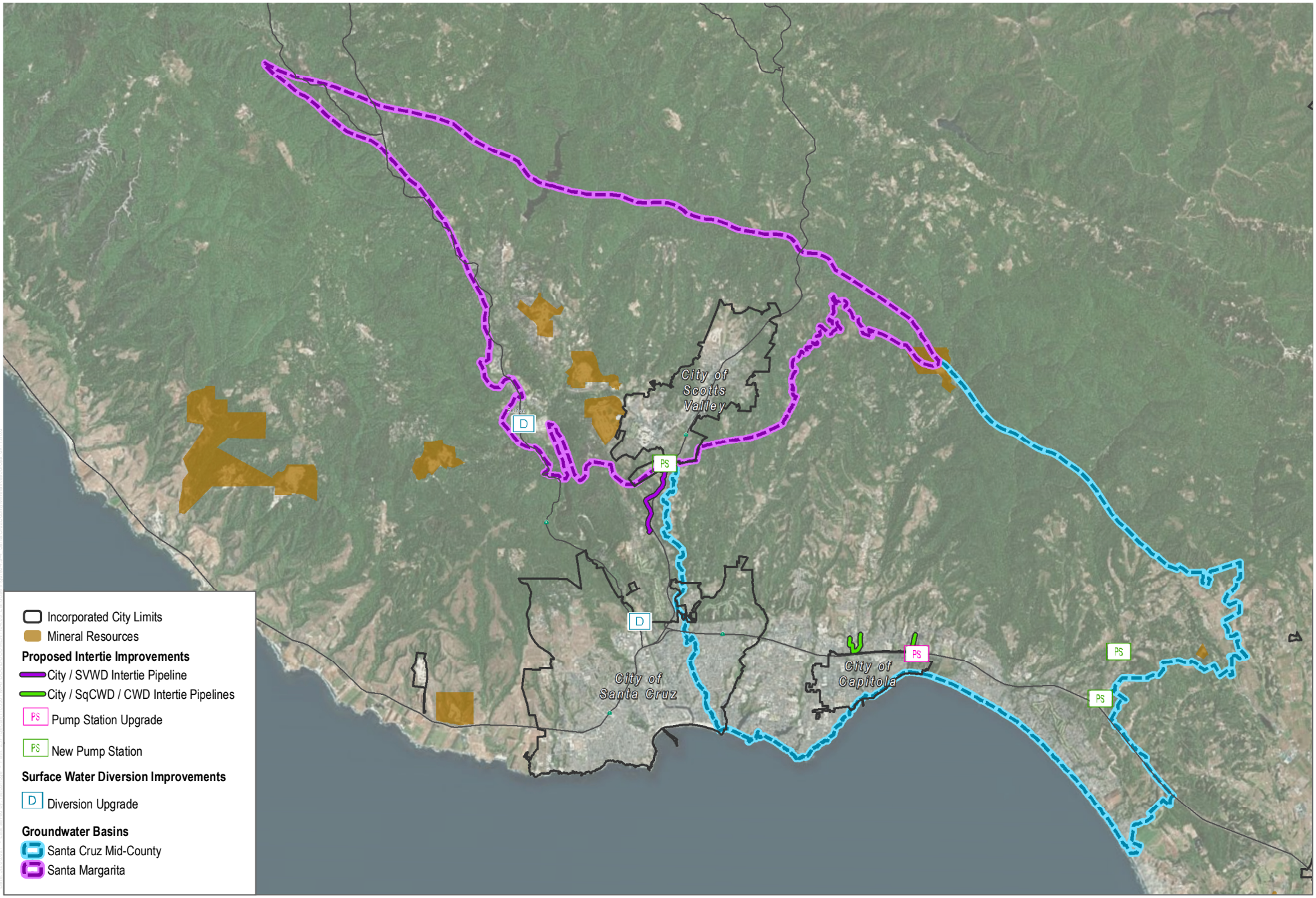
**FIGURE 4.9-3**

Santa Cruz County Timber Resources

Santa Cruz Water Rights Project




SOURCE: Bing Maps 2020, County of Santa Cruz 2020

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**FIGURE 4.9-4**

Santa Cruz County Mineral Resources

Santa Cruz Water Rights Project

## 4.9.2 Regulatory Framework

### 4.9.2.1 Federal

#### Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 provides the management of the nation's coastal resources, including the Great Lakes. CZMA provides management to balance economic development with environmental conservation. The California Coastal Commission (CCC) has jurisdiction for CZMA implementation throughout the state.[1] The California Coastal Act (description below) enforces numerous policies to protect and restore coastal resources. Applicants for coastal development permits (CDPs) must adhere to the California Coastal Act policies, which is regulated by the CCC. The CCC will apply additional land use policies when reviewing federally licensed and permitted activities, ensuring consistency with California's coastal management programs in accordance with the CZMA federal consistency provision.

### 4.9.2.2 State

#### California Coastal Act

In 1976, the California State Legislature enacted the California Coastal Act (Public Resources Code 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 California Coastal Act provides for the management of lands within California's coastal zone boundary, as established by the Legislature and defined in the California Coastal Act (Section 30103). The boundary of the coastal zone varies across the state and varies from a couple hundred feet to 5 miles inland of the shore. The coastal zone boundary also extends approximately 3 miles offshore.

The goals of the California Coastal Act, per Public Resources Code Section 30001.5, are to:

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 sounds 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 California Coastal Act includes specific policies to achieve these goals within the coastal zone (see Division 20 of the Public Resources Code). These policies include the legal standards applied to coastal planning and regulatory decisions made by the CCC pursuant to the California Coastal Act. The California Coastal Act requires that individual jurisdictions adopt a LCP to implement the California Coastal Act at the local level. After the CCC

[1] Except within the San Francisco Bay-Delta where the Bay Conservation and Development Commission has authority for implementation of CZMA within its jurisdiction area.

certifies an LCP, the local government becomes the CDP permitting authority, subject to appeals to the CCC. See Section 4.9.2.3, Local, for information about Santa Cruz County's LCP.

### California Government Code Section 53901

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 project and programmatic components evaluated in this EIR relate to operation, utilization, and storage of water resources; therefore, these facilities are legally exempt from County of Santa Cruz, City of Scotts Valley, City of Santa Cruz, and City of Capitola building and zoning ordinances. However, these facilities are not exempt from the California Coastal Act or relevant LCP, as discussed below.

### California Department of Conservation Farmland Mapping and Monitoring Program

Important Farmland in California is classified and mapped according to the California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP). Authority for the FMMP comes from Government Code Section 65570(b) and Public Resources Code Section 612. Government Code Section 65570(b) requires the Department of Conservation to collect or acquire information on the amount of land converted to or from agricultural use for every mapped county and to report this information to the Legislature. Public Resources Code Section 612 requires the Department of Conservation to prepare, update, and maintain Important Farmland Series Maps and other soils and land capability information. The FMMP monitors the conversion of the State's farmland to and from agricultural use. The FMMP maintains an inventory of state agricultural land and updates the Important Farmland Series Maps every two years. The maps do not necessarily reflect general plan or zoning designations, city limit lines, changing economic or market conditions, or other land use policies, although developed areas are designated as such.

Agricultural land is rated according to several variables, including soil quality and irrigation status. The FMMP rating system classifies farmland according to the following criteria:

- **Prime Farmland.** Farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. These are Class I and Class II soils.
- **Farmland of Statewide Importance.** Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Unique Farmland.** Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climactic zones in California.
- **Urban and Built-Up Land.** Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.
- **Other Land.** Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas, not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

## The California Land Conservation Act of 1965

The California Land Conservation Act of 1965, or Williamson Act, preserves agricultural and open space lands through property tax incentives and voluntary restrictive use contracts. Private landowners voluntarily restrict their land to agricultural and compatible open-space uses under minimum 10-year rolling term contracts. In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual use, rather than potential market value.

## California Public Resources Code

Agricultural land, forest land, and timberland within California are defined by the Public Resources Code as follows:

- Section 21060.1(a) defines "agricultural land" as prime farmland, farmland of statewide importance, or unique farmland, as defined by the United States Department of Agriculture land inventory and monitoring criteria, as modified for California.
- Section 12220(g) defines "forest land" as land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.
- Section 4526 defines "timberland" as land, other than land owned by the federal government and land designated by the State Board of Forestry and Fire Protection 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. Commercial species shall be determined by the board on a district basis.

Section 21095 provides lead agencies with an optional methodology, the Land Evaluation and Site Assessment (LESA) model, to ensure that significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process. The LESA model evaluates measures of soil resource quality, a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, the factors are rated, weighted, and combined, resulting in a single numeric score that becomes the basis for making a determination of a project's potential significance.

## California Timberland Productivity Act of 1982

The California Timberland Productivity Act (Government Code Section 51100 et seq.) establishes the statewide basis for timberland production zoning. A county may zone lands for timberland production and thereby qualify the landowner for the preferential taxation provided for under the Forest Taxation Reform Act. Land within a timberland production zone (TPZ) is restricted to growing and harvesting timber and other compatible uses approved by the county. The use of this land must be "enforceably restricted" to growing and harvesting timber in order to qualify for preferential taxation.

The California Government Code includes definitions applicable to timber production and timber harvest, including the following:

- Section 51104(e) defines "timber" as trees of any species maintained for eventual harvest for forest products purposes, whether planted or of natural growth, standing or down, on privately or publicly owned land, including Christmas trees, but not nursery stock.
- Section 51104(f) defines "timberland" as privately owned land, or land acquired for state forest purposes, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, and which is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre.
- Section 51104(g) defines "timberland production zone" to mean an area that has been zoned pursuant to Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses as defined under Section 51104(h).
- Section 51112 identifies situations that would warrant a decision that a parcel is not devoted to and used for growing and harvesting timber or for growing and harvesting timber and compatible uses.
- Section 51113 allows the opportunity for a landowner to petition that his or her land be zoned for timberland production.

### Z'berg-Nejedly Forest Practice Act of 1973

Commercial harvesting of timber on non-federal lands in California, whether or not the property is under timberland contract, is regulated under the state's Z'berg-Nejedly Forest Practice Act (Public Resources Code Section 4511 et seq.) and the related Forest Practice Rules (Title 14, California Code of Regulations Chapters 4, 4.5, and 10). Through this legislation, the state has established a comprehensive and specialized program for reviewing and regulating the harvesting of timber. Harvest is strictly regulated through the review and approval of plans (e.g., Timber Harvesting Plan) by the California Department of Forestry and Fire Protection (CAL FIRE). An approved Timber Harvesting Plan would be required prior to timber operations (as defined in Section 4527 of the Act) conducted in support of Project-related activities.

### Surface Mining and Reclamation Act

The California State Legislature enacted the Surface Mining and Reclamation Act (SMARA) of 1975 (Public Resources Code Section 2710 et seq.) in response to land use conflicts between urban growth and mineral resource extraction. The intent of SMARA is to: 1) assure reclamation of mined lands, 2) encourage production and conservation of minerals, and 3) create and maintain surface mining and reclamation policy (regulations). The SMARA also requires the prevention of adverse environmental effects caused by mining, the reclamation of mined lands for alternative land uses, and the elimination of public health and safety hazards from the effects of mining activities. One of the principal requirements of SMARA is the preparation of a reclamation plan and annual mine inspections, as well as the maintenance of a financial assurances cost estimate to guarantee post-mining reclamation of the mine site. The reclamation plan must be prepared by a mining applicant prior to initiation of mining activities and amendments to such plans area required for plan modifications. Reclamation plans must be approved by the SMARA lead agency (usually counties or cities) and the California Department of Conservation, Office of Mine Reclamation and are subject to environmental review under CEQA.

At the same time, SMARA encourages both the conservation and production of extractive mineral resources, requiring the State Geologist to classify land according to the presence or absence of significant mineral deposits. Local governments must consider this information before committing land with important mineral deposits to land uses incompatible with mining. The California Geological Survey is responsible for classifying land into Mineral Resource Zones (MRZs) as follows:

- MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- MRZ-2: Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- MRZ-3: Areas containing mineral deposits, the significance of which cannot be evaluated.
- MRZ-4: Areas where available information is inadequate for assignment to any other zone.

Sections 2762 and 2763 of the SMARA require that jurisdictions issue a Statement of Reasons when projects would result in the elimination of the potential to extract minerals in the areas containing regionally significant mineral resources. SMARA requires that the local agency decision makers consider this elimination of extraction potential in their decision on land use. The Statement of Reasons lists potential reasons to approve the proposed project and to include elimination of the potential for extraction of all this resource; decision makers may adopt or modify any of these. The Statement of Reasons must be submitted to the State Geologist and California State Mining and Geology Board for their review for a period of 60 days in conjunction with the environmental review of the proposed project.

### 4.9.2.3 Local

#### County of Santa Cruz

**General Plan and Local Coastal Program**

The County of Santa Cruz 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. The County General Plan and LCP provides policies and programs to establish guidelines for future growth and all types of physical developments. The Land Use element in the County General Plan and LCP provides for the designation and location of land uses and zoning uses throughout the unincorporated areas in the County. 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 certified LCP that applies to activities within the coastal zone is administered by the County Planning Department, pursuant to the California Coastal Act, and includes: (1) the LCP land use plan consisting of the policies and adopted land use, resource, constraint and shoreline access maps and charts contained in the General Plan/LCP document; and (2) the implementing ordinances.

As the Proposed Project contains some infrastructure components within the coastal zone in unincorporated Santa Cruz County (i.e., Beltz 8, 9, and 10 ASR facilities) and could include new ASR facilities at as yet unidentified locations within the coastal zone, it is possible that Beltz ASR facilities and new ASR facilities would require compliance with the LCP. The LCP implementing ordinances in Santa Cruz County Code (SCCC) Chapter 13.03 include the following sections that are relevant to the Proposed Project:

- Zoning Regulations (Chapter 13.10)
- Coastal Zone Regulations (Chapter 13.20)
- Geologic Hazards (Chapter 16.10)
- Grading Regulations (Chapter 16.20)

- Erosion Control (Chapter 16.22)
- Riparian Corridor and Wetlands Protection (Chapter 16.30)
- Sensitive Habitat Protection (Chapter 16.32)
- Significant Trees Protection (Chapter 16.34)
- Native American Cultural Sites (Chapter 16.40)
- Paleontological Resource Protection (Chapter 16.44)
- Agricultural Land Preservation and Protection (Chapter 16.50)
- Timber Harvesting Regulations (Chapter 16.52)
- Mining Regulations (Chapter 15.54)
- Permit and Approval Procedures (Chapter 18.10)

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].

The consistency of new ASR facilities and Beltz 8, 9, and 10 ASR facilities with relevant LCP policies and implementing ordinances is analyzed below.

### Santa Cruz County Code

Planning and Zoning Regulations, Title 13 of the SCCC, set forth zoning regulations and identify allowable uses within the project and programmatic infrastructure component sites located in unincorporated Santa Cruz County. Per Chapter 13.10, public utility facilities are identified with zoning classifications of the County site for which project and programmatic infrastructure components are proposed with a use permit unless exempt by federal or state law. As indicated in Section 4.9.2.2, State, the project and programmatic infrastructure components would be exempt from these zoning regulations. However, pursuant to Chapter 13.20, all infrastructure components located in the coastal zone would require a CDP, as discussed above.

The County's agricultural zoning districts include Commercial Agriculture (CA), Agriculture (A), and Agricultural Preserve (AP). The intent of the CA zoning district is to preserve commercial agricultural lands and their economic integrity. The A zoning district provides for non-commercial agricultural uses, such as family farming and animal raising, and allows limited commercial agricultural activities. Such non-commercial agricultural lands are identified by the County in order to recognize that they are still productive lands and have other values associated with large lot open space characteristics. The AP zoning district permits commercial agricultural uses for agricultural and open lands under an agricultural preserve contract; the AP designation is used as an overlay to indicate parcels with Williamson Act agricultural preservation or open space contracts, or similar preservation easements. In addition, the Residential Agriculture (RA) zoning district is defined by the SCCC as a residential use zone that permits both single-family residential and small-scale, secondary-use commercial agricultural uses.

The intent of the Timber Production (TP) zoning district is to protect and maintain the County's larger tracks of timberland, and to preserve agriculture and other open space uses where they are compatible with timberland uses. Separate from the TP zoning district are areas identified by the County as "Timber Resources." These timber resources have been mapped as defined by the General Plan, and in addition to TP lands, if they are on lands zoned CA or Mineral Extraction (M3).

The intent of the M3 zoning district is to identify the location of rock, sand, gravel, and other mineral resources within the County which are valuable to the orderly and economic development of the County and region; to conserve mineral resources for future use, and to ensure that the recovery of these resources is not preempted by other uses of the land on which they are located, or by the introduction of noncompatible uses on other lands in the immediate vicinity; to give public notice of the intent to preserve and plan for the continued or ultimate use of mineral resources and proposed access thereto; and to allow the orderly economic extraction of minerals by designating the sites of existing and potential mines and allowing for the establishment, operation, expansion and reclamation of mineral extraction facilities and sites with minimum adverse impacts on aquifers, streams, scenic values, and surrounding land uses.

#### Sustainable Santa Cruz County Plan

The Sustainable Santa Cruz County Plan is a planning study that suggests a vision, guiding principles, and strategies to facilitate sustainable development through Santa Cruz County (County of Santa Cruz 2014). The Plan's primary objective is to reduce the production of greenhouse gas emissions, especially from automobiles, which contribute to the highest levels of emissions in Santa Cruz County. Recommended strategies include designing the location of housing, employment, and community services within proximity of each other; developing in pre-existing developed areas; providing more accessibility for pedestrians and bicyclists; and improving the regional economy. Included in the Plan are suggestions for amendments to the General Plan and zoning regulations to encourage sustainable development, which are currently being developed by the County Planning Department.

### City of Santa Cruz

#### General Plan and Local Coastal Program

The General Plan for the City of Santa Cruz was adopted in 2012 (City of Santa Cruz 2012). The City's General Plan addresses state-mandated topics, as well as community design and economic development, in the following chapters: Historic Preservation, Arts, and Culture; Community Design; Land Use; Mobility; Economic Development; Civic and Community Facilities; Hazards, Safety, and Noise; Parks, Recreation, and Open Space; and Natural Resources and Conservation. *General Plan 2030* contains goals, policies, and actions that guide the planning, development, and

preservation of the City through 2030. The Land Use Element of the General Plan includes a brief discussion of current land uses and provides the allowable uses within land use designations identified on the City's Land Use Map.

The City's LCP was originally prepared and adopted as part of its 1990-2005 General Plan and is now being updated as a separate document. The updated document is expected to be approved by fall 2021. The *City of Santa Cruz Local Coastal Program and Coastal Land Use Policies and Maps* was adopted in 1992 and was last amended in 2007 with the addition of the Citywide Creeks and Wetlands Management Plan. The LCP contains three components: General Plan policies and maps, Area Plan and Specific Plan policies and maps, and a Coastal Access Plan. The LCP includes designated coastal policies, regulations, and maps applicable to the coastal zone portions of the City (City of Santa Cruz 2007). The infrastructure components of the Proposed Project are not located within the coastal zone of the City and therefore the City's LCP does not apply, as further described below.

#### Municipal Code

The City of Santa Cruz's Municipal Code, Title 24, Zoning, sets forth the planning and zoning regulations for the City. Per Chapter 24.10, public utility facilities are identified as allowable uses with the zoning classification of the site for which the project and programmatic infrastructure components are proposed with special use permit, unless exempt by federal or state law. As indicated in Section 4.9.2.2, State, the project and programmatic infrastructure components would be exempt from these zoning regulations. As there are no project or programmatic infrastructure components in the City that are located in the coastal zone, the City would not be required to obtain a CDP pursuant to Chapter 24.08. Per Chapter 15.28, an encroachment permit would be required for the installation of pipelines within City-maintained roads and rights-of-way.

### City of Scotts Valley

#### General Plan

The City of Scotts Valley's General Plan is the official document which is used by the City and other jurisdictional agencies to guide the City's long-range plans for development of land and conservation of natural resources (City of Scotts Valley 1999). It is made up of eight elements: (1) Land Use, (2) Circulation, (3) Housing (2015-2023), (4) Open Space and Conservation, (5) Noise, (6) Safety, (7) Public Services and Facilities, and (8) Parks and Recreation. The Plan includes methods to improve public facilities and services to meet community needs and establish a framework within which zoning, subdivision, and other government regulations are implemented. Specifically, the Plan's Land Use Element provides existing zoning and permitted uses for all the lands in the City. The Land Use Element contains text, policies, and maps to indicate designated land uses, protect natural resources, provide aesthetics and character of the Valley, provide urban development near the core of the City, and ensure adequate housing. The City is currently working on an update to the General Plan and will include common visions and provide goals and policies to accommodate future growth through the year of 2040 (City of Scotts Valley 2020).

#### Municipal Code

The City of Scotts Valley Municipal Code, Title 17 Zoning, established comprehensive zoning regulations for the City, which governs the use or land and placement of buildings and improvements throughout the City. The purpose of Title 17 is to encourage appropriate land use, while promoting efficient traffic systems, conserving open space, and stabilizing the value of property. As indicated in Section 4.9.2.2, State, the project and programmatic infrastructure components would be exempt from these zoning regulations.

### City of Capitola

#### General Plan and Local Coastal Program

The City of Capitola's General Plan, adopted in 2014, is intended to guide development and conservation in the City of Capitola through 2035 (City of Capitola 2019a). The General Plan provides the basis for Capitola's land use and development policy and represents the basic community values, ideals, and aspirations. The General Plan outlines guiding principles for community identity, community connections, neighborhoods and housing, environmental resources, economy, fiscal responsibility, mobility, and health and safety. The Capitola General Plan contains five elements addressing the state-mandated topics of land use, circulation, housing, open space, conservation, safety, and noise, supplemented with the optional economic development element.

Development and conservation in Capitola's coastal areas is also regulated by Capitola's LCP (City of Capitola 2005), which was originally certified by the CCC in 1981 and amended in 2001 and 2005. An update to Capitola's LCP is currently in progress. 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. Some programmatic infrastructure components of the Proposed Project are located within the coastal zone of the City of Capitola and therefore the City's LCP does apply, as further described below.

#### Municipal Code

The City of Capitola sets forth planning and zoning regulations through the City's Municipal Code, Title 17, Zoning. The City's zoning regulations identify public utility facilities as allowable uses within the zoning classification of the site for which the project and programmatic infrastructure components are proposed with a conditional use permit, unless exempt by federal or state law. As indicated in Section 4.9.2.2, State, the project and programmatic infrastructure components would be exempt from these zoning regulations. However, per Chapter 17.46, a CDP would be required for those programmatic infrastructure components of the Proposed Project within the coastal zone (i.e., the McGregor Drive pump station upgrade, and part of the Park Avenue pipeline south of State Highway 1). Per Chapter 15.28, an encroachment permit would be required for the installation of pipelines within City-maintained roads and right-of-way.

## 4.9.3 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to land use, agriculture and forestry, and mineral 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.

### 4.9.3.1 Standards of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to land use, agriculture and forestry, and mineral 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. Physically divide an established community.
B. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

C. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use unless conversion is determined not to be significant as a result of application of the LESA model pursuant to Public Resources Code Section 21095.

D. Conflict with existing zoning for agricultural use, or a Williamson Act contract.

E. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]).

F. Result in the loss of forest land or conversion of forest land to non-forest use.

G. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use.

H. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

I. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

### 4.9.3.2 Analytical Methods

This section evaluates the potential land use, agriculture and forestry, and mineral resources impacts associated with construction and operation of the Proposed Project. The analysis of potential impacts addresses the various project and programmatic components listed in Table 4.9-2, which are described in detail in Chapter 3, Project Description.

**Table 4.9-2. 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 methodology applied to assess and evaluate impacts related to land use, agriculture and forestry, and mineral resources is based on information obtained from review of existing and proposed land uses and development on the project and programmatic infrastructure component sites, review of existing surrounding land uses and development, review of the Proposed Project's potential for conflicts with the applicable LCP of the City of Capitola and County of Santa Cruz, and review of maps of agricultural land, timberland, and mineral resources.

As indicated in Section 4.9.2.2, State, the project and programmatic infrastructure components would be exempt from local building and zoning regulations. However, as the Proposed Project contains some components within the coastal zone in unincorporated Santa Cruz County (i.e., Beltz 8, 9, and 10 ASR facilities) and the City of Capitola (i.e., McGregor Drive pump station upgrade and part of the Park Avenue pipeline south of State Highway 1) and is not exempt from the applicable LCP, it would require compliance with the applicable LCP. Additionally, it is possible that new ASR facilities could also be located within the coastal zone in unincorporated Santa Cruz County and would require compliance with the LCP.

### Application of Relevant Practices

The Proposed Project includes standard construction practices (see Section 3.4.5.2, Standard Construction Practices), that the City or its contractors would implement to avoid or minimize effects related to erosion and sedimentation, development in streams and drainages, and inadvertent discovery of cultural resources during construction. These practices and their effectiveness in avoiding and minimizing effects are described in Sections 4.3, Biological Resources, Section 4.4, Cultural Resources, and Section 4.8, Hydrology and Water Quality.

## 4.9.3.3 Project Impact Analysis

### Areas of No Impact

The Proposed Project would not **physically divide an established community (Significance Standard A)**. The Proposed Project consists of modifications to the City's existing water rights to enhance operational flexibility and stream flows, installation and operation of ASR facilities using existing and potential new infrastructure, construction of new or improvements to existing interties (i.e., pipelines and pump stations) between the City and neighboring water systems, and improvements to existing surface water diversions. Upgrades and modifications to existing water supply infrastructure would continue the existing land uses on the respective sites and would not result in physical division of an established community. While the locations of some potential new infrastructure components are not known at this time (i.e., new ASR facilities), they would not introduce barriers or linear features that could physically divide an established community. The Proposed Project would not introduce a new linear element within the landscape, such as a freeway or other type of barrier that could divide an existing community. All linear facilities that are included in the Proposed Project (i.e., pipelines) would be located below ground, and the overlying areas would be restored after construction. Therefore, the Proposed Project would have no impact related to physically dividing an established community and this standard is not further evaluated.

### Impacts

This section provides a detailed evaluation of land use, agriculture and forestry, and mineral resources impacts associated with the Proposed Project.

**Impact LU-1: Conflicts with Land Use Plans, Policies, or Regulations (Significance Standard B).** Construction and operation of the Proposed Project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. ***(Less than Significant)***

This discussion focuses on land use plans, policies, and regulations relevant to the Proposed Project that relate to avoiding or mitigating environmental effects, and whether any potential conflicts could create a significant physical impact on the environment. As indicated in Section 4.9.2.2, State, under California Government Code Section 53091 (d) and (e) facilities for the production, generation, storage, treatment, and transmissions of water supplies, such as the project and programmatic infrastructure components of the Proposed Project, are exempt from local building and zoning regulations. However, the Proposed Project is not exempt from the Coastal Act or applicable LCP. As the Proposed Project contains some components within the coastal zone in unincorporated Santa Cruz County (i.e., Beltz 8, 9, and 10 ASR facilities) and the City of Capitola (i.e., McGregor Drive pump station upgrade and the Park Avenue pipeline south of State Highway 1), it would require compliance with the applicable LCP. Additionally, it is possible that new ASR facilities could also be located within the coastal zone in unincorporated Santa Cruz County and would require compliance with the LCP. Table 4.9-3 includes an analysis of these specific project and programmatic infrastructure components of the Proposed Project and their potential for conflicts with the applicable LCP and related policies and ordinances. References to the Proposed Project standard construction practices are included in the table, which are described in detail in Chapter 3, Project Description and identified in Section 4.9.3.2, Analytical Methods.

## Table 4.9-3. Review of Applicable Land Use Plans, Policies, and Regulations

| Policy/Ordinance | Potential for Proposed Project to Conflict |
|---|---|
| *County of Santa Cruz General Plan and Local Coastal Program* | |
| **5.1.6, Development Within Sensitive Habitats.** Sensitive habitats shall be protected against any significant disruption of habitat values; and any proposed development within or adjacent to these areas must maintain or enhance the functional capacity of the habitat. Reduce in scale, redesign, or, if no other alternatives exist, deny any project which cannot sufficiently mitigate significant adverse impacts on sensitive habitats unless approval of a project is legally necessary to allow a reasonable use of the land (County Code Section 16.32.050[B]). | **No Conflict.** The Beltz 8, 9, and 10 ASR facilities would not conflict with this policy and related ordinance, as there are no sensitive habitats at these sites. Any new ASR facilities in the coastal zone of unincorporated Santa Cruz County would be required to comply with this policy and related code through the process of obtaining a CDP. |
| **5.1.11, Wildlife Resources Beyond Sensitive Habitats.** For areas which may not meet the definition of sensitive habitat contained in policy 5.1.2, yet contain valuable wildlife resources (such as migration corridors or exceptional species diversity), protect these wildlife habitat values and species using the techniques outlined in policies 5.1.5 and 5.1.7 and use other mitigation measures identified through the environmental review process (County Code Sections 16.32.060 – 16.32.070). | **No Conflict.** The Beltz 8, 9, and 10 ASR facilities would not conflict with this policy and related ordinance, as there are no wildlife corridors at these sites. Any new ASR facilities in the coastal zone of unincorporated Santa Cruz County would be required to comply with this policy and related code through the process of obtaining a CDP. The EIR did not identify areas of "exceptional species diversity" as referenced in this policy, and thus the Proposed Project would not conflict with policies to protect valuable wildlife resources. As indicated in Section 4.3, Biological Resources (Impacts BIO-1A, 1B, 1C, and 2), construction impacts to special status species and sensitive habitat areas would be reduced to a less-than-significant level with identified mitigation measures. |

Table 4.9-3. Review of Applicable Land Use Plans, Policies, and Regulations (continued)

| Policy/Ordinance | Potential for Proposed Project to Conflict |
|---|---|
| **5.2.2, Riparian Corridor and Wetland Protection Ordinance.** Implement the protection of Riparian Corridors and Wetlands through the Riparian Corridor and Wetland Protection ordinance to ensure no net loss of riparian corridors and riparian wetlands. The ordinance identifies and defines riparian corridors and wetlands, determines the uses which are allowed in and adjacent to these habitats, and specifies required buffer setbacks and performance standards for land in and adjacent to these areas. Any amendments to this ordinance shall require a finding that riparian corridors and wetlands shall be afforded equal or greater protection by the amended language (County Code Section 16.30.040). | **No Conflict.** The Beltz 8, 9, and 10 ASR facilities would not conflict with this policy and related ordinance, as there are no wetlands or riparian corridors at these sites. Standard Construction Practice #10 requires that new ASR facilities shall avoid streams and drainages, which will minimize the potential that these facilities could cause impacts to riparian habitat and wetlands. Additionally, any new ASR facilities in the coastal zone of unincorporated Santa Cruz County would be required to comply with this policy and related code through the process of obtaining a CDP. |
| **5.2.3, Activities Within Riparian Corridors and Wetlands.** Development activities, land alteration and vegetation disturbance within riparian corridors and wetlands and required buffers shall be prohibited unless an exception is granted per the Riparian Corridor and Wetlands Protection ordinance. As a condition of riparian exception, require evidence of approval for development from the U.S. Army Corps of Engineers, California Department of Fish and Game, and other federal or state agencies that may have regulatory authority over activities within riparian corridors and wetlands (County Code Sections 16.30.040 – 16.30.070). | **No Conflict.** The Beltz 8, 9, and 10 ASR facilities would not conflict with this policy and related ordinance, as there are no wetlands or riparian corridors at these sites. Standard Construction Practice #10 requires that new ASR facilities shall avoid streams and drainages, which will minimize the potential that these facilities could cause impacts to riparian habitat and wetlands. Additionally, any new ASR facilities in the coastal zone of unincorporated Santa Cruz County would be required to comply with this policy and related code through the process of obtaining a CDP. |
| **5.6.1, Minimum Stream Flows for Anadromous Fish Runs.** Pending determination based on a biologic assessment, preserve perennial stream flows at 95% of normal levels during summer months, and at 70% of the normal winter baseflow levels. Oppose new water rights applications and time extensions, change petitions, or transfer of existing water rights which would individually diminish or cumulatively contribute to the diminishment of the instream flows necessary to maintain fish runs and riparian vegetation below the 95%/70% standard. | **No Conflict.** The underlying purpose of the Proposed Project, including the Beltz 8, 9, and 10 ASR and new ASR facilities, is to improve flexibility in operation of the City's water system while enhancing stream flows for local anadromous fisheries. This is accomplished with the implementation of the Agreed Flows as part of the Proposed Project, which were developed based on extensive biological analyses and consultation with the California Department of Fish and Wildlife and the National Marine Fisheries Service. The Proposed Project with the Agreed Flows would not individually diminish or cumulatively contribute to the diminishment of instream flows. Provision of the Agreed Flows would generally require reduced diversions from the North Coast sources and from the San Lorenzo River at Tait at certain times and would benefit instream flows for salmonid habitat. Specifically, as indicated in Section 4.3, Biological Resources, and Appendix D-3, the majority of the effects of the Proposed Project involve an improvement in habitat conditions for steelhead and coho salmon, as well as other special-status fish species, compared to the 2018 baseline condition. The only negative effect is a 2.7% decline in the rearing habitat index in wet years for coho salmon in Laguna Creek, which is actually a result of higher flows |

Table 4.9-3. Review of Applicable Land Use Plans, Policies, and Regulations (continued)

| Policy/Ordinance | Potential for Proposed Project to Conflict |
|---|---|
| | in April provided for steelhead adult migration under the Agreed Flows. Higher flows marginally reduce coho rearing habitat, which is at optimum levels at lower flows than those provided for adult migration. Even with this effect, the wet year coho salmon 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. As indicated in Section 4.3, Biological Resources, operation of the Proposed Project would result in beneficial or less-than-significant effects on local fisheries. |
| **5.6.2, Designation of Critical Water Supply Streams.** Designate the following streams, currently utilized at full capacity, as Critical Water Supply Streams: Laguna. Majors, Liddell, San Vicente, Mill and Reggiardo Creeks; San Lorenzo River and its tributaries above the City of Santa Cruz; Soquel Creek and its tributaries; Corralitos Creek and Browns Valley Creek and their tributaries upstream of the City of Watsonville diversion points. Oppose or prohibit as legal authority allows, new or expanded water diversion from Critical Water Supply Streams. Prohibit new riparian or off stream development, or increases in the intensity of use, which require an increase in water diversions from Critical Water Supply Streams. Seek to restore in-stream flows where full allocation may harm the full range of beneficial uses. (County Code Section 16.30.040) | **No Conflict.** The Proposed Project, including the Beltz 8, 9, and 10 ASR and new ASR facilities, would not result in new or expanded water diversion from Critical Water Supply Streams over and above that already authorized by the City's water rights permits and licenses. In addition, one of the purposes of the Proposed Project is to enhance stream flows for local anadromous fisheries. This is accomplished with the implementation of the Agreed Flows as part of the Proposed Project. |
| **5.6.3, New Major Water Supply Projects.** Ensure the development of new major water supply projects are adequately conditioned to protect beneficial instream uses and riparian habitat. For new major water supply projects located in the Coastal Zone, ensure that no development proceeds unless such projects are adequately conditioned to protect beneficial instream uses and riparian habitat with minimal reliance on technologically-based mitigation measures (e.g., relying on hatchery-raised fish instead of maintaining spawning grounds). (County Code Chapter 16.30) | **No Conflict.** The underlying purpose of the Proposed Project, including the Beltz 8, 9, and 10 ASR and new ASR facilities, is to improve flexibility in operation of the City's water system while enhancing stream flows for local anadromous fisheries. This is accomplished with the implementation of the Agreed Flows as part of the Proposed Project. As indicated in Section 4.3, Biological Resources, operation of the Proposed Project would result in beneficial or less-than-significant effects on local fisheries. |
| **5.7.3, Erosion Control For Stream and Lagoon Protection.** For all new and existing development and land disturbances, require the installation and maintenance of sediment basins, and/or other strict erosion control measures, as needed to prevent siltation of streams and coastal lagoons. (County Code Sections 16.22.060 – 16.22.070) | **No Conflict.** The Proposed Project includes Standard Construction Practices #1 through #4 related to erosion control. Beltz 8, 9, and 10 ASR facility sites are not located nears streams or coastal lagoons. Additionally, Standard Construction Practice #10 requires that new ASR facilities avoid streams and drainages, which will minimize the potential that these facilities could cause erosion near streams and lagoons. |

Table 4.9-3. Review of Applicable Land Use Plans, Policies, and Regulations (continued)

| Policy/Ordinance | Potential for Proposed Project to Conflict |
|---|---|
| **5.9.1, Protection and Designation of Significant Resources.** Protect significant geological features such as caves, large rock outcrops, inland cliffs and special formations of scenic or scientific value, hydrological features such as major waterfalls or springs, and paleontological features, through the environmental review process. Designate such sites on the General Plan and LCP Resources and Constraints Maps where identified. Currently identified sites of Significant Hydrological, Geological and Paleontological Features are as follows:<br>(a) Majors Creek Canyon: The cliffs and exposed rocks of this canyon to the east of Highway 1 are outstanding scenic features.<br>(b) Martin Road: East and west of Martin Road, encompassed in the botanical sites, are unusual sandhill outcroppings.<br>(c) Wilder Creek: This area contains a concentration of limestone caves worth protecting.<br>(d) Table Rock: Highly scenic coastal rock formations (sedimentary intrusive bodies) can be found in the vicinity of Table Rock and Yellow Bank Creek.<br>(County Code Chapter 16.44) | **No Conflict.** As described in Section 4.5, Geology and Soils, the Beltz 8, 9, and 10 ASR facility sites are not located in an area of known significant hydrological, geological, and paleontological resources. However, the Beltz ASR facility sites are located on sites that have high paleontological resources sensitivity. As indicated in Section 4.5.3.3 (Impact GEO-4), however, impacts to unique paleontological resources would be reduced to a less-than-significant level with identified mitigation measures.<br><br>As discussed in Section 4.5, Geology and Soils, City wells are typically located on flat-lying topography that is not susceptible to landslides or other forms of slope failure and given that it is expected that new ASR facilities would be located in similar conditions and therefore would not be located on significant geological features. However, new ASR facilities could be located on sites that have paleontological resources sensitivity, but such impacts would be reduced to a less-than-significant level with identified mitigation measures, as indicated above. |
| **5.10.2, Development Within Visual Resource Areas.** Recognize that visual resources of Santa Cruz County possess diverse characteristics and that the resources worthy of protection may include, but are not limited to, ocean views, agricultural fields, wooded forests, open meadows, and mountain hillside views. Require projects to be evaluated against the context of their unique environment and regulate structure height, setbacks and design to protect these resources consistent with the objectives and policies of this section. Require discretionary review for all development within the visual resource area of Highway One, outside the Urban/Rural boundary, as designated on the GP/LCP Visual Resources Map and apply the design criteria of Section 13.20.130 of the County's zoning ordinance to such development. (County Code Section 13.20.130) | **No Conflict.** As described in Section 4.1, Impacts Not Found to be Significant, Beltz 8, 9, and 10 ASR and new ASR facilities would have a less-than-significant impact on visual resources. |
| **5.10.3, Protection of Public Vistas.** Protect significant public vistas as described in policy 5.10.2 from all publicly used roads and vista points by minimizing disruption of landform and aesthetic character caused by grading operations, timber harvests, utility wires and poles, signs, inappropriate landscaping and structure design. Provide necessary landscaping to screen development which is unavoidably sited within these vistas. (County Code Section 13.20.130) | **No Conflict.** As described in Section 4.1, Impacts Not Found to be Significant, Beltz 8, 9, and 10 ASR and new ASR facilities would have a less-than-significant impact on public vistas. |

Table 4.9-3. Review of Applicable Land Use Plans, Policies, and Regulations (continued)

| Policy/Ordinance | Potential for Proposed Project to Conflict |
|---|---|
| **5.10.8, Significant Tree Removal Ordinance.** Maintain the standards in the County's existing ordinance which regulates the removal of significant trees and other major vegetation in the Coastal Zone, and provide appropriate protection for significant trees and other major vegetation in areas of the County located within the Urban Services Line. (County Code Chapter 16.34) | **No Conflict.** Due to the developed nature of the Beltz 8, 9, and 10 ASR facility sites, removal of significant trees would not be required. Any new ASR facilities in the coastal zone of unincorporated Santa Cruz County would be required to comply with this policy and related code through the process of obtaining a CDP. |
| **5.10.10, Designation of Scenic Roads.** The following roads and highways are valued for their vistas. The public vistas from these roads shall be afforded the highest level of protection. (County Code Section 13.20.130) | **No Conflict.** As described in Section 4.1, Impacts Not Found to be Significant, Beltz 8, 9, and 10 ASR and new ASR facilities would have a less-than-significant impact on scenic roads. |
| **5.19.1, Evaluation of Native American Cultural Sites.** Protect all archaeological resources until they can be evaluated. Prohibit any disturbance of Native American Cultural Sites without an appropriate permit. Maintain the Native American Cultural Sites ordinance. (County Code Chapter 16.40) | **No Conflict.** Standard Construction Practices #24 and #25 described , and MM CUL-2 identified in Section 4.4, Cultural Resources and Tribal Cultural Resources, would provide for the proper handling and protection of archaeological resources and tribal cultural resources at the Beltz 8, 9, and 10 ASR and new ASR facility sites. |
| **6.1.1, Geologic Review for Development in Designated Fault Zones.** Require a review of geologic hazards for all discretionary development projects in designated fault zones. (County Code Chapter 16.10) | **No Conflict.** This policy and code chapter will be addressed through the CDP process for Beltz 8, 9, and 10 ASR and new ASR facilities, as applicable. As indicated in Section 4.5, Geology and Soils, Beltz 8, 9, and 10 ASR facilities sites are not located in a designated fault zone. |
| **6.1.8, Design Standards for New Public Facilities.** Require all new public facilities and critical structures to be designed to withstand the expected ground shaking during the design earthquake on the San Andreas Fault. (County Code Chapter 16.10) | **No Conflict.** This policy and code chapter will be addressed through the CDP process for Beltz 8, 9, and 10 ASR and new ASR facilities, as applicable. As indicated in Section 4.5, Geology and Soils, Beltz 8, 9, and 10 ASR facility sites are not located in a designated fault zone and all the design and construction of the facility infrastructure would be completed in accordance with California Building Code regulations. |
| **6.3.4, Erosion Control Plan Approval Required for Development.** Require approval of an erosion control plan for all development, as specified in the Erosion Control ordinance. Vegetation removal shall be minimized and limited to that amount indicated on the approved development plans, but shall be consistent with fire safety requirements. (County Code Section 16.22.060) | **No Conflicts.** During construction of Beltz 8, 9, and 10 ASR, and new ASR facilities erosion and sediment control best management practices identified in Standard Construction Practices #1 through #4 would be implemented in areas of disturbed soils. Given the developed nature of the Beltz ASR facility sites, vegetation removal, if any, would be minimal. Any new ASR facilities in the coastal zone of unincorporated Santa Cruz County would be required to comply with this policy and related code through the process of obtaining a CDP. |
| **6.3.8, On-site Sediment Containment.** Require containment of all sediment on the site during construction and require drainage improvements for the completed development that will provide runoff control, including onsite retention or detention where downstream drainage facilities have limited capacity. Runoff control systems or Best Management Practices shall be adequate to prevent any significant increase in site runoff over pre-existing volumes and velocities and to maximize on-site collection of non-point source pollutants. (County Code Section 16.22.070) | **No Conflict.** During construction of Beltz 8, 9, and 10 ASR and new ASR facilities erosion and sediment control best management practices identified in Standard Construction Practices #1 through #4 would be implemented in areas of disturbed soils. |

Table 4.9-3. Review of Applicable Land Use Plans, Policies, and Regulations (continued)

| Policy/Ordinance | Potential for Proposed Project to Conflict |
|---|---|
| **6.3.9, Site Design to Minimize Grading.** Require site design in all areas to minimize grading activities and reduce vegetation removal based on the following guidelines:<br>(a) Structures should be clustered;<br>(b) Access roads and driveways shall not cross slopes greater than 30 percent; cuts and fills should not exceed 10 feet, unless they are wholly underneath the footprint and adequately retained;<br>(c) Foundation designs should minimize excavation or fill;<br>(d) Building and access envelopes should be designated on the basis of site inspection to avoid particularly erodible areas;<br>(e) Require all fill and sidecast material to be recompacted to engineered standards, reseeded, and mulched and/or burlap covered.<br>(County Code Section 16.20.050[F]) | **No Conflict.** Given that Beltz 8, 9, and 10 ASR facility sites are already developed and paved sites located on relatively flat topography, grading, excavation, and vegetation removal for the proposed improvements would be minimized. Any new ASR facilities in the coastal zone of unincorporated Santa Cruz County would be required to comply with this policy and related code through the process of obtaining a CDP. |
| **6.3.11, Sensitive Habitat Considerations for Land Clearing Permits.** Require a permit for any land clearing in a sensitive habitat area and for clearing more than one quarter acre in Water Supply Watershed, Least Disturbed Watershed, very high and high erosion hazard areas no matter what the parcel size. Require that any land clearing be consistent with all General Plan and LCP Land Use policies (County Code Chapter 16.22) | **No Conflict.** Given that Beltz 8, 9, and 10 ASR facility sites are already developed and paved sites located on relatively flat topography, grading, excavation, and vegetation removal for the proposed improvements would be minimized. Additionally, grading on these sites would not take place in a sensitive habitat, a Water Supply Watershed, Least Disturbed Watershed, or very high and high erosion hazard areas. Any new ASR facilities in the coastal zone of unincorporated Santa Cruz County would be required to comply with this policy and related code through the process of obtaining a CDP. |
| **7.7.4, Maintaining Recreation Oriented Uses.** Protect the coastal blufftop areas and beaches from intrusion by nonrecreational structures and incompatible uses to the extent legally possible without impairing the constitutional rights of the property owner (County Code Sections 13.20.110[D] and [E]) | **No Conflict.** Given that Beltz 8, 9, and 10 ASR facility sites are not located between the ocean and the nearest public road, these project components would not interfere with coastal blufftop areas and beaches. New ASR facilities sites would also not interfere with coastal blufftop areas and beaches, as these facilities would be setback from blufftops and beaches to avoid potential impacts associated with seawater intrusion in the Santa Cruz Mid-County Groundwater Basin. |
| **7.7.10, Protect Existing Beach Access.** Protect existing pedestrian, and, where appropriate, equestrians and bicycle access to all beaches to which the public has a right of access, whether acquired by grant or through use, as established through judicial determination of prescriptive rights, and acquisition through appropriate legal proceedings. (County Code Sections 13.20.110[D] and [E]) | **No Conflict.** Given that Beltz 8, 9, and 10 ASR facility sites are not located between the ocean and the nearest public road, these project components would not interfere with pedestrian, equestrian, or bicycle access to beaches. New ASR facilities sites would also not interfere with access to beaches, as these facilities would be setback from the coastline and beaches to avoid potential impacts associated with seawater intrusion in the Santa Cruz Mid-County Groundwater Basin. |

Table 4.9-3. Review of Applicable Land Use Plans, Policies, and Regulations (continued)

| Policy/Ordinance | Potential for Proposed Project to Conflict |
|---|---|
| **8.6.6, Protecting Ridgetops and Natural Landforms.** Protect ridgetops and prominent natural landforms such as cliffs, bluffs, dunes, rock outcroppings and other significant natural features from development. In connection with discretionary review, apply the following criteria:<br>(a) Development on ridgetops shall be avoided if other developable land exists on the property.<br>(b) Prohibit the removal of tree masses when such removal would erode the silhouette of the ridgeline form. Consider the cumulative effects of tree removal on the ridgeline silhouette.<br>(c) Restrict the height and placement of buildings and structures to prevent their projection above the ridgeline or treeline. Restrict structures and structural projections adjacent to prominent natural land forms. Prohibit the creation of new parcels which would require structures to project above the ridgeline, treeline or along the edge of prominent natural landforms.<br>(d) Require exterior materials and colors to blend with the natural landform and tree backdrops.<br>(County Code Sections 13.20.110[D] and [E]) | **No Conflict.** Given that Beltz 8, 9, and 10 ASR facility sites are not located on a ridgetop or prominent natural landform, these project components would not erode the silhouette of ridgeline forms. As discussed in Section 4.5, Geology and Soils, City wells are typically located on flat-lying topography that is not be susceptible to landslides or other forms of slope failure and given that it is expected that new ASR facilities would be located in similar conditions and therefore would not be located on ridgetops or prominent natural landforms. |
| *City of Capitola Local Coastal Program Land Use Plan* | |
| **Policy III-4.** It shall be the policy of the City of Capitola to require the planting of trees in new development and to protect existing trees by allowing removal only in accordance with the City's Tree Ordinance. The City should encourage new developments to be designed to preserve significant vegetation. (Municipal Code Chapter 12.12) | **No Conflict.** As discussed in Section 4.3, Biological Resources, the McGregor Drive pump station and the segment of the Park Avenue pipeline south of State Highway 1 would be completed in conformance with local policies and ordinances, including the City's Tree Ordinance. |
| **Policy III-5.** Permitted development shall not block or detract from public views to and along Capitola's shoreline. (Municipal Code Section 17.46.090) | **No Conflict.** As described in Section 4.1, Impacts Not Found to be Significant, the McGregor Drive pump station and the segment of the Park Avenue pipeline south of State Highway 1 would have a less-than-significant impact on public views. |
| **Policy VI-2.** It shall be the policy of the City of Capitola to protect, maintain and, where possible, enhance the environmentally sensitive and locally unique habitats within its coastal zone, including dedication and/or acquisition of scenic conservation easements for protection of the natural environment. All developments approved by the City within or adjacent to these areas must be found to be protective of the long-term maintenances of these habitats. (Municipal Code Chapter 17.46) | **No Conflict.** The McGregor Drive pump station and segment of the Park Avenue pipeline south of State Highway 1 are not located in areas of environmentally sensitive and locally unique habitats, as described in Section 4.3, Biological Resources. |

Table 4.9-3. Review of Applicable Land Use Plans, Policies, and Regulations (continued)

| Policy/Ordinance | Potential for Proposed Project to Conflict |
|---|---|
| **Policy VI-5**. The City shall, as a condition of new development, ensure that run-off does not significantly impact the water quality of Capitola's creeks and wetlands through increased sedimentation, biochemical degradation or thermal pollution. (Municipal Code Section 13.16) | **No Conflict.** As described above, the Proposed Project would implement Standard Construction Practices #1 through #4 related to control of erosion and runoff, as well as water quality protection. |
| **Policy VII-1.** It shall be the policy of the City of Capitola to adequately plan for natural hazards in new development, reduce risks to life and property, and revise all plans and Zoning Ordinances to be in conformance with all the policies of the Coastal Act relating to hazards and shoreline structures. (Municipal Code Chapter 16.24) | **No Conflict.** As discussed in Section 4.5, Geology and Soils, the McGregor Drive pump station site is in an area of low liquefaction potential, while portions of the Park Avenue pipeline segment south of State Highway 1 are in an area of very high liquefaction potential, associated with shallow groundwater beneath a tributary drainage to Tannery Gulch. Design and construction of the intertie would be completed in accordance with standard, site-specific geotechnical investigations, in accordance with California Building Code and California Division of Occupational Safety and Health regulations, thus minimizing the potential for damage and safety impacts. As discussed in Section 4.8, Hydrology and Water Quality, the McGregor Drive pump station upgrade and Park Avenue pipeline segment would have less-than-significant impacts related to flood or tsunami hazards. |

As summarized in Table 4.9-3, these specific project and programmatic infrastructure components of the Proposed Project would not conflict with applicable LCP policies and implementing ordinances. Therefore, the Proposed Project would have a less-than-significant impact related to conflicts with land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect.

### Mitigation Measures

As described above, the Proposed Project would not result in significant land use impacts, and therefore, no mitigation measures are required.

**Impact LU-2: Conversion or Loss of Farmland or Forest Land and Conflicts with Zoning for Agricultural Land, Forest Land, or Timberland (Significance Standards C D, E, F, and G).** Construction of the Proposed Project could convert prime, unique, or important agricultural land to non-agricultural use, convert forest land to non-forest land, conflict with existing zoning for agricultural or timber production uses or conflict with a Williamson Act contract. ***(Less than Significant with Mitigation)***

### Water Rights Modifications

The water rights modifications of the Proposed Project would not directly result in construction of new facilities and therefore would not have the potential to directly convert agricultural lands to non-agricultural uses. Additionally, while the water rights modifications could result in limitations on the availability of water for agricultural use during drier hydrological conditions, as described in Chapter 3, Project Description, it would not have the potential to

indirectly convert agricultural lands to non-agricultural uses with adverse environmental effects. This project component also would not result in any conflicts with existing zoning for agricultural use or with a Williamson Act contract, as it would not change zoning or result in new land uses that could cause such conflicts. Therefore, this project component would have no direct adverse impact on agricultural resources.

Similar to agricultural land above, the water rights modifications of the Proposed Project would not directly result in construction of new facilities and therefore would not have the potential to convert forest land to non-forest uses. This project component also would not result in any conflicts with existing zoning for forest land or timberland, as it would not change zoning or result in new land uses that could cause such conflicts. Therefore, this project component would have no direct impact on forest resources.

The following analysis evaluates the potential indirect impacts to Farmland and forest land 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

Aquifer Storage and Recovery Facilities

**New ASR Facilities.** As no definitive sites have been identified to date for new ASR facilities, the setting of such facility sites is unknown. Up to four new ASR facilities would be constructed within the Santa Cruz Mid-County and/or Santa Margarita Groundwater Basins; while specific sites have not been identified at this time, a typical facility would require a site approximately 0.25 acres in size. As described in Section 4.9.1.3, Agricultural Resources, and Section 4.9.1.4, Forest and Timberland, and shown on Figure 4.9-2 and Figure 4.9-3, there are both agricultural and timber resources located within the lands overlying the two groundwater basins. Depending on the specific locations of future facilities, new ASR facilities could result in the conversion of Farmland or forest land to non-agricultural use or non-forest use, or conflict with zoning for agricultural use, forest land, or timberland for sites located in the coastal zone.

If lands are designated as Farmland (i.e., prime, unique, or important farmland under the State Farmland Mapping and Monitoring Program), conversion to non-agricultural uses would be considered a significant impact. Likewise, if future sites include parcels that are zoned CA or A in the County, new ASR facilities could be in conflict with allowable and conditional uses in these zone districts if facilities are located in the coastal zone.[2] Given that the four new ASR facilities would comprise a total of approximately 1 acre of land it is possible that the siting of one or more of these facilities could convert Farmland to non-agricultural use and/or conflict with allowable and conditional uses in the CA or A zone districts in the coastal zone and the impact would be potentially significant.

Implementation of MM LU-1 would avoid conversion of Farmland and conflicts with agricultural zoning by requiring that new ASR facilities avoid sites with Farmland and sites with CA or A zoning in the coastal zone. Given that the areas of prime, unique, and important farmlands shown on Figure 4.9-2 are limited, especially in the Santa Margarita Groundwater Basin, and given the small parcel size required for new ASR facilities, future siting of these facilities could likely avoid Farmlands. Alternatively, MM LU-1 allows for the use of Farmland if site-specific application of the LESA model determines that the site would not result in a significant impact to agricultural lands.

[2] Outside of the coastal zone, new ASR facilities would not result in conflicts with existing zoning as the City is not subject to County zoning requirements because 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, as described in Section 4.9.2.2, State.

As indicated in Section 4.9.2.2, State, CEQA provides lead agencies with an optional methodology, the LESA model, to assess impacts to agricultural lands. The LESA model evaluates measures of soil resource quality, project size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, the factors are rated, weighted, and combined, resulting in a single numeric score that becomes the basis for making a determination of a project's potential significance based on scoring totals identified in the model. Therefore, with the implementation of this mitigation measure the impact of this programmatic component related to agricultural resources would be reduced to a less-than-significant level.

Future new ASR facilities on sites with forest/timberland resources would result in a significant impact if such uses are converted to non-forest uses. As shown on Figure 4.9-3, areas of timber resources are present on portions of both groundwater basins. There do not appear to be parcels in the coastal zone that are zoned for timber production uses by the County, and therefore, the Proposed Project would not conflict with County zoning regarding timber resources in the coastal zone. Given that the four new ASR facilities would comprise a total of approximately 1 acre of land it is possible that the siting of one or more of these facilities could convert forest/timberland resources to non-uses and the impact would be potentially significant.

Implementation of MM LU-1 would avoid conversion of forest/timberland resources by requiring that new ASR facilities avoid sites with such resources. Given that the areas of timber resources shown on Figure 4.9-3 are limited and given the small parcel size required for new ASR facilities, future siting of these facilities could likely avoid forest/timberland resources. Therefore, with the implementation of this mitigation measure the impact of this programmatic component related to forest resources would be reduced to a less-than-significant level.

**Beltz ASR Facilities.** No Farmland or forest land is located on or near the Beltz ASR facility sites, nor are the sites zoned for agricultural use or forest/timberland or enrolled in a Williamson Act contract (County of Santa Cruz 2019a, 2021b). The Beltz ASR facility sites are mapped as Urban and Built-Up Land by the California Department of Conservation, and the surrounding lands are also Urban and Built-Up Land (California Department of Conservation 2018). Therefore, the Beltz ASR facilities would have no impact on Farmland or forest land.

Water Transfers and Exchanges and Intertie Improvements

**City/SVWD Intertie.** No Farmland or forest land is located on the City/SVWD intertie pipeline site, nor is the site zoned for forest/timberland or enrolled in a Williamson Act contract (County of Santa Cruz 2019a, 2021b). The City/SVWD intertie site is mapped as Urban and Built-Up Land by the California Department of Conservation, and the surrounding lands are also Urban and Built-Up Land (California Department of Conservation 2018). The City/SVWD intertie pipeline site would traverse some lands zoned for residential agricultural uses by the County of Santa Cruz; however, the City/SVWD intertie would not conflict with such zoning given that the facility would be exempt from local zoning under California Government Code Section 53091 (d) and (e). Regardless, the pipeline would be installed in the public roadway along Sims Road and La Madrona Drive, and therefore this programmatic component would not convert agricultural or forest land and there would be no impact.

**City/SqCWD/CWD Intertie – Soquel Village and Park Avenue Pipelines and McGregor Drive Pump Station Upgrade.** No Farmland or forest land is located near the Soquel Village and Park Avenue pipelines or McGregor Drive pump station upgrade sites for the City/SqCWD/CWD intertie, nor are the sites zoned for forest/timberland or enrolled in a Williamson Act contract (County of Santa Cruz 2019a, 2021b). The sites are mapped as Urban and Built-Up Land by the California Department of Conservation, and the surrounding lands are also Urban and Built-Up Land (California Department of Conservation 2018). Therefore, this programmatic component would not convert agricultural or forest land and there would be no impact.

**City/SqCWD/CWD Intertie – New Pump Stations.** No Farmland or forest land is located near the new pump station sites for the City/SqCWD/CWD intertie, nor are the sites zoned for forest/timberland or enrolled in a Williamson Act contract (County of Santa Cruz 2019a, 2021b). The areas of the proposed pump station sites are mapped as Urban and Built-Up Land and Other Land by the California Department of Conservation, and the surrounding lands are also Urban and Built-Up Land and Other Land (California Department of Conservation 2018). Therefore, construction of new pump stations would not result in conversion of farmland or forest/timberland as none exists in the general area where these facilities may be located.

Although the Valencia Road pump station is not located in an area where designated Farmland occurs, the facility could be located on land zoned for agriculture (A), depending on the precise site ultimately identified. However, the Valencia Road pump station would not conflict with such zoning given that the facility would be exempt from local zoning under California Government Code Section 53091 (d) and (e), as it is not in the coastal zone. Therefore, this programmatic component would not convert agricultural or forest land or conflict with zoning for agricultural land, and there would be no impact.

Felton Diversion Improvements

No Farmland or forest land is located on or near the Felton Diversion improvements site, nor is the site zoned for agricultural use or forest/timberland or enrolled in a Williamson Act contract (County of Santa Cruz 2019a, 2021b). The Felton Diversion site is mapped as Other Land, which includes low-density rural developments, brush, timber, wetland, and riparian areas, and the surrounding lands are also Other Land and Urban and Built-Up Land (California Department of Conservation 2018). Therefore, the Felton Diversion improvements would have no impact on Farmland or forest land.

Tait Diversion and Coast Pump Station Improvements

No Farmland or forest land is located on or near the Tait Diversion and Coast Pump Station improvements site, nor is the site zoned for agricultural use or forest/timberland or enrolled in a Williamson Act contract (County of Santa Cruz 2019a, 2021b). The Tait Diversion and Coast Pump Station improvements site is mapped as Urban and Built-Up Land by the California Department of Conservation, and the surrounding lands are also Urban and Built-Up Land (California Department of Conservation 2018). Therefore, the Tait Diversion and Coast Pump Station improvements would have no impact on Farmland or forest land.

### Mitigation Measures

Implementation of the following mitigation measure would reduce potentially significant agriculture and forest land impacts of the Proposed Project to a less-than-significant level, as described above.

**MM LU-1: Avoidance of Agricultural and Forest Lands (Applies to New Aquifer Storage and Recovery [ASR] Facilities).** The following measures shall be implemented to avoid conversion of Farmland or forest/timberland, and/or conflicts with agricultural zoning in the coastal zone:

a. Locate new ASR facilities on sites that do not contain Farmland (i.e., prime, unique, or important farmland under the State Farmland Mapping and Monitoring Program) unless site-specific application of the Land Evaluation and Site Assessment model determines that the site would not result in a significant impact to agricultural lands.

b. Locate new ASR facilities on sites that do not contain forest/timber land.

c. Locate new ASR facilities on sites that are not zoned for agricultural uses in the coastal zone.

| | |
|---|---|
| Impact LU-3: | **Loss of Mineral Resources (Significance Standards H and I).** Construction of the Proposed Project could potentially result in the location of infrastructure components on lands containing mineral resources in existing quarries; however, the Proposed Project would not result in the loss of availability of a mineral resource. ***(Less than Significant)*** |

### Water Rights Modifications

The water rights modifications would not have the potential to result in direct mineral resources impacts, as these modifications would not directly result in construction of new facilities that result in the loss of availability of a known mineral resource or locally important mineral resource recovery site. Therefore, the water rights modifications would have no direct impact on mineral resources.

The following analysis evaluates the potential indirect impacts to mineral 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

No known mineral resources or aggregate production are located on or in the immediate proximity to the known project and programmatic infrastructure component sites (California Geological Survey 2018). The Beltz ASR facility sites are classified as MRZ-4, indicating areas of unknown mineral resource significance (no known mineral occurrence). The City/SqCWD/CWD intertie improvement site is classified as MRZ-1, indicating no mineral significance, and MRZ-4. The City/SVWD intertie improvement site is classified as MRZ-3(a) and MRZ-3(d), indicating inferred mineral deposits that have undetermined mineral resource significance; however, the pipeline alignment would be located in an existing public roadway and therefore would not result in the loss of availability of a known mineral resource or locally important mineral resource recovery site. The Felton Diversion improvement site is classified MRZ-1, which is a designated area where no significant mineral deposits are present (County of Santa Cruz 2019b). The Tait Diversion and Coast Pump Station improvement site is classified MRZ-1 and MRZ-3(d) (County of Santa Cruz 2019b). However, as there is no aggregate production along the San Lorenzo River and given that the Tait Diversion and Coast Pump Station is an existing facility, this programmatic component would not result in the loss of availability of a known mineral resource or locally important mineral resource recovery site.

As no definitive sites have been identified to date for new ASR facilities, the setting of such facility sites is unknown; however, there are lands in existing quarries with known mineral resources or locally important mineral resource recovery sites overlying the Santa Cruz Mid-County and Santa Margarita Groundwater Basins where new ASR facilities would be sited. Therefore, such facilities could potentially be located on lands containing mineral resources. However, given that up to four new ASR facilities would comprise a total of approximately 1 acre of land, the area that could be impacted by new ASR facilities would comprise a negligible portion of mineral resource lands. Furthermore, the reclamation plans for each of the existing quarries in the County designate the end use as some form of open space. If uses other than open space are proposed, an amendment to the quarry's reclamation plan would be required to modify closure plans to allow for new ASR facilities. Consequently, quarries may accommodate new ASR facilities following closure of active quarry operations with amendments to quarry reclamation plans. These existing regulations and standards would ensure that new ASR facilities are consistent with quarry reclamation plans and do not adversely affect the availability of mineral resources in the County, and the impact would be less than significant.

**Mitigation Measures**

As described above, the Proposed Project would not result in significant impacts on mineral resources, and therefore, no mitigation measures are required.

### 4.9.3.4 Cumulative Impacts Analysis

This section provides an evaluation of cumulative land use, agriculture and forestry, and mineral 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 area considered in the cumulative analysis for this topic is Santa Cruz County.

The Proposed Project would not contribute to cumulative impacts related to **physical division of an established community (Significance Standard A)** because it would have no impact related to this standard, as described above. Therefore, this significance standard is not further evaluated.

**Impact LU-4:** **Cumulative Land Use Impacts (Significance Standard B).** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to conflicts with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. ***(Less than Significant)***

Although cumulative projects could have conflicts with established land use and planning documents and land use policies, they would be subject to review and approval by the County of Santa Cruz, the City of Santa Cruz, the City of Scotts Valley, and the City of Capitola, as applicable.[3] During the review and approval process, each of these projects would be required to be designed or otherwise conditioned to avoid conflicts with adopted land use plans and ordinances. In addition, as discussed above in Impact LU-1, the project and programmatic infrastructure components located in the coastal zone would not conflict with the relevant policies and implementing ordinances of the applicable LCP. Therefore, the Proposed Project, in combination with the past, present, and reasonably foreseeable future projects in Santa Cruz County, would result in less-than-significant cumulative impacts related to conflicts with land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect.

**Impact LU-5:** **Cumulative Agriculture and Forestry Impacts (Significance Standards C, D, E, F, and G).** Construction of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would result in a significant cumulative impact related to loss of Farmland and forest land, but the Proposed Project's contribution would not be cumulatively considerable. ***(Less than Significant)***

Most cumulative projects identified in Table 4.0-2 would not result in conversion of Farmland. Cumulative projects consist primarily of water and transportation infrastructure improvement projects, and infill development projects, as well as growth at the University of California, Santa Cruz (UCSC) campus. In general, these projects would tend to be located at existing facilities, along existing transportation corridors, and within developed, urban areas, rather than on Farmland. While growth under the 2021 Long Range Development Plan (LRDP) would result in the

[3] The exception to this is the University of California, Santa Cruz (UCSC) 2021 Long Range Development Plan, which will be subject to review and approval by the University of California Board of Regents. Projects pursued under the pending 2021 LRDP would conform with the 2021 LRDP land use plan and policies or would be required to pursue an amendment to the pending 2021 LRDP land use plan, if warranted.

conversion of approximately 2 acres of Farmland to nonagricultural uses, the 2021 LRDP EIR indicated that this 2-acre area is not a significant agricultural resource due to its limited acreage and water supply as well as its relative isolation compared to other agricultural lands in the region as determined through application of the LESA model (UCSC 2021). The Proposed Project could convert up to approximately 1-acre of Farmland as discussed in Impact LU-2, but the impact would be avoided with implementation of MM LU-1. Therefore, cumulative impacts related to potential conversion of Farmland would be less than significant.

Cumulative projects could result in conversion of forest land, although most cumulative projects identified in Table 4.0-2 would not result in conversion of forest land. Conversion of forest lands could occur with the Newell Creek Dam Inlet/Outlet Replacement Project (approximately 15 acres) and development as part of the UCSC LRDP (approximately 123 acres), resulting in a potentially significant cumulative impact on forest resources, even though there are substantial amounts of remaining forest lands throughout the County. The Proposed Project could convert forest land as discussed in Impact LU-2, but the impact would be avoided with implementation of MM LU-1. Therefore, the Proposed Project's contribution to cumulative forest resources impacts would not be cumulatively considerable.

**Impact LU-6:** **Cumulative Mineral Resource Impacts (Significance Standards H and I).** Construction of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to loss of availability of mineral resources. ***(Less than Significant)***

Cumulative projects listed in Table 4.0-2 consist primarily of water and transportation infrastructure improvement projects, infill development projects, and growth at the UCSC campus. These projects would tend to be located at existing water facilities, along existing transportation corridors, and within developed, urban areas, rather than on lands containing important mineral resources. While the Proposed Project could potentially impact a maximum of approximately 1 acre of land area that could encompass mineral resources due to the location of new ASR facilities at an existing quarry, this would constitute a negligible area of mineral resource lands and Proposed Project impacts would further be minimized through amendments to reclamation plans for existing quarries to modify closure plans to allow for new ASR facilities, as described in Impact LU-3. Therefore, the Proposed Project, in combination with the past, present, and reasonably foreseeable future projects in Santa Cruz County, would result in less-than-significant cumulative impacts related to loss of availability of mineral resources.

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# 4.10 Noise and Vibration

This section describes the existing noise 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 of the Santa Cruz Water Rights Project (Proposed Project). The analysis is based on noise modeling conducted for the Proposed Project as part of the preparation of this environmental impact report (EIR). The results of the noise modeling are summarized in this section, and are included in Appendix H.

A summary of the comments received during the scoping period for this EIR is provided in Table 2-1 in Chapter 2, Introduction, and a complete list of comments is provided in Appendix A. There were no comments related to noise.

## 4.10.1 Existing Conditions

### 4.10.1.1 Acoustic Fundamentals

Acoustics is the scientific study that evaluates perception, propagation, absorption, and reflection of sound waves. Sound is a mechanical form of radiant energy, transmitted by a pressure wave through a solid, liquid, or gaseous medium. Sound that is loud, disagreeable, unexpected, or unwanted is generally defined as noise; consequently, the perception of sound is subjective in nature, and can vary substantially from person to person. Common sources of environmental noise and relative noise levels are shown in Table 4.10-1.

**Table 4.10-1. Typical Noise Levels Associated with Common Activities**

| Common Outdoor Activities | Noise Level (dBA) | Common Indoor Activities |
|---|---|---|
| | 110 | Rock Band |
| Jet Flyover at 1,000 feet | | |
| | 100 | |
| Gas Lawn Mower at 3 feet | | |
| | 90 | |
| Diesel Truck at 50 feet, 50 mph | | Food Blender at 3 feet |
| | 80 | Garbage Disposal at 3 feet |
| Noisy Urban Area, Daytime | | |
| | 70 | Vacuum Cleaner at 10 feet |
| Commercial Area | | Normal speech at 3 feet |
| Heavy Traffic at 300 feet | 60 | |
| | | Large Business Office |
| Quiet Urban Daytime | 50 | Dishwasher (in next room) |
| Quiet Urban Nighttime | 40 | Theater, Large Conference Room (background) |
| Quiet Suburban Nighttime | | |
| | 30 | Library |
| Quiet Rural Nighttime | | Bedroom at Night, Concert Hall (background) |
| | 20 | |
| | | Broadcast/Recording Studio |
| | 10 | |
| Lowest Threshold of Human Hearing (Healthy) | 0 | Lowest Threshold of Human Hearing (Healthy) |

**Source:** Caltrans 2020a.
**Notes:** dBA = A-weighted decibels; mph = miles per hour.

A sound wave is initiated in a medium by a vibrating object (e.g., vocal cords, the string of a guitar, the diaphragm of a radio speaker). The wave consists of minute variations in pressure, oscillating above and below the ambient atmospheric pressure. The number of pressure variation cycles occurring per second is referred to as the frequency of the sound wave and is expressed in Hertz (Hz), which is equivalent to one complete cycle per second.

Directly measuring sound pressure fluctuations would require the use of a very large and cumbersome range of numbers. To avoid this and to have a more useable numbering system, the decibel (dB) scale was introduced. Sound level expressed in decibels (dB) is the logarithmic ratio of two like pressure quantities, with one pressure quantity being a reference sound pressure and the second pressure being that of the sound source of concern. For sound pressure in air, the standard reference quantity is generally considered to be 20 micropascals, which directly corresponds to the threshold of human hearing. The use of the decibel is a convenient way to handle the million-fold range of sound pressures to which the human ear is sensitive. A decibel is logarithmic; it does not follow normal algebraic methods and cannot be directly added. For example, a 65-dB source of sound, such as a truck, when joined by another 65-dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). A sound level increase of 10 dB corresponds to 10 times the acoustical energy, and an increase of 20 dB equates to a 100-fold increase in acoustical energy.

The loudness of sound perceived by the human ear depends primarily on the overall sound pressure level and frequency content of the sound source. The human ear is not equally sensitive to loudness at all frequencies in the audible spectrum. To better relate overall sound levels and loudness to human perception, frequency-dependent weighting networks were developed. The standard weighting networks are identified as A through E. There is a strong correlation between the way humans perceive sound and A-weighted decibels (dBA). For this reason, the dBA can be used to predict community response to noise from the environment, including noise from transportation and stationary sources. Sound levels expressed as dB in this section are A-weighted sound levels, unless noted otherwise.

Noise can be generated by a number of sources, including mobile sources (transportation) such as automobiles, trucks, and airplanes, and stationary sources (non-transportation) such as construction sites, machinery, and commercial and industrial operations. As acoustic energy spreads through the atmosphere from the source to the receiver, noise levels attenuate (decrease) depending on ground absorption characteristics, atmospheric conditions, and the presence of physical barriers (e.g., walls, building façades, berms). Noise generated from mobile sources generally attenuate at a rate of 3 dB (typical for hard surfaces, such as asphalt) to 4.5 dB (typical for soft surfaces, such as grasslands) per doubling of distance, depending on the intervening ground type. Stationary noise sources spread with more spherical dispersion patterns that attenuate at a rate of 6 dB to 7.5 dBA per doubling of distance for hard and soft sites, respectively.

Atmospheric conditions such as wind speed, turbulence, temperature gradients, and humidity may additionally alter the propagation of noise and affect levels at a receiver. Furthermore, the presence of a large object (e.g., barrier, topographic features, or intervening building façades) between the source and the receptor can provide significant attenuation of noise levels at the receiver. The amount of noise level reduction or “shielding” provided by a barrier primarily depends on the size of the barrier, the location of the barrier in relation to the source and receivers, and the frequency spectra of the noise. Natural barriers such as earthen berms, hills, or dense woods as well as built features such as buildings, concrete berms and walls may be effective barriers for the reduction of source noise levels.

### 4.10.1.1 Noise Descriptors

The intensity of environmental noise levels can fluctuate greatly over time and as such, several different descriptors of time-averaged noise levels may be used to provide the most effective means of expressing the noise levels. The selection of a proper noise descriptor for a specific source depends on the spatial and temporal distribution, duration, and fluctuation of both the noise source and the environment near the receptor(s). Noise descriptors most often used to describe environmental noise are defined as follows:

- **$L_{max}$ (Maximum Noise Level):** The maximum instantaneous noise level during a specific period of time.
- **$L_{min}$ (Minimum Noise Level):** The minimum instantaneous noise level during a specific period of time.
- **Lx (Statistical Descriptor):** The noise level exceeded "X" percent of a specific period of time. For example, L50 is the median noise level, or level exceeded 50% of the time.
- **$L_{eq}$ (Equivalent Noise Level):** The average noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value is calculated, which is then converted back to dBA to determine the $L_{eq}$ In noise environments determined by major noise events, such as aircraft over-flights, the $L_{eq}$ value is heavily influenced by the magnitude and number of single events that produce the high noise levels.
- **$L_{dn}$ (Day-Night Average Noise Level):** The 24-hour $L_{eq}$ with a 10-dBA "penalty" for noise events that occur during the noise-sensitive hours between 10 p.m. and 7 a.m. In other words, 10 dBA is "added" to noise events that occur in the nighttime hours, and this generates a higher reported noise level when determining compliance with noise standards. The $L_{dn}$ attempts to account for the fact that noise during this specific period of time is a potential source of disturbance with respect to normal sleeping hours.
- **CNEL (Community Noise Equivalent Level):** The CNEL is similar to the $L_{dn}$ described above, but with an additional 5-dBA "penalty" added to noise events that occur during the noise-sensitive hours between 7 p.m. and 10 p.m., which are typically reserved for relaxation, conversation, reading, and television. When the same 24-hour noise data are used, the reported CNEL is typically approximately 0.5 dBA higher than the $L_{dn}$.
- **SEL (Sound Exposure Level):** The cumulative exposure to sound energy over a stated period of time; typically, the energy of an event, summed into a 1-second period of time.

Community noise is commonly described in terms of the ambient noise level which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent sound level ($L_{eq}$) which corresponds to the steady-state A-weighted sound level containing the same total energy as the time-varying signal over a given time period (usually 1 hour). The $L_{eq}$ is the foundation of the composite noise descriptors such as $L_{dn}$ and CNEL, as defined above, and shows very good correlation with community response to noise. Use of these descriptors along with the maximum noise level occurring during a given time period provides a great deal of information about the ambient noise environment in an area.

### 4.10.1.2 Negative Effects of Noise on Humans

Excessive and chronic exposure to elevated noise levels can result in auditory and non-auditory effects on humans. Auditory effects of noise on people are those related to temporary or permanent hearing loss caused by loud noises. Non-auditory effects of exposure to elevated noise levels are those related to behavioral and physiological effects. The non-auditory behavioral effects of noise on humans are associated primarily with the subjective effects of annoyance, nuisance, and dissatisfaction, which lead to interference with activities such as communications, sleep, and learning. The non-auditory physiological health effects of noise on humans have been the subject of considerable research

attempting to discover correlations between exposure to elevated noise levels and health problems, such as hypertension and cardiovascular disease. The majority of research infers that noise-related health issues are predominantly the result of behavioral stressors and not a direct noise-induced response. The extent to which noise contributes to non-auditory health effects remains a subject of considerable research, with no definitive conclusions.

The degree to which noise results in annoyance and interference is highly subjective and may be influenced by several non-acoustic factors. The number and effect of these non-acoustic environmental and physical factors vary depending on individual characteristics of the noise environment such as sensitivity, level of activity, location, time of day, and length of exposure. One key aspect in the prediction of human response to new noise environments is the individual level of adaptation to an existing noise environment. The greater the change in the noise levels that are attributed to a new noise source, relative to the environment an individual has become accustomed to, the less tolerable the new noise source will be to an individual.

With respect to how humans perceive and react to changes in noise levels, a 1-dBA increase is generally imperceptible outside of a laboratory environment, a 3-dBA increase is barely perceptible, a 6-dBA increase is clearly noticeable, and a 10-dBA increase is subjectively perceived as approximately twice as loud (Egan 1988). These subjective reactions to changes in noise levels was developed on the basis of test subjects' reactions to changes in the levels of steady-state, pure tones or broad-band noise and to changes in levels of a given noise source. Perception and reaction to changes in noise levels in this manner is thought to be most applicable in the range of 50 to 70 dBA, as this is the usual range of voice and interior noise levels.

#### 4.10.1.3 Vibration Fundamentals

Vibration is similar to noise in that it is a pressure wave traveling through an elastic medium involving a periodic oscillation relative to a reference point. Vibration is most commonly described in respect to the excitation of a structure or surface, such as in buildings or the ground. Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., operating factory machinery) or transient in nature (e.g., explosions, impacts). Vibration levels can be depicted in terms of amplitude and frequency; relative to displacement, velocity, or acceleration.

Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal, or the quantity of displacement measured from peak to trough of the vibration wave. RMS is defined as the positive and negative statistical measure of the magnitude of a varying quantity. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a period of one second. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings (FTA 2018). PPV and RMS vibration velocity are nominally described in terms of inches per second (in/sec). However, as with airborne sound, vibration velocity can also be expressed using decibel notation as vibration decibels (VdB) with a reference quantity of 1 micro-inch per second. The logarithmic nature of the decibel serves to compress the broad range of numbers required to describe vibration and allow for the presentation of vibration levels in familiar terms.

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. Human response to vibration has been found to correlate well to average vibration amplitude; therefore, vibration impacts on humans are evaluated in terms of RMS vibration velocity.

Typical outdoor sources of perceptible groundborne vibration include construction equipment, steel-wheeled trains, and vehicles on rough roads. Although the effects of vibration may be imperceptible at low levels, effects may result in detectable vibrations and slight damage to nearby structures at moderate and high levels, respectively. At the elevated levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in damage to structural components. The range of vibration relevant to this analysis occurs from approximately 60 VdB, which is the typical background vibration-velocity level; to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings (FTA 2018). Table 4.10-2 identifies some common sources of vibration, corresponding VdB levels, and associated human perception and potential for structural damage.

**Table 4.10-2. Typical Levels of Groundborne Vibration**

| Human/Structural Response | Velocity Level, VdB (re 1 µ-inch/sec, RMS) | Typical Events (50-foot setback) |
|---|---|---|
| Threshold, minor cosmetic damage | 100 | Blasting, pile driving, vibratory compaction equipment |
| — | 95 | Heavy tracked vehicles (Bulldozers, cranes, drill rigs) |
| Difficulty with tasks such as reading a video or computer screen | 90 | Commuter rail, upper range |
| Residential annoyance, infrequent events | 80 | Rapid transit, upper range |
| Residential annoyance, occasional events | 75 | Commuter rail, typical bus or truck over bump or on rough roads |
| Residential annoyance, frequent events | 72 | Rapid transit, typical |
| Approximate human threshold of perception to vibration | 65 | Buses, trucks, and heavy street traffic |
| — | 60 | Background vibration in residential settings in the absence of activity |
| Lower limit for equipment ultra-sensitive to vibration | 50 | — |

**Source:** FTA 2018.
**Notes:** µ-inch/sec = micro-inch per second; re = in reference to; RMS = root-mean-square; VdB = vibration decibels.

## 4.10.2 Existing Noise Environment

### 4.10.2.1 Study Area

As described in the Project Description, the Proposed Project is located within Santa Cruz County (County), California and involves the water system and areas served of the City of Santa Cruz (City), and water service area of San Lorenzo Valley Water District (SLVWD), Scotts Valley Water District (SVWD), Soquel Creek Water District (SqCWD), and Central Water District (CWD). The components of the Proposed Project are located within Santa Cruz County, the City of Santa Cruz and are generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Figure 3-1 in Chapter 3, Project Description). While the project area is much broader, the study area for noise is focused on the project and programmatic infrastructure component sites where construction and ground disturbance could occur and where new or upgraded facilities would be located (see Figure 3-4 in Chapter 3, Project Description). These sites include the following: aquifer storage and recovery (ASR) sites where known, intertie improvement sites, Felton Diversion fish passage improvement site, and the Tait Diversion and Coast Pump Station improvement 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. This section describes the existing noise environment within the vicinity of the project and programmatic infrastructure components of the Proposed Project.

### 4.10.2.2 Sensitive Noise Receptors

Certain land uses are particularly sensitive to noise, such as schools, hospitals, and rest homes. Residential land uses are also considered noise sensitive, especially during evening and nighttime hours when occupants would typically be relaxing or resting. Noise-sensitive receptors are located immediately adjacent to or within close proximity to the project and programmatic infrastructure component sites.

### 4.10.2.3 Existing Ambient Noise Measurements

Dudek staff visited the locations of the Beltz ASR components of the Proposed Project on May 13, 2020 to measure ambient sound levels in the vicinity of the Beltz ASR sites. Short-term (ST) measurements were conducted with a calibrated Larson Davis Laboratories Model 831 precision integrating sound level meter, placed on a tripod with the microphone positioned approximately 5 feet above the ground. The short-term measurements were 15 minutes in duration at all locations. Figure 4.10-1 shows the measurement locations. Table 4.10-3 presents the results of the short-term noise measurements at the Beltz ASR sites and includes ambient noise information for the Tait Diversion and Coast Pump Station provided by the City. Additional measurement details can be found in Appendix H.

**Table 4.10-3. Short-Term Sound Level Measurements**

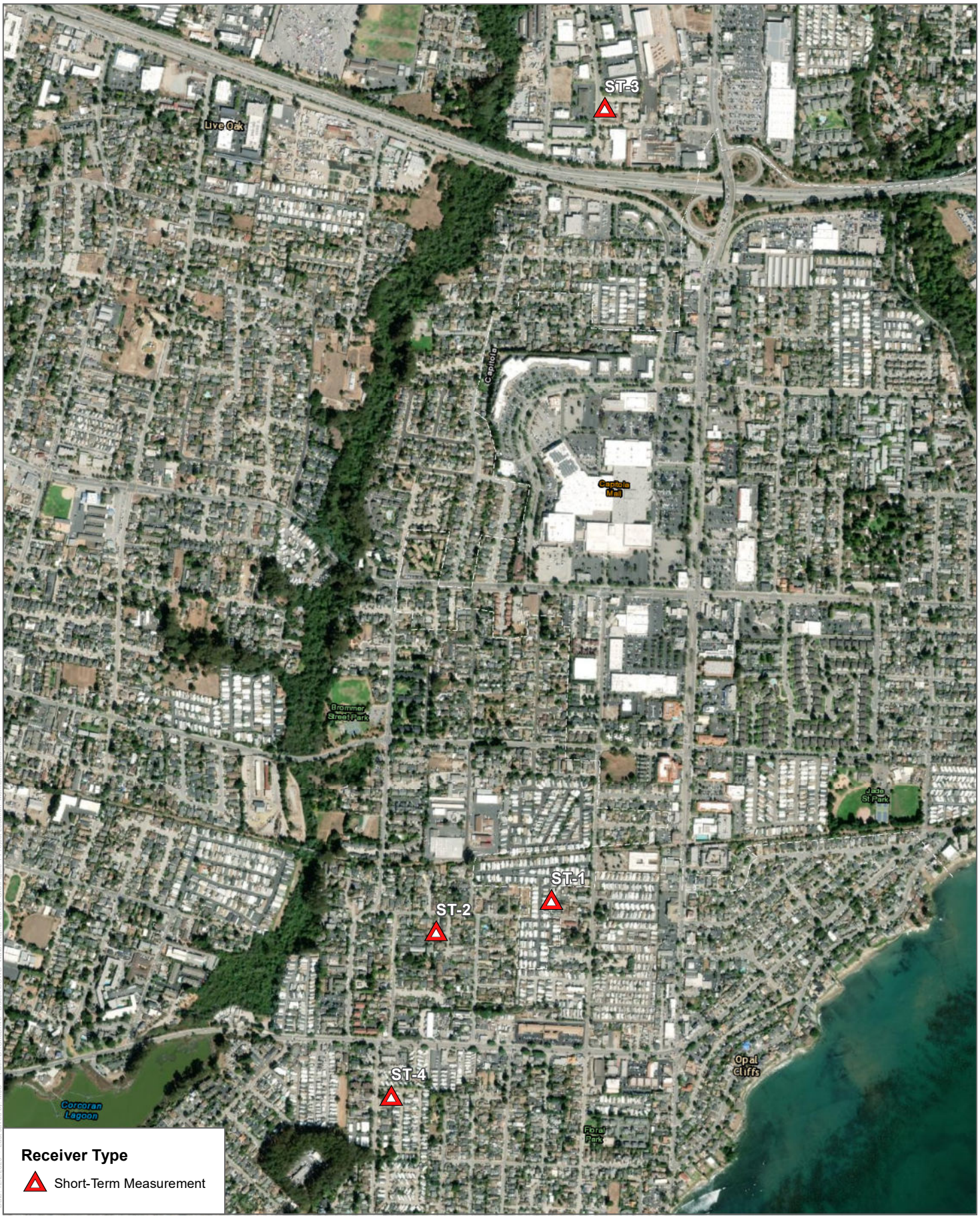
| Site | Description/Noise Sources Observed | Time | $L_{eq}$ (dBA) |
|---|---|---|---|
| ST1: Beltz 8 | Birds, distant aircraft, distant dog barking, distant traffic, rustling leaves | 8:43 a.m. to 8:58 a.m. | 42.9 |
| ST2: Beltz 10 | Approximately 15 feet from the cooling fan for VFD control for submersible pump on northern property boundary[1] | 9:20 a.m. to 9:35 a.m. | 59.4 |
| ST3: Beltz 12 | Distant aircraft, distant industrial, rustling leaves, State Highway 1 traffic | 10:07 a.m. to 10:22 p.m. | 53.6 |
| ST4: Beltz 9 | Traffic, birds, distant aircraft, distant dog barking, distant kids playing, rustling leaves | 10:40 a.m. to 10:55 a.m. | 45.7 |
| Tait Diversion[2] (Location 2) | Water movement in river, distant traffic, distant pump noise | 12/17/2019 to 12/20/2019 | 56.9 – 59.0 |

**Notes:** $L_{eq}$ = equivalent noise level (time-averaged sound level); ST = short-term; VFD = variable frequency drive.
Conditions: All short-term measurements were performed on May 13, 2020. Temperature: 66°F, clear sky, 1-mile-per-hour calm wind.

1 Sound levels measured at ST2 and generated by the VFD cooling fan are not typical operational noise levels for the equipment. Excluding the noise generated by the cooling fan, the ambient noise environment would not have been influenced by the well equipment.

2 Tait Diversion and Coast Pump Station ambient noise levels obtained from the City.

Results shown in Table 4.10-3 show sound levels with all results less than 60 dBA $L_{eq}$ across the measurement periods. The highest level measured in the Beltz site vicinity was 59 dBA adjacent to the variable frequency drive (VFD) controller cooling fan at the existing Beltz 10 site. Sound levels generated by the VFD controller cooling fan are not typical for the well equipment and are typically indicative of a minor maintenance issue, such as being out of balance, having movement impeded or the fan inlet/outlet being obscured. Excluding the temporarily elevated noise levels generated by the cooling fan, the ambient noise environment was not observed to be substantially influenced by the operation of the Beltz well equipment. The ambient noise environment at the Beltz sites was primarily influenced by traffic, community noise, distant industrial/commercial activities and the natural environment.




SOURCE: Dudek 2020, Bing 2020

DUDEK

0 0.075 0.15 Miles

**FIGURE 4.10-1**

Noise Monitoring Locations

Santa Cruz Water Rights Project

Existing ambient noise level data in the vicinity of the Tait Diversion and Coast Pump Station was obtained from the City for three locations surrounding the component site. The ambient noise levels measured in the vicinity of the Tait Diversion and Coast Pump Station were reported to be primarily influenced by the sounds of water movement within the river, distant traffic noise and distant pump noise from the Coast Pump Station. Of the three measurement locations, "Location 2" would be most representative of the noise-sensitive receptor nearest the proposed improvements at the Tait Diversion and Coast Pump Station. Location 2 was located on the east bank of the San Lorenzo River, approximately 60 feet north of the existing Tait Diversion. Ambient noise levels cataloged at measurement Location 2 ranged from approximately 56 to 59 dBA $L_{eq}$.

### 4.10.2.4 Existing Sources of Noise

The project and programmatic infrastructure component sites are located primarily in suburban areas of the County, with the Felton Diversion and one of the pump stations located further into more rural foothills. The character of the ambient noise environment at the infrastructure component sites varies from quiet rural areas to industrial areas that are exposed to substantial traffic noise. As described in the observed noise sources column of Table 4.10-3, common sound sources in the site vicinity include traffic, aircraft, mechanical noise and general community sounds. The primary noise sources affecting the infrastructure component sites are described below. No railroads are located near the sites.

#### Aircraft Noise

During the noise monitoring survey minimal aircraft overflights were observed and were not found to affect the ambient noise measurement underway. The Felton Diversion programmatic component site is located approximately 3 miles southeast of the Bonny Doon Village Airport and the Beltz ASR project component sites are approximately 10 miles northwest of the Watsonville Municipal Airport. The project and programmatic infrastructure component sites are not located within any currently adopted 60 or 65 dB CNEL/$L_{dn}$ airport noise contours. As such, noise associated with existing and future aircraft operations in the area is not a substantial contributor to the ambient noise environment.

#### Industrial Noise

The ambient noise environment in the overall study area is influenced to commercial and light industrial noise levels to a small degree; however, the Beltz 12 ASR site is the only location that has commercial and light industrial uses in the immediate vicinity. During the ambient noise measurement visit to the Beltz 12 ASR site, industrial activities included commercial truck deliveries and auto repair activities. However, the measured sound pressure levels were primarily attributable to vehicle traffic on State Highway 1.

#### Roadway Traffic Noise

Existing traffic noise levels were modeled for roadway segments in the study area based on the Federal Highway Administration (FHWA) Highway Traffic Noise Model (TNM) prediction methodologies (FHWA 1998), traffic volume data from Santa Cruz County (Count of Santa Cruz 2016) and the California Department of Transportation (Caltrans 2019). The FHWA TNM incorporates sound emissions and sound propagation algorithms based on well-established theory and accepted international standards. The acoustical algorithms contained within the FHWA TNM have been validated with respect to carefully conducted noise measurement programs and show excellent agreement in most cases for sites with and without noise barriers. The noise modeling accounted for factors as vehicle volume, speed, vehicle type, roadway configuration, distance to the receiver, and propagation over different types of ground (acoustically soft and hard ground).

Modeled existing traffic noise levels are summarized in Table 4.10-4, at a representative distance of 100 feet from the centerline of each major roadway in the study area and distances from roadway centerlines to the 60-dBA, 65-dBA, and 70-dBA $L_{dn}$ traffic noise level contours. The location of the 60-dBA $L_{dn}$ traffic noise contour along the local roadway network ranges from within the right-of-way to approximately 1,800 feet from the centerline of the modeled roadways. The extent to which existing land uses in the study area are affected by existing traffic noise depends on their respective proximity to the roadways and their individual sensitivity to noise. Refer to Appendix H of this report for complete modeling inputs and results.

**Table 4.10-4. Summary of Modeled Existing Traffic Noise Levels**

| Roadway | Segment | | ADT | $L_{dn}$ at 100 feet | Distance to $L_{dn}$ Contour (feet) | | |
|---|---|---|---|---|---|---|---|
| | *From* | *To* | | | *70 dBA* | *65 dBA* | *60 dBA* |
| State Highway 1 | | | 102,000 | 79.4 | 421 | 908 | 1,955 |
| State Highway 9 | | | 21,900 | 61.9 | 29 | 62 | 134 |
| State Highway 17 | | | 60100 | 76.7 | 279 | 602 | 1297 |
| 41st Avenue | South of Cory Street | | 24,232 | 67.8 | 72 | 155 | 333 |
| 41st Avenue | Portola Drive | Railroad Corridor | 13,732 | 59.0 | 16 | 40 | 86 |
| Brommer Street | Bulb Ave | 41st Avenue | 6,664 | 55.9 | 11 | 25 | 53 |
| Portola Drive | West of 41st Avenue | | 16,056 | 59.7 | 21 | 44 | 96 |
| Soquel Drive | Rodeo Gulch Road | 41st Avenue | 23,618 | 64.7 | 44 | 95 | 206 |

**Notes:** ADT = average daily traffic; dBA = A-weighted decibels; $L_{dn}$ = average day-night noise level.
Not accounting for shielding provided by natural or man-made intervening objects. Actual distance to real-world noise level contours will be dependent upon shielding effects in the environment under consideration.

### Vibration

Transportation-related vibration from roadways in the study area is the primary source of groundborne vibration. Heavy truck traffic can generate groundborne vibration, which varies considerably depending on vehicle type, weight, and pavement conditions. However, groundborne vibration levels generated from vehicular traffic are not typically perceptible outside of the roadway right-of-way (Caltrans 2020).

## 4.10.2.5 Infrastructure Component Site Conditions

This section provides the noise conditions at each of the known project and programmatic infrastructure component sites for which improvements and new facilities are proposed. As there are no definitive sites identified to date for new ASR facilities, no site conditions are provided.

The primary noise source occurring in the ambient noise environment surrounding the infrastructure component sites is vehicular traffic noise on the local and regional roadway network. Roadway traffic noise levels presented in Table 4.10-4, based on the Caltrans and Santa Cruz County Annual Average ADT volume data, would attenuate based on the distance to the noise-sensitive receptors and shielding provided by intervening objects between the source roadway and the receptors. Based on these roadway traffic noise levels, modeled traffic noise levels at the infrastructure component sites are presented below in Table 4.10-5.

Table 4.10-5. Modeled Traffic Noise Levels at Project Locations

| Project Element | Composite Traffic Noise Level, $L_{eq}$ dBA |
|---|---|
| ***Beltz ASR Sites*** | |
| Well 8 ASR site | 53.4 |
| Well 9 ASR site | 53.2 |
| Well 10 ASR site | 53.3 |
| Well 12 ASR site | 67.8 |
| ***City/SVWD Intertie Improvement Sites[1]*** | |
| Pipeline site | ~65 to 79 |
| Pump station site | ~66 |
| ***City/SqCWD/CWD Intertie Improvement Sites[1]*** | |
| Soquel Village pipeline site | ~62 to 71 |
| Park Avenue pipeline site | ~63 to 72 |
| McGregor Drive pump station upgrade site | 73.9 |
| Freedom Boulevard pump station site | ~65 |
| Valencia Road pump station site | ~52 |
| ***Surface Water Diversion Improvement Sites*** | |
| Tait Diversion and Coast Pump Station site | 57.7 |
| Felton Diversion site | 48.5 |

**Notes:** CWD = Central Water District; dBA = A-weighted decibels; $L_{eq}$ = equivalent average noise level; SqCWD = Soquel Creek Water District; SVWD = Scotts Valley Water District.

1 As the exact location and configuration of the intertie improvement components are unknown, traffic noise levels are presented for the approximate locations representing the nearby noise-sensitive receptors.

## 4.10.3 Regulatory Framework

### 4.10.3.1 Federal

#### Federal Noise Control Act

The U.S. Environmental Protection Agency's (EPA's) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, the EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at more local levels of government. Consequently, in 1982, responsibilities for regulating noise control policies were transferred to state and local governments. However, noise control guidelines and regulations contained in the EPA rulings in prior years are still adhered to by designated federal agencies where relevant. No federal noise regulations are applicable to the Proposed Project.

### 4.10.3.2 State

The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation.

## Governor's Office of Planning and Research General Plan Guidelines

The Governor's Office of Planning and Research (OPR), published the State of California General Plan Guidelines (OPR 2003), which provides guidance for the acceptability of projects within specific $L_{dn}$ contours. Table 4.10-6 summarizes acceptable and unacceptable community noise exposure limits for various land use categories. The guidelines also present adjustment factors that may be used to help craft noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

### Table 4.10-6. Summary of Land Use Noise Compatibility Guidelines

| Land Use Category | Community Noise Exposure (dBA $L_{dn}$) | | | |
|---|---|---|---|---|
| | *Normally Acceptable*[1] | *Conditionally Acceptable*[2] | *Normally Unacceptable*[3] | *Clearly Unacceptable*[4] |
| Residential—Low-Density Single-Family, Duplex, Mobile Home | <60 | 55–70 | 70–75 | 75+ |
| Residential—Multifamily | <65 | 60–70 | 70–75 | 75+ |
| Transient Lodging—Motel, Hotel | <65 | 60–70 | 70–80 | 80+ |
| Schools, Libraries, Churches, Hospitals, Nursing Homes | <70 | 60–70 | 70–80 | 80+ |
| Auditoriums, Concert Halls, Amphitheaters | — | <70 | 65+ | — |
| Sports Arena, Outdoor Spectator Sports | — | <75 | 70+ | — |
| Playgrounds, Neighborhood Parks | <70 | — | 67.5–75 | 72.5+ |
| Golf Courses, Riding Stables, Water Recreation, Cemeteries | <75 | — | 70–80 | 80+ |
| Office Building, Business Commercial, and Professional | <70 | 67.5–77.5 | 75+ | — |
| Industrial, Manufacturing, Utilities, Agriculture | <75 | 70–80 | 75+ | — |

**Source:** OPR 2003.

**Notes:** dBA = A-weighted decibels; $L_{dn}$ = day-night average noise level.

1 Specified land use is satisfactory, based on the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

2 New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

3 New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor areas must be shielded.

4 New construction or development should generally not be undertaken.

Generally, residential uses (e.g., single-family homes, mobile homes, etc.) are considered to be acceptable in areas where exterior noise levels do not exceed 60 dBA $L_{dn}$. Residential uses are normally unacceptable in areas exceeding 70 dBA $L_{dn}$ and conditionally acceptable within 55 to 70 dBA $L_{dn}$. Schools are normally acceptable in areas up to 70 dBA $L_{dn}$ and normally unacceptable in areas exceeding 70 dBA $L_{dn}$. Commercial uses are normally acceptable in areas up to 70 dBA $L_{dn}$. Between 67.5 and 77.5 dBA $L_{dn}$, commercial uses are conditionally acceptable, depending on the noise insulation features and the noise reduction requirements.

### California Department of Transportation Guideline Vibration Damage Potential Threshold Criteria

There are no state standards for vibration; however, California Department of Transportation (Caltrans) compiled a synthesis of research on the effects of vibration with thresholds ranging from 0.08 in/sec PPV to 4.0 in/sec PPV for "fragile historic buildings" and "structures of substantial construction," respectively. Based on the synthesis of research, Caltrans developed recommendations for guideline threshold criteria of 0.3 in/sec PPV for older residential structures and 0.25 in/sec PPV for historic buildings and some old buildings exposed to continuous/frequent intermittent sources. For extremely fragile historic buildings, ruins, and ancient monuments, Caltrans recommends a threshold of 0.08 in/sec PPV (Caltrans 2020b).

## 4.10.3.3 Local

### County of Santa Cruz General Plan

The County of Santa Cruz General Plan Noise Element, Chapter 9 (County of Santa Cruz 2020b) contains updated goals, objectives, and policies intended to protect citizens from exposure to excessive noise. The Noise Element establishes standards and policy to promote compatible noise environments for new development or redevelopment projects and to control excessive noise exposure of existing land uses. The following policies and standards are considered, where relevant, in the noise analysis for the Proposed Project.

**Objective 9.2 Noise Exposure of Existing Sensitive Uses and Receptors**

Minimize exposure of existing noise-sensitive land uses and receptors to excessive, unsafe or disruptive noise that may be generated by new land uses and development projects.

Policies

9.2.1 Require acoustical studies for all new development projects that may affect the existing noise environment affecting sensitive land uses and receptors and that may not conform to the Normally Acceptable Noise Exposure in Table 9-2 (Table 4.10-7 in this EIR).

9.2.2 Require site-design and noise reduction measures for any project, including transportation projects that would cause significant degradation of the noise environment due to project effects that could:

(a) Increase the noise level at existing noise-sensitive receptors or areas by 5 dB or more, where the post-project CNEL or DNL will remain equal to or below 60 dB;

(b) Increase the noise level at existing noise-sensitive receptors or areas by 3 dB or more, where the post-project CNEL or DNL would exceed 60 dB;

This policy shall not be interpreted in a manner that would limit the ability of the County to require noise related mitigation measures or conditions of approval for projects that may generate lesser increases than the above. Special consideration may also be applied to special events or activities subject to permit requirements, or to land use development permits for uses and activities exempted from County noise control regulations.

9.2.3 Incorporate noise considerations into the site plan review process, particularly with regard to parking and loading areas, ingress/egress points and refuse collection areas.

9.2.4 For all new commercial and industrial developments which would increase noise levels above the normally acceptable standards in Table 9-2 (shown as Table 4.10-7 in this EIR) or the maximum allowable standards in Table 9-3 (Table 4.10-8 in this EIR), the best available control technologies shall be used to minimize noise levels. In no case shall the noise levels exceed the standards of Table 9-3 (Table 4.10-8 in this EIR).

9.2.5 The following noise mitigation strategies are preferable to construction of conventional masonry noise barriers where these strategies are a feasible option to reduce impacts on sensitive uses:

- Avoid placement of noise sensitive uses in noisy areas.
- Avoid placement of significant noise generators in noise sensitive areas.
- Increase setbacks between noise generators and noise sensitive uses.
- Orient buildings such that the noise sensitive portions of a project (e.g. bedrooms) are shielded from noise sources (such as through careful design of floor plan).
- Use sound-attenuating architectural design and building features.
- Employ technologies that reduce noise generation, such as alternate pavement materials on roadways, when appropriate.
- Employ traffic calming measures where appropriate.

9.2.6 Require mitigation and/or best management practices to reduce construction noise as a condition of project approvals, particularly if noise levels would exceed 75 dBA at neighboring sensitive land uses or if construction would occur for more than 7 days.

## Table 4.10-7. Acceptable through Unacceptable Ranges of Noise Exposure by Land Use

| Land Use | | Community Noise Exposure DNL or CNEL dB(A) | | | | | |
|---|---|---|---|---|---|---|---|
| | | *55* | *60* | *65* | *70* | *75* | *80* |
| A | Residential/Lodging – Single Family, Duplex, Mobile Home, Multi Family | | | | | | |
| B | Schools, Libraries, Religious Institutions, Meeting Halls, Hospitals | | | | | | |
| C | Outdoor Sports Arena or Facility, Playgrounds, Neighborhood Parks | | | | | | |
| D | Office Buildings, Business Commercial and Professional | | | | | | |
| E | Industrial, Manufacturing, Utilities, Agriculture | | | | | | |

**Normally Acceptable:** Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements, and can meet the indoor noise standards.

**Conditionally Acceptable:** New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design to meet interior and exterior noise standards, where applicable.

**Normally Unacceptable:** New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design to meet interior and exterior noise standards, where applicable.

**Unacceptable:** New construction or development should generally not be undertaken.

**Source:** County of Santa Cruz 2020a, Table 9-2.
**Note:** Outdoor noise exposure measured at the property line of receiving land use.

**Table 4.10-8. Maximum Allowable Noise Exposure Stationary Noise Sources[1]**

| Noise Metric | Daytime[5] (7:00 a.m. to 10:00 p.m.) | Nighttime[2,5] (10:00 p.m. to 7:00 a.m.) |
|---|---|---|
| Hourly $L_{eq}$ – average hourly noise level, dB[3] | 50 | 45 |
| Maximum Level, dB[3] | 70 | 65 |
| Maximum Level dB – Impulsive Noise[4] | 65 | 60 |

**Source:** County of Santa Cruz 2020a, Table 9-3.
**Notes:** dB = decibel; $L_{eq}$ = equivalent noise level (time-averaged sound level).
1 As determined at the property line of the receiving land use. When determining effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers or other property line noise mitigation measures.
2 Applies only where the receiving land use operates or is occupied during nighttime hours.
3 Sound of the measurements shall be made with "slow" meter response.
4 Sound level measurements shall be made with "fast" meter response.
5 Allowable levels shall be raised to the ambient noise level were the ambient level exceeds the allowable levels. Allowable levels shall be reduced five dBA if the ambient hourly $L_{eq}$ is at least 10 dBA lower than the allowable level.

## Santa Cruz County Code

The Santa Cruz County Code contains additional guidance with the intent to control noise, to promote and maintain the health, safety and welfare of its citizens. Chapter 8.30 of the Santa Cruz County Code enumerates general standards, limitations and exemptions pertaining to noise within the County. Additionally, Chapter 13.15 institutes "Noise Planning", which codifies General Plan policies and aids in regulating noise throughout the County through land use planning and permitting. The regulations presented below are considered, where relevant, in the noise analysis for the Proposed Project.

### 8.30.10 Offensive Noise

(A) No person shall make, cause, suffer, or permit to be made any offensive noise.

(B) "Offensive noise" means any noise which is loud, boisterous, irritating, penetrating, or unusual, or that is unreasonably distracting in any other manner such that it is likely to disturb people of ordinary sensitivities in the vicinity of such noise, and includes, but is not limited to, noise made by an individual alone or by a group of people engaged in any business, activity, meeting, gathering, game, dance, or amusement, or by any appliance, contrivance, device, tool, structure, construction, vehicle, ride, machine, implement, or instrument.

(C) The following factors shall be considered when determining whether a violation of the provisions of this section exists:

(1) Loudness (Intensity) of the Sound.

(a) Day and Evening Hours. For purposes of this factor, a noise shall be automatically considered offensive if it occurs between the hours of 8:00 a.m. and 10:00 p.m. and it is:

(i) Clearly discernible at a distance of 150 feet from the property line of the property from which it is broadcast; or

(ii) In excess of 75 decibels at the edge of the property line of the property from which the sound is broadcast, as registered on a sound measuring instrument meeting the American National Standard Institute's Standard S1.4-1971 (or more recent revision thereof) for Type 1 or Type 2 sound level meters, or an instrument which provides equivalent data. A noise not reaching this intensity of volume may still be found to be offensive depending on consideration of the other factors outlined below.

(b) Night Hours. For purposes of this factor, a noise shall be automatically considered offensive if it occurs between the hours of 10:00 p.m. and 8:00 a.m. and it is:

(i) Made within 100 feet of any building or place regularly used for sleeping purposes; or

(ii) Clearly discernible at a distance of 100 feet from the property line of the property from which it is broadcast; or

(iii) In excess of 60 decibels at the edge of the property line of the property from which the sound is broadcast, as registered on a sound measuring instrument meeting the American National Standard Institute's Standard S1.4-1971 (or more recent revision thereof) for Type 1 or Type 2 sound level meters, or an instrument which provides equivalent data. A noise not reaching this intensity of volume may still be found to be offensive depending on consideration of the other factors outlined below.

(2) Pitch (frequency) of the sound, e.g., very low bass or high screech;

(3) Duration of the sound;

(4) Time of day or night;

(5) Necessity of the noise, e.g., garbage collecting, street repair, permitted construction activities;

(6) The level of customary background noise, e.g., residential neighborhood, commercial zoning district, etc.; and

(7) The proximity to any building regularly used for sleeping purposes.

### 13.15.040 Exemptions

(A) Noise sources normally and reasonably associated with construction, repair, remodeling, or grading of any real property, provided a permit has been obtained from the County as required, and provided said activities take place between the hours of 8:00 a.m. and 5:00 p.m. on weekdays unless the Building Official has in advance authorized said activities to start at 7:00 a.m. and/or continue no later than 7:00 p.m. Such activities shall not take place on Saturdays unless the Building Official has in advance authorized said activities, and provided said activities take place between 9:00 a.m. and 5:00 p.m. and no more than three Saturdays per month. Such activities shall not take place on Sunday or a federal holiday unless the Building Official has in advance authorized such work on a Sunday or federal holiday, or during earlier morning or later evening hours of a weekday or Saturday.

(B) Emergency Work. The provisions of this chapter shall not apply to the emission of sound for the purpose of alerting persons to the existence of an emergency or in the performance of emergency work.

### 13.15.050 General Noise Regulations and Unlawful Noise

(A) No use, except a temporary construction operation, shall be permitted which creates noise which is found by the Planning Commission not to conform to the noise parameters established by Table 9-2 and Table 9-3 of the Santa Cruz County General Plan beyond the boundaries of the project site at standard atmospheric pressure.

(B) Backup emergency generators shall only be operated during power outages and for other temporary purposes. If the generator is located within 100 feet of a residential dwelling unit, noise attenuation measures shall be included to reduce noise levels to an A-weighted maximum exterior noise level of 60 dB at the property line and a maximum interior noise level of 45 dB within nearby residences.

### 13.15.070 Noise Generating Land Use

(A) New commercial and industrial development that would increase noise levels above the normally acceptable range in Table 9-2 or the levels in Table 9-3 of the Santa Cruz County General Plan Noise Element shall require acoustic studies to determine the noise reduction requirements to be included as conditions of approval. Noise levels shall not exceed the standards in Table 9-3, and require, as conditions of approval, site design and sound reducing measures if the project would:

(1) Increase the noise level at existing noise-sensitive receptors or areas by five (5) dB $L_{dn}$ or more, where the post-project $L_{dn}$ would remain equal to or below 60 dB.

(2) Increase the noise level at existing noise-sensitive receptors or areas by three (3) dB $L_{dn}$ or more, where the post-project $L_{dn}$ would exceed 60 dB.

(B) The standards in this section shall not limit the ability of the County to impose conditions of approval on projects that increase noise levels at existing noise-sensitive receptors or areas by any amount.

### 13.15.080 Exterior Noise Standards

New development shall not be exposed to noise levels that exceed the normally acceptable levels in Table 9-2 of the Santa Cruz County General Plan Noise Element, which establishes acceptable through unacceptable ranges of noise exposure by land use.

## City of Santa Cruz General Plan

Applicable noise standards in the City of Santa Cruz General Plan are contained within Chapter 8 of the General Plan (Hazards, Safety, and Noise) (City of Santa Cruz 2012). The Hazards, Safety, and Noise chapter contains specific goals, policies, and standards for use in planning and land compatibility determinations within the City of Santa Cruz. In particular, the Hazards, Safety, and Noise chapter establishes noise/land-use compatibility standards which are applicable to all new residential, commercial, and mixed-use projects (Figure 2 of the Hazards, Safety, and Noise chapter and Goal HZ3.2.1), and the General Plan seeks to ensure that noise standards are met in the siting of noise-sensitive uses (Goal HZ3.2).

The Hazards, Safety, and Noise chapter policies establish a maximum interior noise level threshold of 45 dBA $L_{dn}$ for all residential uses, consistent with California noise insulation standards. Figure 2 of the Hazards, Safety, and Noise chapter indicates that exterior noise levels up to 60 dBA $L_{dn}$ are normally acceptable for residential development and exterior noise levels up to 65 dBA $L_{dn}$ are normally acceptable for multi-family residential and transient residential development; with noise levels up to 70 dBA $L_{dn}$ considered conditionally acceptable. Hazards, Safety, and Noise chapter Policy HZ3.2.3 reiterates the "noise level target" of 65 dBA $L_{dn}$ for outdoor activity areas associated with new multi-family residential developments. Policies HZ3.1.3 and HZ3.1.5 qualitatively discuss the management and monitoring of construction noise levels to minimize noise impacts on surrounding land uses.

## City of Santa Cruz Municipal Code

Chapters 9.36 and 24.14 of the City of Santa Cruz Municipal Code (City of Santa Cruz 2020) include provisions for noise regulations. The former prohibits excessive noise during nighttime hours (10:00 p.m. through 8:00 a.m.) (Section 9.36.010, Subsection(a)), but without any quantitative (numerical) limits. For the purposes of construction activities performed in support of public works, the nighttime noise restriction shall not apply during the hours of 7:00 a.m. to 8:00 a.m.

Subsection (d) of Chapter 9.36 states that "Subsection (a) shall not apply to any person engaged in performance of a contract for public works awarded by the City of Santa Cruz, in the event of an emergency and if the city manager of the City of Santa Cruz so authorizes work."

Subsection (e) of Chapter 9.36 allows for specific construction activities to occur between the hours of 10:00 p.m. and 8:00 a.m. where either the chief building inspector, public works director, planning and community development director or water department director have provided written determination and consent that said task is required commence or be completed between said hours.

Section 9.36.025 states "This chapter shall not apply to refuse collection, recyclable collection or street sweeping activities undertaken by, or pursuant to contract with, the city of Santa Cruz. Similarly, this chapter shall not apply to any other activity undertaken by the city, another governmental agency, or city contractor, for public health and safety purposes when, in the judgment of the city or governmental agency, such activity cannot be undertaken effectively or efficiently in compliance with the regulations set forth in this chapter.

In addition to the Chapter 9.36 regulations, Section 24.14 describes performance standards which limit noise production with respect to noise production from residential and commercial/industrial land uses: up to a 5 dB or 6 dB increase, respectively, above existing outdoor ambient sound levels.

### City of Scotts Valley General Plan

The City of Scotts Valley General Plan, Chapter 5, Noise Element discusses the noise environment within the City of Scotts Valley and presents goals, policies and actions to help guide planning decisions and protect against exposure to excessive. The Scotts Valley Noise Element does not contain specific noise level thresholds for the evaluation of noise levels within the City but establishes allowable noise level increases for which a project must not exceed. The Scotts Valley noise increase standards are shown in Table 4.10-9. The Scotts Valley General Plan does not contain guidance or noise level standards for noise generated by construction activities.

**Table 4.10-9. Noise Increase Standards**

| Proposed New Use/Location of dBA Reading | Maximum Noise Increase in ($L_{dn}$) dBA Adjacent to Existing: | | | |
|---|---|---|---|---|
| | *Sensitive* | *Residential* | *Commercial* | *Industrial* |
| ***Sensitive*** | | | | |
| At Property Line | 3 | 5 | 5 | 5 |
| 50 feet from Property Line | 3 | 3 | – | – |
| ***Residential*** | | | | |
| At Property Line | 3 | 5 | 5 | 5 |
| 50 feet from Property Line | 3 | 3 | – | – |
| ***Commercial*** | | | | |
| At Property Line | 3 | 5 | 5 | 5 |
| 50 feet from Property Line | 3 | 3 | – | – |
| ***Industrial*** | | | | |
| At Property Line | 3 | 5 | 5 | 7 |
| 50 feet from Property Line | 3 | 3 | – | – |

**Source:** City of Scotts Valley General Plan, Chapter 5, Noise Element, Table 3.

## City of Scotts Valley Municipal Code

The City of Scotts Valley establishes qualitative guidance for the control and enforcement of the City's noise environment within Chapter 5.17 of the Scotts Valley Municipal Code, as presented below. The noise restrictions presented in the Scotts Valley Municipal Code do not address noise generated from construction activities.

5.17.030 - Exemptions.

A. The proper use of a siren or other alarm by a police, fire or authorized emergency vehicle as defined in the California Vehicle Code. Likewise, any stationary fire alarm operated by the fire district of the city is exempt from the provisions of this chapter;

B. The proper use of emergency generators by any privately owned service facility, up to a maximum of 75 dBA measured at the property line, necessary to maintain service essential to the public health, safety or welfare;

1. Noise generated by city-permitted construction activities occurring during authorized construction hours as set forth elsewhere in this Code.

5.17.040 - Violations and Penalties

A. No person shall make, cause, suffer or permit to be made any offensive noises which disturb or annoy people of ordinary sensitiveness or which are so harsh or so prolonged or unnatural or unusual in their use, time or place as to cause physical discomfort to any person, and which are not necessary in connection with any lawfully conducted activities.

B. No person shall, between the hours of ten p.m. and eight a.m., make, cause, suffer or permit to be made any offensive noise within the vicinity of any building or place regularly used for sleeping purposes.

## City of Capitola General Plan Noise Element

The City of Capitola has developed and adopted guidelines, goals and policies with the intent of controlling and diminishing environmental noise and protecting inhabitants from exposure to excessive noise levels. Applicable noise standards are contained in Table SN-1 of the City of Capitola General Plan Noise Element. Goal SN-7 of the General Plan contains the City of Capitola policies on noise, with the primary intent of minimizing the community's exposure to excessive noise.

Noise level exposure at low density, single-family residential land uses are considered to be "normally acceptable" at levels up to 60 dBA CNEL/DNL and "conditionally acceptable" from 55 to 70 dBA CNEL/DNL. Noise Level exposure at commercial land uses are considered to be "normally acceptable" at levels up to 70 dBA CNEL/DNL and "conditionally acceptable" up to 77.5 dBA CNEL/DNL.

## City of Capitola Noise Ordinance

City of Capitola Noise Ordinance is enumerated as Municipal Code Section 9.12, Noise. The Capitola Noise Ordinance does not contain quantitative performance standards for the evaluation of noise generated by sources other than mechanical sweeping devices, vacuum machines and leaf blowers. All other noise sources within the City of Capitola are evaluated on a more subjective basis, at the discretion of the Capitola Police and the City Council. As such, the City of Capitola Municipal Code Noise Ordinance does not have specific thresholds of significance that can be applied to the evaluation of operational noise generated by the Proposed Project.

The City of Capitola Municipal Code Section 9.12.010 provides qualitative discussion on prohibited noise levels within the City. Municipal Code Section 9.12.010 A, establishes that it is unlawful to generate noise levels that could be considered a nuisance, within 200 feet of any place (residence, transient lodging, etc.) regularly used for sleeping purposes between the hours of 10:00 p.m. and 8:00 a.m. Municipal Code Section 9.12.010 B establishes limitations on the generation of construction noise, except when otherwise approved by the City of Capitola. Generally, generation of construction noise is limited to the hours of 7:30 a.m. to 9:00 p.m. Monday through Friday and 9:00 a.m. to 4:00 p.m. on Saturday. Construction noise is not allowed on Sundays.

## 4.10.4 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to noise. 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.

### 4.10.4.1 Standards of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to noise are based on past and current versions of 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 permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
B. Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
C. Result in excessive groundborne vibration or groundborne noise levels.
D. Expose people residing or working in the project area to excessive noise levels in a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport.

In analyzing noise and vibration impacts associated with the Proposed Project, pertinent noise standards introduced in Section 4.10.3.3, Local, for the County of Santa Cruz and the cities of Santa Cruz, Scotts Valley, and Capitola have been considered and utilized, in part, to develop the following quantified significance criteria (presented in Table 4.10-10) for Significance Standards A and B above related to permanent increases in ambient noise levels.

**Table 4.10-10. Significant Change in Permanent Ambient Noise Levels**

| Existing Ambient Noise Level, $L_{dn}$/CNEL | Significant Increase |
|---|---|
| <60 dBA | + 5 dB or Greater |
| >60 dBA | + 3 dB or Greater |

**Source:** Adapted from FICON 1992 and Caltrans 2020.
**Notes:** dBA = Decibel A-weighted; CNEL = Community Noise Equivalent Level; $L_{dn}$ = day-night average noise level.

It is important to consider significance thresholds based on the degradation of the existing ambient noise environment. Using a single absolute value to evaluate an impact relating to a noise level increase would not account for the

preexisting ambient noise environment to which a person has become accustomed. The County of Santa Cruz, the City of Santa Cruz and City of Scotts Valley have established varying standards to address increases in the ambient noise environment that occur due to the development of a project, or the addition of a new noise source. These relative noise level thresholds allow for an increase above the existing ambient noise levels ranging from 3 to 6 dBA $L_{dn}$, depending on the ambient noise level without the project element or the land uses involved. The City of Capitola has not established a threshold to define what would be considered a significant increase above the existing ambient.

For community noise assessments Caltrans considers that it is "generally not significant" if no noise-sensitive uses are located within the project area, or if increases in community noise levels associated with implementation of the project would not exceed +3 dB at noise-sensitive locations in the project vicinity (Caltrans 2020a). Research assessing the percentage of people who are highly annoyed by changes in ambient noise levels indicate that when ambient noise levels are low, a greater change is needed to cause a response. As ambient noise levels increase, a lesser change in noise levels is required to elicit significant annoyance. Based on this premise, the significance thresholds outlined in Table 4.10-10 for permanent increases in ambient noise levels are considered to correlate well with human response to changes in such noise levels and assess degradation of ambient community noise environment. These significance thresholds are consistent with those outlined by the County of Santa Cruz and would provide compliance with the City of Santa Cruz and City of Scotts Valley relative increase standards.

Given the above, the quantified significance thresholds for Significance Standards A, B, and C are as follows:

- **Significance Standard A**. The Proposed Project would result in the generation of a substantial permanent increase in ambient noise levels resulting in a significant impact in the vicinity of the project and programmatic infrastructure component sites if they would cause an increase of +5 dBA $L_{dn}$ in the ambient noise level exposure, where existing ambient noise levels are below 60 dBA $L_{dn}$ or a +3 dBA $L_{dn}$ increase in the ambient noise level exposure, where existing ambient noise levels are above 60 dBA $L_{dn}$, based on Table 4.10-10. (These thresholds are consistent with those outlined by the County of Santa Cruz and would provide compliance with the City of Santa Cruz and City of Scotts Valley relative increase standards.)
- **Significance Standard B**. The Proposed Project would result in the generation of a substantial temporary or permanent noise levels in the vicinity of the project and programmatic infrastructure component sites if they would:
    - Construction Noise. For temporary construction activities on the project and programmatic infrastructure component sites in any location, a significant impact would generally result if construction noise exceeds 60 dBA between 10:00 p.m. and 8:00 a.m. or 75 dBA between 5:00 p.m. and 10:00 p.m. Between the hours of 8:00 a.m. to 5:00 p.m. on weekdays, construction noise is not limited, based on Santa Cruz County Code Section 8.30.10. Other factors considered in the determination of significance are pitch, duration of sound, time of day or night, necessity of the noise, and proximity to buildings used for sleeping.
    - Operational Noise. For operational noise in any location the same quantified significance thresholds as identified for Significance Standard A would apply.
- **Significance Standard C.** The Proposed Project would result in the generation of a substantial temporary ground borne noise or vibration levels resulting in a significant impact in the vicinity of project and programmatic infrastructure component sites if it would result in groundborne noise or vibration levels that exceed the Caltrans guidance (i.e., 0.3 in/sec PPV for older residential structures and 0.25 in/sec PPV for historic buildings and some old buildings exposed to continuous/frequent intermittent sources) (Caltrans 2020).

### 4.10.4.2 Analytical Methods

This section evaluates the potential noise impacts associated with construction and operation of the Proposed Project. The analysis of potential impacts addresses the various project and programmatic components listed in Table 4.10-11, which are described in detail in Chapter 3, Project Description.

**Table 4.10-11. 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 | | ✓ |

Potential noise impacts associated with the Proposed Project were calculated and analyzed based on project construction and operations information; information contained in the traffic analysis and air quality analysis prepared for the Proposed Project; and data obtained during on-site noise measurements. Observations made during the site survey along with land use information and aerial photography were used to determine potential locations of sensitive receptors near the project and programmatic infrastructure components.

#### Construction

The principal source of project-generated noise would be associated with construction activities on the project and programmatic infrastructure component sites; therefore, the analysis focuses on construction noise and vibration. Construction-related noise effects were assessed with respect to nearby noise-sensitive receptors and their relative exposure (accounting for intervening topography, barriers, distance, etc.), based on application of FHWA Roadway Construction Noise Model and FTA reference noise level data and usage-factors. The FTA and FHWA have measured and documented maximum noise levels and operational characteristics for a wide range of construction machinery, which are summarized in Table 4.10-12. The phases and individual equipment mix for each of the project and programmatic components were based on the construction information presented in Section 4.2, Air Quality, and

Appendix E and the construction noise modeling for the project and programmatic infrastructure components is presented in Appendix H.

## Table 4.10-12. Typical Construction Equipment Noise Emission Levels

| Equipment Description | Acoustical Use Factor (%) | $L_{max}$ at 50 feet (dBA, slow)[1] |
|---|---|---|
| Auger Drill Rig | 20 | 85 |
| Backhoe | 40 | 80 |
| Compactor (ground) | 20 | 93 |
| Compressor (air) | 40 | 80 |
| Concrete Mixer Truck | 40 | 85 |
| Concrete Pump Truck | 20 | 82 |
| Concrete Saw | 20 | 90 |
| Crane | 16 | 85 |
| Dozer | 40 | 85 |
| Dump Truck | 40 | 80 |
| Excavator | 40 | 85 |
| Flat Bed Truck | 40 | 84 |
| Front End Loader | 40 | 80 |
| Generator | 50 | 82 |
| Grader | 40 | 85 |
| Jackhammer[2] | 20 | 85 |
| Mounted Impact Hammer (hoe ram)[2] | 20 | 90 |
| Paver | 50 | 85 |
| Pneumatic Tools | 50 | 85 |
| Pumps | 50 | 77 |
| Rock Drill | 20 | 85 |
| Roller | 20 | 85 |
| Scraper | 40 | 85 |
| Tractor | 40 | 84 |
| Vacuum Excavator (Vac-truck) | 40 | 85 |

**Sources:** DOT 2006; FTA 2018.
**Notes:** $L_{max}$ = maximum noise level; dBA = A-weighted decibels.
1 All equipment fitted with a properly maintained and operational noise control device, per manufacturer specifications.
2 Impulsive/impact device.

Additional noise sources associated with the project and programmatic infrastructure components would be off-site construction traffic on the local and regional roadway network. Project-related traffic was evaluated qualitatively based on the passenger car equivalent (PCE) vehicle trips and existing traffic volumes used as an input.

Groundborne vibration impacts were qualitatively assessed based on existing reference documentation (e.g., vibration levels produced by specific construction equipment operations), through the application of Caltrans methodology outlined within the *Transportation and Construction Vibration Guidance Manual* (Caltrans 2020) and the relative distance to potentially sensitive receptors from a given vibration source. Representative groundborne vibration levels for various types of construction equipment, developed by FTA, are summarized below in Table 4.10-13. Based on the reference vibration levels presented in Table 4.10-12, the distance at which the equipment would exceed the applicable Caltrans thresholds was calculated for the project and programmatic infrastructure components.

**Table 4.10-13. Representative Vibration Levels for Construction Equipment**

| Equipment | | PPV at 25 feet (in/sec)[1,2] | Approximate Lv (VdB) at 25 feet[3] |
|---|---|---|---|
| Pile Driver (impact) | Upper range | 1.518 | 112 |
| | Typical | 0.644 | 104 |
| Pile Driver (vibratory/sonic) | Upper range | 0.734 | 105 |
| | Typical | 0.170 | 93 |
| Vibratory Roller | | 0.210 | 94 |
| Hoe Ram | | 0.089 | 87 |
| Large Bulldozer | | 0.089 | 87 |
| Caisson Drilling | | 0.089 | 87 |
| Heavy-duty Trucks (Loaded) | | 0.076 | 86 |
| Jackhammer | | 0.035 | 79 |
| Small Bulldozer | | 0.003 | 58 |

**Source**: FTA 2018.
**Notes:**
1 Where PPV is the peak particle velocity.
2 Vibration levels can be approximated at other locations and distances using the above reference levels and the following equation: PPVequip = PPVref (25/D)$^{1.5}$ (in/sec); where "PPV ref" is the given value in the above table, "D" is the distance for the equipment to the new receiver in feet.
3 Where Lv is the RMS velocity expressed in vibration decibels (VdB), assuming a crest factor of 4.

## Operation

The Proposed Project's operation and maintenance activities for existing infrastructure (i.e., Beltz facilities, intertie pipelines, McGregor Drive pump station, Felton Diversion and Tait Diversion and Coast Pump Station) would generally remain similar to existing activities and would have a similar frequency and intensity. Similar to existing conditions, operation and maintenance would include: weekly station checks involving cleaning, inspections of equipment, testing of any generators, and landscape maintenance; annual inspections of equipment; and ingress/egress maintenance. The Proposed Project components are discussed qualitatively based on existing and similar facilities, existing ambient noise levels and nearby noise-sensitive receptors.

## Application of Relevant Standard Practices

The Proposed Project includes a standard construction practice (see Section 3.4.5.2, Standard Construction Practices), that the City or its contractors would implement to avoid or minimize effects related to noise and vibration. This practice and its effectiveness in avoiding and minimizing effects is described below.

Standard Construction Practice #26 requires the City to designate a Construction Noise Coordinator and notify adjacent property owners regarding planned nighttime construction activities, and specifies the protocol for responding to any local complaints that are received about construction noise. When a noise complaint is received, the Construction Noise Coordinator shall notify the City within 48 hours, determine the cause of the complaint, and implement as possible reasonable measures to resolve the complaint as deemed acceptable by the City. This measure is somewhat effective in that it provides an avenue for adjacent property owners to communicate with the City to express noise complaints, if any; however, it does not include enforceable, objective measures or standards that the Proposed Project must achieve related to construction noise.

If the Proposed Project would have potentially significant impacts even with the implementation of the above standard construction practice, the impact analysis identifies mitigation measures.

### 4.10.4.3 Project Impact Analysis

#### Areas of No Impact

The Proposed Project would not **expose people to excessive aircraft noise (Significance Standard C)**. The nearest airstrip to the Proposed Project is the Bonny Doon Village Airport, which is a private use airport located approximately 3 miles northwest of the Felton Diversion. The nearest public or public-use airport is Watsonville Municipal Airport, which is located approximately 10 miles southeast of the Beltz ASR facility sites. Watsonville Municipal Airport is not part of an adopted airport land use plan, and the study area is not located within the airport influence area (County of Santa Cruz 2020c). Therefore, the Proposed Project would have no impact related to exposure of people in the project area to excessive airport-related noise, and this standard is not further evaluated.

#### Impacts

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

**Impact NOI-1: Substantial Permanent Increase in Ambient Noise Levels (Significance Standard A).** Operation of the Proposed Project would result in generation of a substantial permanent increase in ambient noise levels during long-term operation in the vicinity of one of the programmatic infrastructure components. ***(Less than Significant with Mitigation)***

**Water Rights Modifications**

The water rights modifications would not directly result in operational activities that could cause noise. Given that, the water rights modifications would not result in the generation of substantial permanent increase in ambient noise levels. Therefore, this project component of the Proposed Project would have no direct impact.

The following analysis evaluates the potential indirect impacts related to operational noise as a result of the proposed water rights modifications, that once approved could result in the implementation of the other project and programmatic infrastructure components of the Proposed Project.

**Infrastructure Components**

Aquifer Storage and Recovery Facilities

**New ASR Facilities.** Specific locations and configurations for the proposed new ASR facilities are not known. However, the proposed ASR facilities are anticipated to be configured in a manner similar to the Beltz ASR 12 site. The Beltz 12 ASR site incorporates an enclosed pump and chemical storage building, a water treatment system consisting of pressurized tanks, backwash tanks, a sand separator and necessary infrastructure connections. The primary noise generating sources associated with the Beltz 12 configuration are the pump and appurtenances that are located within a building made of concrete masonry unit (CMU) blocks that would provide approximately 20 dB or more of interior to exterior noise reduction (City of Santa Cruz 2011). Operational noise levels generated by this programmatic component are anticipated to be reduced to levels less than the ambient

noise level in the study area and would not expose nearby receptors to noise levels exceeding ambient noise levels in the vicinity. Therefore, this programmatic component would result in a less-than-significant impact.

**Beltz ASR Facilities.** Facilities upgrades at the Beltz ASR sites would include new injection pipelines, back flow prevention devices, and upgrades to the existing submersible pumps and motors. The existing submersible pump and motor assemblies would be upgraded to improve efficiency and capacity; however, as these pumps are submerged below grade and enclosed, the proposed pump and motor improvements would not result in increased noise levels at the Beltz ASR facilities. In addition to the facilities upgrades discussed above, the Beltz 9 ASR site could install up to three additional approximately 2-inch monitoring wells on the existing site. Once construction is completed, the monitoring wells would not introduce new noise sources above the ambient noise environment.

Similar to existing conditions, operation and maintenance would include: weekly station checks involving cleaning, inspections of equipment, testing of any generators, and landscape maintenance; annual inspections of equipment; and ingress/egress maintenance. The Beltz ASR facility upgrades would not introduce new operation and maintenance tasks that would generate permanent noise levels above the ambient noise environment. Therefore, this project component would result in a less-than-significant impact.

Water Transfers and Exchanges and Intertie Improvements

**City/SVWD Intertie Improvements.** The City/SVWD intertie programmatic component would construct a new pipeline and pump station interconnecting SCWD and SVWD. Once construction is complete, the intertie pipeline would not introduce any new noise sources in the ambient noise environment. The proposed City/SVWD intertie pump station is anticipated to be constructed in a manner consistent with other pump stations in the study area, which locate all pumps motors and noise generating components within a CMU brick building. The enclosed CMU brick buildings housing the equipment at existing pump stations within the area generate noise levels at or below the existing ambient levels. Additionally, the general location for the City/SVWD pump station is located between approximately 150 and 500 feet from the centerline of Highway 17. As such existing and future traffic noise levels at the proposed pump station location would result in an elevated ambient noise environment. Operational noise levels generated by the proposed City/SVWD intertie pump station are anticipated to be at or below ambient noise levels in the immediate vicinity. Therefore, this programmatic component would result in a less-than-significant impact.

**City/SqCWD/CWD Intertie Improvements.** The City/SqCWD/CWD intertie programmatic component would construct two new intertie pipelines and two new pump stations. Additionally, the existing SqCWD McGregor Drive pump station would be upgraded to increase efficiency and capacity. The upgrades to the McGregor Drive pump station are anticipated to be located within the existing CMU building. Overall, operations and noise emissions associated with McGregor Drive pump station upgrade would remain similar to those of the existing pump station.

Once construction is complete, the intertie pipeline would not introduce any new noise sources in the ambient noise environment. The two proposed new City/SqWD/CWD intertie pump stations are anticipated to be constructed in a manner consistent with other pump stations in the study area, which locate all pumps, motors and noise generating components within a CMU brick building. The enclosed CMU brick buildings housing the equipment at new pump stations would reduce noise levels to at or below the existing ambient noise levels. Therefore, this programmatic component would result in a less-than-significant impact.

Felton Diversion Improvements

The Felton Diversion Fish Passage improvements do not incorporate new long-term operational noise generating sources. Therefore, this programmatic component would result in a less-than-significant impact.

Tait Diversion and Coast Pump Station Improvements

Improvements at the Tait Diversion dam could include a new or modified intake, hydraulic improvements, improvements to the check dam, and fish passage upgrades. The Tait diversion dam improvements do not incorporate long-term operational noise generating components.

Improvements at the Coast Pump Station could include new pumps and motors, power upgrades, including a possible substation upgrade, a new or modified concrete wet well and a solids handling system. Upgrades to the pumps, motors and facility power supply would have the potential to introduce new long-term operational noise sources or increase existing noise levels due to upgrades and modifications. Specific equipment types, configurations, and locations of the Coast Pump Station improvements are unknown at this time. Based on the proximity of potential noise-sensitive receptors in the immediate vicinity, improvements of the Coast Pump Station could result in noise levels exceeding the applicable noise level thresholds and therefore would result in a potentially significant impact.

Implementation of MM NOI-1 would avoid a substantial permanent increase in ambient noise levels by requiring the selection of equipment that inherently complies with the applicable thresholds where feasible, and where not feasible, full or partial enclosures to reduce equipment noise levels shall be required to comply with the applicable thresholds. The effectiveness of the noise reduction enclosure shall be demonstrated through submittal of an acoustical assessment. Therefore, with the implementation of this mitigation measure, the impacts of this programmatic component would be reduced to a less-than-significant impact level.

### Mitigation Measures

Implementation of the following mitigation measure would reduce potentially significant impacts of the Proposed Project related to permanent increases in ambient noise levels to a less-than-significant level, as described above.

**MM NOI-1: Operational Noise Levels (Applies to Coast Pump Station Improvements).** The Proposed Project shall implement the following measures to reduce the potential for exposure of nearby noise-sensitive receptors to excessive noise levels:

- Where feasible, a primary element for the selection of proposed noise-generating equipment (e.g., pumps, motors, transformers, etc.) shall be equipment that inherently does not generate an increase of +3 dB in the ambient noise levels where the existing ambient is below 60 dBA $L_{dn}$, or a +5 dB increase in the ambient noise levels where the existing ambient is above 65 dBA $L_{dn}$, as measured at the nearest sensitive receptor.
- Where this is not feasible, noise-generating equipment shall be located within a full or partial noise reduction enclosure. The effectiveness of the equipment enclosure to reduce noise level exposure to within the applicable noise level threshold shall be demonstrated through submittal of a focused acoustical assessment.

**Impact NOI-2: Substantial Increase in Ambient Noise Levels in Excess of Standards (Significance Standard B).** Construction of the Proposed Project would result in generation of a substantial temporary increase in ambient noise levels in the vicinity of some project and programmatic infrastructure components in excess of applicable standards established in local general plans or noise ordinances. ***(Significant and Unavoidable)*** Operation of the Proposed Project would result in generation of a substantial permanent increase in ambient noise levels in the vicinity of one of the programmatic infrastructure components in excess of applicable standards. (***Less than Significant with Mitigation***)

## Construction

### Water Rights Modifications

The water rights modifications would not directly result in construction activities that could cause noise. Given that, the water rights modifications would not result in the generation of substantial temporary increase in ambient noise levels. Therefore, this project component of the Proposed Project would have no direct impact.

The following analysis evaluates the potential indirect impacts related to construction noise as a result of the proposed water rights modifications, that once approved could result in the implementation of the other project and programmatic infrastructure components of the Proposed Project.

### Infrastructure Components

The Proposed Project includes project and programmatic infrastructure components that would have the potential to impact ambient noise during construction. The Proposed Project also includes the implementation of Standard Construction Practice #26 that requires that adjacent property owners be notified of nighttime construction schedules and that a Construction Noise Coordinator be identified that will be responsible for responding to local complaints about construction noise. See Section 4.10.4.2, Analytical Methods, for additional information about this measure and its effectiveness.

Construction associated with development of the project and programmatic infrastructure components of the Proposed Project would generate noise levels associated with the operation of heavy construction equipment and construction related activities (see Table 4.10-12 for typical construction equipment noise levels). The effects of construction noise depends largely on the types and specific locations of construction activities occurring on any given day, noise levels generated by those activities, distances to noise-sensitive receptors,[1] and the existing ambient noise environment in the vicinity of the receiver. Construction generally occurs in several discrete phases, with each phase varying the equipment mix and the associated noise. These phases alter the characteristics of the noise environment generated on the project and programmatic infrastructure component sites and in the surrounding community on any given day and for the duration of construction.

The phases and individual equipment mix for each of the components discussed below were based on the construction information present Section 4.2, Air Quality, and Appendix E and the construction noise modeling for the project and programmatic infrastructure components is presented in Appendix H. Noise levels for the phases were calculated using the FHWA and FTA reference noise levels presented in Table 4.10-12.

[1] Distances of construction activities to noise-sensitive receptors can vary throughout a given day and over the course of construction as construction equipment and activities move around a discrete construction site or along a linear pipeline construction site.

Aquifer Storage and Recovery Facilities

**New ASR Facilities.** As discussed in Chapter 3, Project Description, the new ASR facilities would likely consist of: (1) a pump control and chemical storage building; (2) a treatment system; (3) backwash tank(s) used in the treatment system; (4) a water well and monitoring wells, submersible pump and concrete pedestal, station piping including treated water pipelines, sewer connections, and stormwater drainage facilities that would connect to nearby facilities in adjacent roadways. The potential locations and specific on-site configurations for the new ASR facilities are unknown at this time. However, based on similar ASR facility construction requirements, typical construction equipment assumptions and fleet mixes are known. These construction equipment assumptions include the use of graders, a borehole drill rig, forklifts, pumps, tractors/loaders, cranes, generators, and other smaller pieces of equipment.

The loudest mix of equipment associated with construction of new ASR facilities would occur during the "Mobilization" phase; with the borehole drilling, reaming, and test pump removal phases being marginally quieter. The Mobilization phase would incorporate the use of a grader, a drill rig, a loader and a tractor; with a resulting noise level of 85.2 dBA $L_{eq}$ at a distance of 50 feet. Accounting for an attenuation rate of 6 dB per doubling of distance, construction of the new ASR facilities would exceed the daytime noise level threshold of 75 dBA at a distance of 124 feet and the 60 dBA nighttime threshold at a distance of 472 feet.

Given that the locations of the proposed new ASR facilities are unknown and with the population density of the overall area, it is possible that the proposed facilities would be located within 472 feet of nearby noise-sensitive receptors. Additionally, as indicated in Chapter 3, Project Construction, borehole drilling operations would occur on a continuous, 24-hour-per-day basis for a construction period of approximately 3 months, to avoid the risk of the borehole wall collapsing during construction. Therefore, it is possible that exceedance of the noise level thresholds could occur on a continuous basis over the construction period of approximately 3 months, which is a lengthy duration, as opposed to typical construction noise that is intermittent and varies throughout the construction period. Therefore, the construction of the new ASR facilities would result in a potentially significant impact.

Implementation of MM NOI-2 would reduce the temporary increase in ambient noise levels during construction in excess of applicable standards in the vicinity of new ASR facilities by restricting construction hours; requiring the location of noise generating equipment as far as possible from noise-sensitive receptors, within an acoustically rated enclosure, shroud or temporary barrier when construction hours cannot be restricted; requiring certain types of construction equipment be located within such enclosures, shrouds or temporary barriers regardless of hours of construction; requiring the use of mufflers and noise suppressors on equipment; and limiting equipment idling. With the exception of the borehole drilling operations, implementation of MM NOI-2 would result in the minimization of elements of construction noise that would be typically considered to be unreasonably disturbing, such as noise having excessive intensity, duration, or pitch. Therefore, with the implementation of MM NOI-2 project-related construction noise for this programmatic component, with the exception of noise from drilling operations, would be reduced to a less-than-significant level.

During the construction period requiring continuous borehole drilling the implementation of MM NOI-2, which restricts the construction hours of operations to less sensitive daytime hours, would not be possible. As the location of the construction activities and the distance to potential nearby noise-sensitive receptors is unknown and borehole drilling operations during construction would occur during the more sensitive nighttime period, temporary noise from these operations could still exceed the noise level thresholds noted above, after incorporation of MM NOI-2. Additionally, it is possible that exceedance of the noise level thresholds could occur on a continuous basis over the construction period of approximately 3 months and therefore the exceedance could occur over a lengthy duration. As a result, this programmatic component would have a significant and unavoidable impact related to construction noise.

**Beltz ASR Facilities.** Facility upgrades and improvements at the existing Beltz 8, 9, 10, and 12 ASR facilities would include the addition of permanent supply pipeline, backflow prevention devices and submersible pumps with higher capacity than the existing submersible pumps. In addition, the Beltz 9 ASR facility site would install up to three additional approximately 2-inch monitoring wells on the existing site. The loudest mix of equipment associated with the construction of the Beltz ASR facilities would occur during the: borehole well drilling, injection line, backflow meter, electrical conduit, and control installation phase. This portion of the project component would result in a composite construction noise level of 88.1 dBA $L_{eq}$ at a distance of 50 feet from the center of construction operations. Accounting for an attenuation rate of 6 dB per doubling of distance, this project component would exceed the 60 dBA threshold at a distance of 610 feet and the 75 dB threshold at a distance of 250 feet.

Noise-sensitive receptors near the Beltz 8, 9, 10 and 12 ASR sites are located immediately adjacent to the existing operations. Additionally, as indicated in Chapter 3, Project Construction, borehole drilling operations at the Beltz 9 ASR facility would occur on a continuous, 24-hour-per-day basis for a construction period of approximately one month, to avoid the risk of the borehole wall collapsing during construction. Therefore, it is possible that exceedance of the noise level thresholds could occur on a continuous basis over the construction period of approximately one month, which is a lengthy duration, as opposed to typical construction noise that is intermittent and varies throughout the construction period. As such, construction of the proposed Beltz ASR facilities would result in a potentially significant impact.

Implementation of MM NOI-2 would reduce the temporary increase in ambient noise levels during construction in excess of applicable standards in the vicinity of Beltz ASR facilities, as described above for new ASR facilities. With the exception of the borehole drilling operations at the Beltz 9 ASR facility, implementation of MM NOI-2 would result in the minimization of elements of construction noise that would be typically considered to be unreasonably disturbing, such as noise having excessive intensity, duration, or pitch. Therefore, with the implementation of MM NOI-2 project-related construction noise for this project component, with the exception of noise from drilling operations at the Beltz 9 ASR facility, would be reduced to a less-than-significant level.

During the construction period requiring continuous borehole drilling the implementation of MM NOI-2, which restricts the construction hours of operations to less sensitive daytime hours, would not be possible. As the borehole drilling operations during construction at the Beltz 9 ASR facility would occur during the more sensitive nighttime period, temporary noise from these operations could still exceed the noise level thresholds noted above, after incorporation of MM NOI-2. Additionally, it is possible that exceedance of the noise level thresholds at the Beltz 9 ASR facility could occur on a continuous basis over the construction period of approximately 3 months and therefore the exceedance could occur over a lengthy duration. As a result, the Beltz 9 ASR facility would have a significant and unavoidable impact related to construction noise.

**City/SVWD Intertie Improvements.** The City/SVWD intertie could result in the placement of a new pipeline along Sims Road and La Madrona Road and construction of a new pump station. Construction of the City/SVWD intertie pipeline is assumed to occur within the respective roadway rights-of-way. The pipeline construction is anticipated to occur within close proximity to noise-sensitive receptors, as existing residential land uses are located adjacent to the transportation rights-of-way.

Noise generating phases of the pipeline construction would be the pipeline installation and paving phases. The loudest construction noise levels would occur during the paving phase of the pipeline construction, with predicted composite construction noise levels of 85.8 dBA $L_{eq}$ at a distance of 50 feet from the centerline of the linear construction area active at that time. Paving operations associated with the intertie pipeline would generate noise levels exceeding the 60 dBA threshold at distances less than 500 feet and the 75 dBA threshold at distances less than 131 feet.

The pump station, proposed in the general vicinity of La Madrona Drive and Altenitas Drive, would be constructed in phases. The phases would be site preparation, building construction, architectural coating, paving and testing; with building construction being the loudest phase, with a predicted composite construction noise level of 86.2 dBA $L_{eq}$ at a distance of 50 feet from the center of construction operations. Based on noise levels associated with pipeline noise levels, the proposed pump station construction would generate noise levels exceeding the 60 dBA threshold at a distance of 518 feet and the 75 dBA threshold at a distance of 136 feet.

Based on the proximity of potential nearby noise-sensitive receptors, construction of the City/SVWD intertie pipeline and pump station would exceed the noise level thresholds in some locations for a limited duration. Construction of the pipeline would progress along the pipeline corridor rapidly and therefore the exposure of sensitive receptors would be limited in duration. Likewise, construction of the pump station would occur over a two-month period and therefore exposure of sensitive receptors would also be limited in duration. These construction activities would generate typical construction noise that is intermittent and varies throughout the construction period depending on the construction activity, equipment being used, location of equipment on the pipeline corridor or pump station site, etc. However, this programmatic component is conservatively assumed to result in a potentially significant impact.

Implementation of MM NOI-2 would reduce the temporary increase in ambient noise levels during construction in excess of applicable standards in the vicinity of the City/SVWD intertie, as described above for new ASR facilities. Implementation of MM NOI-2 would result in the minimization of elements of construction noise that would be typically considered to be unreasonably disturbing, such as noise having excessive intensity, duration, or pitch. Therefore, with the implementation of MM NOI-2 project-related construction noise for this programmatic component would be reduced to a less-than-significant level.

**City/SqCWD/CWD Intertie Improvements.** The City/SqCWD/CWD intertie would result in replacement of an existing pipeline in two segments, one in Soquel Village and one in Park Avenue. It is assumed that the City/SqCWD/CWD intertie pipeline would occur within or adjacent to the roadway rights-of-way. The current pipeline alignment would result in construction activities occurring within the immediate vicinity of noise-sensitive single-family and multi-family receptors at approximate distances as close as 25 to 75 feet. The loudest construction noise exposure generated by the City/SqCWD/CWD intertie pipeline construction would occur during the paving phase with a predicted composite construction noise levels of 85.8 dBA $L_{eq}$ at a distance of 50 feet from the centerline of the linear construction area active at that time. Paving operations associated with the intertie pipeline construction would generate noise levels exceeding the 60 dBA threshold at distances less than 500 feet and the 75 dBA threshold at distances less than 131 feet.

The City/SqCWD/CWD McGregor Drive pump station upgrade element would be performed in up to four phases: demolition (removal/replacement of equipment), structural rehabilitation if any, building reconstruction and testing, based on a worst-case assessment of what could be required for the upgrade. The building reconstruction phase would be the loudest with a predicted composite construction noise level of 86.0 dBA $L_{eq}$ at a distance of 50 feet from the center of the construction. Based on the predicted noise levels, the pump station upgrade would generate noise levels exceeding the 60 dBA threshold at a distance of 510 feet and the 75 dBA threshold at a distance of 134 feet.

The portion of the City/SqCWD/CWD intertie that would connect SqCWD and CWD would require the construction of two new pump stations, one on Valencia Road and one on Freedom Boulevard; however precise locations are not known at this time. The proposed pump stations would be constructed in phases, including site preparation, building construction, architectural coating, paving and testing. The loudest construction phase was building construction with a predicted composite construction noise level of 86.2 at a distance of 50 feet. Based on the

predicted construction noise levels, construction of the proposed new pump stations would generate noise levels exceeding the 60 dBA threshold at a distance of 518 feet and the 75 dBA threshold at a distance of 212 feet.

Based on the proximity of potential nearby noise-sensitive receptors, construction of the propose pipelines, pump station upgrade and new pump stations would exceed the noise level thresholds in some locations for a limited duration. Construction of the pipelines would progress along the pipeline corridors rapidly and therefore the exposure of sensitive receptors would be limited in duration. Likewise, construction of the upgraded and new pump stations would each occur over a two-month period and therefore exposure of sensitive receptors would also be limited in duration. These construction activities would generate typical construction noise that is intermittent and varies throughout the construction period depending on the construction activity, equipment being used, location of equipment on the pipeline corridors or pump station sites, etc. However, this programmatic component is conservatively assumed to result in a potentially significant impact.

Implementation of MM NOI-2 would reduce the temporary increase in ambient noise levels during construction in excess of applicable standards in the vicinity of the City/SqCWD/CWD intertie, as described above for new ASR facilities. Implementation of MM NOI-2 would result in the minimization of elements of construction noise that would be typically considered to be unreasonably disturbing, such as noise having excessive intensity, duration, or pitch. Therefore, with the implementation of MM NOI-2 project-related construction noise for this programmatic component would be reduced to a less-than-significant level.

**Felton Diversion Improvements.** This programmatic component would involve minor modifications to the existing fish passage at the Felton Diversion. The proposed improvements would be constructed on the west side of the Felton Diversion structure. Felton diversion improvements would typically occur from 8:00 a.m. to 10:00 p.m. The nearest noise-sensitive receptor is the single-family residence located approximately 100 feet west of the west end of the Felton Diversion.

The predicted composite noise level for the fish passage improvements is 85.2 dBA $L_{eq}$ at a distance of 50 feet from the center of the construction operations. Based on the predicted construction noise levels, the Felton Diversion improvements would generate noise levels exceeding the 60 dBA threshold at a distance of 475 feet and the 75 dBA threshold at a distance of 124 feet.

Based on the proximity of the nearest noise-sensitive receptor (100 feet) and an attenuation rate of 6 dB per doubling of distance, construction of the propose fish passage improvements would exceed the noise level thresholds for a limited duration. Construction of the Felton Diversion improvements would occur over a three-month period and construction activities would generate typical construction noise that is intermittent and varies throughout the construction period depending on the construction activity, equipment being used, location of equipment, etc. However, this programmatic component is conservatively assumed to result in a potentially significant impact.

Implementation of MM NOI-2 would reduce the temporary increase in ambient noise levels during construction in excess of applicable standards in the vicinity of the Felton Diversion improvement site, as described above for new ASR facilities. Implementation of MM NOI-2 would result in the minimization of elements of construction noise that would be typically considered to be unreasonably disturbing, such as noise having excessive intensity, duration, or pitch. Therefore, with the implementation of MM NOI-2 project-related construction noise for this programmatic component would be reduced to a less-than-significant level.

**Tait Diversion and Coast Pump Station Improvements.** This programmatic component would implement several improvements at the existing Tait Diversion and Coast Pump Station. Improvements could include new or modified intake design, hydraulic modifications, improvements to the check dam, required fish passage upgrades and pump upgrades. The proposed improvements would be implemented in phases, including site-preparation, and a phase for each of the proposed improvements listed above. The loudest phase would be the site preparation phase, with a predicted composite noise level of 85.8 dBA $L_{eq}$ at a distance of 50 feet from the center of the construction area.

The nearest noise-sensitive receptors in the vicinity the Tait Diversion and Coast Pump Station improvements are located within the City of Santa Cruz. Construction activities are assumed to occur at distances ranging from approximately 150-feet up to 400-feet from the nearest noise-sensitive receptor. At this distance, the predicted composite noise level for the site preparation phase would be attenuate to 68 dBA $L_{eq}$. The loudest construction noise phase would be approximately 68 dBA $L_{eq}$ at the outdoor activity area of the nearest noise-sensitive land use and would comply with the 75 dBA threshold, but would not comply with the 60 dBA threshold.

Based on the proximity of the nearest noise-sensitive receptor (150 to 400 feet) and an attenuation rate of 6 dB per doubling of distance, construction of the propose improvements would exceed the noise level thresholds for a limited duration. Construction of the Tait Diversion and Coast Pump Station improvements would occur over an eight-month period and construction activities would generate typical construction noise that is intermittent and varies throughout the construction period depending on the construction activity, equipment being used, location of equipment, etc. However, this programmatic component is conservatively assumed to result in a potentially significant impact.

Implementation of MM NOI-2 would reduce the temporary increase in ambient noise levels during construction in excess of applicable standards in the vicinity of the Tait Diversion and Coast Pump Station, as described above for new ASR facilities. Implementation of MM NOI-2 would result in the minimization of elements of construction noise that would be typically considered to be unreasonably disturbing, such as noise having excessive intensity, duration, or pitch. Therefore, with the implementation of MM NOI-2 project-related construction noise for this programmatic component would be reduced to a less-than-significant level.

## Operation

### Water Rights Modifications

As indicated in Impact NOI-1, the water rights modifications would not directly result in operational activities that could cause noise. Given that, the water rights modifications would not result in the generation of substantial permanent increase in ambient noise levels. Therefore, this project component of the Proposed Project would have no direct impact.

The following analysis evaluates the potential indirect impacts related to operational noise as a result of the proposed water rights modifications, that once approved could result in the implementation of the other project and programmatic infrastructure components of the Proposed Project.

### Infrastructure Components

As indicated in Impact NOI-1, operational noise levels generated by most of the various project and programmatic infrastructure components would not permanently increase ambient noise levels and therefore also would not exceed applicable noise standards established in local general plans or noise ordinances. The possible exception

involves the operation of the Tait Diversion and Coast Pump Station component and specifically the Coast Pump Station element. Based on the proximity of potential noise-sensitive receptors in the immediate vicinity, as described in Impact NOI-1, improvements of the Coast Pump Station could result in operational noise levels exceeding the applicable noise level thresholds and therefore would result in a potentially significant impact.

Implementation of MM NOI-1 would avoid a substantial permanent increase in ambient noise levels in excess of applicable standards by requiring the selection of equipment that inherently complies with the applicable thresholds where feasible, and where not feasible, full or partial enclosures to reduce equipment noise levels shall be required to comply with the applicable thresholds. The effectiveness of the noise reduction enclosure shall be demonstrated through submittal of an acoustical assessment. Therefore, with the implementation of this mitigation measure, the impacts of this programmatic component would be reduced to a less-than-significant impact level.

### Mitigation Measures

Implementation of MM NOI-1 described above would reduce potentially significant operational noise to a less-than-significant level. Implementation of the following mitigation measure would reduce potentially significant construction noise impacts of the Proposed Project related to increases in ambient noise levels to a less-than-significant level for most project and programmatic infrastructure components. However, as indicated above, the new ASR facilities and the Beltz 9 ASR facilities would have significant and unavoidable construction noise impacts due to well drilling operations during construction.

**MM NOI-2:** **Construction Noise (Applies to all Infrastructure Components).** The Proposed Project shall implement the following measures related to construction noise:

- Restrict construction activities and use of equipment that have the potential to generate significant noise levels (e.g., use of concrete saw, mounted impact hammer, jackhammer, rock drill, etc.) to between the hours of 8:00 a.m. and 5:00 p.m., unless specifically identified work outside these hours is authorized by the City's Water Director as necessary to allow for safe access to a construction site, safe construction operations, efficient construction progress, and/or to account for prior construction delays outside of a contractor's control (e.g., weather delays).
- Construction activities requiring operations continuing outside of the standard work hours of 8:00 a.m. and 5:00 p.m. (e.g., borehole drilling operations) shall locate noise generating equipment as far as possible from noise-sensitive receptors, and/or within an acoustically rated enclosure (meeting or exceeding Sound Transmission Class [STC] 27), shroud or temporary barrier as needed to prevent the propagation of sound into the surrounding areas in excess of the 60 dBA nighttime (10:00 p.m. to 8:00 a.m.) and 75 dBA daytime (8:00 a.m. to 10:00 p.m.) criteria at the nearest sensitive receptor. Noisy construction equipment, such as temporary pumps that are not submerged, aboveground conveyor systems, and impact tools will likely require location within such an acoustically rated enclosure, shroud or barrier to meet these above criteria. Impact tools, in particular, shall have the working area/impact area shrouded or shielded whenever possible, with intake and exhaust ports on power equipment muffled or suppressed. Impact tools may necessitate the use of temporary or portable, application-specific noise shields or barriers to achieve compliance.

- Portable and stationary site support equipment (e.g., generators, compressors, and cement mixers) shall be located as far as possible from nearby noise-sensitive receptors.
- Construction equipment and vehicles shall be fitted with efficient, well-maintained mufflers that reduce equipment noise emission levels at the project site. Internal-combustion-powered equipment shall be equipped with properly operating noise suppression devices (e.g., mufflers, silencers, wraps) that meet or exceed the manufacturer's specifications. Mufflers and noise suppressors shall be properly maintained and tuned to ensure proper fit, function, and minimization of noise.
- Construction equipment shall not be idled for extended periods of time (i.e., 5 minutes or longer) in the immediate vicinity of noise-sensitive receptors.

Impact NOI-3: **Groundborne Vibration (Significance Standard B).** Construction of the Proposed Project would result in the potential generation of excessive groundborne vibration or groundborne noise levels. *(Less than Significant with Mitigation)*

### Water Rights Modifications

The water rights modifications would not directly result in construction activities and therefore would not cause vibration. Therefore, this project component of the Proposed Project would have no direct impact.

The following analysis evaluates the potential indirect impacts related to vibration as a result of the proposed water rights modifications, that once approved could result in the implementation of the other project and programmatic infrastructure components of the Proposed Project.

### Infrastructure Components

Construction activities on the project and programmatic infrastructure sites may result in varying degrees of temporary groundborne vibration or noise, depending on the specific construction equipment used and operations involved. Pile driving and blasting are not currently expected to be utilized in the construction of the components of the Proposed Project. The construction phases and equipment mixes used in this analysis are consistent with those used in Impact NOI-2. The Proposed Project is not anticipated to incorporate equipment or processes that would generate substantial groundborne noise or vibration during operations, as such, groundborne noise and vibration sources would be limited to construction activities.

Aquifer Storage and Recovery Facilities

**New ASR Facilities.** Groundborne noise and vibration sources are anticipated to include a borehole drill rig and heavy equipment (e.g., excavator, tractors, vibratory roller, etc.). Use of a vibratory roller during the paving portions of pipeline installations would produce vibration levels exceeding the Caltrans threshold of 0.3 in/sec PPV at distances less than 15 feet from the vibratory roller. Aside from the vibratory roller, the borehole drill rig and heavy equipment would produce vibration levels exceeding the Caltrans 0.3 in/sec PPV threshold at distances less than 9 feet. While it is unlikely that the new ASR programmatic components would be located within 15 feet of existing sensitive receptors, the proposed locations for these facilities are unknown at this time. Therefore, there is a possibility for this programmatic component construction operations to generate significant groundborne noise and vibration levels. Therefore, generation of groundborne noise and vibration levels associated with this programmatic component would result in a potentially significant impact.

Implementation of MM NOI-3 would avoid the generation of excessive groundborne vibration or groundborne noise levels by requiring construction vibration practices to minimize vibration including a prohibition on the use of vibratory rollers or compactors near sensitive receptors and a requirement that only rubber-tire heavy equipment be used near sensitive receptors. Therefore, with the implementation of this mitigation measure the impact of this programmatic component would be reduced to a less-than-significant impact level.

**Beltz ASR Facilities.** Groundborne noise and vibration sources associated with the Beltz ASR facility improvements are anticipated to include the use of heavy equipment (e.g., excavator, tractors, etc.), pumps and power hand tools. Construction operations associated with the Beltz ASR facility improvements would occur at the location of the existing equipment at Belts 8, 9, 10, and 12. The heavy equipment associated with the Beltz ASR facility improvements would produce vibration levels exceeding the Caltrans 0.3 in/sec PPV threshold at distances less than 9 feet. The closest sensitive receptors to the Beltz ASR facility sites range from approximately 25 to 45 feet from the center of the proposed construction activities. Therefore, generation of groundborne noise and vibration levels associated with this project component would result in a less-than-significant impact.

Water Transfers and Exchanges and Intertie Improvements

**City/SVWD Intertie Improvements.** The City/SVWD intertie would result in the placement of a new pipeline along Sims Road and La Madrona Road and construction of a new pump station. Groundborne noise and vibration sources associated with the City/SVWD intertie programmatic component are anticipated to include the use of heavy equipment (e.g., excavator, tractors, dozers, vibratory roller), air compressors, cement mixer trucks and powered hand tools. Construction operations associated with the City/SVWD intertie would include linear construction for pipeline installation and construction of the proposed pump station. Use of a vibratory roller during the paving portions of pipeline installation would produce vibration levels exceeding the Caltrans threshold of 0.3 in/sec PPV at distances less than 15 feet from the vibratory roller. The heavy equipment associated with the construction of the proposed pump station would produce vibration levels exceeding the Caltrans 0.3 in/sec PPV threshold at distances less than 9 feet. As the precise construction limits have not been specifically defined at this time, there is a possibility for the proposed programmatic component construction operations to generate significant groundborne noise and vibration levels at adjacent sensitive receptors. Therefore, generation of groundborne noise and vibration levels associated with this programmatic component would result in a potentially significant impact.

Implementation of MM NOI-3 would avoid the generation of excessive groundborne vibration or groundborne noise levels, as described above for new ASR facilities. Therefore, with the implementation of this mitigation measure the impact of this programmatic component would be reduced to a less-than-significant impact level.

**City/SqCWD/CWD Intertie Improvements.** The City/SqCWD/CWD intertie would result in replacement of an existing pipeline in two segments, one in Soquel Village and one in Park Avenue, and upgrade of an existing pump station on McGregor Drive. Groundborne noise and vibration sources associated with the City/SqCWD/CWD intertie programmatic components are anticipated to include the use of heavy equipment (e.g., excavator, tractors, dozers, vibratory roller), air compressors, cement mixer trucks and powered hand tools. Construction operations associated with the City/SqCWD/CWD intertie would include linear construction for pipeline installation and upgrades at the existing pump station. Use of a vibratory roller during the paving portions of pipeline installation would produce vibration levels exceeding the Caltrans threshold of 0.3 in/sec PPV at distances less than 15 feet from the vibratory roller. The heavy equipment associated with the construction of the proposed pump station upgrade would produce vibration levels exceeding the Caltrans 0.3 in/sec PPV threshold at distances less than 9 feet.

The portion of the City/SQCWD/CWD intertie that would connect SqCWD and CWD would require the construction of two new pump stations, one on Valencia Road and one on Freedom Boulevard; however precise locations are not known at this time. Groundborne noise and vibration sources associated with the new City/SqCWD/CWD pump stations are anticipated to include the use of heavy equipment (e.g., excavator, tractors, dozers, vibratory roller), air compressors, cement mixer trucks and powered hand tools. Use of a vibratory roller during the paving portions of pump station construction would produce vibration levels exceeding the Caltrans threshold of 0.3 in/sec PPV at distances less than 15 feet from the vibratory roller. The heavy equipment associated with the construction of the proposed pump station would produce vibration levels exceeding the Caltrans 0.3 in/sec PPV threshold at distances less than 9 feet. As the precise construction limits have not been specifically defined at this time, there is a possibility for the City/SqCWD/CWD intertie construction operations to generate significant groundborne noise and vibration levels. Therefore, generation of groundborne noise and vibration levels associated with this programmatic component would result in a potentially significant impact.

Implementation of MM NOI-3 would avoid the generation of excessive groundborne vibration or groundborne noise levels, as described above for new ASR facilities. Therefore, with the implementation of this mitigation measure the impact of this programmatic component would be reduced to a less-than-significant impact level.

Felton Diversion Improvements

This programmatic component would reconfigure and upgrade the existing fish passage located at the western portion of the Felton Diversion. Groundborne noise and vibration sources associated with the improvements are anticipated to include the use of heavy equipment (e.g., excavator, tractors, etc.), generators, pumps and powered hand tools. The equipment associated with the Felton Diversion improvements would produce vibration levels exceeding the Caltrans 0.3 in/sec PPV threshold at distances less than 9 feet. The closest sensitive receptors to the Felton Diversion are more than 175 feet from the proposed construction activities. Therefore, generation of groundborne noise and vibration levels associated with this programmatic component would result in a less-than-significant impact.

Tait Diversion and Coast Pump Station Improvements

This programmatic component would implement improvements to the check dam, the fish passage, intake, hydraulic modifications, and pump upgrades at the coast pump station. Groundborne noise and vibration sources associated with the improvements are anticipated to include the use of heavy equipment (e.g., excavator, tractors, etc.), generators, cement mixer trucks, pumps and powered hand tools. Construction operations associated with the Tait Diversion and Coast Pump Station improvements would occur at the location of the existing equipment, dam and fish passage. The equipment associated with the improvements to the Tait Diversion and Coast Pump Station would produce vibration levels exceeding the Caltrans 0.3 in/sec PPV threshold at distances less than 9 feet. The closest sensitive receptors to the Tait Diversion and Coast Pump Station are more than 150 feet from the proposed construction activities. Therefore, generation of groundborne noise and vibration levels associated with this programmatic component would result in a less-than-significant impact.

### Mitigation Measures

Implementation of the following mitigation measure would reduce the potentially significant impact related to construction vibration to a less-than-significant level.

**MM NOI-3:** **Construction Vibration (Applies to New Aquifer Storage and Recovery Facilities and all Intertie Improvements).** The Proposed Project shall implement the following measures to reduce the potential for structural damage from groundborne noise and vibration:

- Vibratory rollers or compactors shall not be used within 15 feet of sensitive receptors.
- Heavy equipment required to operate within 9 feet of sensitive receptors shall be limited to rubber-tired equipment.

### 4.10.4.4 Cumulative Impacts Analysis

This section provides an evaluation of cumulative noise 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 area of potential cumulative noise and vibration impacts is limited to the immediate vicinity of the project and programmatic infrastructure components, areas immediately adjacent to the routes designated for access, hauling or linear construction and areas within approximately 650 feet of the Proposed Project construction activities.

The Proposed Project would not contribute to cumulative impacts related to **aircraft noise (Significance Standard C)** because it would have no impact related to this standard as described above. Therefore, this significance standard is not further evaluated. Additionally, the proposed water rights modifications are not further evaluated given no noise impacts were identified for this project component (see Impact NOI-1 through Impact NOI-3) and therefore this component would not contribute to cumulative impacts.

**Impact NOI-4:** **Cumulative Noise Impacts (Significance Standards A and B).** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to noise and vibration. ***(Less than Significant)***

Cumulative noise impacts could occur if sensitive receptors were exposed to elevated noise and vibration levels from multiple cumulative projects simultaneously and in close proximity. Construction of the project and programmatic infrastructure components would occur over several phases, beginning in 2022 and ending in 2028. As shown in Table 4.0-2, a number of cumulative projects are located at or near the infrastructure component sites and could be under construction during this same period of time. Table 4.0-2 displays the estimated construction schedule for cumulative projects, where known.

Construction of the project and programmatic infrastructure components of the Proposed Project would have the potential to generate noise and vibration levels in excess of the applicable standards, as described in Impact NOI-2 and NOI-3. Specifically, construction of the new ASR facility injection wells and the Beltz 9 ASR facility monitoring wells would require continuous 24-hour borehole drilling for up to 3 months, which would be a significant contribution to the immediate noise environment when drilling operations are underway. As indicated in Impact NOI-2, this impact would be significant unavoidable specifically related to the well drilling activities due to the continuous nature of the noise and its duration. However, bore-hole drilling associated with the well installation would not likely occur in close enough proximity to allow for drill rig noise levels to combine with cumulative projects and therefore would not result in a significant cumulative noise impact. The bore-hole drilling would also cease after 3 months. Other elements of the Proposed Project construction activities, not utilizing a drill rig, would not generate noise levels that would contribute to a significant cumulative noise impact. Therefore, the Proposed Project's cumulative construction noise impact would be less than significant, despite the significant unavoidable project-specific noise impacts of limited physical extent and duration associated with bore-hole drilling.

Operation of the project and programmatic infrastructure components of the Proposed Project would result in new facilities, equipment, and operational noise sources, including equipment at new pump stations, equipment at the new ASR facilities, and new equipment at the Coast Pump Station. New stationary equipment could generate operational noise above the applicable noise thresholds at the Coast Pump Station, as indicated in Impact NOI-1 and Impact NOI-2. However, because of the distance of all of these proposed facilities from other cumulative noise-generating projects, and implementation of MM NOI-1 during operation, the Proposed Project would not generate noise levels that would contribute to a significant cumulative noise impact. Therefore, the Proposed Project's cumulative operational noise impact would be less than significant.

## 4.10.5 References

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# 4.11 Recreation

This section describes the existing recreation 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 of the Santa Cruz Water Rights Project (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. A comment related to recreation was received from the State Water Resources Control Board (SWRCB). Issues identified in public comments related to potentially significant effects on the environment according to the California Environmental Quality Act (CEQA), and/or issues raised by responsible and trustee agencies are identified and addressed in this EIR.

## 4.11.1 Existing Conditions

### 4.11.1.1 Study Area

The study area for the evaluation of impacts on recreation includes the same boundary used for the biological study area as described in Section 4.3, Biological Resources, which includes the expanded place of use boundary, all of the City of Santa Cruz's (City's) water system infrastructure, surface water and groundwater sources, and proposed project and programmatic infrastructure component sites associated with the Proposed Project. Figure 4.11-1 shows the location of all recreation areas and parks located in immediate proximity to the surface water sources used by the City, including the San Lorenzo River, Newell Creek and Loch Lomond Reservoir, and North Coast streams. Section 4.11.1.2, Regional and Project Setting, provides a description of recreation areas and parks that are located along the City's surface water sources or in the immediate vicinity (within 0.25 miles) of project and programmatic infrastructure component sites. Other recreation areas and parks elsewhere in the County are not described.

### 4.11.1.2 Regional and Project Setting

#### Parks and Recreation Areas near the City's Surface Water Sources

**Loch Lomond Recreation Area.** Loch Lomond Reservoir is located in the Santa Cruz Mountains and owned and operated by the City. Loch Lomond Recreation Area is approximately 355 acres, stretches 3 miles long, and is located at 100 Loch Lomond Way near Ben Lomond, California, in unincorporated Santa Cruz County (see Figure 4.11-2). The main entrance on Loch Lomond Way provides access to parking areas, picnic areas, a park store, and boat dock and launch ramp area.

Loch Lomond Reservoir's primary function is water storage for Santa Cruz residents. The reservoir exists above the Newell Creek Dam, which spans across Newell Creek; a major tributary of the San Lorenzo River. The Newell Creek Dam holds water from the Newell Creek watershed, which impounds the Loch Lomond Reservoir. Newell Creek directly supports the recreation activities at the reservoir, including boating and fishing, and flows from near Bear Creek Road at the Summit southerly to its junction with the San Lorenzo River near Highland County Park (City of Santa Cruz 2020d).



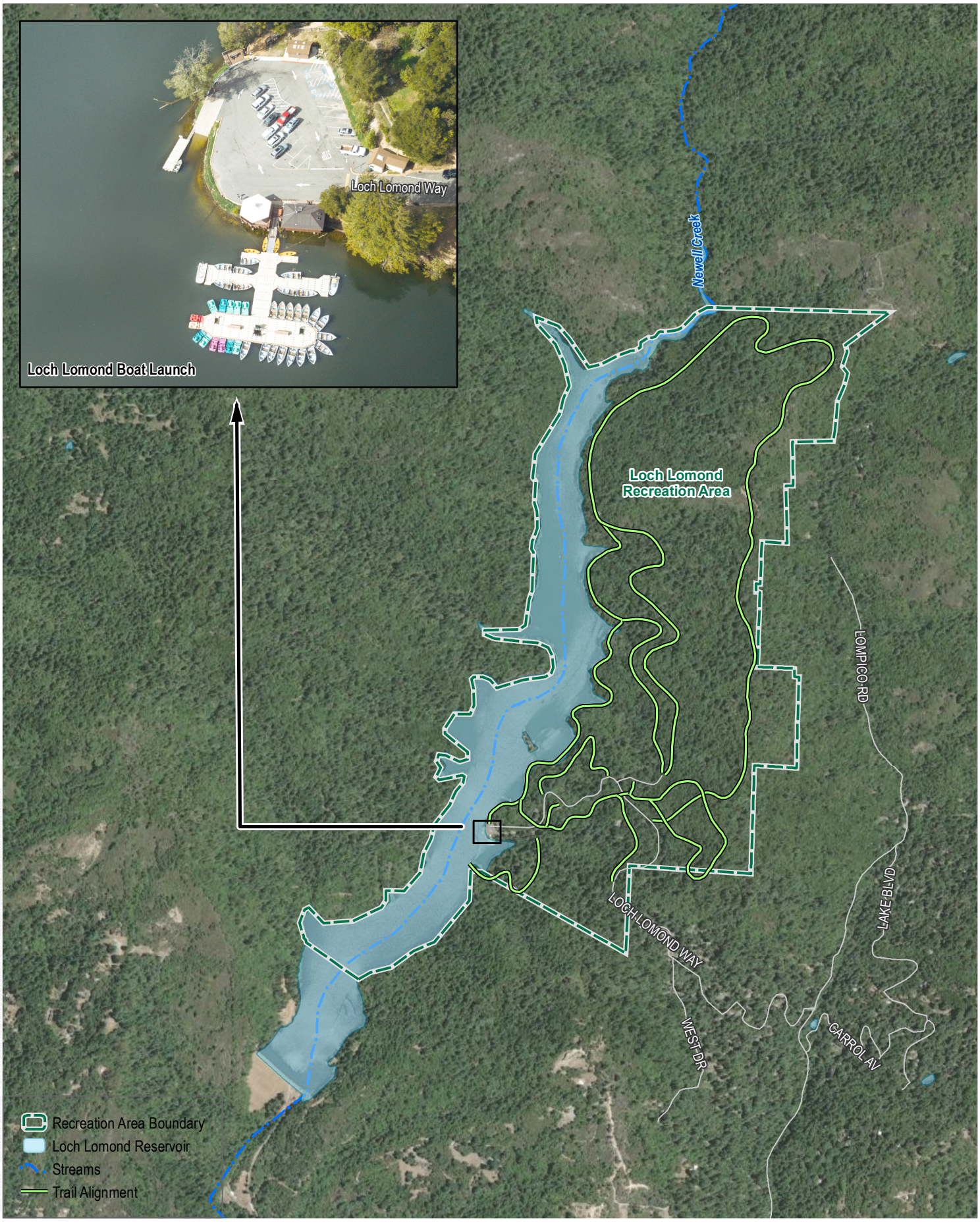

SOURCE: ESRI 2020, City of Santa Cruz 2020

**FIGURE 4.11-1**

Recreation and Park Areas Adjacent to City Surface Water Sources and Proposed Infrastructure Components

DUDEK

0 1 2 Miles




SOURCE: ESRI 2020, City of Santa Cruz 2020

DUDEK

0 750 1,500 Feet

**FIGURE 4.11-2**

Loch Lomond Recreation Area

Santa Cruz Water Rights Project

The Loch Lomond Recreation Area is open from March to September for limited recreational use, which includes boat rentals, picnicking, fishing, hiking, and natural resource interpretive programs. Recreational use of the reservoir is prohibited during the winter (City of Santa Cruz 2013). There are seven main picnic areas include located on the hillside overlooking the reservoir. Smaller picnic areas are located along the eastern shoreline and on a small island. Developed restrooms and portable toilets are located near the picnic areas. No campground facilities are provided at the recreation area. Due to concerns about contamination of the City's water supply in the reservoir, swimming and wading are prohibited and private boat launching is restricted to only allow boats that are stored at the Loch Lomond Recreation Area. Space is limited to approximately 100 boats (City of Santa Cruz 2020a); however, most of the boats at the recreation area are paddle and row boats available for rent.

The reservoir supports a warm water fishery primarily composed of introduced non-native game species including largemouth bass (*Micropterus salmoides*), green sunfish (*Lepomis cyanellus*), channel catfish (*Ictalurus punctatus*), and bluegill (*Lepomis macrochirus*) (City of Santa Cruz 2013). In addition, one other non-native species, golden shiner (*Notemigonus crysoleucas*) and three native species, Sacramento sucker (*Catostomus occidentalis),* prickly sculpin (*Cottus asper*) and rainbow trout (*Oncorhynchus mykiss*) are known to occur in the reservoir, though golden shiner and Sacramento sucker have not been observed since 1992. CDFW has planted hatchery-raised rainbow trout in Loch Lomond as part of an annual stocking program, with stocking occurring in Loch Lomond as recently as March and April 2021 (CDFW 2021). Therefore, all rainbow trout currently within the reservoir are assumed to be hatchery-raised fish.

When full, Loch Lomond Reservoir provides 180 surface acres of water that are accessible by rental paddle boats and row boats, and private boats that are stored at Loch Lomond (City of Santa Cruz 2013). Loch Lomond Reservoir is kept as full as possible as it serves as the primary water supply during drought conditions (City of Santa Cruz 2013). However, the water surface elevation in the reservoir is highly variable and is influenced by natural inflow from Newell Creek, pumping to the Graham Hill Water Treatment Plant, pumping from the Felton Diversion, evapotranspiration, and instream flow releases for fisheries downstream of the dam (City of Santa Cruz 2013). While the reservoir is typically open to the public from March 1 to mid-October, boats and related infrastructure can only operate safely throughout the full recreational season when the lake level is approximately 564 feet above mean sea level (amsl) or higher at the beginning of the season, which allows for current marina infrastructure to function safely (City of Santa Cruz 2014). When the lake level is below approximately 564 feet amsl at the beginning of the season (March 1) the City either, depending on actual lake levels, does not allow for boating at all that season or discontinues boating mid-season when boat launching is no longer possible.

Table 4.11-1 indicates the percentage of days at the reservoir that fall below approximately 564 feet amsl, based on an average of all years in the historic hydrologic record (1936 to 2015). During the recreational use period from March 1 to mid-October, on average there are approximately 12% of days under existing conditions where a full recreational season of boating would not occur because lake levels fall below approximately 564 feet amsl in March, at the beginning of the season.

Table 4.11-1. Percentage of Days that Loch Lomond Reservoir Falls Below Approximately 564 Feet (amsl)

| Month | 2018 Existing Conditions |
|---|---|
| Jan | 22.2% |
| Feb | 15.9% |
| Mar | 12.0% |
| Apr | 10.9% |
| May | 9.5% |
| Jun | 10.8% |
| Jul | 11.6% |
| Aug | 14.0% |
| Sep | 21.8% |
| Oct | 29.0% |
| Nov | 30.4% |
| Dec | 26.1% |

**Source:** Gary Fiske and Associates 2021.
**Note:** amsl = above mean sea level.

**Highlands Park.** Highlands Park is owned and operated by the Santa Cruz County Department of Park, Open Space, and Cultural Services. The park is 26 acres and is located at 8500 Highway 9 (State Route 9), Ben Lomond, California, in unincorporated Santa Cruz County (see Figure 4.11-1). The park is located just south of the confluence of the San Lorenzo River[1] and Newell Creek. The park features softball and baseball fields, soccer field, skate park, volleyball court, tennis courts, group picnic areas and a house used for events, such as weddings, parties, etc. (County of Santa Cruz 2020b). The park also provides informal access to the San Lorenzo River. Fishing is permitted with a license, but no recreational facilities are located along the river's edge.

**Felton Covered Bridge Park.** The Felton Covered Bridge Park is owned and operated by the County of Santa Cruz's Department of Parks, Open Space, and Cultural Services. The park is located at on Graham Hill Road at the intersections of Mount Hermon Road, in Felton. The park features a covered wooden bridge, picnic areas, playground and grassy areas (County of Santa Cruz 2020a). The park also provides informal access to the San Lorenzo River. Fishing is permitted with a license, but no recreational facilities are located along the river's edge.

**Henry Cowell Redwoods State Park.** Henry Cowell Redwoods State Park is owned and operated by the California Department of Parks and Recreation. Henry Cowell Redwoods State Park is located in the Santa Cruz Mountains, on 101 North Big Trees Road, Felton, California. Henry Cowell's primary attraction for visitors is the 40-acre grove of old-growth redwoods. Visitors can enjoy hiking, horseback riding, bicycling, picnicking, swimming, and camping on more than 4,600 acres of forested and open land. The park also provides informal access to and along the San Lorenzo River, including to a popular swimming hole called the Garden of Eden (California Department of Parks and Recreation 2020a).

**Pogonip.** Pogonip is part of the City of Santa Cruz' open space properties, located at 333 Golf Club Drive, and is operated by the City's Parks and Recreation Department. Pogonip has approximately 8 miles of hiking trails and

[1] The San Lorenzo River is 29 miles long and the watershed is approximately 137 square miles and includes the cities of Santa Cruz and Scotts Valley and the communities of Boulder Creek, Ben Lomond, and Felton (City of Santa Cruz 2020g).

3 miles of multi-use (hiking, biking and horseback riding) trails. In the northernmost portion of Pogonip, a multi-use trail provides a connection between Henry Cowell Redwoods State Park, Pogonip, and the upper UCSC campus. Along the eastern boundary of Pogonip is the Emma McCrary Trail, which is accessed from Golf Club Drive. There is also an entrance on State Route 9 to the Sycamore Grove, which is located adjacent to the San Lorenzo River (City of Santa Cruz 2020e).

**San Lorenzo Park.** The San Lorenzo Park is owned and operated by the City of Santa Cruz. The park is located at 137 Dakota Street, in the City of Santa Cruz, California. The park is approximately 11 acres and features a duck pond, 9-hole disc golf course, large playground, artificial-turf lawn bowling green, and an area called the benchlands greenbelt. The park provides informal access to the San Lorenzo River and a pedestrian bridge connects the park to downtown and Pacific Avenue (City of Santa Cruz 2020f), and to the River Walk, described below.

**Santa Cruz Riverwalk.** The Santa Cruz Riverwalk is a multi-use pedestrian and bicycle pathway on the top of the San Lorenzo River levee that is maintained by the City of Santa Cruz. The Riverwalk runs from just the north of the State Route 1 Bridge over the river at the Tannery Arts Center and continues south through downtown Santa Cruz ending at the Santa Cruz Beach Boardwalk. Features of the Riverwalk include mile markers, exercise equipment, educational interpretive signage, and park benches (City of Santa Cruz 2020h). As the Riverwalk is located on the levee, it does not provide direct access to the river and does not provide recreational facilities along the river's edge.

**Ken Wormhoudt Skate Park at Mike Fox Park.** The Ken Wormhoudt Skate Park at Mike Fox Park is owned and operated by the City of Santa Cruz. The park is located at 225 San Lorenzo Boulevard at Riverside Avenue adjacent to the Santa Cruz Riverwalk. The 1.25-acre park includes an approximate 15,000-square foot skate park, pickleball courts and basketball courts (City of Santa Cruz 2020c). The skate park is fenced and does not provide direct access to the river and does not provide recreational facilities along the river's edge.

**Main Beach.** Main Beach, owned and operated by the City of Santa Cruz, is located west of the San Lorenzo River mouth and is approximately 26 acres. Main Beach offers public bathrooms, lifeguard services, surf rentals, volleyball courts, and close proximity to Santa Cruz Boardwalk, restaurants, hotels, Santa Cruz Municipal Wharf, and public transit. Beach activities include surfing, sunbathing, swimming, various water activities, and walking distance to Santa Cruz Wharf, Santa Cruz Beach Boardwalk, and West Cliff walking trail (City of Santa Cruz 2020b).

**North Coast Beaches.** The streams that feed into the City's North Coast system include Laguna Creek, Liddell Spring, and Majors Creek. Of these streams, Laguna Creek flows through the Cotoni-Coast Dairies unit of the California Coastal National Monument and Coast Dairies State Park/Laguna Creek Beach; Liddell Spring flows through Bonny Doon Beach; and Majors Creek flows through Red, White, and Blue Beach. Recreational access along the North Coast streams is likely focused near these beaches, all of which are located in the unincorporated area of Santa Cruz County.

### Parks and Recreation Areas near Infrastructure Component Sites

There are no designated parks and recreation areas located on the proposed project and programmatic infrastructure component sites. While the Felton Diversion and Tait Diversion and Coast Pump Station are located on the banks of the San Lorenzo River, they are not located in a designated park or recreation area. New Brighton State Beach is located immediately adjacent to a proposed McGregor Drive pump station upgrade site. New Brighton State Beach is owned and operated by the California Department of Parks and Recreation. The park is located on Park Avenue off State Route 1 in Capitola, California. New Brighton State Beach is a 93-acre beach that offers beach access, fishing, bonfires, and camping (California Department of Parks and Recreation 2020b).

## 4.11.2 Regulatory Framework

### 4.11.2.1 Federal

#### Clean Water Act

The Clean Water Act (CWA) is aimed at restoring and maintaining the chemical, physical and biological integrity of the nation's waters (see Section 4.3, Biological Resources for additional information). The act requires that due regard be given to improvements necessary to conserve waters for public water supplies, propagation of fish and aquatic life, agricultural and industrial uses and recreational purposes, including recreation in and on the water. Within the study area evaluated, recreational contact and non-contact beneficial uses are designated for the San Lorenzo River, Newell Creek, Loch Lomond Reservoir and the North Coast streams (see Section 4.11.2.2, State).

#### National Wild and Scenic Rivers Act

The National Wild and Scenic Rivers System was established in 1968 (16 United States Code 1271 et seq.). Under this system, rivers possessing "outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values" may be designated as wild, scenic, or recreational. However, the San Lorenzo River, Newell Creek and the North Coast streams are not designated rivers under this system.

#### Cotoni-Coast Dairies California Coastal National Monument Resource Management Plan Amendment

The Cotoni-Coast Dairies California Coastal National Monument Resource Management Plan Amendment (RMPA) was prepared by the BLM in consultation with various government agencies and organizations. The RMPA specifies goals and objectives for natural and cultural resource protection on the Cotoni-Coast Dairies property, as well as a range of allowable uses for recreation, livestock grazing, and vegetation management actions, including project design features that would be applied to protect resources. The decisions resulting from this planning effort would affect approximately 5,800 acres of federal lands (surface-only) managed by the BLM Central Coast Field Office in Santa Cruz County. The RMPA also describes implementation-level decisions regarding development of public parking facilities and recreational trails for visitor use and enjoyment on the north coast of Santa Cruz County. The California Coastal Commission approved the RMPA in December 2020.

### 4.11.2.2 State

#### Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Control Act of 1969 is California's statutory authority for the protection of water quality. Under the Act, the State must adopt water quality policies, plans, and objectives that protect the State's waters for the use and enjoyment of the people. The Act sets forth the obligations of the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs) to adopt and periodically update water quality control plans for all the waters of an area. The water quality control plan is defined as having three components: beneficial uses which are to be protected, water quality objectives which protect those uses, and an implementation plan which accomplishes those objectives.

The September 2017 Water Quality Control Plan for the Central Coastal Basin (Basin Plan) is the Central Coast RWQCB's current master water quality control planning document. The Basin Plan establishes beneficial uses, and

water quality objectives for each of the water bodies in the Central Coast Region. As indicated in Section 4.8, Hydrology and Water Quality, the following beneficial uses related to recreation apply to the San Lorenzo River, Newell Creek, Loch Lomond Reservoir and the North Coast streams: water contact recreation; non-contract water recreation; and commercial and sport fishing. However, water contact recreation is not permitted at the Loch Lomond Recreational Area. Loch Lomond Reservoir also has the beneficial use of navigation.

#### State Wild and Scenic Rivers Act

The California Legislature passed the State Wild and Scenic Rivers Act in 1972 (Public Resources Code Section 5093.50 et seq.). The Legislature declared that it was the state's intent that "certain rivers which possess extraordinary scenic, recreation, fishery, or wildlife values shall be preserved in their free-flowing state, together with their immediate environments, for the benefit and enjoyment of the people of the state." However, the San Lorenzo River, Newell Creek, and the North Coast streams are not designated rivers under this system.

### 4.11.2.3 Local

The study area for the Proposed Project includes the jurisdictions of the City of Santa Cruz, City of Capitola, City of Scotts Valley, and County of Santa Cruz. The general plans and, where relevant, the local coastal programs of these jurisdictions include policies and programs related to parks and recreation areas. Section 4.9, Land Use, Agriculture and Forestry, and Mineral Resources, discusses applicable general plan and local coastal program policies related to parks and recreation areas, as relevant to the Proposed Project.

## 4.11.3 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to recreation. 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.

### 4.11.3.1 Standards of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to recreation 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. Conflict with established recreational uses of the area.

B. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

C. Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

### 4.11.3.2 Analytical Methods

This section evaluates the potential recreation impacts associated with construction and operation of the Proposed Project. The analysis of potential impacts addresses the various project and programmatic components listed in Table 4.11-2, which are described in detail in Chapter 3, Project Description.

Table 4.11-2. 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 | | ✓ |

To address Significance Standard A, the analysis considers potential effects of the Proposed Project on formal and informal recreation along the City's surface water sources including Loch Lomond Reservoir, Newell Creek, San Lorenzo River, and the North Coast streams. This analysis is based on hydrologic and water supply modeling performed for the Proposed Project (see Appendix D) and presented in this section in a tabular format (see Table 4.11-1 and Table 4.11-3). If the Proposed Project would result in decreasing water levels that would reduce boating or other recreational opportunities, this would be considered a conflict with established recreational uses along the City's surface water sources and a significant impact would be identified for Significance Standard A.

To address Significance Standards B and C, the evaluation also considers whether new staff associated with the Proposed Project could result in an increase in the demand for park and recreation areas such that substantial physical deterioration of such facilities would occur or be accelerated or such that construction or expansion of recreational or park facilities would be required. As indicated in Chapter 3, Project Description, it is anticipated that up to three new staff would be needed to operate under Proposed Project conditions: one for the Agreed Flows implementation and two for the new Santa Cruz aquifer storage and recovery (ASR) facilities maintenance.

## Application of Relevant Standard Practices

The Proposed Project does not include any standard operational or construction practices that are relevant to recreation.

## 4.11.3.3 Project Impact Analysis

### Areas of No Impact

The Proposed Project includes water rights modifications and infrastructure components. The Proposed Project does not include new recreational or park facilities and would not **require the construction or expansion of recreational facilities (Significance Standard C)**, given the nominal staff increase that would result from Proposed Project implementation. Therefore, the Proposed Project would have no impact related to construction or expansion of recreational facilities.

### Impacts

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

**Impact REC-1: Conflicts with Existing Recreational Uses (Significance Standard A).** Operation of the Proposed Project would not change or conflict with existing recreational uses. ***(Beneficial)***

Potential changes to recreational uses due to Proposed Project implementation at Loch Lomond Reservoir and along the City's flowing surface water sources, including Newell Creek, San Lorenzo River and the North Coast streams, are described below, based on hydrologic and water supply modeling performed for the Proposed Project in Appendix D and provided in this section in a tabular format.

### Loch Lomond Reservoir/Loch Lomond Recreation Area

As indicated in Section 4.11.1.2, Regional and Project Setting, Loch Lomond Reservoir is kept as full as possible as it serves as the primary water supply during drought conditions. Under existing conditions, the water surface elevation in the reservoir is highly variable and is influenced by natural inflow from Newell Creek, pumping to the Graham Hill Water Treatment Plant, pumping from the Felton Diversion, evapotranspiration, and instream flow releases for fisheries downstream of the dam. Under Proposed Project conditions with the implementation of all project and programmatic components, additional variables would apply. In particular, with the implementation of ASR facilities in the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin, the City would have additional storage that could be used during dry and drought conditions, which would reduce the City's reliance on Loch Lomond Reservoir.

As indicated in Section 4.11.1.2, Regional and Project Setting, boats and related infrastructure can only operate safely throughout the full recreational season (March 1 to mid-October) when the lake level is approximately 564 feet amsl or higher at the beginning of the season, which allows for current marina infrastructure to function safely. When the lake level is below approximately 564 feet amsl at the beginning of the season (March 1) the City either, depending on actual lake levels, does not allow for boating at all that season or discontinues boating mid-season when boat launching is no longer possible. Table 4.11-3 compares the percentage of days in each calendar month at the reservoir that fall below approximately 564 feet amsl under existing and Proposed Project conditions, based on an average for each of those months in all years in the historic hydrologic record (1936 to 2015). During the recreational use period from March 1 to mid-October, on average there are approximately 12% of days under existing conditions where a full season of boating and related operations do not occur because lake levels fall below approximately 564 feet amsl in March, at the beginning of the season. In comparison, under Proposed Project conditions, on average there would be approximately 4.5% of days where a full season of boating and related operations would not occur because lake levels fall below approximately 564 feet amsl in March, an improvement

over existing conditions. Given that lake levels would improve, the Proposed Project would also not degrade the recreational experience of boaters and other recreationalists at the Loch Lomond Recreation Area, such as might occur with aesthetic impacts at the reservoir. Such aesthetic impacts could occur with the Proposed Project if a drop in lake levels and associated appearance of a "bath tub ring" were to result. (A bath tub ring is an area of unvegetated land adjacent to a lake or reservoir that can occur with a substantial decrease in lake levels and is most commonly associated with drought conditions.)

Therefore, the Proposed Project would have a beneficial effect on boating in Loch Lomond Reservoir, given that it would improve conditions for boating compared to existing conditions by increasing lake levels, which would allow for a full season of boating more frequently. Given this beneficial effect, the Proposed Project would not conflict with existing recreational uses at Loch Lomond Reservoir.

**Table 4.11-3. Percentage of Days that Loch Lomond Reservoir Falls Below Approximately 564 Feet (amsl)**

| Month | 2018 Existing Conditions | Proposed Project Conditions |
|---|---|---|
| Jan | 22.2% | 9.4% |
| Feb | 15.9% | 6.6% |
| Mar | 12.0% | 4.5% |
| Apr | 10.9% | 2.7% |
| May | 9.5% | 3.5% |
| Jun | 10.8% | 4.6% |
| Jul | 11.6% | 7.1% |
| Aug | 14.0% | 8.9% |
| Sep | 21.8% | 11.9% |
| Oct | 29.0% | 14.8% |
| Nov | 30.4% | 13.7% |
| Dec | 26.1% | 11.6% |

**Source:** Gary Fiske and Associates 2021.
**Note:** amsl = above mean sea level.

### Newell Creek, San Lorenzo River and the North Coast Streams

As indicated in Section 4.11.1.2, Regional and Project Setting, there is some known informal access and related recreation along Newell Creek, at or near Loch Lomond Reservoir; along the San Lorenzo River, at various park locations; and at North Coast streams, where the streams flow through North Coast beaches (see Figure 4.11-1 and Figure 4.11-2). As indicated in Section 4.8, Hydrology and Water Quality, based on an average of all years in the historical record (1936 to 2015), the difference in residual flows below the City's points of diversion 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. Therefore, the changes in residual flows with the Proposed Project would have no impact on informal access and recreational uses along Newell Creek, San Lorenzo River, and the North Coast Streams.

**Mitigation Measures**

As described above, the Proposed Project would not result in significant impacts related to conflicts with existing recreational uses, and therefore, no mitigation measures are required.

**Impact REC-2: Increased Use of Existing Parks or Recreational Facilities (Significance Standard B).** Operation of the Proposed Project would not increase the use of parks or recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. ***(Less than Significant)***

The Proposed Project includes water rights modifications and project and programmatic infrastructure components, as shown in Table 4.11-2. As indicated in Chapter 3, Project Description, it is anticipated that up to three new staff would be needed to operate under Proposed Project conditions: one for the Agreed Flows implementation and two for the new ASR facilities maintenance. These staff could be hired from within the County, or from outside the region, which would require relocation. Even if it is conservatively assumed that the three new staff would relocate from outside the area, this population increase is nominal and would not be expected to increase the use of parks or recreational facilities in the County such that substantial physical deterioration of the facilities would occur or be accelerated. Therefore, the Proposed Project would have a less-than-significant impact.

**Mitigation Measures**

As described above, the Proposed Project would not result in significant impacts related to increased use of existing park and recreational facilities, and therefore, no mitigation measures are required.

### 4.11.3.4 Cumulative Impacts Analysis

This section provides an evaluation of cumulative recreation 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 area considered in the cumulative analysis for this topic is the study area identified in Section 4.11.1.1, Study Area, and includes the expanded place of use boundary shown on Figure 3-3 in Chapter 3, Project Description.

The Proposed Project would not contribute to cumulative impacts related to **construction or expansion of new recreational facilities (Significance Standard C)**, given the nominal staff increase that would result from Proposed Project implementation. Therefore, this topic is not further evaluated as the Proposed Project would not have the potential to have a considerable contribution to cumulative recreation impacts related to such construction or expansion of new recreational facilities.

**Impact REC-3: Cumulative Recreation Impacts (Significance Standards A and B).** Operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not change or conflict with existing recreational uses, but could increase the use of parks or recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. However, the Proposed Project's contribution would not be cumulative considerable. ***(Less than Significant)***

**Conflicts with Existing Recreational Uses**

As indicated in Impact REC-1, the Proposed Project would have a beneficial effect on boating in Loch Lomond Reservoir given that there would be fewer days during the recreational use period from March to September when

boating would not be allowed. This conclusion also incorporates other City water infrastructure projects listed as cumulative projects in Table 4.0-2, where relevant. As indicated in Chapter 3, Project Description, because approval of the proposed water rights modifications would result in changed conditions that extend into the future, City modeling included in Appendix D assumed implementation of all upgrades to existing infrastructure currently being planned. These upgrades include the surface water diversion improvements at the Felton Diversion and Tait Diversion/Coast Pump Station, as part of the Proposed Project. 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. These cumulative projects include improvements to the Newell Creek Pipeline, the North Coast Pipeline, and the Graham Hill Water Treatment Plant.

There are two additional cumulative projects in Table 4.0-2 that have the potential to affect water levels in Loch Lomond Reservoir or residual flows in the Newell Creek and the San Lorenzo River. These cumulative projects include: (1) the Conjunctive Use Plan for the San Lorenzo River Watershed, which is aiming to increase stream baseflow for fish and water supply reliability, by allowing for conjunctive use of the SLVWD's service areas and with the Scotts Valley Water District, and use of SLVWD's Loch Lomond Reservoir water right; and (2) the City's River Bank Filtration Study, which could potentially result in the installation of vertical or horizontal wells along the San Lorenzo River near the Tait and Felton Diversions. Given that neither of these cumulative projects have been specifically defined to date or evaluated in a CEQA document, it is speculative to determine what cumulative effect if any these projects would have on the formal and informal recreational activities in Loch Lomond Reservoir and along the Newell Creek and the San Lorenzo River. However, the City's hydrologic and water supply modeling for the Proposed Project that are the basis for Table 4.11-3 in Impact REC-1 account for SLVWD's access to 313 acre-feet per year of water from Loch Lomond Reservoir and that allotment is assumed in this EIR.[2] Therefore, cumulative impacts related to conflicts with existing recreational uses would be less than significant.

### Physical Deterioration of the Recreational Facilities

As indicated in Impact REC-2, the population increase associated with the Proposed Project would be nominal and would not be expected to increase the use of parks or recreational facilities in the County such that substantial physical deterioration of the facilities would occur or be accelerated. Table 4.0-2 in Section 4.0, Introduction to Analyses, includes numerous cumulative projects that could result in population increases in the County and an associated increase in the use of parks and recreational facilities. As such, cumulative projects have the potential to result in an increase in the use of parks or recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. Therefore, implementation of cumulative projects could have a potentially significant cumulative impact. However, the Proposed Project's contribution to this impact would not be cumulatively considerable as the population increase is nominal and would not be expected to increase the use of parks or recreational facilities in the County such that substantial physical deterioration of the facilities would occur. Therefore, the cumulative impact of the Proposed Project of the would be less than significant.

[2] SLVWD is entitled by contract to receive a 313 acre-feet per year of the water stored in Loch Lomond Reservoir that has not been used since 1977.

## 4.11.4 References

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# 4.12 Transportation

This section describes the existing transportation 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 of the Santa Cruz Water Rights Project (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. There were no comments related to transportation.

## 4.12.1 Existing Conditions

### 4.12.1.1 Study Area

As described in the Project Description, the Proposed Project is located within Santa Cruz County (County), California and involves the water system and areas served of the City of Santa Cruz (City), and the water service area of San Lorenzo Valley Water District (SLVWD), Scotts Valley Water District (SVWD), Soquel Creek Water District (SqCWD), and Central Water District (CWD). The components of the Proposed Project are located within Santa Cruz County and are generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Figure 3-1 in Chapter 3, Project Description). While the project area is much broader, the study area for transportation is focused on the proposed project and programmatic infrastructure component sites where construction and ground disturbance could occur and where new or upgraded facilities would be located (see Figure 3-4 in Chapter 3, Project Description). These sites include the following: aquifer storage and recovery (ASR) sites where known, intertie improvement sites including the City/SVWD intertie site and the City/SqCWD/CWD intertie site, Felton Diversion fish passage improvement site, and the Tait Diversion and Coast Pump Station improvement 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. This section describes key roadway segments, as well as transit, pedestrian, and biking facilities within the vicinity of the project and programmatic infrastructure components.

### 4.12.1.2 Roadways and Access

Roadway characteristics and roadway classifications for key vicinity roads are described below. Access to proposed project and programmatic infrastructure component sites is also described. All roadways discussed are within the unincorporated County and some roadways segments also pass through incorporated areas of the County and are shown on Figure 3-1 and Figure 3-2, in Chapter 3, Project Description.

**State Highway 1**, also co-designated within the study area as Cabrillo Highway, is generally a north-south, four-lane divided freeway that follows the coast of California and regionally connects the coastal communities within the County. Within the study area, State Highway 1 is the main thoroughfare for traffic and provides regional access to the proposed Beltz ASR sites and the City/SqCWD/CWD intertie sites. State Highway 1 connects with State Highway 9 and State Highway 17. Since, State Highway 1 is a freeway, there are no parking or bicycle facilities provided and the posted speed limit is 65 miles per hour (mph).

**State Highway 9** is generally a north-south, two-lane undivided highway that connects the City with areas of unincorporated Santa Cruz County including the communities of Felton, Ben Lomond, and Boulder Creek. State Highway 9 ends in the City of Saratoga where it connects with State Highway 17. State Highway 9 also connects with State Highway 1 within the City of Santa Cruz, near the proposed Tait Diversion and Coast Pump Station improvement site. State Highway 9 also provides access to the proposed Felton Diversion improvement site. There are no parking or bicycle facilities provided and the posted speed limit ranges between 25 mph to 45 mph.

**State Highway 17** is a north-south, four-lane divided freeway that connects the City with areas of unincorporated Santa Cruz County, as well as to Santa Clara County and the San Jose metropolitan area. State Highway 17 ends in the City of San Jose where it connects with Interstate 880 (I-880). State Highway 17 also connects with State Highway 1 within the City. State Highway 17 provides regional access to the proposed City/SVWD intertie site. Since, State Highway 17 is a freeway, there are no parking or bicycle facilities provided and the posted speed limit ranges between 50 mph to 65 mph.

**41st Avenue** is a north-south roadway that has generally four to six-lanes that are divided, however it narrows to two-lanes and becomes undivided south of Melton Street. It serves as the main connection point between State Highway 1 and the proposed Beltz ASR sites. 41st Avenue extends from Soquel Drive to Cliff Drive, and according to the functional street classification within the County's General Plan Circulation Element, is identified as an Arterial roadway (County of Santa Cruz 2020a). 41st Avenue is also within the jurisdiction of the City of Capitola, from State Highway 1 to Nova Drive. Within the City of Capitola General Plan Mobility Element, 41st Avenue is also designated as an Arterial roadway (City of Capitola 2019). Parking is allowed along some sections, and pedestrian facilities are generally provided on both sides of the roadway. According to the Santa Cruz County Bike Map, Class II painted bicycles lanes are provided on both sides of 41st Avenue (County of Santa Cruz 2016). The posted speed limit ranges between 25 to 35 mph.

**38th Avenue** is a north-south roadway with two-lanes that are divided and serves as a connection point to Beltz ASR sites located south of State Highway 1. 38th Avenue extends from the Capitola Mall south towards Cliff Drive, and according to the functional street classification within the County's General Plan Circulation Element, is identified as a Collector roadway (County of Santa Cruz 2020a). 38th Avenue is also within the jurisdiction of the City of Capitola, north of Jade Street. Within the City of Capitola General Plan Mobility Element, 38th Avenue is also designated as a Collector roadway (City of Capitola 2019). Parking is allowed along some sections north of Brommer Street, and pedestrian facilities are generally provided on both sides of the roadway. According to the Santa Cruz County Bike Map, Class II painted bicycles lanes are provided on both sides of 38th Avenue north of Brommer Street, and Class III bicycle route markings are provided south of Brommer Street (County of Santa Cruz 2016). The posted speed limit is 25 mph.

**30th Avenue** is a north-south roadway with two-lanes that are divided and serves as a connection point to the Beltz ASR sites south of State Highway 1. 30th Avenue generally extends from north of Capitola Road towards Cliff Drive, and according to the functional street classification within the County's General Plan Circulation Element, is identified as a Collector roadway (County of Santa Cruz 2020a). Parking and pedestrian facilities are generally provided on both sides of the roadway. According to the Santa Cruz County Bike Map, Class II painted bicycles lanes are provided on both sides of 38th Avenue north of Portola Drive. The posted speed limit is 25 mph.

**Soquel Drive** is an east-west roadway that has generally 4-lanes that are undivided. It serves as connection point to the Beltz 12 site via Research Park Drive. Soquel Drive extends from Soquel Avenue to Rio Del Mar Boulevard, and according to the functional street classification within the County's General Plan Circulation Element, is identified as an Arterial roadway (County of Santa Cruz 2020a). Parking is allowed along some sections, and

pedestrian facilities are generally provided on both sides of the roadway. According to the Santa Cruz County Bike Map, Class II painted bicycles lanes are provided on both sides of Soquel Drive (County of Santa Cruz 2016). The posted speed limit ranges between 25 to 35 mph.

**Freedom Boulevard** is generally a north-south roadway that has two to four-lanes undivided and connects State Highway 1/Soquel Drive, with the City of Watsonville. Freedom Boulevard, near State Highway 1 provides access to the proposed City/SqCWD/CWD intertie – Freedom Boulevard pump station and Valencia Drive pump station sites. According to the functional street classification within the County's General Plan Circulation Element, Freedom Boulevard is identified as an Arterial roadway (County of Santa Cruz 2020a). Parking is generally not provided along the roadway, while pedestrian facilities are provided along the eastern portion of the roadway near State Highway 1. According to the Santa Cruz County Bike Map, Class II painted bicycles lanes are provided on both sides of the roadway (County of Santa Cruz 2016). The posted speed limit is 45 mph.

**Park Avenue** is generally a north-south roadway that has two to four-lanes undivided and connects State Highway 1/Soquel Drive, with other areas of the City of Capitola. Park Avenue, near State Highway 1 provides access to the proposed City/SqCWD/CWD intertie – Park Avenue pipeline site and McGregor Drive pump station site. According to the functional street classification within the City of Capitola General Plan Mobility Element, Park Avenue is identified as an Arterial roadway (City of Capitola 2019). Parking is generally not provided along the roadway, while pedestrian facilities are provided along both sides of the roadway north of State Highway 1, and along the eastern portion south of State Highway 1. According to the Santa Cruz County Bike Map, Class II painted bicycles lanes are provided on both sides of the roadway (County of Santa Cruz 2016). The posted speed limit is 35 mph.

**McGregor Drive** is generally an east-west two-lane undivided roadway and connects Park Avenue to provide access to the proposed City/SqCWD/CWD intertie – McGregor Drive pump station site. According to the functional street classification within the City of Capitola General Plan Mobility Element, McGregor Drive is identified as a Local roadway (City of Capitola 2019). Parking is not provided along the roadway, and there are no pedestrian facilities. According to the Santa Cruz County Bike Map, Class II painted bicycles lanes are provided on both sides of the roadway (County of Santa Cruz 2016). The posted speed limit is 25 mph.

**Porter Street** is generally a north-south roadway that has two to four-lanes undivided and connects State Highway 1/ Soquel Drive, with the City of Capitola to the south and unincorporated areas of Santa Cruz County to the north. Porter Street, north of State Highway 1 provides access to the proposed City/SqCWD/CWD intertie – Soquel Village pipeline site. According to the functional street classification within the County's General Plan Circulation Element, Porter Street is identified as an Arterial roadway (County of Santa Cruz 2020a). Parking is generally not provided along the roadway, while pedestrian facilities are provided along both sides of the road. According to the Santa Cruz County Bike Map, Class II painted bicycles lanes are provided on both sides of the roadway (County of Santa Cruz 2016). The posted speed limit is 25 mph.

**La Madrona Drive** is a north-south, two-lane, undivided roadway that provides a connection between the City of Scotts Valley and City of Santa Cruz. La Madrona Drive is parallel with State Highway 17 and begins from the terminus of El Rancho Drive and connects to Mt. Hermon Road and is the main roadway for the proposed City/SVWD intertie site and pump station. La Madrona Drive, according to the functional street classification within the County's General Plan Circulation Element, is identified as a Collector roadway (County of Santa Cruz 2020a). Parking is generally prohibited, and pedestrian facilities are not provided. According to the Santa Cruz County Bike Map, La Madrona Drive is listed an Alternate Route (County of Santa Cruz 2016). The posted speed limit is 35 mph.

#### 4.12.1.3 Transit

Various portions of the study area are directly served by transit service in the County. The Santa Cruz Metropolitan Transit District (Santa Cruz Metro) provides bus service throughout the study area. There are four transit centers within the study area that provide regional bus service from population centers within the County, as well as from the San Jose metropolitan area. The Metro Center is located in the downtown area of the City of Santa Cruz and provides a connection point between regional locations and local bus routes within the County and serves as the main hub for Santa Cruz Metro. The Capitola Mall Transit Center provides bus service for regional routes to the Capitola Mall, from the City of Santa Cruz, City of Capitola, City of Watsonville, Aptos, Soquel, and other communities within the unincorporated County. The Cavallaro Center is located in the City of Scotts Valley and provides regional connections between the communities of Ben Lomond, Felton, Boulder Creek, downtown Santa Cruz, and the San Jose metropolitan Area. The Watsonville Transit Center is located in downtown Watsonville and provides regional connections by utilizing State Highway 1 for connections to downtown Santa Cruz, Capitola, and the unincorporated communities of Aptos, Soquel, and Freedom (Santa Cruz Metro 2020).

#### 4.12.1.4 Pedestrian and Bicycle Facilities

As stated above, pedestrian facilities are not available along State Highway 1 and State Highway 17. Sidewalks are provided along the western edge of State Highway 9 from State Highway 1 to Vernon Street, after which there are no pedestrian facilities. Freedom Boulevard has sidewalks along the developed parcels near State Highway 1 and possess Class II bicycle lanes on both sides of the roadway (County of Santa Cruz 2016).

### 4.12.2 Regulatory Framework

#### 4.12.2.1 Federal

There are no federal regulations related to transportation that are directly applicable to the Proposed Project.

#### 4.12.2.2 State

##### California Senate Bill 743

On September 27, 2013, Senate Bill (SB) 743 was signed into law, which creates a process to change the way that transportation impacts are analyzed under the California Environmental Quality Act (CEQA). SB 743 required the Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines to provide an alternative to level of service (LOS)[1] for evaluating transportation impacts. Under the new transportation guidelines, LOS, or vehicle delay, will no longer be considered an environmental impact under CEQA. The updates to the CEQA Guidelines required under SB 743 were approved on December 28, 2018. The newly enacted CEQA Guidelines Section 15064.3 identifies vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts under CEQA and is currently being implemented as of July 1, 2020.

[1] Level of service (LOS) is commonly used as a qualitative description of segment and roadway operations and is based on the capacity and the volume of traffic using the segment or roadway. The Highway Capacity Manual describes the operation of a roadway using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions).

Related legislation, SB 32 (2016) requires California to reduce greenhouse gas emissions 40% below 1990 levels by 2030. The California Air Resources Board has determined that it is not possible to achieve this goal without reducing VMT growth and specifically California needs to reduce per capita VMT across all economic sectors. SB 743 is primarily focused on passenger-cars and the reduction in per capita VMT as it relates to individual trips. The OPR Technical Advisory (OPR 2018) provides guidance and tools to properly carry out the principles within SB 743 and how to evaluate transportation impacts in CEQA. Since the City's adopted guidelines directly utilize the adopted guidance and screening criteria from the OPR Technical advisory, the methodology and thresholds from the OPR Technical Advisory was utilized within this analysis to determine VMT related impacts. See Section 4.12.2.3, Local, for information about the City's SB 743 Implementation Guidelines.

### 4.12.2.3 Local

#### County of Santa Cruz

**SB 743 Implementation Guidelines**

As of October 2020, the County of Santa Cruz has published guidelines for the implementation of SB 743 as it pertains to VMT (County of Santa Cruz 2020b). Similar to what is described in the OPR Technical Advisory document mentioned in Section 4.12.2.2, State, the VMT analysis process is based on the type of land use and can be screened out for a less-than-significant transportation impact based on a variety of factors such as:

- Small Projects:
    - Project trip generation is less than 110 net new trips per day.
    - CEQA transportation analysis is required if the project is inconsistent with the Sustainable Communities Strategy as determined by Santa Cruz County.
- Projects Near High Quality Transit:
    - The project is located within 0.5 miles of an existing major transit stop as defined in California Public Resources Code Section 21064.3: two or more bus lines which maintain a service interval frequency of 15 minutes or less during both the morning and afternoon peak commute periods. Currently there are no existing major transit stops in the unincorporated County.
    - CEQA transportation analysis is required if any of the following are true: the project has a Floor Area Ratio (FAR) of less than 0.75; the project includes more parking for use by residents, customers, or employees of the project than required by Santa Cruz County Code; the project is inconsistent with the Sustainable Communities Strategy as determined by Santa Cruz County; or the project replaces affordable residential units with a smaller number of moderate or high-income residential units.
- Local-Serving Retail:
    - No single store on-site exceeds 50,000 square feet, or the project is local-serving as determined by Santa Cruz County.
    - CEQA transportation analysis is required if the nature of the service is regionally focused as determined by Santa Cruz County.

- Affordable Housing:
    - The project provides a high percentage of affordable housing as determined by Santa Cruz County.
    - CEQA transportation analysis is required if the percentage of affordable housing is determined by Santa Cruz County to not be high.
- Local Essential Service:
    - The project includes land uses such as: day care center, public K-12 school, policy or fire facility, local serving medical/dental office building, or government office (in-person services such as post office, library, and utilities).
    - CEQA transportation analysis is required if the nature of the service is regionally focused as determined by Santa Cruz County.
- Map-Based Screening:
    - The area of development is under the threshold as shown on screening map as allowed by Santa Cruz County.
    - CEQA transportation analysis is required if the project will result in significant population or employment growth that substantially changes regional travel patterns as determined by Santa Cruz County.
- Redevelopment Projects:
    - The project replaces an existing VMT-generating land use and does not result in a net overall increase in VMT.
    - CEQA transportation analysis is required if the project replaces an existing VMT-generating land use and results in a net overall increase in VMT.

If a project is unable to be screened out, and is not within an area where average VMT is below or at the County's VMT threshold level as indicated by the map-based screening figures located within the County's VMT guidelines, then further analysis is required by utilizing the County's "Sketch Planning Tool" or otherwise having a qualified transportation consultant analyze the project's VMT by using the Santa Cruz County Travel Demand Model. The Santa Cruz County Travel Demand Model estimates daily trips based on various trip purposes within each transportation analysis zone (TAZ) as well as local demographics based on employment and population. Finally, transportation demand management (TDM) strategies and VMT reduction based on the land use analyzed are available to reduce VMT to less-than-significant levels.

### General Plan

As required by State of California law, the County has adopted a General Plan and Local Coastal Program that work in tandem with each other to create and address goals and policies as related to the transportation system of the County. Within the General Plan, the Circulation Element serves as the key policy statement of the County regarding transportation facilities serving unincorporated areas (County of Santa Cruz 2020a). The Circulation Element contains several policies and programs that fulfill this purpose.

Specific goals identified in the Circulation Element are identified below, some of which are relevant to the Proposed Project. These goals outline the County's objectives to improve the transportation system.

- **Transportation System**: Provide a convenient, safe, and economical transportation system for the movement of people and goods, promoting the wise use of resources, particularly energy and clean air, and the health and comfort of residents.
- **Mode Choice**: Provide the public with choice in transportation modes on a well-integrated system.
- **Limit Increase in Auto Use**: Limit the increase in auto usage to minimize adverse impacts. Increase transit ridership, carpooling, vanpooling, walking and bicycling, etc.
- **Efficiency**: Provide for more efficient use of existing transportation facilities.
- **Regional Goals**: Meet the requirements of regional plans, such as the Congestion Management Program, Air Quality Management Plan and Regional Transportation Plan. Integrate planning for transportation, land use, and air quality goals.
- **Parking**: Manage parking supply to provide reasonably convenient parking for groups such as shoppers, and visitors who are most sensitive to the parking supply levels, while encouraging alternatives to solo commuting and limiting impacts on neighborhoods.
- **Bikeway System**: Develop and implement a comprehensive bikeway system that promotes bicycle travel as a viable transportation mode and meets the recreation and travel needs of the citizens of Santa Cruz County.
- **Safety**: Reduce the number and severity of bicycle accidents.
- **Coordination**: Coordinate transportation improvements in area plans with the General Plan and Local Coastal Program Land Use Plan and regional transportation plans.

The following policy pertains to the County's approach to LOS:

- **3.12.1. Level of Service (LOS) Policy:** In reviewing the traffic impacts of proposed development projects or proposed roadway improvements, LOS C should be considered the objective, but LOS D as the minimum acceptable (where costs, right-of-way requirements, or environmental impacts of maintaining LOS under this policy are excessive, capacity enhancement may be considered infeasible). Review development projects or proposed roadway improvements to the Congestion Management Program network for consistency with Congestion Management Plan goals. Proposed development projects that would cause LOS at an intersection or on an uninterrupted highway segment to fall below D during the weekday peak hour will be required to mitigate their traffic impacts. Proposed development projects that would add traffic at intersections or on highway segments already at LOS E or F shall also be required to mitigate any traffic volume resulting in a 1% increase in the volume/capacity ratio of the sum of all critical movements. Projects shall be denied until additional capacity is provided or where overriding finding of public necessity and or benefit is provided.

### Encroachment Permits

For any construction in the public right-of-way, the County requires an encroachment permit. The associated fee and permit process are described in the Santa Cruz County Code, Chapter 9.70, Streets and Roads. As part of the encroachment permit process, if pedestrian, bicycle, or vehicle traffic would be impacted, a traffic control plan must be provided. Several provisions are provided on the encroachment permit application (County of Santa Cruz 2021).

## City of Santa Cruz

### SB 743 Implementation Guidelines

On June 9, 2020 the City of Santa Cruz City Council enacted Resolution NS-29, which adopts the use of VMT as the new transportation measure of environmental impacts and has published procedures and guidelines for how best to implement SB 743 and VMT analysis for projects occurring within the City (City of Santa Cruz 2020). VMT is analyzed based on the type of land use and then screened for non-significant transportation impacts. The guidelines closely follow the recommendations and procedures as stated in the OPR Technical Advisory document described in Section 4.12.2.2, State. For projects not screened out for non-significant transportation impacts, a VMT analysis utilizing the Santa Cruz County Travel Demand Model is required. The Santa Cruz County Travel Demand Model estimates daily trips based on various trip purposes within each TAZ as well as local demographics based on employment and population. Finally, TDM strategies and VMT reduction based on the land use analyzed are available to reduce VMT to less-than-significant levels.

### General Plan

As required by State of California law, the City of Santa Cruz has adopted the General Plan 2030 document as the most recent update to their general plan (City of Santa Cruz 2012). Within the General Plan, the Mobility Element sets forth policies to ease the ability of people and vehicles to move around the City (City of Santa Cruz 2012).

Specific policies identified in the Circulation Element are identified below, some of which are relevant to the Proposed Project. These policies outline the City's objectives to improve the transportation system.

- **M1.6.1** Design parking areas with adequate lighting, safe pedestrian circulation, adequate landscaping, a minimum amount of pavement, and adequate numbers of accessible spaces reserved for the physically disabled.
- **M2.1.1** Encourage diverse local and regional transit options.
- **M2.1.2** Encourage use of alternative modes of transportation.
- **M2.3.1** Design for and accommodate multiple transportation modes.
- **M3.1.1** Seek ways to reduce vehicle trip demand and reduce the number of peak hour vehicle trips.
- **M3.1.2** Encourage high occupant vehicle travel.
- **M3.1.3** Strive to maintain the established "level of service" D or better at signalized intersections.
- **M3.1.4** Accept a lower level of service and higher congestion at major regional intersections if necessary improvements would be prohibitively costly or result in significant, unacceptable environmental impacts.
- **M3.2.1** Maintain the condition of the existing road system.
- **M3.2.2** Ensure safe and efficient arterial operations.
- **M3.2.4** Improve traffic safety and flow. Ways to do this include installing and maintaining traffic signs, pavement markings, and median improvements.
- **M3.3.5** Require new development to be designed to discourage through traffic in adjacent neighborhoods and to encourage bicycle or pedestrian connections.
- **M3.3.7** Develop neighborhood traffic control plans where necessary to minimize traffic impacts on local streets.
- **M4.1.8** Remove or reduce obstructions and sidewalk tripping hazards, ensure accessibility to the physically disabled and elderly, and improve amenities along existing and potential pedestrian paths and walkways.

- **M4.1.9** Require landscaping in the development, replacement, and repair of sidewalks, including the placement of trees on private property and/or in tree wells on sidewalks.
- **M4.2.3** Facilitate bicycling connections to all travel modes.
- **M4.3.1** Promote the development of bike lanes on arterial and collector streets and in proposed and already adopted City plans.
- **M4.5.2** Design driveway access ramps to not interfere with the safe use of sidewalks.

#### Encroachment Permits

For any construction in the public right-of-way, the City requires an encroachment permit. The associated fee and permit process are described in the City's Municipal Code, Chapter 15.34, Encroachment Permits. Permits for construction in the public right of way require a City-approved traffic control plan showing the intended placement of all necessary signage and traffic control devices used to direct traffic around the site. The traffic control plan should include (City of Santa Cruz 2021):

- Conform to the California Manual on Uniform Traffic Control Devices (see Part 6 - Temporary Traffic Control).
- Be designed by a responsible representative of the permit applicant knowledgeable in the principles of proper temporary traffic control.
- Clearly show the work area.
- Include traffic control provisions to accommodate pedestrian, bicycle, and vehicular traffic that may be affected.
- Show any "no parking" areas needed to accommodate traffic and work in the work zone.
- If construction requires multiple phased traffic control configurations, a traffic control plan for each phase should be submitted.

### City of Capitola

As required by State of California law, the City of Capitola possesses a General Plan and Circulation Element (City of Capitola 2019). Within the General Plan, the Mobility Element establishes a policy framework for a balanced transportation system (City of Capitola 2019).

Specific policies identified in the Circulation Element are identified below, some of which are relevant to the Proposed Project. These policies outline the City of Capitola's objectives to improve the transportation system.

- **Policy MO-3.1 Arterial Streets.** Actively discourage diversion of traffic to local streets by maintaining maximum capacity on arterial streets and locating high traffic-generating uses on arterial streets.
- **Policy MO-3.3 Level of Service Standard.** Continue to maintain the established level of service C or better at intersections throughout Capitola, with the exception of the Village area, Bay Avenue, and 41st Avenue.
- **Policy MO-3.4 Reduced Standards.** Accept a lower level of service and higher congestion at major regional intersections if necessary improvements are considered infeasible, as determined by the Public Works Director, or result in significant, unacceptable environmental impacts.
- **Policy MO-4.1 General Design.** Ensure that new and reconfigured roadways and roadway improvements are safe, functional, and attractive.
- **Policy MO-4.2 Standards.** Require streets to be dedicated and improved in accordance with the adopted street standards. Any modifications from these standards shall require approval by the Public Works Director or Planning Commission, as appropriate.

- **Policy MO-4.4 Driveways.** Where appropriate and feasible, combine driveways serving small parcels to permit safer merging.
- **Policy MO-4.5 Parking Access.** Promote efficient ingress and egress to and from parking areas and promote efficient internal circulation between adjacent parking areas to reduce congestion on roadways.
- **Policy MO-7.1 Regional Cooperation.** Support regional efforts to improve the availability, affordability, reliability, and convenience of public transportation service in Capitola.
- **Policy MO-9.1 Sidewalks.** Maintain a complete system of sidewalks to provide for safe, attractive, and convenient pedestrian circulation in Capitola.

#### Encroachment Permits

For any person, firm or corporation encroaching into the public right-of-way, or water course to do work, store materials, erect or place any structure, the City of Capitola requires an encroachment permit. The associated fee and permit process are described in the City of Capitola Municipal Code, Section 12.56, Privately Installed Improvements on Public Property or Easements. As part of the encroachment permit process, the following are conditions of the permit (City of Capitola 2020):

- Notify the Public Works Department 24 hours prior to the start of work.
- Contractor shall implement traffic control plan.
- Full road closure is not permitted without prior authorization by the City Engineer.
- Restore all damaged curb, gutter, sidewalk, paving per city standard detail.
- Storage of materials in the public roadway is prohibited.
- Keep work site clear of debris and be aware of tracking mud, dirt, gravel into the street, cover all stockpiles and excavation spoils.
- Practice good housekeeping.

### City of Scotts Valley

As required by State of California law, the City of Scotts Valley possesses a General Plan and Circulation Element (City of Scotts Valley 1993). The General Plan is currently undergoing a revision and is expected to be updated in the near future. Within the General Plan, the Circulation Element establishes a policy framework for a balanced transportation system (City of Capitola 2019).

Specific objectives and policies as identified in the Circulation Element are identified below, some of which are relevant to the Proposed Project. These policies and objectives outline the City of Scott Valley's goal to create an integrated transportation system.

- **CG-85.** To provide the planning area with an integrated transportation system which serves private motorized vehicles, bicycles, equestrians, pedestrians and other forms of transit.
- **CP-95.** The City shall coordinate its transportation planning effort with appropriate agencies to promote an integrated transportation system which favors public transit and alternatives to the single occupancy vehicle.
- **CO-104.** Minimize the potential adverse effects associated with the development of an integrated transportation system.
- **CG-121.** To provide for a public street and highway system capable of accommodating existing and projected needs of the planning area.

- **CO-122.** Establish a street and highway system which serves the planning area that gives preference to local residents' safety and comfort.
- **CP-123.** The present street and highway system shall be improved and maintained to provide safe and efficient travel between various parts of the planning area and to individual properties.
- **CP-141.** The planning area's street and highway system shall be coordinated with street and highway network in adjacent areas.
- **CP-146**. The City shall identify and improve congested and critical traffic locations.
- **CA-150.** Require that all intersections maintain a Level of Service "C", or better, except as noted in the general plan.
- **CP-155.** On-street truck loading and unloading shall be prohibited on major arterials during peak traffic flow hours and discouraged at all other times.
- **CP-167.** Adequate provision shall be made for pedestrian crossings at appropriate locations.
- **CG-205**. To provide for a safe and efficient bicycle transportation system as a major form of travel or recreation.

**Encroachment Permits**

For any improvements located in the public right-of-way, the City of Scotts Valley requires an encroachment permit. The associated fee and permit process are described in the City of Scotts Valley Municipal Code, Chapter 12.08, Encroachments. As part of the encroachment permit process, all street improvements must abide by the City of Scotts Valley Standard Details and Specification (City of Scotts Valley 2017), including policies requiring that whenever lane closures or any form of traffic diversions are in place, a 6-foot wide lane for pedestrian and bicycle traffic must be provided. During times of heavy pedestrian traffic (i.e. school children, etc.) the use of a flag person for public safety is necessary. A traffic control plan shall be submitted for review if required by the Public Works Director/City Engineer (City of Scotts Valley 2021).

## 4.12.3 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to transportation. 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.

### 4.12.3.1 Standards of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to transportation are based on Section 15064.3 and Appendix G of the CEQA Guidelines, the OPR Technical Advisory document described in Section 4.12.2.2, State, the SB 743 Implementation Guidelines adopted by Santa Cruz County and the SB 743 Implementation Guidelines adopted by the City of Santa Cruz described in Section 4.12.2.3, Local, and the City of Santa Cruz CEQA Guidelines, as listed below. A significant impact would occur if the Proposed Project would:

A. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
B. Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).
C. Cause an increase in VMT which is greater than 15% below the regional average VMT.

D. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

E. Result in inadequate emergency access.

### 4.12.3.2 Analytical Methods

This section evaluates the potential transportation impacts associated with construction and operation of the Proposed Project. The analysis of potential impacts addresses the various project and programmatic components listed in Table 4.12-1, which are described in detail in Chapter 3, Project Description.

**Table 4.12-1. 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 | | ✓ |

Within this analysis, both project and programmatic components are evaluated for their impacts in relation to temporary construction impacts and impacts from permanent operations and maintenance. The peak construction phases of the Proposed Project are analyzed for transportation impacts, based on the construction scenario developed in Section 4.2, Air Quality, for each project and programmatic component. The complete construction assumption details located in Appendix E were used to calculate the peak construction phase for the project and programmatic components.

Once Proposed Project construction is complete, operations would entail a minimal increase in on-road vehicle trips associated with routine inspection and maintenance of the new facilities by City staff. As indicated in Chapter 3, Project Description, it is anticipated that up to three new staff would be needed to operate under Proposed Project conditions: one for the Agreed Flows implementation and two for the new ASR facilities maintenance. An additional daily vehicle trip was also included for Beltz ASR maintenance. For long-term operations, it was conservatively estimated that an increase of up to eight daily one-way trips would be generated in support of the project and

programmatic components. Therefore, given this nominal increase in traffic volumes, this section provides a qualitative assessment of operation and maintenance activities associated with the Proposed Project.

Impacts have been evaluated with respect to the standards of significance, as described above. In the event adverse environmental impacts would occur subsequent to consideration of applicable policies and regulations and Proposed Project standard operational and construction practices described in Chapter 3, Project Description, impacts would be potentially significant and mitigation measures would be provided to reduce impacts to less-than-significant levels.

### Application of Relevant Standard Practices

The Proposed Project does not include any standard operational or construction practices that are relevant to transportation.

## 4.12.3.3 Project Impact Analysis

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

**Impact TRA-1: Conflict with Program, Plan, Ordinance, or Policy Addressing the Circulation System (Significance Standard A).** Construction and operation of the Proposed Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. ***(Less than Significant)***

**Construction**

Water Rights Modifications

Water rights modifications would not directly result in construction of new or upgraded infrastructure and therefore would not directly conflict with policies addressing the circulation system. As such, this project component would result in no direct impacts.

The following analysis evaluates the potential indirect impacts related to conflicts with adopted policies addressing the circulation system 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

This section addresses the potential that Beltz ASR facilities, as well as the combined effect of all project and programmatic infrastructure components, could result in plan and policy conflicts addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

**Beltz ASR Facilities.** Construction of the Beltz ASR project component was evaluated for study area and roadway network impacts and for potential conflicts with key policies addressing the circulation system. The Institute of Transportation Engineers' (ITE) Trip Generation, 10th Edition does not contain trip rates for the construction-related activities that would be associated with Beltz ASR. As such, trip generation estimates for construction projects were based on the peak number of workers and trucks that would be required for the proposed construction activities. Construction traffic includes the number of workers and the amount of delivery (vendor) and haul truck traffic that would be generated to and from the site daily and during the AM and PM peak commuting hours. The maximum number of construction-related

trips is expected to occur over a series of construction phases that overlap to occur concurrently. Therefore, the peak construction phase overall was utilized to calculate the estimate trip generation for the Beltz ASR project component.

All Beltz ASR facility locations are within unincorporated Santa Cruz County (Figure 3-4 in Chapter 3, Project Description). However, construction traffic would use roadways immediately adjacent to the Beltz ASR sites, such as 41st Avenue, which is partially within the jurisdiction of the City of Capitola, and Soquel Drive, which is partially within the jurisdiction of the City of Santa Cruz. Construction would begin sequentially for each Beltz ASR facility location; however, construction overlap may occur between several Beltz ASR facilities. Construction could start with Beltz 9 ASR facility in May 2022 and end with Beltz 10 ASR facility in March 2023. The peak construction phase identified is Beltz 8 ASR, which possesses several construction components that will be occur in September 2022 and are listed below in Table 4.12-2. The construction activities would occur primarily between 8:00 a.m. and 5:30 p.m., Monday through Friday; however, some construction activities may occur outside of these hours. Work hours may shift depending on the phase of construction. Construction staging would occur on-site to the extent possible; however, staging could require parking immediately adjacent to the construction sites and could encroach into public roadways. To provide a conservative analysis, all workers were assumed to arrive during the AM peak hour and leave the site during the PM peak hour and all truck trips were averaged for an 8-hour workday to estimate peak hour trips. The number of truck trips were converted using Passenger Car Equivalency (PCE) factors to more accurately account for the effect of trucks on the circulation system. All truck trips were converted to PCE trips using a factor of 2.0 PCE for vendor trucks and 3.0 PCE for haul trucks. The trip generation estimates of the overlapping construction phases that constitute the peak construction phase are shown in Table 4.12-2 below.

## Table 4.12-2. Peak Construction Trip Generation Estimates for Beltz Aquifer Storage and Recovery

| Vehicle Type | Daily Quantity | | Daily Trips [1] | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *In* | *Out* | *Total* | *In* | *Out* | *Total* |
| ***Beltz 8 ASR Facility [2] – Non-PCE Adjusted Trips*** | | | | | | | | | |
| *Injection Line, Backflow, and Meter Install; Electrical Conduit and Control Installation; Storm Drain Line Connection* | | | | | | | | | |
| Construction Workers | 4 | workers | 8 | 4 | 0 | 4 | 0 | 4 | 4 |
| Vendor trucks | 2 | trucks | 4 | 2 | 0 | 2 | 0 | 2 | 2 |
| Haul trucks | 1 | trucks | 2 | 1 | 0 | 1 | 0 | 1 | 1 |
| ***Non-PCE Trips*** | | | ***14*** | ***7*** | ***0*** | ***7*** | ***0*** | ***7*** | ***7*** |
| ***Beltz 8 ASR Facility [2] – PCE Adjusted Trips*** | | | | | | | | | |
| *Injection Line, Backflow, and Meter Install; Electrical Conduit and Control Installation; Storm Drain Line Connection* | | | | | | | | | |
| Construction Workers | 4 | workers | 8 | 4 | 0 | 4 | 0 | 4 | 4 |
| Vendor trucks | 4 | trucks | 8 | 4 | 0 | 4 | 0 | 4 | 4 |
| Haul trucks | 3 | trucks | 6 | 3 | 0 | 3 | 0 | 3 | 3 |
| ***PCE Trips*** | | | ***22*** | ***11*** | ***0*** | ***11*** | ***0*** | ***11*** | ***11*** |

**Notes:** ASR = aquifer storage and recovery; PCE = Passenger Car Equivalents.

1 Daily trips represent the number of trips to and from the project component site (i.e., two trips represent one vehicle traveling to the work area and leaving the work area).

2 The construction of several other Beltz ASR facilities may overlap during construction of the Beltz ASR 8 construction components, however the maximum overlap in terms of traffic generated will be identical as is shown above.

As shown in Table 4.12-2, the Beltz ASR project component peak phase of construction activities would generate 14 daily trips, 7 AM peak hour trips (7 inbound and 0 outbound), and 7 PM peak hour trips (0 inbound and 7 outbound). With the application of PCE factors to truck trips, the project component would generate 22 total PCE daily trips, and 11 PCE trips during the AM peak hour (11 inbound and 0 outbound) and 11 PCE trips during the PM peak hour (0 inbound and 11 outbound). Construction related traffic would be temporary and short term.

The transportation analysis of the peak construction overlapping phases of the Beltz ASR project component indicates that the expected number of peak hour and daily trips would not create a measurable impact to any roadway or intersection in the area and would not conflict with County of Santa Cruz's LOS policy (see Section 4.12.2.3, Local). The Beltz ASR project component would not increase roadway capacity, generate a permanent increase in traffic, or change traffic patterns that could cause an impact to the circulation system including transit, roadway, bicycle, and pedestrian facilities and therefore would not conflict with adopted policies addressing the circulation system. As such, construction of this project component of the Proposed Project would result in a less-than-significant impact.

**All Infrastructure Components.** The construction of the project and programmatic infrastructure components, including Beltz ASR, was evaluated for study area and roadway network impacts and for potential conflicts with key policies addressing the circulation system. The overlapping construction phases were identified for all project and programmatic infrastructure components, including the Beltz ASR project component, since the construction for these components could occur concurrently in the same geographic areas within the study area. Therefore, the peak construction phase for all project and programmatic components were combined to calculate the estimated trip generation. The locations of project and programmatic components would occur within unincorporated Santa Cruz County, the City of Capitola, and the City of Santa Cruz (see Figure 3-4 in Chapter 3, Project Description). Construction traffic would use roadways immediately adjacent to the specific project and programmatic components and would use on-site construction staging and parking; however, staging could require parking immediately adjacent to the constructions sites and could encroach into public roadways.

For the Beltz ASR project component, construction would start with Beltz 9 ASR facility in May 2022 and end with Beltz 10 ASR in March 2023. The construction activities would occur in one shift of approximately 9 hours and 30 minutes between 8:00 a.m. and 5:30 p.m., Monday through Friday. Work hours could shift depending on the phase of construction. Construction for the programmatic infrastructure components would start April 2022 and end December 2028. The construction activities are assumed to occur over a standard 8-hour shift, Monday through Friday. Work hours could shift depending on the phase of construction. To provide a conservative analysis, all workers were assumed to arrive during the AM peak hour and leave the site during the PM peak hour and all truck trips were averaged for an 8-hour workday to estimate peak hour trips. The number of truck trips were converted using PCE factors to more accurately account for the effect of trucks on the circulation system. All truck trips were converted to PCE trips using a factor of 2.0 PCE for vendor trucks and 3.0 PCE for haul trucks. The trip generation estimates of the overlapping construction phases that constitute the peak construction phase are shown in Table 4.12-3 below. It should be noted that not all components and construction phases are shown in the table; only overlapping construction phases that constitute the peak construction phase are shown.

## Table 4.12-3. Peak Construction Trip Generation Estimates for Project and Programmatic Infrastructure Components

| Vehicle Type | Daily Quantity | | Daily Trips[1] | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *In* | *Out* | *Total* | *In* | *Out* | *Total* |
| ***Beltz 8 ASR Facility – Non-PCE Adjusted Trips*** | | | | | | | | | |
| *Tank Construction* | | | | | | | | | |
| Construction Workers | 4 | workers | 8 | 4 | 0 | 4 | 0 | 4 | 4 |
| Vendor trucks | 1 | trucks | 2 | 1 | 0 | 1 | 0 | 1 | 1 |
| Haul trucks | 0 | trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ***Total Beltz 8 ASR Non-PCE Trips*** | | | ***10*** | ***5*** | ***0*** | ***5*** | ***0*** | ***5*** | ***5*** |
| ***Beltz 8 ASR Facility – PCE Adjusted Trips*** | | | | | | | | | |
| *Tank Construction* | | | | | | | | | |
| Construction Workers | 4 | workers | 8 | 4 | 0 | 4 | 0 | 4 | 4 |
| Vendor trucks | 2 | trucks | 4 | 2 | 0 | 2 | 0 | 2 | 2 |
| Haul trucks | 0 | trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ***Total Beltz 8 ASR PCE-Trips*** | | | ***12*** | ***6*** | ***0*** | ***6*** | ***0*** | ***6*** | ***6*** |
| ***City/SqCWD/CWD Intertie (Non-PCE Adjusted Trips)*** | | | | | | | | | |
| *Pipeline Installation* | | | | | | | | | |
| Construction Workers | 4 | workers | 8 | 4 | 0 | 4 | 0 | 4 | 4 |
| Vendor trucks | 2 | trucks | 4 | 2 | 0 | 2 | 0 | 2 | 2 |
| Haul trucks | 2 | trucks | 4 | 2 | 0 | 2 | 0 | 2 | 2 |
| *Pipeline Installation Non-PCE Trips* | | | *16* | *8* | *0* | *8* | *0* | *8* | *8* |
| *Paving* | | | | | | | | | |
| Construction Workers | 4 | workers | 8 | 4 | 0 | 4 | 0 | 4 | 4 |
| Vendor trucks | 2 | trucks | 4 | 2 | 0 | 2 | 0 | 2 | 2 |
| Haul trucks | 0 | trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Paving Non-PCE Trips* | | | *12* | *6* | *0* | *6* | *0* | *6* | *6* |
| *Architectural Coating* | | | | | | | | | |
| Construction Workers | 2 | workers | 4 | 2 | 0 | 2 | 0 | 2 | 2 |
| Vendor trucks | 2 | trucks | 4 | 2 | 0 | 2 | 0 | 2 | 2 |
| Haul trucks | 0 | trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Architectural Coating Non-PCE Trips* | | | *8* | *4* | *0* | *4* | *0* | *4* | *4* |
| ***Total Intertie Non-PCE Trips*** | | | ***36*** | ***18*** | ***0*** | ***18*** | ***0*** | ***18*** | ***18*** |
| ***City/SqCWD/CWD Intertie (PCE-Adjusted Trips)*** | | | | | | | | | |
| *Pipeline Installation* | | | | | | | | | |
| Construction Workers | 4 | workers | 8 | 4 | 0 | 4 | 0 | 4 | 4 |
| Vendor trucks | 4 | trucks | 8 | 4 | 0 | 4 | 0 | 4 | 4 |
| Haul trucks | 6 | trucks | 12 | 6 | 0 | 6 | 0 | 6 | 6 |
| *Pipeline PCE Trips* | | | *28* | *14* | *0* | *14* | *0* | *14* | *14* |

Table 4.12-3. Peak Construction Trip Generation Estimates for Project and Programmatic Infrastructure Components (continued)

| Vehicle Type | Daily Quantity | | Daily Trips[1] | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *In* | *Out* | *Total* | *In* | *Out* | *Total* |
| *Paving* | | | | | | | | | |
| Construction Workers | 4 | workers | 8 | 4 | 0 | 4 | 0 | 4 | 4 |
| Vendor trucks | 4 | trucks | 8 | 4 | 0 | 4 | 0 | 4 | 4 |
| Haul trucks | 0 | trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving PCE Trips | | | 16 | 8 | 0 | 8 | 0 | 8 | 8 |
| *Architectural Coating* | | | | | | | | | |
| Construction Workers | 2 | workers | 4 | 2 | 0 | 2 | 0 | 2 | 2 |
| Vendor trucks | 4 | trucks | 8 | 4 | 0 | 4 | 0 | 4 | 4 |
| Haul trucks | 0 | trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Architectural Coating PCE Trips | | | 12 | 6 | 0 | 6 | 0 | 6 | 6 |
| **Total Intertie PCE Trips** | | | **56** | **28** | **0** | **28** | **0** | **28** | **28** |
| **Total Combined Non-PCE Trips** | | | **46** | **23** | **0** | **23** | **0** | **23** | **23** |
| **Total Combined PCE Trips** | | | **68** | **34** | **0** | **34** | **0** | **34** | **34** |

**Notes:** CWD = Central Water District; PCE = Passenger Car Equivalents; SqCWD = Soquel Creek Water District.

[1] Daily trips represent the number of trips to and from the project and programmatic sites (i.e., two trips represent one vehicle traveling to the work area and leaving the work area).

As shown in Table 4.12-3, with the program components in addition to the Beltz ASR project component peak phase of construction activities would generate 46 daily trips, 23 AM peak hour trips (23 inbound and 0 outbound), and 23 PM peak hour trips (0 inbound and 23 outbound). With the application of PCE factors to truck trips, the project would generate 68 total PCE daily trips, and 34 PCE trips during the AM peak hour (34 inbound and 0 outbound) and 34 PCE trips during the PM peak hour (0 inbound and 34 outbound). Construction related traffic would be temporary and short term.

The transportation analysis of the peak construction overlapping phases of the project and programmatic components indicates that the expected number of peak hour and daily trips would not create a measurable impact to any roadway or intersection in the area and would not conflict with applicable local agency LOS policies (see Section 4.12.2.3, Local). The project and program infrastructure components would not increase roadway capacity, generate a permanent increase in traffic, or change traffic patterns that could cause an impact to the circulation system including transit, roadway, bicycle, and pedestrian facilities and therefore would not conflict with adopted policies addressing the circulation system. As such, construction of the project and programmatic components of the Proposed Project would result in a less-than-significant impact.

### Operation

Once Proposed Project infrastructure construction is complete, operations would entail a minimal increase in on-road vehicle trips associated with routine inspection and maintenance of the new and upgraded facilities by City staff. As indicated in Section 4.12.3.2, Analytical Methods, it is anticipated that up to three new staff would be needed, one for the Agreed Flows implementation and two for the new ASR facilities maintenance. An additional daily vehicle trip was also included for Beltz ASR maintenance. For long-term operation of the Proposed Project, it

was conservatively estimated that an increase of up to eight daily one-way trips would be generated in support of the project and programmatic components. Due to the nominal increase in trips generated during operations and maintenance, the roadway operations in the area would not substantially differ from existing conditions. Therefore, operation of the Proposed Project would not conflict with adopted policies, plans, or programs addressing the circulation system including transit, roadway, bicycle, and pedestrian facilities. As such, operation of the project and programmatic components of the Proposed Project would result in a less-than-significant impact.

### Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to conflicts with adopted policies addressing the circulation system, and therefore, no mitigation measures are required.

**Impact TRA-2: Vehicle Miles Traveled (Significance Standards B and C).** Construction and operation of the Proposed Project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b) or cause an increase in VMT which is greater than 15% below the regional average VMT. ***(Less than Significant)***

### Water Rights Modifications

The water right modifications of the Proposed Project would not directly result in construction or operation of new facilities and therefore would not directly generate new VMT or conflict with or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b). Therefore, this project component would have no direct impacts.

The following analysis evaluates the potential indirect impacts related to increased VMT 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

CEQA Guidelines Section 15064.3(b) focuses on VMT for determining the significance of transportation impacts. It is further divided into four subdivisions: (1) land use projects, (2) transportation projects, (3) qualitative analysis, and (4) methodology. The project and programmatic infrastructure components of the Proposed Project would be categorized under (3), qualitative analysis, as this Subdivision (b)(3) recognizes that lead agencies may not be able to quantitatively estimate VMT for every project type. In these situations, lead agencies are directed to evaluate factors such as the availability of transit, proximity to other destinations, and other factors that may affect the amount of driving required by the project. Additionally, Subdivision (b)(3) indicates that a qualitative analysis of construction traffic is often appropriate. A qualitative analysis of VMT is provided in this analysis as the Proposed Project consists of project and programmatic infrastructure components that would generate temporary construction-related traffic and nominal operational-related traffic, as described in Impact TRA-1.

Furthermore, OPR's Technical Advisory provides several "screening thresholds" that may be applied to identify land use projects that should be expected to cause a less-than-significant impact without detailed study; specifically, the "screening threshold for small projects" states that projects that generate fewer than 110 daily trips generally may be assumed to cause a less-than-significant impact (OPR 2018). As of October 2020, the County of Santa Cruz has published guidelines for the implementation of SB 743, along with screening criteria that uses the guidance published within the OPR technical advisory as a reference point. Specifically, the guidance excludes from further analysis "small projects" that generate fewer than 100 net new trips per day. The City of Santa Cruz also has

developed implementation guidelines for SB 743, including the same screening criteria that excludes "small projects" that generate less than 110 trips per day from further analysis, which matches the recommended guidance within the OPR Technical Advisory. As shown in Table 4.12-3 in Impact TRA-1, during the peak overlapping construction phases, the project and programmatic infrastructure components would result in approximately 68 total PCE daily trips within the study area and roadway network, which includes approximately 12 total PCE daily trips for Beltz ASR. Once construction is completed, VMT would return to pre-project conditions with the implementation of the project and programmatic infrastructure components. Therefore, as the project and programmatic infrastructure components would not conflict with or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b) or cause an increase in VMT which is greater than 15% below the regional average VMT, impacts would be less than significant.

### Mitigation Measures

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

**Impact TRA-3: Geometric Design Hazards (Significance Standard D).** Construction and operation of the Proposed Project would not substantially increase hazards due to a geometric design feature or incompatible use. ***(Less than Significant)***

### Water Rights Modifications

The water right modifications of the Proposed Project would not directly result in construction or operation of new facilities and therefore would not result in direct impacts associated with hazardous design features or incompatible land uses. Therefore, this project component would have no direct impacts.

The following analysis evaluates the potential indirect impacts related to hazardous design features or incompatible land uses 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

The construction of the project and programmatic infrastructure components of the Proposed Project would result in a temporary increase in local traffic as a result of construction-related workforce traffic, material deliveries, and construction activities, as described in Impact TRA-1. The primary off-site impacts from the movement of construction trucks would include short-term and intermittent effects on traffic operations because of slower movements and larger turning radii of delivery and haul trucks compared to passenger vehicles. All construction traffic and parking would occur on-site or within the areas immediately adjacent to the project and programmatic infrastructure component sites (as shown in Figure 3-4 and Figures 3-4a through 3-4i, in Chapter 3, Project Description). The intertie pipeline components would use public roadways for pipeline installation, intermittent staging and parking. Any roadway blockages for larger construction trucks would be temporary, would occur with flagging and safe maneuvers, and would be under the provisions of a traffic control plan or other encroachment permit requirements, as described in Impact TRA-4 and therefore would not create hazardous roadway conditions.

Once operational, the project and programmatic infrastructure components would generate nominal traffic and vehicle trips associated with routine operations and maintenance of each facility, as described in Impact TRA-1, and therefore would not create hazardous roadway conditions. As such, no sharp curves, dangerous intersections, or incompatible uses would be introduced during construction and operation of the project and programmatic

infrastructure components of the Proposed Project. Therefore, the project and programmatic infrastructure components would have less-than-significant impacts.

### Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to hazardous design features or incompatible land uses, and therefore, no mitigation measures are required.

**Impact TRA-4: Emergency Access (Significance Standard E).** Construction of the Proposed Project would not result in inadequate emergency access. ***(Less than Significant)***

### Water Rights Modifications

The water right modifications of the Proposed Project would not directly result in construction or operation of new facilities and therefore would not result in direct impacts associated with inadequate emergency access. Therefore, this project component would have no direct impacts.

The following analysis evaluates the potential indirect impacts related to inadequate emergency access 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

The project and programmatic infrastructure components of the Proposed Project would be sited at multiple locations within unincorporated Santa Cruz County, the City of Santa Cruz, the City of Capitola and the City of Scotts Valley. All construction traffic that would be generated as a result of the project and programmatic infrastructure components would be temporary, as indicated in Impact TRA-1. Construction and staging areas would be located to not block any egress or ingress points for the sites. The project and programmatic infrastructure sites and areas of construction would be accessible to emergency responders and associated vehicles during construction and operation of the Proposed Project.

Construction of some of the proposed project and programmatic infrastructure components could require partial road closures or access limitations in public roadways on a temporary and periodic basis during the construction period. Where construction would take place in public roadways, encroachment permits would need to be obtained in most cases from the applicable local agency for work done within the public right-of-way, as described in Section 4.12.2.3, Local. The issuance of encroachment permits requires submission of traffic control plans in Santa Cruz County and the cities of Santa Cruz and Capitola. While the City of Scotts Valley specifies the need for a traffic control plan only if required by the Public Works Director/City Engineer, other requirements of encroachment permits include conducting all street improvements in accordance with the City of Scotts Valley Standard Details and Specification, which include policies for addressing lane closures or any form of traffic diversions. Implementation of these plans and requirements would ensure that access for emergency vehicles would be maintained during construction.

Therefore, the construction of the project and program infrastructure components as part of the Proposed Project would comply with all applicable local requirements and would not result in inadequate emergency access. Similarly, the Proposed Project would have limited operational traffic and vehicle trips associated with routine

maintenance of facilities, as described in Impact TRA-1. Therefore, impacts associated with inadequate emergency access would be less than significant.

**Mitigation Measures**

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

### 4.12.3.4 Cumulative Impacts Analysis

This section provides an evaluation of cumulative transportation 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 area for the analysis of cumulative impacts related to transportation consists of the proposed project and programmatic infrastructure component sites and areas along various public roadways that would support haul truck, vendor truck, and worker vehicle access to the component sites.

As the water rights modifications of the Proposed Project would have no direct transportation impacts, as described in Impacts TRA-1 through TRA-4, this project component would not have the potential to directly contribute to cumulative transportation impacts and therefore is not further evaluated.

**Impact TRA-5: Cumulative Transportation Impacts (Significance Standards A, B, C, D, and E).** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to transportation. ***(Less than Significant)***

**Conflicts with Plans and Policies**

The construction of the proposed project and programmatic infrastructure components would occur over several phases, beginning in 2022 and ending in 2028. As shown in Table 4.0-2, a number of cumulative projects are located at or near the infrastructure component sites and could be under construction during this same period of time. Table 4.0-2 displays the estimated construction schedule for cumulative projects, where known. Construction of the project and program infrastructure components in combination with other cumulative projects would not be expected to conflict with adopted policies addressing the circulation system given the temporary nature of construction, the limited amount of vehicle trips expected to be generated in the study area from the Proposed Project (see Impact TRA-1) and cumulative projects, and the regulations and controls on construction activities (see Impacts TRA-3 and TRA-4). Therefore, cumulative impacts related to such conflicts during construction would be less than significant.

Operation of the proposed project and programmatic infrastructure components, along with cumulative projects (see Table 4.0-2) could potentially result in conflicts with adopted policies, plans, or programs addressing the circulation system including transit, roadway, bicycle, and pedestrian facilities related to one or more of the cumulative projects, which would be considered a potentially significant cumulative impact. However, the Proposed Project's contribution to this impact would not be cumulatively considerable. As indicated in Impact TRA-1, due to the nominal increase in trips generated during operations and maintenance, the roadway operations in the area would not substantially differ from existing conditions and therefore, operation of the Proposed Project would not conflict with adopted policies, plans, or programs addressing the circulation system including transit, roadway,

bicycle, and pedestrian facilities. As such, the Proposed Project would have a less-than-significant cumulative impact related to conflicts with adopted policies, plans, or programs addressing the circulation system.

#### Vehicle Miles Traveled

According to OPR's Technical Advisory, a project that falls below the screening threshold (see Impact TRA-2) aligns with long-term environmental goals and relevant plans and would have no cumulative impact distinct from the project impact (OPR 2018). Due to the number of cumulative projects occurring within the region, as well as the wide variety of cumulative projects that have the potential to generate VMT, it is possible that one or more of the cumulative projects identified in Table 4.0-2 could be determined to have a significant cumulative VMT impact, based on comparison to the 2040 Future Year model scenario used by the City and County in their respective VMT guidelines, described in Section 4.12.2.3, Local, and in Impact TRA-2. While that is true, the University of California, Santa Cruz (UCSC) 2021 Long Range Development Plan (LRDP) Draft EIR reported that the 2021 LRDP would not result in a significant cumulative VMT impact (UCSC 2021). Regardless, as described under Impact TRA-2, the project and programmatic components of the Proposed Project, would generate fewer than 110 daily vehicle trips during the peak construction overlapping phase and once construction is completed, VMT would return to pre-project conditions with the implementation of the project and programmatic infrastructure components. Therefore, the Proposed Project would not conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) and cumulative impacts related to VMT would be less than significant.

#### Geometric Design Hazards and Emergency Access

Cumulative projects located at or near the infrastructure component sites could be under construction during the same period of time. Table 4.0-2 displays the estimated construction schedule for cumulative projects, where known. Construction of the project and program infrastructure components in combination with other cumulative projects would not be expected to create hazardous roadway conditions or inadequate emergency access given the temporary nature of construction and the implementation of traffic control plans and/or other requirements of encroachment permits, as described in Impacts TRA-3 and TRA-4. As such, cumulative impacts related to emergency access and roadway hazards would be less than significant.

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# 4.13 Utilities and Energy

This section describes the existing utilities and energy 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 of the Santa Cruz Water Rights Project (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 utilities and energy were received from the Soquel Creek Water District and several 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.

## 4.13.1 Existing Conditions

### 4.13.1.1 Study Area

The Proposed Project involves the water system and the areas served of the City of Santa Cruz (City)[1] and 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), as shown on Figure 3-4 in Chapter 3, Project Description. The Proposed Project is located within Santa Cruz County and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Figure 3-1 in Chapter 3, Project Description). The study area for utilities and energy includes the above noted areas served by the City and water service areas of the neighboring water agencies, as well as the proposed project and programmatic infrastructure component sites where construction and ground disturbance could occur and where new or upgraded facilities would be located (see Figure 3-4 in Chapter 3, Project Description). These sites include the following: aquifer storage and recovery (ASR) sites where known, intertie improvement sites, Felton Diversion fish passage improvement site, and the Tait Diversion and Coast Pump Station improvement 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 ASR new facilities, site-specific conditions are not available.

### 4.13.1.2 Water Supply

#### City of Santa Cruz

The City provides drinking water from a variety of sources to residents of the City and surrounding areas. The areas served by the City include the City, a portion of the City of Capitola, and portions of unincorporated Santa Cruz County in Live Oak, Soquel, and along Graham Hill Road, as well as limited service along the coast north of the City,[2] primarily along State Highway 1. The City serves approximately 25,000 connections in an approximate 20-square mile area. The current population residing in the City's water service area is estimated as 95,251 people. Approximately two thirds of

[1] The City owns and operates a water system that diverts and serves water both within the City limits and outside of those limits. References to the City's water system, rights and supplies therefore refer to areas both inside and outside of the City limits.

[2] The City's service on the coast north of the City consists of limited numbers of connections that primarily derive from the City's agreements with landowners along its water pipelines. The City also provides approximately 12 mgy of raw water for agricultural irrigation along the coast north of the City.

the total population, almost 64,000, lives inside the City limits. Within the City, about 9,100 people including students, faculty, staff, and their families reside on the University of California Santa Cruz campus (City of Santa Cruz 2016).

The City's water supply is primarily from surface water sources with some groundwater production in the Santa Cruz Mid-County Groundwater Basin. The City's water system is comprised of four main sources of supply: San Lorenzo River diversions; North Coast spring and creeks; Newell Creek (Loch Lomond Reservoir); and the Beltz well system. Between 2005 and 2015, the North Coast sources represented approximately 26% of the total water supply, the San Lorenzo River represented approximately 55%, Newell Creek (Loch Lomond Reservoir) represented approximately 14%, and Beltz wells contributed the remaining approximately 5% (City of Santa Cruz 2016).

The San Lorenzo River sources include the Tait Diversion adjacent to the Coast Pump Station on State Highway 9 near the City limits and the Felton Diversion, which is an inflatable dam and intake structure built in 1974, located about 6 miles upstream from the Tait Diversion. When the Felton Diversion is being operated, water is pumped through the Felton Booster Station to Loch Lomond Reservoir. Loch Lomond Reservoir is located east of the town of Ben Lomond in the Santa Cruz Mountains and has a maximum capacity of 2,810 million gallons. The North Coast water sources consist of surface diversions from three coastal creeks and a natural spring located approximately 6 to 8 miles northwest of downtown Santa Cruz: Liddell Spring, Laguna Creek, Reggiardo Creek, and Majors Creek.

The Beltz well system consists of four production wells and two water treatment plants located in the eastern portion of the areas served by the City within the Santa Cruz Mid-County Groundwater Basin. Even though groundwater constitutes only about 5% of the City's water supply, it is a crucial component of the water system for meeting peak season demands, maintaining pressure in the eastern portion of the distribution system, and weathering dry periods (City of Santa Cruz 2016). The City and SqCWD, as well as CWD, are member agencies of the Santa Cruz Mid-County Groundwater Agency (MGA), which is responsible for implementing the mandates set forth in the 2014 Sustainable Groundwater Management Act in the Santa Cruz Mid-County Basin, as further described below.

The City stores water in Loch Lomond Reservoir to help meet dry-season water demand and provide back-up supply during winter storms when river diversions can be problematic due to turbidity issues. The City follows a variety of policies, procedures and legal restrictions in operating its water supply system, and the amount of water produced from each of the City surface water sources is controlled by different water rights and operational agreements. In general, the water supply system is managed to use available flowing sources to meet daily demands as much as possible. Groundwater and stored water from Loch Lomond Reservoir are used primarily in the summer and fall months when flows in the coast and river sources decline.

The City's adopted 2015 Urban Water Management Plan (UWMP) reported that annual water production had fluctuated from a high of nearly 3,800 million gallons per year (mgy) in 2006 to a low of approximately 2,500 mgy in 2015 (City of Santa Cruz 2016). The 2015 water production rate represents production volumes experienced under severe drought conditions during a second year of rationing with local emergency water shortage regulations and state-mandated restrictions in effect. In 2018, water demand in the areas served by the City totaled approximately 2,650 mgy (M.Cubed 2019). The 2015 UWMP estimates a 20-year water demand at approximately 3,200 mgy in the year 2035 based on deliveries for average years, projected water demands, and available surface water flows consistent with ecosystem protection goals regarding fish habitat. It is also noted that the current water demand projection for the University of California, Santa Cruz (UCSC) for the year 2040 is approximately 20 mgy less than the 308 mgy forecast for UCSC in the City's 2015 UWMP based on the water demand projection for the currently proposed 2021 Long Range Development Plan (LRDP) (UCSC 2021).

The City's primary water supply reliability issue relates to potential shortfalls during dry and critically dry years. The City's water supply is almost exclusively from local surface water sources whose yield varies from year to year depending on the amount of rainfall received. The UWMP predicts that projected water demand will be met for 90% of all normal water years and that existing and planned sources of water available to the City will meet the predicted service area total annual water demand of about 3,200 mgy. The UWMP's projections for the year 2035 show a shortfall of approximately 40 mgy during normal periods, 528 mgy during single dry year periods, and 1,250 to 1,639 mgy during multiple dry year periods. The City had not previously seen shortages in normal water years, but the UWMP identified potential reductions in water production for ecosystem protection (releases for fishery protection), which are similar to the Agreed Flows included in the Proposed Project. However, operationally the City predicts sufficient water supplies in normal years to meet demand even though a slight deficit seems to exist in the modeled projections (City of Santa Cruz 2016).

The City has been pursuing possible new or supplemental water sources for the past several decades to meet demand during dry and multiple-dry year periods. The most recent strategies were developed as a result of a two-year Water Supply Advisory Committee (WSAC) process as explained in Section 3.2.1, Water Supply Planning Background, of this EIR. Four primary Water Supply Augmentation Strategy portfolio elements were identified that were subsequently included in the UWMP that are summarized below; see Chapter 5, Growth Inducement, for further details:

- **Element 0: Additional water conservation** with a goal of achieving an additional 200 to 250 mgy of demand reduction by 2035 by expanding water conservation programs. An updated Water Conservation Master Plan was completed in 2016 that includes 35 implementation measures, many of which are already underway (City of Santa Cruz 2016).
- **Element 1: Passive recharge of regional aquifers** by working to develop agreements for delivering surface water to the SqCWD and/or the SVWD[3] so they can rest their groundwater wells, help the aquifers recover, and potentially store water for future use by the City in dry periods. To date, the City and SqCWD have operated a pilot water transfer program that expired at the end of 2020, which conveyed treated North Coast source water from the City's Graham Hill Water Treatment Plant (GHWTP) to the SqCWD for the purpose of passively recharging the groundwater basin. Pilot transfers were provided to a limited portion of the SqCWD service area during the 2018/2019 and 2019/2020 winter and spring wet season during which time water quality monitoring and operational data were collected. In February and March 2021, the City and SqCWD, respectively, approved extension of the program for another five-year term through the wet seasons of water years 2022 (October 1, 2021) through water year 2026 (May 1, 2026) and increased the price of the transferred water. No other modifications to the agreement were made.
- **Element 2: Active recharge of regional** by using existing infrastructure and potential new infrastructure in the Purisima aquifer in the Soquel-Aptos Basin (now referred to as the Santa Cruz Mid-County Groundwater Basin), in the Santa Margarita/Lompico/Butano aquifers (now referred to as the Santa Margarita Groundwater Basin) in the Scotts Valley area, or in both to store water that can be available for use by the City in dry periods. An aquifer storage and recovery (ASR) study is underway that is looking at regional options for groundwater injection, storage, and future extraction in order to actively recharge regional aquifers. A pilot ASR project is currently underway utilizing the City's existing Beltz wells.
- **Element 3: A potable water supply using advanced-treated recycled water** as its source as a supplemental or replacement supply in the event the groundwater storage strategies described above prove insufficient to meet the City supplemental water supply goals. In the event advanced-treated recycled water does not

[3] While WSAC recommendations considered only delivering surface water to SqCWD and SVWD, current conceptual-level planning considers delivering surface water to SLVWD and CWD as well.

meet the City's needs, desalination would become Element 3. A recycled water feasibility study was completed in June 2018, and a phase two recycled water study is being prepared to further develop alternatives for a comparative analysis with ASR and in-lieu projects. A desalination project feasibility update was completed in August 2018. In November of 2018, City Council accepted staff recommendations to prioritize recycled water over desalination, understanding that if the other alternative water supply augmentation strategies being considered are not able to meet the plan's goal, desalination would be reconsidered.

### San Lorenzo Valley Water District

SLVWD provides water service to a population of approximately 19,700 in several communities within the San Lorenzo Valley (LAFCO 2020). The District's legal boundaries encompass three service areas that cover approximately 61 square miles (WCS 2016a). Additionally, the District provides sewer service to the Bear Creek Estates area within the District. At present, SLVWD provides water service to approximately 8,000 connections in the communities of Boulder Creek, Brookdale, Ben Lomond, Felton, Lompico, Zayante, and southern Scotts Valley. Services are provided by four water systems and one sewer system: (1) North System (Boulder Creek, Brookdale, Ben Lomond, Lompico, and Zayante), (2) Felton, (3) South System (Pasatiempo Pines area in southern Scotts Valley), (4) Mañana Woods (southern Scotts Valley), and (5) Bear Creek Estates Wastewater System (LAFCO 2020).

The SLVWD's currently active water supplies consist of nine active stream diversions, eight active groundwater wells, and one active spring.[4] In addition to the City, SLVWD is entitled by contract to receive a 313 acre-feet per year (afy) of the water stored in Loch Lomond Reservoir (City of Santa Cruz 2016) that has not been used since 1977. Water supplies also include a potential water supply from the City in lieu of direct diversions from Loch Lomond Reservoir (WSC 2016a). SLVWD has purchased small amounts of water from SVWD during short-term, quasi-emergency situations, providing a maximum of 10% of South System monthly production and less than 0.1% of District total average annual use. This source is not considered significant with regard to the District's long-term water-supply planning (WSC 2016a). The SLVWD's groundwater wells draw from the overdrafted Santa Margarita Groundwater Basin.

Water deliveries ranged from 1,781 afy in 2010 to 1,469 afy in 2015; projected demand is estimated at 1,795 afy (WSC 2016a). The SLVWD's UWMP indicates that SLVWD's water supply is adequate to meet both current and projected water demands during average, single-dry-year, and multiple-dry-year conditions (WSC 2016a). However, this finding that supplies would be adequate during multiple-dry-year conditions is based on the assumption that continued local groundwater overdraft in the Santa Margarita Groundwater Basin is sustainable and that water can be supplied to the South System from the North System sources through the systems' existing interconnection (WSC 2016a).

SLVWD and the County of Santa Cruz are developing a Conjunctive Use Plan for the San Lorenzo River Watershed to increase stream baseflow for fish and increase reliability of surface and ground water supplies for the SLVWD. This project would interconnect SLVWD's three independent water systems to allow for increased reliability and allow the distribution systems to utilize surplus surface water from each other, providing in-lieu recharge to the groundwater aquifers through conjunctive use. Project components identified to date that would allow for conjunctive use within SLVWD's service areas and in conjunction with the SVWD 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.

[4] SLVWD's diversions under its water-right Permit No. 20123 are contingent on the existence of certain minimum streamflows existing below the City's Felton Diversion through the September-May period.

As a result of the CZU Lighting Complex Fire in August 2020, SLVWD facilities sustained significant facility and operational capacity losses. According to a preliminary damage assessment prepared for SLVWD, more than 50% of the structures assessed were destroyed or majorly damaged, while other facilities have heat damage, smoke, or possible contamination (SLVWD 2020). The water system's primary damage includes intakes and raw water pipelines (Peavine, Foreman, Clear Creek 1-3, Sweetwater); the Bennett Spring Overflow, tanks, piping and controls; and water storage (Lyon and Little Lyon tanks are contaminated with soot and other fire byproducts). The Big Steel Water Tanks and the Water Treatment Plant were spared from significant damage, but will require some minor repair before resuming full operation. SLVWD is currently working on emergency repairs to bring the water system back to functioning condition. At the time of the assessment in September 2020, service had been restored to all customers, although 419 customers were still affected by a Do Not Drink/Do Not Boil order (SLVWD 2020).

The San Lorenzo River watershed also sustained extensive damage during the fire, including destruction of trees and vegetation with indirect damage due to contamination of surface waters by ash and debris, increased erosion potential due to destruction of vegetation on slopes, and potential future damage caused by toppling of damaged trees. Surface waters within the fire zone have been contaminated directly by ash and debris (SLVWD 2020).

### Scotts Valley Water District

SVWD provides potable and recycled water and serves most of the City of Scotts Valley and some unincorporated areas north of the City, serving a population of approximately 11,000. The only source of potable water for the SVWD is groundwater from the overdrafted Santa Margarita Groundwater Basin. SVWD shares the basin with neighboring SLVWD, the Mount Hermon Association, other small water systems and over 1,100 private well users. No raw water is supplied to or by SVWD. Recycled water, supplied to SVWD by the City of Scotts Valley Water Reclamation Facility, is used primarily for landscape irrigation (Kennedy Jenks Consultants 2016).

Water demand is projected to increase from approximately 1,333 afy in 2015 to 1,635 afy in 2035 and 1,661 afy in 2040. Groundwater production had declined from 2002 through 2015 due to drought conditions, use of recycled water, and implementation of conservation programs (Kennedy/Jenks Consultants 2016). SVWD has adequate supplies available to meet projected demands should a multiple-dry-year period occur; however, overdraft of the Santa Margarita Groundwater Basin, especially in a time of drought, presents a concern for reliability over extended periods of time (Kennedy/Jenks Consultants 2016). See Section 4.8, Hydrology and Water Quality, for additional information on the Santa Margarita Groundwater Basin. Emergency intertie pipelines between SVWD and SLVWD can be used to transfer water during emergencies. These interties improve regional supply reliability by allowing SVWD access to SLVWD surface water source in an emergency (Kennedy/Jenks Consultants 2016).

The decline of groundwater levels in many parts of the Santa Margarita Groundwater Basin occurred during 1985-2004 representing a loss in groundwater storage in the basin by an estimated 28,000 acre-feet. SVWD began actively managing groundwater in the area in the early 1980s, developed the Water Resources Management Plan in 1983 to monitor and manage water resources, and adopted a Groundwater Management Plan in 1994. Along with SLVWD and other agencies, SVWD also participated in the Santa Margarita Groundwater Basin Advisory Committee that was actively involved in the cooperative groundwater management of the basin until its dissolution and substitution with Santa Margarita Groundwater Agency (SMGWA) in 2017. With conservation and other management efforts by local water agencies, the total pumping from the basin has decreased by 45% since 1997 (SVWD 2021). See Section 3.2.1, Water Supply Planning Background, for additional information on the Santa Margarita Groundwater Basin.

## Soquel Creek Water District

The SqCWD provides potable water service and groundwater resource management within its service area and serves a population of approximately 40,000 (ESA 2018). The SqCWD's service area includes portions of the City of Capitola and unincorporated Santa Cruz County, including the communities of Aptos, La Selva Beach, Opal Cliffs, Rio Del Mar, Seascape, Seacliff Beach, and Soquel. SqCWD relies entirely on the overdrafted groundwater aquifers in the Santa Cruz Mid-County Groundwater Basin. Total water use includes water delivered to customers, water sold to other agencies, and non-revenue water and is expected to decline from an estimated 3,900 afy in 2020 to 3,300 afy in 2045 (WSC 2016b).

As indicated above, the City and SqCWD are member agencies of the Santa Cruz Mid-County Groundwater Agency, which is responsible for implementing the mandates set forth in the 2014 Sustainable Groundwater Management Act in the Santa Cruz Mid-County Basin (Basin). The Basin is identified as one of 21 basins in California as critically overdrafted and it is required to bring the Basin into sustainability by 2040. The MGA adopted a Groundwater Sustainability Plan (GSP) on November 21, 2019 and submitted it to the State Department of Water Resources in January 2020. DWR approved the GSP on June 3, 2021 as being found to satisfy the requirements of Sustainable Groundwater Management Act (DWR 2021). The GSP includes projects and management actions that are being implemented to restore protective water levels and prevent further seawater intrusion from moving further inland and contaminating the groundwater basin.

As the Santa Cruz Mid-County Groundwater Basin is in a state of critical overdraft, SqCWD has been actively pursuing supplemental supply options that would allow for reductions in groundwater pumping to facilitate basin recovery (WSC 2016b). (See Section 4.8, Hydrology and Water Quality, for additional information on the Santa Cruz Mid-County Groundwater Basin.) Groundwater elevations in the basin are below protective levels, and SqCWD established pre- and post-recovery pumping goals at 2,300 and 3,300 afy, respectively, based on the SqCWD maintaining its proportion of the basin's consumptive use. To meet the targeted pumping, SqCWD has identified that approximately 1,500 afy of supplemental water source(s) would be required by the year 2025, decreasing to 1,100 afy by the year 2035, to meet the recovery pumping goals (WSC 2016b).

According to the UWMP, SqCWD actively manages water resources using a combination of management tools that were first established in the 1996 Soquel-Aptos Area Groundwater Management Plan, which was updated and expanded in 2007 (WSC 2016b). As a result of SqCWD's ongoing groundwater monitoring program, signs of coastal overdraft were detected early leading to development of SqCWD's first Integrated Resources Plan (IRP) in 2006. The IRP was updated in 2012 and ultimately replaced with the development of the Community Water Plan (CWP) in 2015 (WSC 2016b).

The CWP is based on the District's UWMP and community input and is the District's roadmap for meeting the goal of a sustainable groundwater basin by 2040 (SqCWD 2015). Components of the CWP include promoting water conservation and water neutral development to reduce groundwater extractions; being proactive with the groundwater management program to protect aquifers; and seeking supplemental water supplies to meet water needs. The groundwater management program includes a monitoring well network with over 80 monitoring wells to track water quality and water levels, implementation of the Well Master Plan to redistribute groundwater pumping away from the coast to slow down seawater intrusion, development of a computer model to better understand the basin and determine sustainable yield, and other activities. The pursuit of supplemental supplies includes the Pure Water Soquel: Groundwater Replenishment and Seawater Intrusion Prevention Project (Pure Water Soquel) and surface water transfers, as the primary supplemental supplies being pursued.

In terms of surface water transfers, as previously described, the City and SqCWD have been investigating the feasibility of transferring excess City surface water to SqCWD for the purpose of passively recharging the groundwater basin. Pursuant to a 2016 agreement that was extended in February and March 2021, a pilot program was established to sell excess winter water supply from the City's GHWTP to the SqCWD, and pilot transfers were provided to a limited portion of the SqCWD service area during the 2018/2019 and 2019/2020 winter and spring wet season (City of Santa Cruz and SqCWD 2015); the extension of the agreement allows for another five-year term through water year 2026 (May 1, 2026). In 2018, SqCWD approved the Pure Water Soquel Groundwater Replenishment and Seawater Intrusion Prevention Project (Pure Water Soquel), which is a groundwater replenishment and seawater intrusion prevention project that uses advanced water purification to purify recycled water for replenishing the groundwater basin. Pure Water Soquel is included in the GSP and is necessary for the basin to reach sustainability. The project is designed to produce 1.3 mgd or approximately 1,500 afy of purified water, which as indicated above is the estimated volume required to offset the portion of the Basin's groundwater overdraft attributable to SqCWD groundwater pumping (ESA 2018). The facility is also being designed to enable future expansion if needed. The project is under construction and is expected to be operational in 2022. Additionally, SqCWD is currently improving its existing groundwater well infrastructure and redistributing pumping inland through implementation of the Well Master Plan (WSC 2016b).

The SqCWD UWMP assumes that pumping will be limited to 2,300 afy when adequate supplemental supply is in use and that the District will pump at or below this level for at least 20 years to fully restore the basin. The volume of groundwater pumped in 2045 assumes the groundwater basin has been fully restored and that pumping at the post-recovery pumping goal can occur. Once an adequate supplemental supply is available, SqCWD may utilize more of the supplemental supply sources in order to reduce the cumulative deficit recovery period, or to enhance basin conditions when faced with changing factors such as basin outflows, climate change, or other unforeseen factors even if the basin has been fully restored (WSC 2016b).

While SqCWD is generally 100% reliant on its groundwater supply, its distribution system includes interties with CWD and the City, as well as other local entities. The three interties with the City include one bi-directional intertie allowing for limited water exchanges, and two uni-directional (to SqCWD) interties that provide SqCWD with greater reliability in the event of an emergency. Over the five-year period of 2011-2015, SqCWD received approximately 0.3 acre-feet of water from CWD and the City, and provided 6.09 acre-feet (approximately 2 mgy) of water to the City (WSC 2016b).

### Central Water District

CWD covers a service area of approximately 5 square miles east of the unincorporated area of Aptos, between the SqCWD and City of Watsonville. With an estimated population of 2,700 to 3000, CWD produced 126.7 million gallons of water and customers consumed 123.3 million gallons in fiscal year 2017/2018. Total production and associated groundwater pumping have declined since 2008 (CWD 2020).

CWD's water supply source is also drawn exclusively from the same two groundwater aquifers in the overdrafted Santa Cruz Mid-County Groundwater Basin, the Purisima and the Aromas. CWD shares these two aquifers with other groundwater users and is a member of the Santa Cruz Mid-County Groundwater Sustainability Agency. The CWD has monitored groundwater resources and is currently designated to manage the groundwater resources within its boundaries. There are three wells that provide CWD's water supply and an additional three wells that are currently inactive (CWD 2020). The District has an adequate water supply and is addressing infrastructure repairs and upgrades through its capital improvement program (LAFCO 2017).

### 4.13.1.3 Wastewater

#### Service Area

The City wastewater treatment facility (WWTF) serves the cities of Santa Cruz and Capitola and parts of unincorporated Santa Cruz County. In addition to the City of Santa Cruz, the WWTF serves the Santa Cruz County Sanitation District (SCCSD) and Community Service Areas (CSA) 10 and 57. For further description, see the City's General Plan 2030 EIR (Draft EIR volume), which is incorporated by reference (City of Santa Cruz 2012). The City also provides capacity for the City of Scotts Valley to discharge its treated wastewater into the Pacific Ocean via the City's discharge.

#### Treatment Plant Overview

The City owns and operates the WWTF, located on California Street adjacent to Neary Lagoon that provides secondary level of treatment. The City treats sewage from domestic and industrial sources and discharges the treated effluent into the Pacific Ocean under the provisions of a waste discharge permit (NPDES No. CA0048194) issued by the California RWQCB, Central Coast Region (Order No. R3-2005-0003). Monterey Bay, into which the region's treated wastewater is disposed, was designated in 1992 as a National Marine Sanctuary. Wastewater influent and effluent characteristics are carefully monitored for compliance with state water quality requirements. The City also participates in a regional receiving water monitoring program with other dischargers in the Monterey Bay area (City of Santa Cruz 2012).

The City's WWTF was upgraded in 1998 to provide secondary treatment in order to meet state and federal waste discharge requirements, and currently produces wastewater of a quality that would be classified as Disinfected Secondary-23. The treatment process consists of a series of steps, including screening, aerated grit removal, primary sedimentation, trickling filter treatment, solids contact, secondary clarification, and ultraviolet disinfection (City of Santa Cruz 2012).

The WWTF is not currently permitted for and does not now produce recycled water for offsite reuse. The current level of treatment is not sufficient for general irrigation without additional treatment and facility upgrades. In addition to the treatment upgrades, a distribution system, including pumps, meters, storage facilities, and separate piping would be required to convey the recycled water to customers (City of Santa Cruz 2012). The City is actively investigating the feasibility of development and use of recycled water, as discussed in Section 4.3.1.2, Water Supply.

In 2019, the City approved an agreement with SqCWD to allow SqCWD to utilize a portion of the treated effluent produced by the City's WWTF for groundwater replenishment as part of Pure Water Soquel approved by the SqCWD. Pure Water Soquel will treat a portion of secondary effluent water from the City's WWTF with a new tertiary treatment facility, located at the City's WWTF. That tertiary-treated water will then be pumped to a new Advance Water Purification Facility located in Live Oak for further purification using advanced water purification methods for injection into the ground to replenish the groundwater basin. The agreement also included additional benefits of providing a facility to produce Title 22 recycled water for the City's use at the WWTF. In the future, a portion of that water could be used for a recycled water and irrigation water for La Barranca Park, which runs along Bay Street near the WWTF. Pure Water Soquel will also reduce the City's discharge of treated secondary wastewater to the Monterey Bay National Marine Sanctuary (City of Santa Cruz 2020c).

### Treatment Plant Capacity

The WWTF has a permitted wastewater treatment capacity of 17.0 million gallons per day (mgd). In 2019, the WWTF treated 3.3 billion gallons of wastewater effluent at an average daily rate of 9.04 mgd. The SCCSD has treatment capacity rights of 8 mgd at the City's WWTF. The City contributes approximately 5.0 mgd and has a remaining capacity of 4.0 mgd. The SCCSD contributes approximately 5.5 mgd with a remaining capacity of 2.5 mgd. The total remaining treatment plant capacity, therefore, is 6.5 mgd.

### Treated Effluent Disposal

The treated effluent is disposed into the Monterey Bay via a deep ocean outfall constructed in 1987. The outfall extends 12,250 feet on the ocean bottom and terminates one mile offshore at a depth of approximately 110 feet below sea level. A 1,200-foot diffuser at the end of the pipe provides an initial dilution of greater than 139 parts seawater to 1 part wastewater (City of Santa Cruz 2012). The City of Scotts Valley discharges its treated effluent via the City's ocean outfall. The Scotts Valley Wastewater Treatment Plant has a permitted capacity of 1.5 million gpd and treats water to secondary and tertiary levels. Secondarily treated effluent that is not used for recycled water is transmitted via a main to Santa Cruz and discharged to the ocean through the outfall shared with the City.

### Wastewater Collection

The City wastewater collection system serves approximately 15,000 connections. The collection system includes 23 pump stations and over 160 miles of sewer pipeline ranging in size from 6 to 54 inches in diameter. The City has a hydraulic model for the sewer system and continues to focus on collections system projects that reduce infiltration and inflow into the system (City of Santa Cruz 2012). The SCCSD provides sanitary sewer collection within its service area boundaries in unincorporated urban areas that generally extend from the eastern limits of the City to the unincorporated Aptos community to the south.

## 4.13.1.4 Solid Waste

Solid waste generally refers to garbage, refuse, sludge, and other discarded solid materials that come from residential, industrial, and commercial activities. Construction, demolition, and inert wastes are also classified as solid waste. Agricultural waste can be generated by agricultural areas, but typically is disposed on site (composted, mulched, chipped, or burned) rather than entering the municipal waste stream. The general waste classifications used for California waste management units, facilities, and disposal sites are Nonhazardous Solid Waste, Special Waste, Designated Waste, Hazardous Waste, and Industrial Waste. As stated in Chapter 3, Project Description, disposal of solid waste generated by the Proposed Project would likely occur at the City of Santa Cruz Resource Recovery Facility (RRF) or the County of Santa Cruz Buena Vista Landfill. The remaining solid waste disposal capacity of these landfills is summarized in Table 4.13-1 and further described in the following sections.

**Table 4.13-1. Project Area Landfill Capacity**

| Solid Waste Facility | Total Capacity | | | Daily Capacity | | |
|---|---|---|---|---|---|---|
| | *Total Permitted Capacity (cubic yards)* | *Remaining Capacity (cubic yards)* | *Percent Remaining* | *Permitted Daily Capacity (tons)* | *Average Daily Disposal in 2019 (tons)* | *Percent Remaining* |
| City of Santa Cruz Resource Recovery Facility | 10,484,325 | 4,806,477 | 46% | 535 | 141 | 74% |
| Buena Vista Landfill | 7,537,700 | 2,206,541 | 29% | 838 | 277 | 67% |

**Sources:** CalRecycle 2019, 2020b, 2020c.

## City of Santa Cruz

Solid waste in the City is taken to the City's RRF, which includes a sanitary landfill, recycling center, yard waste drop-off, construction and demolition drop-off, and household hazardous waste drop-off. The RRF is located approximately 3 miles west of the City off State Highway 1 at 605 Dimeo Lane. The RRF is a 100-acre solid waste landfill facility with permitted composting or green waste operation with 67 acres available for disposal use. The RRF is permitted to receive a total of 10,484,325 cubic yards (cy) of solid waste, including construction/demolition, dead animals, green materials, industrial, inert, metals, mixed municipal, sludge (biosolids), tires, and wood waste. The facility has a maximum permitted daily solid waste throughput capacity of 535 tons, and a maximum permitted green waste throughput capacity of 12,500 cy. Based on the most recent facility capacity evaluation in May 2017, the landfill had a remaining capacity of 4,806,477 cy and an estimated closure date of January 2058 (CalRecycle 2020c). In 2019, 51,350 tons of solid waste were disposed of at the RRF (CalRecycle 2019), which is an average of approximately 141 tons per day.

## County of Santa Cruz

Santa Cruz County Recycling and Trash Services (Recycling & Trash) is responsible for the operation and administration of solid waste diversion and disposal in the unincorporated areas of the County. Recycling & Trash operates the County's two solid waste facilities, the Buena Vista Landfill located west of the City of Watsonville at 1231 Buena Vista Drive and the Ben Lomond Transfer Station located east of Ben Lomond in the San Lorenzo Valley at 9835 Newell Creek Road. The cites of Scotts Valley and Capitola have franchise agreements with Green Waste Recovery for collection of refuse, recycling and yardwaste. Green Waste Recovery also uses the County's facilities.

The Buena Vista Landfill is a 126-acre solid waste landfill facility with permitted composting or green waste operation with 61 acres available for disposal use. The Buena Vista Landfill is permitted to receive a total of 7,537,700 cy of solid waste, including agricultural, construction/demolition, contaminated soil, dead animals, green materials, industrial, inert, metals, mixed municipal, sludge (biosolids), tires, and wood waste. The facility has a maximum permitted daily solid waste throughput capacity of 838 tons, and a maximum permitted green waste throughput capacity of 12,500 cy. Based on the most recent facility capacity evaluation in 2018, the Buena Vista Landfill has a remaining capacity 2,206,541 cy and an estimated closure date of July 2031 (CalRecycle 2020b). In 2019, 101,190 tons of solid waste were disposed of at the Buena Vista Drive Sanitary Landfill (CalRecycle 2019), which is an average of approximately 277 tons per day.

The Ben Lomond Transfer Station is a 3.5-acre large-volume solid waste transfer/processing facility located east of Ben Lomond in the San Lorenzo Valley at 9835 Newell Creek Road. The Ben Lomond Transfer Facility is permitted to receive and process a total of 300 tons per day of mixed municipal, green materials, tires, construction/demolition, and industrial waste. Processed waste from this facility is either diverted for reuse, recycling, or composting off site or is transferred to the Buena Vista Landfill (CalRecycle 2020a).

### 4.13.1.5 Energy

#### Electricity and Natural Gas

Pacific Gas and Electric Company (PG&E) provides electrical and natural gas service to the region. Incorporated in California in 1905, PG&E is one of the largest combination natural gas and electric utilities in the United States. It currently provides service to approximately 16 million people throughout a 70,000-square-mile service area in northern and central California from Eureka in the north to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east. The service area includes 106,681 circuit miles of electric distribution lines, 18,466 circuit miles of interconnected transmission lines. 42,141 miles of natural gas distribution pipelines and 6,438 miles of transportation pipelines. PG&E and other utilities in the state are regulated by the California Public Utilities Commission (PG&E 2020).

Monterey Bay Community Power (MBCP) was formed in March 2017 as a joint powers authority to provide locally controlled, clean and renewable electricity to residents and businesses in Monterey, San Benito, and Santa Cruz Counties, as well as parts of Santa Barbara and San Luis Obispo Counties. MBCP recently underwent a name change to Central Coast Community Energy (3CE). 3CE operates through the Community Choice Energy (CCE) model established by the State of California. The CCE model enables communities to choose clean-source power at a cost equivalent to PG&E while retaining PG&E's role in maintaining power lines and providing customer service. The CCE model helps ensure local economic vitality because surplus revenues that would normally flow to PG&E will stay in the community. 3CE started serving electricity to customers beginning spring 2018, with current PG&E customers automatically switched over (MBCP [3CE] 2020). Notably, the City purchases electricity from 3CE for its municipal facility operations.

According to the U.S. Energy Information Administration (EIA), California used approximately 255,224 gigawatt hours of electricity in 2018 (EIA 2020a). Electricity usage in California for different land uses varies substantially by the types of uses in a building, type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building. Due to the state's energy efficiency building standards and efficiency and conservation programs, California's electricity use per capita in the residential sector is lower than any other state except Hawaii (EIA 2020b).

In Santa Cruz County, PG&E reported an annual electrical consumption of approximately 1,212 million kWh in 2018, with 667 million kWh for non-residential use and 546 million kWh for residential use (CEC 2020a).

According to the EIA, California used approximately 2,136,907 million cubic feet of natural gas in 2018 (EIA 2020c). The majority of California's natural gas customers are residential and small commercial customers (core customers). These customers account for approximately 35% of the natural gas delivered by California utilities (CPUC 2020). Large consumers, such as electric generators and industrial customers (noncore customers), account for approximately 65% of the natural gas delivered by California utilities (CPUC 2020). CPUC regulates California natural gas rates and natural gas services, including in-state transportation over transmission and distribution pipeline systems, storage, procurement, metering, and billing. Most of the natural gas used in California comes from out-of-state natural gas basins. Biogas (e.g. from wastewater treatment facilities or dairy farms) is just beginning to be delivered into the gas utility pipeline systems, and the State has been encouraging its development (CPUC 2020).

In 2018, PG&E had delivered approximately 52 million therms to Santa Cruz County, with 21 million therms for non-residential use and 31 million therms for residential use (CEC 2020b).

### Transportation-Related Energy Consumption

According to the EIA, California used approximately 681 million barrels of petroleum in 2018, with the majority (584 million barrels) used for the transportation sector (EIA 2020d). This total annual consumption equates to a daily use of approximately 1.9 million barrels of petroleum. There are 42 U.S. gallons in a barrel, so California consumes approximately 78.4 million gallons of petroleum per day, adding up to an annual consumption of 28.6 billion gallons of petroleum. In California, petroleum fuels refined from crude oil are the dominant source of energy for transportation sources. Petroleum usage in California includes petroleum products such as motor gasoline, distillate fuel, liquefied petroleum gases, and jet fuel. California has implemented policies to improve vehicle efficiency and to support use of alternative transportation, which are described in Section 4.13.2, Regulatory Framework, below.

## 4.13.1.6 Telecommunications Systems

Numerous telecommunications providers serve the project area and provide access to infrastructure for broadband, fiber optic, wireless, and emerging technologies. Telecommunications providers in the area include AT&T, Xfinity from Comcast, Cruzio Internet, and Charter Spectrum, among others.

## 4.13.1.7 Existing Infrastructure Conditions

### Existing Water Infrastructure

The City's major water infrastructure facilities include three water treatment plants, including the Graham Hill Water Treatment Plants and two groundwater treatment plants related to the Beltz well system; 4 raw water pump stations, 10 distribution tanks with a total maximum capacity of 21.2 million gallons of treated water storage; 7 surface water diversions; 7 groundwater production wells; and approximately 300 miles of treated and raw water pipelines interconnecting the City's system. Key components of the City water system, including the North Coast system, the Newell Creek Dam inlet/outlet pipe, and water treatment facilities have reached the end of their useful life and are overdue for renewal and replacement. The City's Capital Improvement Program (CIP) for water infrastructure includes plans and funding for numerous capital improvements projects, including rehabilitation or replacement projects, upgrades and improvement projects, water supply augmentation components, and water main replacements (City of Santa Cruz 2020a, 2020b). Section 4.0, Introduction to Analyses, identifies the CIP projects that are currently planned or under construction.

The SqCWD water supply system consists of 18 production wells (15 of which are currently active), approximately 166 miles of pipeline, and 18 water storage tanks (ESA 2018). The CWD distribution system consists of approximately 23.2 miles of 2- to 10-inch-diameter pipe. The distribution system is separated into five pressure zones, each supplied by pressure-reducing valves or by a combination of booster pumps and storage tanks. There are three wells that provide CWD's water supply and an additional three wells that are currently inactive (CWD 2020).

The SLVWD maintains approximately 190 miles of pipeline and pump stations, storage tanks and water treatment facilities within its three water systems. SLVWD has identified and prioritized its infrastructure needs in the 2017 Capital Improvement Plan. The principal needs are well replacements, storage tanks, distribution system upgrades, and interties (LAFCO 2020).

## Existing Wastewater Infrastructure

See Section 4.13.1.3, Wastewater, regarding the City's WWTF. Within the City, municipal wastewater is delivered to the treatment plant through a collection system consisting of 160 miles of gravity mains, 3.5 miles of force main, and 21 pumping stations (City of Santa Cruz 2016). As previously indicated, the SCCSD provides sanitary sewer collection within its service area boundaries that generally extend from the eastern limits of the City to the unincorporated Aptos community to the south. The SCCSD serves the following areas in the County with sewer service: Aptos, Capitola, Soquel, and Live Oak.

## Proposed Infrastructure Component Sites

This section provides information on existing infrastructure conditions at each of the project and programmatic infrastructure component sites for which improvements and new facilities are proposed. All existing sites are supplied with electrical service.

### Aquifer Storage and Recovery Sites

As there are no definitive sites identified to date for new ASR facilities, no site-specific conditions are provided.

Beltz No. 8 (Beltz 8) and associated treatment facilities are located on City-owned property at 3701 Roland Drive in the unincorporated County of Santa Cruz. Components of the existing facility include the following: (1) a pump control and chemical storage buildings; (2) an iron and manganese treatment system consisting of two pressurized dual media filter tanks; (3) one 75,000-gallon backwash tank used in the iron and manganese treatment; and (4) a 210-foot-deep well that has a casing diameter of 14 inches, submersible pump and concrete pedestal, station piping including treated water pipeline, and a sewer connection that connects to other facilities in Roland Drive.

Beltz No. 9 (Beltz 9) is located on City-owned property at 740 30th Avenue, in the unincorporated County area. Components of the existing facility include the following: (1) a pump control cabinet and (2) a 240-foot-deep well that has a casing diameter of 14 inches, submersible pump and concrete pedestal, and well head station piping.

Beltz No. 10 (Beltz 10) is located on City-owned property at 977 34th Avenue, in the unincorporated County area. Components of the existing facility include the following: (1) a pump control cabinet and (2) a 240-foot-deep well that has a casing diameter of 14 inches, submersible pump and concrete pedestal, and well head station piping.

Beltz No. 12 (Beltz 12) and associated treatment facilities are located on City-owned property at 2750 Research Park Drive, in the unincorporated Soquel area of the County, Components of the existing facility include the following: (1) a pump control and chemical storage building; (2) an iron and manganese treatment system consisting of a pressurized filter tank with various media inside; (3) two backwash tanks used in the iron and manganese treatment that each have a capacity of 35,000 gallons; and (4) a 640-foot-deep well that has a casing diameter of 16 inches, submersible pump and concrete pedestal, station piping including treated water pipeline, sewer connections, and stormwater drainage facilities that connect to other facilities in Research Park Drive.

### Intertie Improvement Sites

The City's water supply system could be interconnected to the SVWD's system through installation of approximately 8,000 linear feet of new 12-inch-diameter intertie piping from Sims Road in the south, along La Madrona Drive to the north to the City of Scotts Valley where a new pump station would be constructed as described in Section 3.4.3.3. Interconnection of the SVWD and the SLVWD systems has already been constructed and permitted for

emergency use as part of the Scotts Valley Multi-Agency Regional Intertie Project. Additional permitting would be required to use the existing intertie for non-emergency use as part of a potential future water supply transfer and exchange project. It is possible that other alignments to connect the City's system to SVWD and/or SLVWD could be considered in the future. A range of alternative pipeline alignments and pump station locations would likely be considered if and when an intertie project is pursued, planned, and designed.

The three interties between the City and SqCWD include one bi-directional intertie allowing for limited water exchanges, and two uni-directional (to SqCWD) interties that provide SqCWD with greater reliability in the event of an emergency. The existing interties between the City's and the SqCWD's water systems have capacity for 1.5 mgd during normal operations, but some existing pipeline segments and the existing McGregor Drive pump station are not adequate to efficiently move water through the SqCWD if water transfers become part of normal operations.

SqCWD also has two interties with the CWD on Huntington Drive and on Soquel Drive near Freedom Boulevard. Booster pump stations on these two interties would be required to allow SqCWD to move water to CWD. Currently, CWD can move water to SqCWD, but SqCWD cannot move water to CWD.

#### Surface Water Diversion Sites

The Felton Diversion was constructed in 1976 and, in general, consists of an inflatable rubber dam, a fish-screened intake structure, a conventional sump and high-lift pump station, a slide-gated bypass channel, a Denil-style fish ladder, an operations building, and miscellaneous site improvements.

The original Tait Diversion was constructed in 1961; it was modified in 1983 with a fish screen that met California Department of Fish and Wildlife[5] and National Marine Fisheries Service regulatory design criteria at that time. The City's Coast Pump Station facility that is adjacent to the Tait Diversion has evolved over time and currently includes two pump stations, the Coast Pumps and the River Pumps, which pump raw water from City's North Coast sources and the San Lorenzo River, respectively, to City's GHWTP, approximately 1 mile to the north.

## 4.13.2 Regulatory Framework

### 4.13.2.1 Federal

#### Clean Water Act

The Clean Water Act (CWA) is the primary federal law that protects our nation's waters, including lakes, rivers, aquifers, and coastal areas. As defined by the U.S. Environmental Protection Agency (EPA), the CWA is the primary law regulating pollution of the nation's waterways and is intended to govern the restoration and maintenance of the chemical, physical, and biological integrity of the nation's water (EPA 2018).

Section 303 of the CWA requires states to identify where existing pollution control technologies alone cannot meet water quality standards. Every 2 years, states are required to submit a list of impaired water bodies to the EPA, where they are prioritized based on (1) the severity of the pollution and (2) the designated use of the water (EPA 2018).

Section 401 of the CWA requires that an applicant seeking a federal permit to conduct any activity, including the construction or operation of a facility that may result in the discharge of any pollutants, obtain certification from the

[5] The former Department of Fish and Game was renamed the Department of Fish and Wildlife in 2013.

state. The Section 401 certification requirement verifies compliance with existing water quality requirements or waives the certification requirement (EPA 2020a).

Section 402 of the CWA implements the National Pollution Discharge Elimination System (NPDES).

Section 404 of the CWA established a permit program to regulate the discharge of dredged materials or fill into waters of the United States, including wetlands. Common activities regulated by Section 404 include water resource projects (e.g., dams/levees), infrastructure development (e.g., road and airports), and mining activities (EPA 2020b).

### National Pollutant Discharge Elimination System

The NPDES is legislated by Section 402 of the CWA and regulated by the EPA. The permitting program prohibits the unauthorized discharge of pollutants from a point source (e.g., pipe, ditch, well) to United States waters. The permitting program addresses municipal, commercial, and industrial wastewater discharges and discharges from large animal feeding operations. Under Section 402 of the CWA, permittees must verify compliance with permit requirements by monitoring their effluent, maintaining records, and filing periodic reports. The program is administered at the local level by the Regional Water Quality Control Boards (RWQCBs). Under the NPDES program, the State Water Resources Control Board (SWRCB) implements Waste Discharge Requirements for some discharges in addition to those subject to NPDES permits. Permits contain specific requirements that limit the pollutants in discharges. They also require dischargers to monitor their wastewater to ensure that it meets all requirements. Wastewater dischargers must maintain their treatment facilities, and treatment plant operators must be certified. The SWRCB routinely inspects treatment facilities and strictly enforce permit requirements.

### Federal Energy Policy and Conservation Act

In 1975, Congress enacted the Federal Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the act, the National Highway Traffic Safety Administration is responsible for establishing additional vehicle standards. In 2012, new fuel economy standards for passenger cars and light trucks were approved for model years 2017 through 2021 (77 FR 62624–63200). Fuel economy is determined based on each manufacturer's average fuel economy for the fleet of vehicles available for sale in the United States.

### Intermodal Surface Transportation Efficiency Act

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 promoted the development of intermodal transportation systems to maximize mobility and address national and local interests in air quality and energy. ISTEA contained factors for metropolitan planning organizations to address in developing transportation plans and programs, including some energy-related factors. To meet the new ISTEA requirements, metropolitan planning organizations adopted policies defining the social, economic, energy, and environmental values guiding transportation decisions.

### Transportation Equity Act for the 21st Century

The Transportation Equity Act for the 21st Century was signed into law in 1998 and builds on the initiatives established in the ISTEA legislation (previously discussed). The act authorizes highway, highway safety, transit, and other efficient surface transportation programs. The act continues the program structure established for highways and transit under ISTEA, such as flexibility in the use of funds, emphasis on measures to improve the environment, and focus on a strong planning process as the foundation of transportation decisions. The act also provides for

investment in research and its application to maximize the performance of the transportation system through, for example, deployment of intelligent transportation systems to help improve operations and management of transportation systems and vehicle safety.

### Energy Independence and Security Act

On December 19, 2007, the Energy Independence and Security Act (EISA) of 2007 was signed into law. In addition to setting increased Corporate Average Fuel Economy standards for motor vehicles, the EISA includes the following other provisions related to energy efficiency:

- Renewable Fuel Standard (RFS) (Section 202)
- Appliance and Lighting Efficiency Standards (Sections 301–325)
- Building Energy Efficiency (Sections 411–441)

This federal legislation requires ever-increasing levels of renewable fuels to replace petroleum (EPA 2017). The EPA is responsible for developing and implementing regulations to ensure that transportation fuel sold in the United States contains a minimum volume of renewable fuel. The RFS program regulations were developed in collaboration with refiners, renewable fuel producers, and many other stakeholders.

The RFS program was created under the Energy Policy Act of 2005 and established the first renewable fuel volume mandate in the United States. As required under the act, the original RFS program (RFS1) required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. Under the EISA, the RFS program was expanded in several key ways that lay the foundation for achieving significant reductions in greenhouse gas (GHG) emissions from the use of renewable fuels, reducing imported petroleum, and encouraging the development and expansion of the renewable fuels sector in the United States. The updated program is referred to as RFS2 and includes the following:

- EISA expanded the RFS program to include diesel in addition to gasoline.
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022.
- EISA established new categories of renewable fuel and set separate volume requirements for each one.
- EISA required the EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

Additional provisions of the EISA address energy savings in government and public institutions, research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green" jobs.

## 4.13.2.2 State

### Urban Water Management Planning Act

In 1983, the California State Legislature (Legislature) enacted the Urban Water Management Planning Act (California Water Code, Sections 10610–10656), which requires specified urban water suppliers within the state to prepare a UWMP and update it every 5 years. State and local agencies and the public frequently use UWMPs to determine if water supply planning has been efficiently implemented. As such, UWMPs serve as an important element in documenting water supply availability and reliability for purposes of compliance with Senate Bill (SB) 610 and SB 221, which link water

supply sufficiency to large land use development project approvals. Urban water suppliers also must prepare UWMPs, pursuant to the Urban Water Management Planning Act, in order to be eligible for state funding and drought assistance.

A UWMP provides information on water usage, water supply sources, and water reliability planning within a specified water agency service area. It also may provide implementation schedules to meet projected demands over the planning horizon a description of opportunities for new development of desalinated water, groundwater information (where groundwater is identified as an existing or planned water source), a description of water quality over the planning horizon, and identification of water management tools that maximize local resources and minimize imported water supplies. Additionally, a UWMP evaluates the reliability of water supplies within the specified service area. This includes a water supply reliability assessment, a drought risk assessment, and a water shortage contingency plan.

### Senate Bill 7

SB 7 (SB X7-7) was enacted in November 2009 and requires all water suppliers to increase water use efficiency. The legislation set an overall goal of reducing per capita urban water use by 20% by December 31, 2020 (California Water Code Section 10608.20). In order to reach this goal, SB X7-7 required each urban retail water supplier to report progress in meeting water use targets (California Water Code Section 10608.40). The law also required wholesale water suppliers to support their retail member agencies' efforts to comply with SB X7-7 through a combination of regionally and locally administered active and passive water conservation measures, programs, and policies, as well as the use of recycled water.

### California Water Code

California's Porter-Cologne Water Quality Control Act (1969), which became Division 7 (Water Quality) of the California Water Code, establishes the responsibilities and authorities of the nine RWQCBs and the SWRCB. Among other things, it directs each regional board to formulate and adopt a water quality control plan—known as a basin plan—for all areas within the region. The basin plan defines existing and potential beneficial uses and water quality objectives for coastal waters, groundwater, surface waters, imported surface waters, and reclaimed waters in the basin. The RWQCB implements the Basin Plan by issuing and enforcing waste discharge requirements to individuals, communities, or businesses whose waste discharges can affect water quality.

### Water Supply Assessments

In 2001, Senate Bill (SB) 610 amended California law regarding review of water availability for large projects (Section 10910 et seq. of the Water Code; Section 21151.9 of the Public Resources Code [CEQA]; see also Section 15155 of the CEQA Guidelines). Pursuant to SB 610, preparation of a water supply assessment (WSA) is required for projects subject to CEQA that meet specified criteria regarding project size: projects of 500 or more residential units, 500,000 square feet or more of retail commercial space, 250,000 square feet or more of office commercial space, 500 or more hotel rooms, specified industrial uses, or a project that would result in a water demand equal to or greater than the amount needed to serve a 500-unit residential project. These assessments, prepared by "public water systems" responsible for service, address whether there are adequate existing or projected water supplies available to serve proposed projects over a 20-year period, in addition to existing demand and other anticipated development in the service area. The Proposed Project does not propose new residential, commercial, hotel or other development, and therefore, it does not meet the requirements that would trigger the preparation of a WSA.

### California Integrated Waste Management Act

AB 939, known as the California Integrated Waste Management Act of 1989, required all California cities and counties to divert 50% of the waste generated within their boundaries by the year 2000. The act requires each California city and county to prepare, adopt, and submit to CalRecycle a Source Reduction and Recycling Element (SRRE) that demonstrates how the jurisdiction will meet the California Integrated Waste Management Act's mandated diversion goals. Each jurisdiction's SRRE must include specific components, as defined in California Public Resources Code Sections 41003 and 41303. In addition, the SRRE must include a program for the management of solid waste generated in the jurisdiction consistent with the following hierarchy: (1) source reduction, (2) recycling and composting, and (3) environmentally safe transformation, and (4) land disposal.

### Assembly Bill 341

AB 341, adopted in October 2011, amended the California Integrated Waste Management Act and established a statewide policy goal to divert 75% of solid waste from landfills by 2020. AB 341 focused on mandatory commercial recycling and requires California commercial enterprises and public entities that generate 4 or more cubic yards per week of waste to arrange for recycling services.

### Assembly Bill 1826

AB 1826 (2014) requires businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate on a weekly basis. Additionally, AB 1826 requires that, after January 1, 2016, all local jurisdictions implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings with five or more units. Organic waste includes food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste. This law phases in the mandatory recycling of commercial organics over time.

### Warren-Alquist Act

The California legislature passed the Warren-Alquist Act in 1974. The Warren-Alquist Act created the California Energy Commission (CEC). The legislation also incorporated the following three key provisions designed to address the demand side of the energy equation:

- It directed the CEC to formulate and adopt the nation's first energy conservation standards for buildings constructed and appliances sold in California.
- The act removed the responsibility of electricity demand forecasting from the utilities, which had a financial interest in high-demand projections, and transferred it to a more impartial CEC.
- The CEC was directed to embark on an ambitious research and development program, with a particular focus on fostering what were characterized as non-conventional energy sources.

### State of California Energy Action Plan

The CEC and CPUC approved the first State of California Energy Action Plan in 2003. The plan established shared goals and specific actions to ensure that adequate, reliable, and reasonably priced electrical power and natural gas supplies are provided, and identified policies, strategies, and actions that are cost-effective and environmentally sound for California's consumers and taxpayers. In 2005, a second Energy Action Plan was adopted by the CEC and CPUC to reflect various policy changes and actions of the prior 2 years.

At the beginning of 2008, the CEC and CPUC determined that it was not necessary or productive to prepare a new energy action plan. This determination was based, in part, on a finding that the state's energy policies have been significantly influenced by the passage of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006 (discussed below). Rather than produce a new energy action plan, the CEC and CPUC prepared an update that examines the state's ongoing actions in the context of global climate change.

### Senate Bills 1078 (2002), 107 (2006), X1-2 (2011), 350 (2015) and 100 (2018)

Senate Bill (SB) 1078 established the California RPS Program and required that a retail seller of electricity purchase a specified minimum percentage of electricity generated by eligible renewable energy resources as defined in any given year, culminating in a 20% standard by December 31, 2017. These retail sellers include electrical corporations, community choice aggregators, and electric service providers. The bill relatedly required the CEC to certify eligible renewable energy resources, design and implement an accounting system to verify compliance with the RPS by retail sellers, and allocate and award supplemental energy payments to cover above-market costs of renewable energy.

SB 107 (2006) accelerated the RPS established by SB 1078 by requiring that 20% of electricity retail sales be served by renewable energy resources by 2010 (not 2017). Additionally, SB X1-2 (2011) required all California utilities to generate 33% of their electricity from eligible renewable energy resources by 2020. Specifically, SB X1-2 sets a three-stage compliance period: by December 31, 2013, 20% of electricity had to come from renewables; by December 31, 2016, 25% of electricity had to come from renewables; and by December 31, 2020, 33% will be required to come from renewables.

SB 350 (2015) expanded the RPS by requiring retail seller and publicly owned utilities to procure 50% of their electricity from eligible renewable energy resources by 2030, with interim goals of 40% by 2024 and 45% by 2027.

SB 100 (2018) accelerated and expanded the standards set forth in SB 350 by establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030 be secured from qualifying renewable energy sources. SB 100 also states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California. This bill requires that the achievement of 100% zero-carbon electricity does not increase carbon emissions elsewhere in the western grid. Additionally, 100% zero-carbon electricity cannot be achieved through resource shuffling.

Consequently, utility energy generation from non-renewable resources is expected to be reduced based on implementation of the RPS requirements described above. The Proposed Project's reliance on non-renewable energy sources would be reduced accordingly.

### Assembly Bill 1007 (2005)

AB 1007 (2005) required the CEC to prepare a statewide plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). The CEC prepared the plan in partnership with the California Air Resources Board (CARB) and in consultation with other state agencies, plus federal and local agencies. The State Alternative Fuels Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

### Assembly Bill 32 (2006) and Senate Bill 32 (2016)

In 2006, the state legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 required California to reduce its GHG emissions to 1990 levels by 2020. In 2016, the Legislature enacted SB 32, which extended the horizon year of the state's codified GHG reduction planning targets from 2020 to 2030, requiring California to reduce its GHG emissions to 40% below 1990 levels by 2030. In accordance with AB 32 and SB 32, CARB prepares scoping plans to guide the development of statewide policies and regulations for the reduction of GHG emissions. Many of the policy and regulatory concepts identified in the scoping plans focused on increasing energy efficiencies, using renewable resources, and reducing the consumption of petroleum-based fuels (such as gasoline and diesel). As such, the state's GHG emissions reduction planning framework creates co-benefits for energy-related resources.

### California Building Standards

Part 6 of Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. Part 6 establishes energy efficiency standards for residential and non-residential buildings constructed in California to reduce energy demand and consumption. Part 6 is updated periodically to incorporate and consider new energy efficiency technologies and methodologies. The current Title 24 standards are the 2019 Title 24 Building Energy Efficiency Standards, which became effective January 1, 2020. Title 24 also includes Part 11, California's Green Building Standards (CALGreen). CALGreen establishes minimum mandatory standards as well as voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The 2019 CALGreen standards are the current applicable standards. For nonresidential projects, some of the key mandatory CALGreen 2019 standards involve requirements related to bicycle parking, designated parking for clean air vehicles, electric vehicle (EV) charging stations, shade trees, water conserving plumbing fixtures and fittings, outdoor potable water use in landscaped areas, recycled water supply systems, construction waste management, excavated soil and land clearing debris, and commissioning (24 CCR Part 11).

### Integrated Energy Policy Report

The CEC is responsible for preparing integrated energy policy reports that identify emerging trends related to energy supply, demand, and conservation; public health and safety; and maintenance of a healthy economy. The CEC's 2018 Integrated Energy Policy Report discusses the state's policy goals of decarbonizing buildings, doubling energy efficiency savings, and increasing flexibility in the electricity grid system to integrate more renewable energy (CEC 2018). Specifically, for the decarbonizing of building energy, the goal would be achieved by designing future commercial and residential buildings to have their energy sourced almost entirely from electricity in place of natural gas. Regarding the increase in renewable energy flexibility, the goal would be achieved through increases in energy storage capacity within the state, increases in energy efficiency, and adjusting energy use to the time of day when the most amount of renewable energy is being generated. Over time these policies and trends would serve to reduce the Proposed Project's GHG emissions profile and energy consumption as they are implemented.

### State Vehicle Standards

In response to the transportation sector accounting for more than half of California's carbon dioxide ($CO_2$) emissions, AB 1493 was enacted in 2002. AB 1493 required CARB to set GHG emissions standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set GHG emissions standards for

motor vehicles manufactured in 2009 and all subsequent model years. The 2009–2012 standards resulted in a reduction in approximately 22% of GHG emissions compared to emissions from the 2002 fleet, and the 2013–2016 standards resulted in a reduction of approximately 30% compared to the 2002 fleet.

In 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global-warming gases with requirements for greater numbers of zero-emissions vehicles into a single package of standards called Advanced Clean Cars. By 2025, when the rules would be fully implemented, new automobiles would emit 40% fewer global-warming gases and 75% fewer smog-forming emissions (CARB 2020a). However, the EPA and National Highway Traffic Safety Administration (NHTSA) published the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, which revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. Since California and 22 other states, as well as the District of Columbia and four cities, filed suit against the EPA and a petition for reconsideration of the rule, the effect of the SAFE Rule on the Advanced Clean Cars program is still to be determined pending the ruling of ongoing litigation.

Although the focus of the state's vehicle standards is on the reduction of air pollutants and GHG emissions, one co-benefit of implementation of these standards is a reduced demand for petroleum-based fuels.

#### Sustainable Communities Strategy

The Sustainable Communities and Climate Protection Act of 2008, or SB 375, coordinates land use planning, regional transportation plans, and funding priorities to help California meet its GHG emissions reduction mandates established in AB 32. As codified in California Government Code Section 65080, SB 375 requires Metropolitan Planning Organizations to include a sustainable communities strategy in their regional transportation plans. The main focus of the sustainable communities strategy is to plan for growth in a fashion that will ultimately reduce GHG emissions, but the strategy is also part of a bigger effort to address other development issues, including transit and vehicle miles traveled (VMT), which influence the consumption of petroleum-based fuels.

### 4.13.2.3 Local

#### City of Santa Cruz Municipal Code

Title 16 of the City's Municipal Code addresses water, sewers, and other public services. Title 16 chapters relevant to water service include:

- Chapter 16.01, Water Shortage Regulations and Restrictions
- Chapter 16.02, Water Conservation
- Chapter 16.03, Plumbing Fixture Retrofit Regulations
- Chapter 16.04, Water Services
- Chapter 16.05, Loch Lomond Recreation Area, Watershed Lands and Riparian Conservation Areas
- Chapter 16.06, Regulation of Water Wells
- Chapter 16.09, Water System Improvements
- Chapter 16.10, Desalination Plant – Voter Approval
- Chapter 16.11, Water Service Accounts
- Chapter 16.13, Unified Utilities Billing System

- Chapter 16.14, System Development Charges
- Chapter 16.15, Water Use
- Chapter 16.16, Water-Efficient Landscaping
- Chapter 16.24, Utility Service Area Expansion

The City has enacted several ordinances regarding water conservation. Chapter 16.01 identifies regulations and restrictions during declared times of water shortages. Chapter 16.02 sets forth water conservation provisions to prevent the waste or unreasonable use or method of use of water. Chapter 16.16 sets forth requirements for water-efficient landscaping and also is intended to comply with the California Government Code Section 65591 et seq., the Water Conservation in Landscaping Act. The regulations are applicable to applicants for new, increased, or modified water service within the areas served by the City. On June 28, 2011, the City Council adopted Ordinance 2011-04, which amends the Municipal Code and adds a new section (16.08.065) to allow graywater use for irrigation. Graywater is wastewater that originates from showers, bathtubs, bathroom sinks, and clothes washing machines.

Chapter 16.08 ("Sewer System Ordinance") of the City's Municipal Code regulates discharge to sanitary sewer and requires that all wastewater be discharged to public sewers, with the exception of graywater as allowed by Municipal Code Chapter 16.08. Septic tanks and cesspools are not allowed within city boundaries except as specified for limited conditions in Chapter 6.20 of the Municipal Code.

### General Plans and Local Coastal Programs

The study area for the Proposed Project includes the jurisdictions of the City of Santa Cruz, City of Capitola, City of Scotts Valley, and County of Santa Cruz. The general plans and, where relevant, the local coastal programs of these jurisdictions include policies and programs related to utilities and energy. Section 4.9, Land Use and Planning, discusses applicable general plan and local coastal program policies related to utilities and energy, as relevant to the Proposed Project.

### Santa Cruz County Landfill Ban

On June 21, 2005, the Santa Cruz County Board of Supervisors voted to ban the disposal of recyclable materials in the Buena Vista Landfill and created new requirements for County residents and businesses to recycle. The ban prohibits placement of recyclable materials in refuse containers in the unincorporated County area. The landfill ban and list of recyclable materials prohibited are provided in the Santa Cruz County Code, Title 7, Health and Safety, Chapter 7.20, Solid Waste. The list covers a variety of household and commercial wastes, ranging from yard waste and newspapers, to concrete and electronic waste, among many others. The ban further provides that if the director of Santa Cruz County Department of Public Works determines that a particular recyclable material cannot be recycled for a specific time period, then the director may permit the disposal of said recyclable material at any county disposal facility for that time period.

### Santa Cruz County Zero Waste Plan

In 2015, the County of Santa Cruz Department of Public Works published the Zero Waste Plan. The Plan is intended to guide County officials in the planning and decision-making process to achieve zero waste goals. The Plan outlines several strategies and initiatives aimed at moving the County towards a zero-waste future. These include:

- Supporting legislation and adopting policies that require minimized environmental impacts and reduce the waste stream;
- Ensuring that facilities and infrastructure are in place to properly manage all recovered materials;

- Continuing to implement activities and programs that support the County's Zero Waste Policy;
- Fostering sustainable green practices and business;
- Educating and engaging businesses, organizations, public agencies, and residents to encourage zero-waste behavior change (SCCDPW 2015).

### Energy Watch Program

The Association of Monterey Bay Area Governments (AMBAG) Energy Watch Program is a partnership between AMBAG and PG&E, which seeks to reduce energy use in the Monterey Bay region by providing the following resources to eligible PG&E customers:

- Energy assessments and audits
- Direct installation of energy efficient equipment
- Technical assistance and financial incentives for energy efficient retrofits in municipal buildings
- Energy efficiency seminars and training courses in the region.
- Information on other PG&E energy efficiency programs and services

AMBAG is the MPO for the region, which includes Monterey, San Benito, and Santa Cruz counties. In 2008, AMBAG adopted the Monterey Bay Regional Energy Plan, which provides a framework that local cities and counties can adopt or use as guidelines to reduce energy use (AMBAG 2008). Also, AMBAG adopted the Monterey Bay 2040 Moving Forward – 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy (2040 MTP/SCS), the implementation of which is anticipated to achieve a 4%-per-capita reduction and nearly 7%-per-capita reduction in GHG emissions from passenger vehicles by 2020 and 2035, respectively (AMBAG 2018). The 2040 MTP/SCS outlines the region's proposed transportation network, emphasizing multimodal system enhancements, system preservation, and improved access to high quality transit, as well as land use development that complements this transportation network (AMBAG 2018). These transportation strategies would reduce VMT and associated petroleum fuels.

In addition, local climate action plans and strategies, which include energy-consumption-reduction measures, are described in Section 4.6, Greenhouse Gas Emissions.

## 4.13.3 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to water supply, wastewater and solid waste, and energy. 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.

### 4.13.3.1 Standards of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to utilities and energy 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. Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects, or extend a sewer trunk line with capacity to serve new development.
B. Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years, or use water in a wasteful manner.
C. Result in a determination by the wastewater treatment provider, which serves or may serve the project, that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
D. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.
E. Not comply with federal, state, and local management and reduction statutes and regulations related to solid waste or litter control.
F. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation, or
G. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

### 4.13.3.2 Analytical Methods

This section evaluates the potential utilities and energy impacts associated with construction and operation of the Proposed Project. The analysis of potential impacts addresses the various project and programmatic components listed in Table 4.13-2, which are described in detail in Chapter 3, Project Description.

**Table 4.13-2. 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 | | ✓ |

## Water Supply and Wastewater

The analyses are based on review of the project and programmatic components of the Proposed Project in light of existing adopted plans. Operation of the Proposed Project would result in a limited increase of permanent employees, estimated at a total of three new staff.

## Solid Waste

The analysis of potential solid waste impacts associated with the project and programmatic infrastructure components is based on a qualitative discussion in comparison to the existing capacities of landfills expected to serve the Proposed Project.

## Energy

### Construction

***Electricity.*** The amount of electricity used during construction of the project and programmatic infrastructure components would be minimal because typical demand would stem from electrically powered hand tools. As such, construction electricity demand is qualitatively addressed.

***Natural Gas.*** Natural gas is not anticipated to be required during construction of the project and programmatic infrastructure components; therefore, construction natural gas demand is qualitatively addressed.

***Petroleum.*** Potential impacts were assessed for off-road equipment and on-road vehicle trips during construction, as provided by the California Emissions Estimator Model (CalEEMod) outputs (see Appendix E). Fuel consumption from construction equipment and vehicle trips was estimated by converting the total $CO_2$ emissions anticipated to be generated by the construction of each project and programmatic infrastructure component to gallons using conversion factors for $CO_2$ to gallons of gasoline or diesel. The conversion factor for gasoline is 8.78 kilograms per metric ton (MT) $CO_2$ per gallon, and the conversion factor for diesel is 10.21 kilograms per MT $CO_2$ per gallon (The Climate Registry 2019). Heavy-duty construction equipment associated with construction activities, vendor trucks, and haul trucks are assumed to use diesel fuel. Worker vehicles are assumed to be gasoline fueled. All details for construction criteria air pollutant emissions modeling discussed in Section 4.2, Air Quality, as well as Appendix E, are also applicable for the estimation of construction-related energy consumption. See Section 4.2.3.2, Analytical Methods, and Appendix E for a discussion of construction emissions calculation methodology and assumptions used in the energy analysis.

### Operation

Once project and programmatic infrastructure component construction is complete, operations would entail a minimal increase in on-road vehicle trips associated with routine inspection and maintenance of the new facilities by City staff. It is anticipated that up to three new staff would be needed, one for the Agreed Flows implementation and two for the new ASR facility maintenance. An additional daily vehicle trip was included for Beltz ASR facility maintenance. As a conservative estimate, these new daily vehicle trips were assumed to occur seven days a week, 365 days per year. Fuel consumption from vehicle trips was estimated by converting the total $CO_2$ emissions anticipated to be generated to gallons using conversion the factor for $CO_2$ to gallons of gasoline. The Proposed Project would also result in increased electricity demand for water conveyance.

### Application of Relevant Standard Practices

The Proposed Project does not include any standard operational or construction practices that are relevant to utilities and energy.

## 4.13.3.3 Project Impact Analysis

This section provides a detailed evaluation of utilities and energy impacts associated with the Proposed Project. Impacts associated with stormwater drainage (Significance Standard A) are addressed in Section 4.8, Hydrology and Water Quality.

**Impact UTL-1:** **New or Expanded Facilities (Significance Standard A).** Construction and operation of the Proposed Project would result in new or expanded water facilities that would result in significant impacts, but would not require or result in new or expanded wastewater treatment, storm drainage, electric power, natural gas, or telecommunications facilities or a new sewer trunk line. ***(Significant and Unavoidable)***

#### Water Rights Modifications

The water right modifications of the Proposed Project would not directly result in construction or operation of new facilities and associated significant environmental effects. Therefore, this project component would have no direct impacts.

The following analysis evaluates the potential indirect impacts related to new or expanded utilities 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

The project and programmatic infrastructure components of the Proposed Project would not require or result in the construction of wastewater treatment, electric power, natural gas, or telecommunications facilities that could result in potential significant environmental effects. Similarly, the Proposed Project would not require or result in construction or extension of a sewer trunk line with capacity to serve new development. However, the Proposed Project does include new and/or expanded infrastructure components to existing water system facilities, which primarily are minor infrastructure improvements that are described below. However, some of these infrastructure improvements would result in potentially significant impacts, primarily related to biological resources (nesting birds, special status species, sensitive habitat), cultural resources (archaeological, historical and tribal cultural resources), drainage, paleontological resources, hazardous materials, and construction and operational noise, as described throughout Chapter 4, Environmental Setting, Impacts, and Mitigation Measures. These impacts can be reduced to a less-than-significant level, except for temporary construction noise at new ASR facilities and Beltz 9 ASR facility, which would remain significant and unavoidable. The impacts of new infrastructure components that are analyzed in this EIR are summarized below.

<u>Aquifer Storage and Recovery Facilities</u>

**New ASR Facilities.** New ASR facilities could be located in the Santa Cruz Mid-County and/or the Santa Margarita Groundwater Basins at unidentified locations and would likely consist of the following components: (1) a pump control and chemical storage building; (2) a treatment system; (3) backwash tank(s) used in the treatment system; (4) a water

well and monitoring wells, submersible pump and concrete pedestal, station piping including treated water pipelines, sewer connections, and stormwater drainage facilities that would connect to nearby facilities in adjacent roadways. Additionally, new ASR facilities would include security fencing and security lighting. A typical facility would require a site approximately 0.25 acres in size. Up to four new ASR facilities and associated sites are anticipated.

This EIR evaluates the impacts of construction and operation of new ASR facilities throughout Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, and identifies potentially significant impacts that can be reduced to a less-than-significant level with mitigation related to: special-status wildlife and nesting birds (Impact BIO-1B), special-status plants (Impact BIO-1C), sensitive habitat (Impact BIO-2), jurisdictional aquatic resources (Impact BIO-3), historic resources (Impact CUL-1), archaeological resources (Impact CUL-2), tribal cultural resources (Impact CUL-3), seismic hazards related to induced liquefaction (Impact GEO-1), paleontological resources (Impact GEO-4), release of hazardous materials from existing contaminated soil or groundwater (Impact HAZ-2), construction noise related to non-drilling activities (Impact NOI-2), and construction vibration (Impact NOI-3). Additionally, a significant and unavoidable temporary construction noise impact would result from drilling operations at these new ASR facilities (Impact NOI-2).

**Beltz ASR Facilities.** The Proposed Project would result in addition of minor appurtenant facilities at each of the Beltz wells to allow for ASR. These improvements generally consist of installation of new pipeline segments and upgrading and/or replacement of existing well pumps. Additional water treatment facilities may also be added at Beltz 8 and 12 ASR facilities and new monitoring wells would be installed at the Beltz 9 ASR facility. Proposed improvements are summarized below and shown on Figures 3-4a through 3-4d in Chapter 3, Project Description.

- Beltz 8 ASR Facility. For injection purposes, a new permanent 120-foot-long supply pipeline would be installed between the well and the existing distribution system piping. Improvements at this site would also include a new pipeline between the existing tank and the existing storm drain inlet, replacement of the existing submersible pump and modifications to the well head, including control panel. The existing pump and motors might be upsized to handle additional flows from the wells once all wells are converted to ASR wells. In addition, as part of a treatment plant upgrade, a second backwash tank might be installed to handle the additional backwash volumes once all existing Beltz wells (8, 9, 10, and 12) are converted to ASR wells.
- Beltz 9 ASR Facility. For injection purposes, a new permanent 120-foot-long supply pipeline would be installed between the well and the existing distribution system piping on 30th Avenue. Improvements at this site would also include replacement of the existing submersible pump and modifications to the well head, including control panel. Up to three additional approximately 2-inch-diameter monitoring wells (screened in the A and AA formation of the Purisima Aquifer) would be constructed. The wells would be constructed within the City-owned property in existing pavement or adjacent to the pavement within an existing planter area.
- Beltz 10 ASR Facility. A new permanent 140-foot-long supply pipeline would be installed between the well and the existing distribution system piping located on 34th Avenue for injection purposes. The existing submersible pump and motor assembly and control panel would be replaced. New piping and electrical conduits would be installed between the well head and the new control panel.
- Beltz 12 ASR Facility. A new permanent 100-foot-long supply pipeline would be installed between the well and the existing distribution system on Research Park Drive for injection purposes. For extraction purposes, the existing submersible pump and motor would be removed and replaced, including new valves and control panel. In addition, a second pressurized media filter tank used in the iron and manganese treatment system may be installed if needed to handle the additional flow delivered from the well.

The proposed improvements are relatively minor in size and located within existing developed areas. This EIR evaluates the impacts of construction and operation of new facilities including Beltz ASR facilities throughout Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, and identifies potentially significant impacts that can be reduced to a less-than-significant level with mitigation related to: nesting birds (Impact BIO-1B, archaeological resources (Impact CUL-2), tribal cultural resources (Impact CUL-3), paleontological resources (Impact GEO-4), localized impacts related to groundwater quality or restrictive effects in nearby wells (Impact HYD-2), and construction noise related to non-drilling activities (Impact NOI-2). Additionally, a significant and unavoidable temporary construction noise impact would result from drilling operations for Beltz 9 ASR facility (Impact NOI-2).

Water Transfers and Exchanges and Intertie Improvements

**City/SVWD Intertie.** The City's water supply system could be interconnected to the SVWD's system through installation of approximately 8,000 linear feet of new 12-inch-diameter intertie piping from Sims Road in the south, along La Madrona Drive to the north to the City of Scotts Valley where a new pump station would be constructed (URS 2013b) (see Figure 3-4e in Chapter 3, Project Description). Interconnection of the SVWD and the SLVWD systems has already been constructed and permitted for emergency use, as part of the Scotts Valley Multi-Agency Regional Intertie Project. Additional permitting would be required to use the existing intertie for non-emergency use such as could be pursued as part of a potential future water supply transfer and exchange project. It is possible that other alignments to connect the City's system to SVWD and/or SLVWD could be considered in the future. A range of alternative pipeline alignments and pump station locations would likely be considered if and when an intertie project is pursued, planned, and designed. Depending upon the ultimate alignment and project selected, additional environmental review under CEQA may be required. This EIR evaluates the impacts of construction and operation of new facilities that may be needed for the City/SVWD intertie throughout Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, and identifies potentially significant impacts that can be reduced to a less-than-significant level with mitigation related to: special-status wildlife and nesting birds (Impact BIO-1B), special-status plants (Impact BIO-1C), sensitive habitat (Impact BIO-2); archaeological resources (Impact CUL-2), tribal cultural resources (Impact CUL-3), paleontological resources (Impact GEO-4), construction noise (Impact NOI-2), and construction vibration (Impact NOI-3).

**City/SqCWD/CWD Intertie.** The existing interties between the City's water system and the SqCWD's water system have capacity for 1.5 mgd during normal operations (City of Santa Cruz 2015). However, additional pipeline replacements and an upgrade to SqCWD's McGregor Drive pump station would likely be needed to more efficiently move water through its service area (see Figure 3-4f in Chapter 3, Project Description). Additionally, two new pump stations on the interties between SqCWD and CWD, on Huntington Drive and on Soquel Drive near Freedom Boulevard, would be required to allow SqCWD to move water to CWD (see Figure 3-4g in Chapter 3, Project Description). Currently, CWD can move water to SqCWD, but SqCWD cannot move water to CWD due to the hydraulics in the water distribution systems for both districts. This EIR evaluates the impacts of construction and operation of new facilities that may be needed for the City/SqCWD/CWD intertie throughout Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, and identifies potentially significant impacts that can be reduced to a less-than-significant level with mitigation related to: special-status wildlife and nesting birds (Impact BIO-1B), special-status plants (Impact BIO-1C), sensitive habitat (Impact BIO-2), historic resources (Impact CUL-1), archaeological resources (Impact CUL-2), tribal cultural resources (Impact CUL-3), paleontological resources (Impact GEO-4), release of hazardous materials from existing contaminated soil or groundwater (Impact HAZ-2), alteration to drainage patterns (Impact HYD-3), construction noise (Impact NOI-2), and construction vibration (Impact NOI-3).

**Felton Diversion Improvements.** Proposed fish passage improvements at the Felton Diversion would be designed to support use of City water rights while improving passage for coho salmon and steelhead. These improvements may include fish screen replacement, installation of a traveling brush system to keep the fish screens operating at optimum

efficiency, and construction of a continuous downstream outmigration bypass route within the existing bypass channel with downstream opening slide gate. These improvements would be constructed on the west side of the Felton Diversion entirely within the existing concrete diversion facility structure (see Figure 3-4h in Chapter 3, Project Description). These improvements would not require any construction activities or disturbance in the river bed. This EIR evaluates the impacts of fish passage improvements at the Felton Diversion throughout Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, and identifies potentially significant impacts that can be reduced to a less-than-significant level with mitigation related to: nesting birds (Impact BIO-1B), archaeological resources (Impact CUL-2), tribal cultural resources (Impact CUL-3), and construction noise (Impact NOI-2).

**Tait Diversion and Coast Pump Station Improvements.** Improvements at the Tait Diversion and Coast Pump Station facility would provide for future reliability of the water supply and to allow the City the option of diverting water under the existing Felton Diversion water rights at either the Felton Diversion or downstream at the Tait Diversion (see Figure 3-4i in Chapter 3, Project Description). Specifically, the capacity of the Tait intake and pump station would be designed to accommodate up to 28 cfs[6] of surface water flows. Improvements at the Tait Diversion could include, but would not be limited to, (1) a new or modified intake design, (2) upstream and/or downstream hydraulic modifications, (3) improvements to the check dam, and (4) any required fish passage upgrades. Upgrades would be implemented to meet current state and federal fisheries protection criteria. Improvements could include, but would not be limited to, one or more of the following: dam notching incorporating a spillway crest gate and new upstream river intake with flat plate intake screen; conventional vertical slot fish ladder and new upstream river intake housing a gallery of retrievable cylindrical fish screens; incorporation of a Coanda intake screen within the dam and conventional Denil-style fish ladder at the right abutment; and/or 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, but would not be limited to, (1) new pumps and motors; (2) primary and backup power upgrades, which could include upgrades to the Pacific Gas & Electric substation; (3) a new or modified concrete wet well; and (4) a solids handling system.

The Tait Diversion improvements would likely require construction activities and disturbance in the river bed. This EIR evaluates the impacts of fish passage improvements at the Tait Diversion and improvements to the Coast Pump Station throughout Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, and identifies potentially significant impacts that can be reduced to a less-than-significant level with mitigation related to: special status wildlife and nesting birds (Impact BIO-1B), special-status plants (Impact BIO-1C), sensitive habitat (Impact BIO-2), jurisdictional aquatic resources (Impact BIO-3), archaeological resources (Impact CUL-2), tribal cultural resources (Impact CUL-3), paleontological resources (Impact GEO-4), and construction and operational noise (Impact NOI-1 and Impact NOI-2).

### Mitigation Measures

As described above, implementation of the mitigation measures identified in other technical sections of Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, would reduce potentially significant impacts of the Proposed Project related to utilities identified in Impact UTL-1, to a less-than-significant level for most project and programmatic infrastructure components. However, as indicated in Impact UTL-1, the new ASR facilities and the Beltz 9 ASR facility would have significant and unavoidable temporary construction noise impacts due to well drilling operations.

[6] Intake and pump station capacity of 28 cfs would provide for the proposed diversion of water at the Tait Diversion under both the Tait Licenses and Felton Permits.

**Impact UTL-2: Water Supplies (Significance Standard B).** Operation of the Proposed Project would provide sufficient water supplies to serve the Proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years. ***(Beneficial)***

The Proposed Project includes three primary components: water rights modifications, water supply augmentation components (ASR and water transfers), and surface water diversion improvements. As discussed in Impact UTL-1, the Proposed Project would result in some improvements to existing facilities and some new facilities. Upon completion, it is estimated that approximately three new City staff would be added for maintenance, which would result in a minor increase in water demand that could be served by existing supplies. However, the Proposed Project would not result in new residential, commercial, office or other type of development that would result in a demand for water service.

The water rights modifications of the Proposed Project would allow use and transfer of City water, when available, for ASR or water transfers with other water districts. The underlying purpose of the Proposed Project is to improve flexibility in operation of the City's water system while enhancing stream flows for local anadromous fisheries. Incorporating the Agreed Flows into all City water rights is necessary to benefit local fisheries, specifically for coho salmon and steelhead, but would further constrain the City's limited surface water supply. Consequently, the City needs to improve operational flexibility of the water system within existing rights, permits, and licenses to allow better use of limited water resources. To do this, the City is proposing water rights modifications to the existing rights, permits, and licenses to expand the authorized place of use (POU) and provide for other modifications related to the method of diversion, points of diversion and re-diversion, underground storage and purpose of use, and extension of time to put water to full beneficial use, which would allow the City to better utilize existing diversions. This in turn would enable implementation of water supply augmentation improvements, which support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers and exchanges) and Element 2 (active recharge of regional aquifers via ASR) to deliver a safe, adequate, reliable and environmentally sustainable water supply, which is one of the primary objectives of the Proposed Project. The Proposed Project also would facilitate opportunities within the City and regionally for conjunctive use[7] of the City's surface water rights in combination with groundwater by addressing significant barriers to implementing conjunctive use due to the place of use associated with the City's water-right permits and licenses. This would, among other things, assist in implementation of the "Water Transfers/In Lieu Groundwater Recharge" element of the Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan.

An increase in available water supplies within the areas served by the City over existing conditions would occur as a result of the Proposed Project (see Table 3-9 in Chapter 3, Project Description) that would meet projected supply deficits during times of identified water supply shortfalls. While existing City water supplies would be used for the water augmentation component (ASR and water transfers) as a result of the Proposed Project, this would occur at times of water availability and would also result in underground storage of water for future extraction during dry periods. With the flexibility provided by the Proposed Project water rights modifications and in combination with conjunctive management and water augmentation options, the Proposed Project would eliminate potential water shortfalls during dry and multiple-dry years to meet the projected demand in the areas served by the City. The hydrological and water supply modeling conducted for the Proposed Project includes ASR facilities and water transfers. The results show that water supplies would be adequate to meet the estimated projected demand of 3,200 mgy for all customers in the City's water service area, as described in Chapter 3, Project Description. It is also noted that the current water demand projection for UCSC for the year 2040 is approximately 20 mgy less than the 308 mgy forecast for UCSC in the City's

[7] Conjunctive use refers to a range of actions and projects that provide for the coordinated management of surface water and groundwater supplies to increase total supplies and enhance water supply reliability. Conjunctive use actions and projects can also be used to sustainably manage groundwater supplies.

2015 UWMP based on the water demand projection for the currently proposed 2021 LRDP (UCSC 2021). Therefore, the Proposed Project, including all project and programmatic components, provides adequate water supplies to serve direct demand from new City staff associated with the Proposed Project and projected demand in the areas served by the City during currently constrained dry periods. Therefore, the Proposed Project's impact related to water supply would be beneficial.

Public comments during the Scoping period (see Chapter 2, Introduction, and Appendix A) expressed concern that the Proposed Project would result in adverse long-term impacts on water consumption related to diversion from the San Lorenzo Valley and transfers to the SqCWD and other POUs. While the proposed water rights modifications do change place of use, there is no proposed change in the amount of water that the City can divert. Primarily, the Proposed Project would allow for direct transfer to the City's GHWTP and future distribution for ASR and/or transfers to other agencies, that could include SLVWD and SVWD in addition to SqCWD. SLVWD has filed a protest with the State Water Resources Control Board concerning the City's water rights petitions. SLVWD's protest expresses concerns about: (1) SLVWD's access to water from the City's Loch Lomond water under the two agencies' contract; and (2) the effect of the City's proposed changes to minimum flows at the Big Trees gage below Felton (see Appendix B, Water Rights Petitions). The City intends to comply with its contract with SLVWD, which the two agencies understand to give SLVWD access to 313 acre-feet per year of water from Loch Lomond Reservoir. That allotment is assumed in the City's hydrologic, water supply and fisheries modeling for the Proposed Project and this EIR. Under water-right permit no. 20123, SLVWD's right to divert water from tributaries to the San Lorenzo River upstream of Felton is tied to flows at the Big Trees gage below Felton. Specifically, term 13 of that permit states that SLVWD "may divert water under this permit only when flow in the San Lorenzo River below the Felton Diversion Weir exceeds the following amounts: a. September – 10 cubic feet per second; b. October – 25 cubic feet per second; c. November 1 through May 31 – 20 cubic feet per second." The City proposes increased streamflow requirements for itself at the Big Trees gage, which actually should cause the flows stated in permit no. 20123's term 13 to be met more often. The Proposed Project therefore will not adversely affect SLVWD as it will not limit its ability to divert above Felton under its permit no. 20123. Therefore, the Proposed Project would not result in adverse changes in water supply to SLVWD or SVWD.

### Mitigation Measures

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

**Impact UTL-3: Wastewater Treatment Capacity (Significance Standard C).** Operation of the Proposed Project would have adequate wastewater treatment capacity to serve project demand. ***(Less than Significant)***

The Proposed Project would result in some improvements to existing facilities. Upon completion, it is estimated that approximately three new employees could be added for maintenance, which would result in minor increased wastewater flows. With a remaining capacity of 4.0 mgd, the City's WWTF has adequate capacity to serve this minor increase in flows.

The ASR element of the water supply augmentation component would include backflushing of injection and extraction facilities and would result in the generation of sludge that would be discharged to a nearby County of Santa Cruz sanitary sewer line. Sewer discharge permits from the SCCSD would be required to permit discharge from each new ASR facility and Beltz ASR would operate under existing sewer discharge permits from SCCSD. Since backflushing of facilities is an intermittent activity, it would not substantially affect average wastewater flows, and there is existing adequate excess capacity available to the SCCSD at the City's WWTF, and therefore, the Proposed Project's impact would be less than significant.

### Mitigation Measures

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

**Impact UTL-4: Solid Waste Generation (Significance Standard D).** Construction and operation of the Proposed Project would not generate solid waste in excess or state or local standards, or of the capacity of local infrastructure, or impair attainment of solid waste reduction goals. ***(Less than Significant)***

Construction activities would generate solid waste, including vegetation, asphalt, concrete, and other nonhazardous materials, that could be disposed of in a landfill. Excavation during construction of project and programmatic infrastructure components, including ASR facilities, pipeline trenches, pump stations, and diversions, would generate spoils, some of which would be expected to be reused on the component sites as fill material. In general, project and programmatic infrastructure components would not be large in size and would not result in the generation of a substantial amount of waste materials requiring off-site disposal. Earthen spoils that could not be accommodated on the component sites (e.g., for sites that would use new/engineered backfill material rather than native material) could either be used as fill for other construction projects in the area or could be hauled to a landfill to be used as intermediate cover.[8] It is expected that the disposal of construction materials would generally be limited, and the majority of construction waste would be recycled and reused due to the cost of disposing of such materials.

As described above, any off-site disposal would be at the City's RRF, which has an expected closure date of January 2058, or the County's Buena Vista Landfill, which has an expected closure date of July 2031. As described above in Section 4.13.1.4, Solid Waste, the City's RRF and the Buena Vista Landfill have remaining capacities of 46% and 29%, respectively, or a total of 7,013,018 cy of solid waste. Daily throughput in 2019 averaged 26% and 33% of the facilities' permitted daily capacities, respectively. Given this, the City's RRF and County's Buena Vista Landfill would have adequate capacity to accommodate solid waste generated by the Proposed Project and the impact would be less than significant.

### Mitigation Measures

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

**Impact UTL-5: Compliance with Solid Waste Regulations (Significance Standard E).** Construction and operation of the Proposed Project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste. ***(Less than Significant)***

The Proposed Project would be required to comply with all applicable regulations associated with the reduction of solid waste entering landfills, including the California Integrated Waste Management Act, potentially new more aggressive statewide resource recovery goals (i.e., AB 341 policy goal of 75% reduction), as well as the City's and County's plans, policies, and programs related to recycling/diversion and disposal of solid waste. As previously noted, during construction, all wastes would be expected to be recycled to the maximum extent possible, in accordance with applicable regulations. All nonhazardous solid waste generated from the Proposed Project once operational would be recycled, with a goal of 75%, in compliance with the Integrated Waste Management Act. Unsalvageable materials generated from the Proposed Project would be disposed of at authorized sites in accordance with all applicable federal,

[8] As defined in 27 CCR Section 20700, intermediate cover is compacted earthen material of at least 12 inches placed on the surface of a fill where no additional solid waste will be deposited within 180 days. Intermediate cover reduces odors, keeps litter from scattering, and helps deter scavengers.

state, and local statutes and regulations. Thus, the Proposed Project would comply with state and local statutes and regulations related to solid waste during construction and operation and the impact would be less than significant.

### Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to compliance with solid waste regulations, and therefore, no mitigation measures are required.

**Impact UTL-6: Result in Wasteful, Inefficient or Unnecessary Consumption of Energy Resources (Significance Standard F).** Construction and operation of the Proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. ***(Less than Significant)***

### Construction

Electricity

Temporary electric power for as-necessary lighting and electronic equipment would be provided by 3CE. The amount of electricity used during construction would be minimal because typical demand would be generated by electrically powered hand tools. The electricity used for construction activities would be temporary and minimal; therefore, Proposed Project construction would not result in wasteful, inefficient, or unnecessary consumption of electricity.

Natural Gas

Natural gas is not anticipated to be required during construction of the Proposed Project. Fuels used for construction would primarily consist of diesel and gasoline, which are discussed below. Any minor amounts of natural gas that may be consumed as a result of Proposed Project construction would be temporary and negligible and would not have an adverse effect; therefore, Proposed Project construction would not result in wasteful, inefficient, or unnecessary consumption of natural gas.

Petroleum

Heavy-duty equipment associated with construction would rely on diesel fuel, as would vendor trucks involved in delivery of materials to the project site and haul trucks exporting materials off site. Construction workers would travel to and from the project sites throughout the duration of construction. It is assumed in this analysis that construction workers would travel in gasoline-powered light-duty vehicles. Appendix E lists the assumed equipment usage and vehicle trips for construction of each project and programmatic infrastructure component.

As described above in Section 4.13.3.2, Analytical Methods, fuel consumption from construction equipment was estimated by converting the total $CO_2$ emissions from each construction phase to gallons using the conversion factors for $CO_2$ to gallons of gasoline or diesel. The conversion factor for gasoline is 8.78 kilograms per MT $CO_2$ per gallon, and the conversion factor for diesel is 10.21 kilograms per MT $CO_2$ per gallon (The Climate Registry 2019).

The estimated diesel fuel usage from construction equipment, haul trucks, and vendor trucks, as well as estimated gasoline fuel usage from worker vehicles is shown in Table 4.13-3.

## Table 4.13-3. Proposed Project Construction Petroleum Demand

| Project or Programmatic Component | Off-Road Equipment (diesel) | Haul Trucks (diesel) | Vendor Trucks (diesel) | Worker Vehicles (gasoline) |
|---|---|---|---|---|
| | *gallons* | | | |
| New ASR Facility Monitoring Wells[2] | 38,333.95 | 58.30 | 491.40 | 564.33 |
| New ASR Facility Supply Wells[2] | 26,094.81 | 145.74 | 304.64 | 546.83 |
| New ASR Facility Treatment Facilities[2] | 64,021.59 | 202.59 | 2,052.34 | 1,980.68 |
| Beltz 8 ASR Facility | 5,225.05 | 22.57 | 326.66 | 350.90 |
| Beltz 9 ASR Facility | 4,089.47 | 14.96 | 136.88 | 129.66 |
| Beltz 10 ASR Facility | 1,988.05 | 7.35 | 98.86 | 82.76 |
| Beltz 12 ASR Facility | 2,917.47 | 22.57 | 150.88 | 148.34 |
| City/SVWD Intertie - Pipeline | 11,157.02 | 564.98 | 837.27 | 429.62 |
| City/SVWD Intertie - New Pump Station | 3,151.48 | 0.00 | 72.59 | 83.99 |
| City/SqCWD/CWD[1] Intertie - Pipelines | 22,923.53 | 1,188.29 | 1,780.12 | 1,063.30 |
| City/SqCWD/CWD[1] Intertie - New Pump Stations | 6,306.15 | 0.00 | 150.89 | 202.96 |
| City/SqCWD/CWD[1] Intertie - Pump Station Upgrade | 2,179.77 | 15.04 | 50.29 | 74.17 |
| Felton Diversion Improvements | 1,956.11 | 28.60 | 48.39 | 90.44 |
| Coast Pump Station Upgrade | 2,319.55 | 14.23 | 48.20 | 68.78 |
| Tait Diversion Improvements | 21,744.42 | 64.05 | 731.45 | 379.52 |
| **Total** | **214,408.42** | **2,349.25** | **7,280.86** | **6,196.29** |

**Notes:** ASR = aquifer storage and recovery; CWD = Central Water District; SqCWD = Soquel Creek Water District; SVWD = Scotts Valley Water District. See Appendix E for details.

1 The CalEEMod modeling included in Appendix E for the City/SqCWD/CWD intertie connections and new pump stations accounted for one representative intertie connection and one new pump station. However, since two intertie connections and two new pump stations are anticipated for the City/SqCWD/CWD intertie, the petroleum demand for these components were multiplied by two for inclusion in this table.

2 The CalEEMod modeling included in Appendix E accounted for one representative monitoring well, one supply well, and one treatment facility. However, since up to four new ASR facilities are anticipated, the petroleum demand for the new ASR facilities were multiplied by four for inclusion in this table.

As shown in Table 4.13-3, the Proposed Project is estimated to consume approximately 230,235 gallons of petroleum during the construction phase. By comparison, approximately 29 billion gallons of petroleum are consumed in California annually (EIA 2020d). Thus, the Proposed Project's petroleum consumption would constitute less than 0.001% of the statewide annual petroleum consumption. Overall, because the Proposed Project would not be unusual as compared to overall local and regional demand for energy resources and would not involve characteristics that require equipment that would be less energy-efficient than at comparable construction sites in the region or state, the Proposed Project construction would not result in wasteful, inefficient, or unnecessary consumption of petroleum.

### Operations

#### Electricity

As provided by the City, the Proposed Project is anticipated to require approximately 1.3 million kWh per year more than the 10-year average electricity demand (2009-2018) for facility operations. For context, PG&E, which delivers

electricity to 3CE, reported an annual electrical consumption for Santa Cruz County of approximately 1,212 million kWh in 2018, with 667 million kWh for non-residential use and 545 million kWh for residential use (CEC 2020a). The additional electricity demand for the Proposed Project would represent a minimal increase in usage throughout the County and would not be unusual or wasteful as compared to overall local and regional demand for energy resources. Therefore, Proposed Project operations would not result in wasteful, inefficient, or unnecessary consumption of electricity.

Natural Gas.

Natural gas is not anticipated to be required during operation of the Proposed Project. Any minor amounts of natural gas that may be consumed as a result of Proposed Project operations would be negligible; therefore, Proposed Project operations would not result in wasteful, inefficient, or unnecessary consumption of natural gas.

Petroleum

The estimated gasoline fuel usage associated with new employees for Proposed Project operations would be approximately 1,520 gallons per year. This fuel usage would represent a minimal increase in gasoline demand; therefore, Proposed Project operations would not result in wasteful, inefficient, or unnecessary consumption of petroleum.

Overall, based on all of the above considerations, the Proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy resources during construction or operation and would have less-than-significant energy-related impacts.

### Mitigation Measures

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

**Impact UTL-7: Conflict with an Applicable Renewable Energy or Energy Efficiency Plan (Significance Standard G).** Construction and operation of the Proposed Project would not result in conflicts with or otherwise obstruct a state or local plan for renewable energy or energy efficiency. ***(Less than Significant)***

Part 6 of Title 24 of the California Code of Regulations establishes energy efficiency standards for residential and non-residential buildings constructed in California to reduce energy demand and consumption. Part 6 is updated periodically (every 3 years) to incorporate and consider new energy efficiency technologies and methodologies. Title 24 also includes Part 11, CALGreen. CALGreen institutes mandatory minimum environmental performance standards for all ground-up, new construction of commercial and state-owned buildings. Components of the Proposed Project would meet any applicable Title 24 and CALGreen standards to reduce energy demand and increase energy efficiency.

Additionally, as discussed in Section 4.6, Greenhouse Gas Emissions, the Proposed Project would not conflict with the various state and local plans that mandate reduced energy use. Overall, the Proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency; therefore, impacts during construction and operation of the Proposed Project would be less than significant.

### Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to conflicts with applicable renewable energy or energy efficiency plans, and therefore, no mitigation measures are required.

### 4.13.3.4 Cumulative Impacts Analysis

This section provides an evaluation of cumulative utilities and energy 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.

**Impact UTL-8: Cumulative Water and Wastewater Impacts (Significance Standards B and C).** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to water and wastewater. ***(Less than Significant)***

With regard to water and wastewater utilities, the geographic area considered in the cumulative analysis includes the geographic vicinity of the project and programmatic infrastructure component sites (Significance Standard A) and the areas served by the City (Significance Standards B and C). Standard A addresses whether new or expanded infrastructure would result in a significant impact, and the impacts of the project and programmatic infrastructure components are addressed in the cumulative sections for each topic in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, of this EIR.

Standards B and C address whether adequate water supplies and wastewater treatment capacity are available to serve cumulative development. As explained in Impact UTL-2, the Proposed Project would result in greater flexibility of water system operations to meet identified water supply shortfalls during dry periods through the implementation of water rights modifications that would allow for ASR and water transfers with other water districts. The cumulative development projects[9] are already factored into the growth forecasts, water demand forecasts and estimates of supply shortfalls that the Proposed Project is intended to fill during currently constrained dry periods. Therefore, cumulative development would not result in a significant cumulative impact related to water supply availability (Significance Standard B). Similarly, adequate wastewater treatment capacity exists to serve cumulative development, and thus, cumulative development would not result in a significant cumulative impact related to wastewater treatment capacity. Therefore, cumulative impacts related to water and wastewater would be less than significant.

**Impact UTL-9: Cumulative Landfill Impacts (Significance Standard D).** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to landfill capacity. ***(Less than Significant)***

The geographic area considered for the analysis of cumulative impacts related to solid waste generation and landfill capacity is Santa Cruz County. Construction and operation of past, present, and reasonably foreseeable future projects in the region would generate solid waste that would require disposal in area landfills. However, given regulatory requirements related to reuse and recycling, as well as remaining landfill capacities, area landfills would be expected to have adequate capacity to serve cumulative development, and cumulative impacts on landfill capacity would be less than significant.

[9] Cumulative development includes the UCSC 2021 LRDP and related growth. The current water demand projection for UCSC for the year 2040 is approximately 20 mgy less than the 308 mgy forecast for UCSC in the City's 2015 UWMP based on the water demand projection for the UCSC 2021 LRDP (UCSC 2021).

**Impact UTL-10: Cumulative Energy Impacts (Significance Standards F and G).** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to energy. ***(Less than Significant)***

The geographic area considered for the analysis of cumulative energy impacts is Santa Cruz County. Potential cumulative impacts on energy would result if the Proposed Project, in combination with past, present, and future projects, would result in the wasteful or inefficient use of energy. Significant energy impacts could result from development that would not incorporate sufficient building energy efficiency features, achieve building energy efficiency standards, or if projects result in the unnecessary use of energy during construction or operation.

As discussed in Impact UTL-6 and Impact UTL-7, the Proposed Project would not result in wasteful, inefficient, or unnecessary use of energy during construction or operations, nor would it conflict with an applicable plan. The majority of the cumulative projects listed in Table 4.0-2 consist of capital improvement projects to the City's water supply infrastructure; other infrastructure projects within Santa Cruz County; and residential, commercial, and mixed-use projects within Santa Cruz County. Each project would have a construction period during which electricity, natural gas, and petroleum would be used; however, it is expected that such usage would be temporary and would not constitute a wasteful, inefficient, or unnecessary consumption of energy. Additionally, while some of these projects could result in increases in energy consumption during their operation, the increased demand is also anticipated to be minimal relative to statewide energy usage and, in combination with the Proposed Project, would not contribute to any potentially significant cumulative energy impacts. Furthermore, any commercial and residential cumulative projects that may take place in the County that include long-term energy demand would be subject to CALGreen, which provides energy efficiency standards. In addition, cumulative projects would be required to meet or exceed the Title 24 building standards, as applicable, further reducing the inefficient use of energy. Future development would also be required to meet even more stringent requirements, including the objectives set forth in the December 2017 CARB Scoping Plan and Part 6 of Title 24 of the California Code of Regulations, which seek to make all newly constructed residential homes produce a sustainable amount of renewable energy through the use of on-site photovoltaic solar systems. Furthermore, various federal and state regulations, including the Low Carbon Fuel Standard, Pavley Clean Car Standards, and Low Emission Vehicle Program, would serve to reduce the transportation fuel demand of cumulative projects.

For the reasons above, the Proposed Project, together with the cumulative projects, would not result in wasteful, inefficient, or unnecessary use of energy or conflicts with applicable plans. Therefore, the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to energy and the impact would be less than significant.

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# 5 Growth Inducement

## 5.1 Introduction

California Environmental Quality Act (CEQA) Guidelines Section 15126.2(e) requires that any growth-inducing aspect of a project be discussed in an EIR. This discussion should include consideration of ways in which the project could directly or indirectly foster economic or population growth or construction of additional housing in the surrounding environment. According to this section, the evaluation of growth-inducing effects should also consider whether a project would:

- Remove obstacles to population growth (e.g., through the expansion of public services into an area that does not currently receive these services).
- Increase the population, which may tax existing community service facilities, requiring the construction of new facilities that could cause significant environmental effects.
- Encourage and facilitate other activities that could significantly affect the environment.

According to the CEQA Guidelines Section 15126.2(e), it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment. This section also addresses the standard in CEQA Guidelines Appendix G relating to Population and Housing as to whether a project would induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

The analysis contained in this chapter assesses the growth-inducing effects due to potential changes in water supplies potentially resulting from the Proposed Project. To support this analysis, information is provided about the existing water service areas, water supply and demand projections, and population/growth forecasts from current Urban Water Management Plans (UWMP) prepared by local water agencies, as well as, regional population forecasts and information from local general plans. This information is provided for the City of Santa Cruz (City)[1] and also the four other water districts that may participate in future water transfers with the City as a result of the Proposed Project: Soquel Creek Water District (SqCWD), San Lorenzo Valley Water District (SLVWD), Scotts Valley Water District (SVWD) and Central Water District (CWD). The City is in the process of preparing the 2020 UWMP, which is expected to be completed in 2021. See Section 4.13, Utilities and Energy, for additional background on existing water service providers.

A summary of the comments received during the scoping period for this 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 growth inducement were received from SqCWD, the Valley Women's Club of San Lorenzo Valley, and several members of the public. Issues identified in public comments related to potentially significant effects on the environment under CEQA, and issues raised by responsible and trustee agencies, are identified and addressed in this EIR.

[1] The City owns and operates a water system that diverts and serves water both within the City limits and outside of those limits. References to the City's water system, rights and supplies therefore refer to areas both inside and outside of the City limits.

# 5.2 Background on Water Supply and Demand

## 5.2.1 City of Santa Cruz

The areas served by the City include the City of Santa Cruz, a portion of the City of Capitola, and portions of unincorporated Santa Cruz County in Live Oak, Soquel, and along Graham Hill Road, as well as along the coast north of the City. The City's service on the coast north of the City consists of limited numbers of connections that primarily derive from the City's agreements with landowners along its water pipelines. As explained in Section 4.13, Utilities and Energy, the City's water supply is primarily from surface water sources with some groundwater production in the Santa Cruz Mid-County Groundwater Basin. Groundwater from this basin is used by the City, the SqCWD, and CWD, several small water systems, and numerous private rural water wells. The City stores water in Loch Lomond Reservoir to help meet dry-season water demand and as a back-up supply during winter storms when river diversions can be problematic due to turbidity issues.

The City follows a variety of policies, procedures and legal requirements in operating the City's water supply system, and the amount of water produced from each of the City surface water sources is controlled by different water rights and operational agreements. In general, the water supply system is managed to use available flowing sources to meet daily demands as much as possible. Groundwater and stored water from Loch Lomond Reservoir are used primarily in the summer and fall months when flows in the coast and river sources decline.

The City's adopted 2015 UWMP reported that annual water production had fluctuated from a high of nearly 3,800 million gallons per year (mgy) in 2006 to a low of approximately 2,500 mgy in 2015, which was during a time of drought and mandated water use restrictions (City of Santa Cruz 2016a). In 2018, water demand in the areas served by the City totaled approximately 2,650 mgy (M.Cubed 2019). The 2015 UWMP estimates a 20-year water demand projection at approximately 3,200 mgy in the year 2035 based on deliveries for average years, projected water demands, and available surface water flows consistent with ecosystem protection goals regarding fish habitat.

The City's primary water supply reliability issue relates to potential shortfalls during dry and critically dry years. The City's water supply is almost exclusively from local surface water sources whose yield varies from year to year depending on the amount of rainfall received. The City's water supply reliability issue is the result of having only a marginally adequate amount of storage to serve demand during dry and critically dry years when the system's Loch Lomond reservoir doesn't fill completely, and lack of storage makes the supply particularly vulnerable to multi-year droughts (see Chapter 3, Project Description, for further explanation).

The UWMP predicts that water demand projections will be met for 90 percent of all normal water years and that in those years existing and planned sources of water available to the City will meet the predicted service area total annual water demand of about 3,200 mgy. The UWMP's projections for the year 2035 show a shortfall of approximately 40 mgy during normal periods, 528 mgy during single dry year periods, and 1,250 to 1,639 mgy during multiple dry year periods. The City had not previously seen shortages in normal water years, but the UWMP identified potential reductions in water production for ecosystem protection (releases for fishery protection). However, operationally, the City predicts sufficient water supplies in normal years to meet demand even though a slight deficit seems to exist in the modelled projections (City of Santa Cruz 2016a). In single dry years, supplies are slightly inadequate to meet projected demand beyond 2020. In multiple dry years, available supplies fall substantially short of system demands. The one variable that represented the biggest unknown at the time the UWMP was prepared was the amount of water that would be required for flow releases for fishery ecosystem protection purposes (City of Santa Cruz 2016a). However, subsequent to adoption of the 2015 UWMP, the City finalized a negotiated long-term minimum bypass flow

requirements (Agreed Flows) with California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Service (NMFS) as part of the pending Anadromous Salmonid Habitat Conservation Plan (ASHCP) process (see Chapter 3, Project Description and Appendix C for additional information about the Agreed Flows).

The estimated approximate 1.2 billion gallon per year (or 1,200 mgy) shortfall during a multiple-dry-year period has been used for planning supplemental water supplies in the areas served by the City. The City has been pursuing possible new or supplemental water sources for the past several decades. The most recent strategies were developed as a result of a two-year Water Supply Advisory Committee (WSAC) process as explained in Section 3.2.1, Water Supply Planning Background, of this EIR. Four primary Water Supply Augmentation Strategy portfolio elements were identified that were subsequently included in the UWMP as follows:

- **Element 0: Additional water conservation** with a goal of achieving an additional 200 to 250 mgy of demand reduction by 2035 by expanding water conservation programs.
- **Element 1: Passive recharge of regional aquifers** by working to develop agreements for delivering surface water to the SqCWD and/or the SVWD[2] so they can rest their groundwater wells, help the aquifers recover, and potentially store water for use by the City in dry periods.
- **Element 2: Active recharge of regional aquifers** by using existing infrastructure and potential new infrastructure in the regionally shared Purisima aquifer in the Soquel-Aptos Basin (now referred to as the Santa Cruz Mid-County Groundwater Basin) and/or in the Santa Margarita/Lompico/Butano aquifers (now referred to as the Santa Margarita Groundwater Basin) in the Scotts Valley area to store water that can be available for use by the City in dry periods.
- **Element 3: A potable water supply using advanced-treated recycled water or desalination** as its source as a supplemental or replacement supply in the event the groundwater storage strategies described above prove insufficient to meet the goals of cost-effectiveness, timeliness or yield. In the event advanced-treated recycled water does not meet the City's needs, desalination would become Element 3.

The City has made progress in the pursuit of these strategies as summarized below. Implementation of the Proposed Project would support Elements 1 and 2.

- **Element 0:** An updated Water Conservation Master Plan was completed in 2016 to define the next generation of water conservation activities. The plan includes 35 implementation measures, many of which are already underway. The projected per capita water use in gallons per person per day (gpcd) is expected to decline to about 92 gpcd, far below the City's 2020 target of 110 gpcd, and continuing to decline to a level of about 78 gpcd by 2035 (City of Santa Cruz 2016a).
- **Element 1:** To date, the City and SqCWD have operated a pilot water transfer program that expired at the end of 2020, but was extended by the City and SqCWD in early 2021. The pilot program sends treated water from the City's Graham Hill Water Treatment Plant (GHWTP) to the SqCWD. Prior to implementing water transfers the two agencies worked collaboratively to assess the potential for any negative water quality consequences of introducing surface water into the SqCWD's water system and all studies indicated that the potential for either health or aesthetic issues was low (Dudek 2021). Pilot transfers[3] were provided

[2] While WSAC recommendations considered only delivering surface water to SqCWD and SVWD, current planning considers delivering surface water to SLVWD and CWD as well.

[3] Water transfers are reallocations of water between users through willing sellers and willing buyers; excess water would be sold by the City and purchased by a neighboring agency. Water exchanges are also reallocation of water between users through willing sellers and willing buyers; excess water would be provided or sold to a neighboring agency with agreement that water would be provided back to the City during dry periods or time of need. Water exchanges could occur either through future well extractions and/or through direct delivery via interties between neighboring agencies.

to a limited portion of the SqCWD service area during the 2018/2019 and 2019/2020 winter and spring wet season. During this time, active water quality monitoring and operational constraints analyses were conducted to help inform the feasibility of developing a larger and/or long-term project involving water transfers and exchanges.

- **Element 2:** An aquifer storage and recovery (ASR) study is underway that is looking at regional options for groundwater injection, storage and future extraction in order to actively recharge regional aquifers. A pilot ASR project is currently underway utilizing the City's existing Beltz wells, which will support the development of the Beltz ASR component of the Proposed Project.
- **Element 3:** Advanced treated recycled water or desalinated water would be developed as a supplemental or replacement supply in the event that the groundwater storage strategies described above prove insufficient to meet the City's goals of cost-effectiveness, timeliness and yield. A recycled water feasibility study was completed in June 2018, and a phase two recycled water study is being prepared to further develop alternatives for a comparative analysis with ASR and in-lieu projects. A desalination project feasibility update was completed in August 2018. In November of 2018, City Council accepted staff recommendations to prioritize recycled water over desalination, with the understanding that if the other alternative water supply augmentation strategies being considered are not able to meet the plan's goal, desalination would be reconsidered. Specifically, the City determined to continue to evaluate the opportunities and benefits of replacement and expansion of the City's existing tertiary treatment facility and to continue to evaluate treating wastewater to advanced treatment standards for potential groundwater replenishment and/or as surface water augmentation by sending such treated water to Loch Lomond Reservoir.

### 5.2.2 San Lorenzo Valley Water District

SLVWD serves several communities within the 136-square-mile San Lorenzo River watershed in the unincorporated San Lorenzo Valley. SLVWD owns, operates, and maintains three water systems that supply separate service areas from separate water sources, referred to as the North Service Area, the South Service Area, and the Felton Service Area. The North Service Area includes the unincorporated communities of Boulder Creek, Brookdale and Ben Lomond, and the South Service Area encompasses portions of the City of Scotts Valley and adjacent unincorporated areas. The Felton Service Area includes the town of Felton and adjacent areas. The SLVWD's currently active water supplies consist of nine active stream diversions, eight active groundwater wells, and one active spring.[4] The SLVWD's groundwater wells draw from the overdrafted Santa Margarita Groundwater Basin. The SLVWD also has entitlement to a portion of the surface water storage in Loch Lomond Reservoir that has not been used to date.[5]

Water deliveries ranged from 1,781 afy in 2010 to 1,469 afy in 2015; projected total demand in the SLVWD's service areas is estimated at 1,795 afy (WSC 2016a). Based on the water supply and demand analysis provided in SLVWD's UWMP and with continued proactive management of its water resources, SLVWD's water supply is adequate to meet both current and projected water demands during average, single-dry-year, and multiple-dry-year conditions (WSC 2016a). The UWMP's finding that supplies would be adequate during multiple-dry-year conditions is based, however, on the assumption that continued local groundwater overdraft in the Santa Margarita Groundwater Basin is sustainable and that water can be supplied to the South System from the North System sources through the systems' existing interconnection (WSC 2016a).

[4] SLVWD's diversions from tributaries to the San Lorenzo River under its water-right Permit No. 20123 are contingent on the existence of certain minimum stream flows existing below the City's Felton Diversion Dam through the September-May period.

[5] SLVWD is entitled by agreement to purchase up to 313 acre-feet per year (102 million gallons per year) of Loch Lomond Reservoir water.

SLVWD and the County of Santa Cruz are developing a Conjunctive Use Plan for the San Lorenzo River Watershed to increase stream baseflow for fish and increase reliability of surface and groundwater supplies for the SLVWD. This project would interconnect SLVWD's three independent water systems to allow for increased reliability and allow the distribution systems to utilize surplus surface water from each other, providing in-lieu recharge to the groundwater aquifers through conjunctive use. Proposed project components identified to date that would allow for conjunctive use within the SLVWD's service areas and in cooperation with the SVWD 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 well area[6].

As a result of the CZU Lighting Complex Fire in August 2020, SLVWD facilities sustained significant facility and operational capacity losses according to a preliminary damage assessment prepared for SLVWD, which found more than 50% of the structures assessed were destroyed or severely damaged, while other facilities had heat damage, smoke, or possible contamination (SLVWD 2020). The water system's primary damage includes intakes and raw water pipelines (Peavine, Foreman, Clear Creek 1-3, Sweetwater); the Bennett Spring Overflow, tanks, piping and controls; and water storage (Lyon and Little Lyon tanks are contaminated with soot and other fire byproducts). The Big Steel Water Tanks and the Water Treatment Plant were spared from significant damage, but will require some minor repair before resuming full operation. SLVWD is currently working on emergency repairs to bring the water system back to functioning condition. At the time of the assessment in September 2020, service had been restored to all customers, although 419 customers were still affected by a Do Not Drink/Do Not Boil order (SLVWD 2020). The SLVWD watershed also sustained extensive damage during the fire, including destruction of trees and vegetation with indirect damage due to contamination of surface waters by ash and debris, increased erosion potential due to destruction of vegetation on slopes, and potential future damage caused by toppling of damaged trees. Surface waters within the fire zone have been contaminated directly by ash and debris (SLVWD 2020).

### 5.2.3 Scotts Valley Water District

SVWD provides potable and recycled water and serves most of the City of Scotts Valley and some unincorporated areas north of the City. The only source of potable water for the SVWD is groundwater from the overdrafted Santa Margarita Groundwater Basin. SVWD shares the basin with neighboring SLVWD and Mount Hermon Association, other small water systems, and over 1,100 private well users. No raw surface water is supplied to or by SVWD. Recycled water, supplied to SVWD by the City of Scotts Valley Water Reclamation Facility, is used primarily for landscape irrigation (Kennedy Jenks Consultants 2016).

Water demand is projected to increase from approximately 1,333 afy in 2015 to 1,635 afy in 2035 and 1,661 afy in 2040. Groundwater production had declined from 2002 through 2015 due to drought conditions, use of recycled water, and implementation of conservation programs (Kennedy/Jenks Consultants 2016). SVWD has adequate supplies available to meet projected demands should a multiple-dry-year period occur; however, overdraft of the Santa Margarita Groundwater Basin, especially in a time of drought, presents a concern for reliability over extended periods of time (Kennedy/Jenks Consultants 2016). See Section 4.8, Hydrology and Water Quality, for additional information on the Santa Margarita Groundwater Basin. Emergency intertie pipelines between SVWD and SLVWD can be used to transfer water during emergencies. These interties improve regional supply reliability by allowing SVWD access to SLVWD surface water source in an emergency (Kennedy/Jenks Consultants 2016).

[6] The Olympia groundwater area is a hillslope area of partially exposed Santa Margarita Sandstone between the communities of Mount Hermon, Zayante, and Scotts Valley (WSC 2016a).

### 5.2.4 Soquel Creek Water District

The SqCWD provides potable water service and groundwater resource management within its service area that includes portions of the City of Capitola and unincorporated Santa Cruz County. SqCWD relies entirely on the overdrafted groundwater aquifers in the Santa Cruz Mid-County Groundwater Basin. SqCWD pumps groundwater from aquifers located within two geologic formations that underlie its service area. The Purisima Formation provides about 64% of SqCWD's annual average production for Capitola, Soquel, Seacliff Beach, and Aptos, and the Aromas Red Sands aquifer typically provides the remaining 36% of the annual average production for the communities of Seascape, Rio Del Mar and La Selva Beach. Total water use includes water delivered to customers, water sold to other agencies, and non-revenue water and is expected to decline from an estimated 3,900 acre-feet per year (afy) in 2020 to 3,300 afy in 2045 (WSC 2016b).

Due to long-term over-production in the Santa Cruz Mid-County Groundwater Basin, its groundwater elevations are below protective levels. SqCWD established a pumping goal of 2,300 afy that must be met for at least 20 years to 2040 to eliminate the cumulative pumping deficit that has occurred and to restore the Basin. Once the Basin has been fully restored, pumping at the post-recovery goal of 3,300 afy set by the SqCWD Board of Directors can occur. To meet the targeted pumping goal, SqCWD has identified that approximately 1,500 afy of supplemental water source(s) would be required by the year 2025, decreasing to 1,100 afy by the year 2035, to meet the recovery pumping goals (WSC 2016b).

SqCWD has been actively pursuing supplemental supply options that would allow for reductions in groundwater pumping and facilitate basin recovery. In 2018, SqCWD approved the Pure Water Soquel Groundwater Replenishment and Seawater Intrusion Prevention Project (Pure Water Soquel), which uses advanced water purification to produce recycled water for replenishing the groundwater basin. The project is designed to produce 1.3 mgd or approximately 1,500 afy of purified water, which is the estimated volume required to offset the portion of the Santa Cruz Mid-County Groundwater Basin's groundwater overdraft attributable to SqCWD, as indicated above (ESA 2018). The facility is also being designed to enable future expansion if needed. The project is expected to be operational in 2022. Additionally, SqCWD is currently improving its existing groundwater well infrastructure and redistributing pumping inland through implementation of the Well Master Plan (WSC 2016b).

As indicated above, the SqCWD 2015 UWMP assumes that pumping will be limited to 2,300 afy when adequate supplemental supply is in use and that the SqCWD will pump at or below this level for at least 20 years to fully restore the basin. The volume of groundwater pumped in 2045 assumes that the groundwater basin has been fully restored and that pumping at the post-recovery pumping goal of 3,300 afy can occur. Once an adequate supplemental supply is available, SqCWD may utilize more of the supplemental supply sources in order to reduce the cumulative deficit recovery period, or to enhance basin conditions when faced with changing factors such as basin outflows, climate change, or other unforeseen factors even if the basin has been fully restored (WSC 2016b). Additionally, as previously indicated, the City and SqCWD implemented a pilot transfer program for the purpose of passively recharging the groundwater basin (see Section 5.2.1, City of Santa Cruz, for information about this pilot transfer program).

While SqCWD is generally 100% reliant on its groundwater supply, its distribution system includes interties with CWD and the City, as well as other local water supply systems. The three interties with the City include one bi-directional intertie allowing for limited water exchanges, and two uni-directional (to SqCWD) interties that provide SqCWD with greater reliability in the event of an emergency. Over the five-year period of 2011-2015, SqCWD received approximately 0.3 acre-feet of water from CWD and the City, and provided 6.09 acre-feet (approximately 2 million gallons [mg]) of water to the City (WSC 2016b).

### 5.2.5 Central Water District

CWD covers a service area of approximately 5 square miles east of the unincorporated area of Aptos, between the SqCWD and the City of Watsonville. With an estimated population of 2,700 to 3000, CWD produced 126.7 mg of water and customers consumed 123.3 mg in fiscal year 2017/2018.

CWD's water supply source is drawn exclusively from two groundwater aquifers in the overdrafted Santa Cruz Mid-County Groundwater Basin, the Purisima and the Aromas. CWD shares these two aquifers with other groundwater users and is a member of the Santa Cruz Mid-County Groundwater Agency. There are three wells that provide CWD's water supply and an additional three wells that are currently inactive (CWD 2020). Total production and associated groundwater pumping have declined since 2008 (CWD 2020). CWD has an adequate water supply and is addressing infrastructure repairs and upgrades through its capital improvement program (LAFCO 2017).

## 5.3 Population Growth and Development

### 5.3.1 Population Forecasts

Water service providers are responsible for providing services to accommodate growth in their service areas. The obligation of water service providers is demonstrated by the state Urban Water Management Planning Act (California Water Code Sections 10610 through 10657) and its requirement to prepare and adopt UWMPs. These UWMPs must be prepared and updated every five years and are required to estimate water supply needs for their service area in normal, dry, and drought years over a 20-year planning period. Water Code Section 10631 requires that an UWMP include current and projected population, and that the projected population estimates be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years. In other words, these suppliers are required to look at least 20 years into the future and to identify water sources that are or should be available within that time frame to meet estimated demand.

The Association of Monterey Bay Area Governments (AMBAG) prepares regional population, housing and employment projections approximately every five years for the counties of Monterey, San Benito, and Santa Cruz. Each forecast is produced with the best available data and is extensively reviewed by AMBAG's member agencies. Once completed, the forecast is used to provide data support for long-term regional planning documents and special districts' master plans, as well as to support city and county long-range planning. The City and other water districts have derived population projections for their respective service areas based on AMBAG projections. The most recent regional forecast was adopted by AMBAG in 2018, and AMBAG is in the process of preparing the 2022 regional forecasts. The 2022 Regional Growth Forecast was accepted for planning purposes by the AMBAG Board of Directors on November 18, 2020, and the 2022 Regional Growth Forecast is scheduled to be formally adopted by the AMBAG Board of Directors in June 2022. It is noted that the accepted forecast shows a slightly lower population growth than the adopted 2018 Forecast for all jurisdictions except the City of Capitola (AMBAG 2020).

Existing and projected population is summarized in Table 5-1. As shown in Table 5-1, existing population (per the California Department of Finance [DOF]) is less than the population forecast for the year 2020 (AMBAG) for all jurisdictions except for the unincorporated County of Santa Cruz, which has a slightly higher existing population than the AMBAG forecast for 2020. The 2015 UWMPs for the City, SqCWD, SLVWD and SVWD provide population projections for their service areas drawing from the AMBAG projections. These are summarized in Table 5-2.

**Table 5-1. Existing and Projected Population Growth**

| Jurisdiction | Existing Population (AMBAG / *DOF*[1]) | Projected Population (AMBAG Projections) | | |
|---|---|---|---|---|
| | *2020* | *2030* | *2035* | *2040* |
| City of Santa Cruz | 68,381 / *64,424* | 75,571 | 79,027 | 82,266 |
| City of Capitola | 10,194 / *10,108* | 10,451 | 10,622 | 10,809 |
| City of Scotts Valley | 12,145 / *11,693* | 12,282 | 12,348 | 12,418 |
| Unincorporated Santa Cruz County | 136,891 / *137,740* | 139,105 | 140,356 | 141,645 |

**Sources:** AMBAG 2018; DOF 2020.
**Notes:** AMBAG = Association of Monterey Bay Area Governments; DOF = California Department of Finance.
[1] Existing population as of January 1, 2020 as reported by the California Department of Finance is shown in *italic*s typeface.

**Table 5-2. Population Projections in Urban Water Management Plans**

| Jurisdiction | 2025 | 2030 | 2035 |
|---|---|---|---|
| City 2015 UWMP | | | |
| City of Santa Cruz | 70,058 | 73,375 | 76,692 |
| County of Santa Cruz and City of Capitola | 33,562 | 34,614 | 35,698 |
| *Total* | 103,620 | 107,989 | 112,390 |
| SqCWD 2015 UWMP | 41,938 | 43,481 | 45,315 |
| SLVWD 2015 UWMP | 22,776 | 23,293 | 23,688 |
| SVWD 2015 UWMP | 11,655 | 11,927 | 12,198 |

**Sources:** City of Santa Cruz 2016a; WSC 2016a, 2016b; Kennedy/Jenks Consultants 2016.
**Notes:** SLVWD = San Lorenzo Valley Water District; SqCWD = Soquel Creek Water District; SVWD = Scotts Valley Water District; UWMP = Urban Water Management Plan.

Due to its small number of service connections, CWD is not required to prepare an UWMP, and thus, is not included in Table 5-2. However, according to the CWD's Fiscal Year 2017/2018 Annual Report, no significant population growth is expected in the next 5 to 10 years. It is also noted that a recent service review of SLVWD indicates that it currently provides water service to a population of 19,900, and slow growth is projected to occur in the unincorporated County area for the next twenty years (LAFCO 2020). Local Agency Formation Commission (LAFCO) staff estimates that the entire population in the SLVWD service areas will reach 21,000 by 2040, which is slightly below current projections.

### 5.3.2 Land Use and Development Regulations

In providing water services, water agencies are responding to growth and development that are ultimately managed and approved by city and county land use policies. Various local, regional, and national forces and conditions influence growth rates and development patterns. The location and intensity of development that occurs in a specific area is controlled primarily by local governments through state-mandated general plans and zoning regulations. Cities and counties in California are required to prepare, adopt, and maintain a comprehensive, long-term general plan for the physical development of the county or city, and of any relevant land outside its boundaries (California Government Code Section 65300). The general plan is a city's or county's official land use policy document that guides its future character, form, and quality of development. In addition, the general plan establishes location and density/intensity of land uses. The state has mandated temporary housing reforms effective between

January 1, 2020 and January 1, 2025 that may permit additional housing to be developed within defined urbanized areas subject to a city's or county's general plan (California Government Code Section 66300). A city's or county's zoning code and other ordinances implement the general plan to regulate the intensity, density, and manner of development for all land uses. The amount of development contemplated by a general plan, as reflected in its land use and housing elements, among others, also must reflect a city's or county's "fair share" of projected housing demand, as reflected in a Regional Housing Needs Allocation (RHNA) formulated by the relevant "council of governments" (e.g., AMBAG) with input from the State Department of Housing and Community Development.

The cities of Santa Cruz, Capitola, and Scotts Valley and the County of Santa Cruz are the land use regulatory jurisdictions in the project area. The areas served by the City's water system include areas within the City limits and portions of Capitola and unincorporated County areas, and the SqCWD's service area includes portions of Capitola as well as primarily unincorporated County areas. The SVWD boundaries include most of the City of Scotts Valley as well as some unincorporated County areas north of the City. SLVWD's service areas encompass primarily unincorporated County areas, but also a small portion of the City of Scotts Valley. The service area of CWD is entirely within unincorporated County areas. The service areas of existing water agencies in relation to Proposed Project components are shown on Figure 3-4 in Chapter 3, Project Description. All of these jurisdictions have adopted general plans (with separate housing elements), local coastal plans, zoning, and other regulations that guide development; and in the case of the County, help to manage growth. The cities of Santa Cruz, Capitola, and Scotts Valley and the County of Santa Cruz have current housing elements, each of which sets forth goals and objectives for housing production, rehabilitation, and conservation to address their required RHNA established by AMBAG. Pursuant to state law, housing elements are updated every eight years. The housing elements also identify available sites or locations for housing to be built and describe programs to facilitate new housing opportunities. AMBAG has also developed housing unit projections for each jurisdiction as part of its regional population projections developed in 2018, which extend through the year 2040.

Various ordinances contained in the County Code also dictate how growth and development occurs in the unincorporated County area. In particular, Measure J was passed in 1978 by County voters to manage growth in the County. The passage of this measure resulted in the development of Title 17, Community Development, of the County Code, which establishes the County's Growth Management Ordinance. This ordinance sets policies that govern future growth and development in the County, and specifically regulates the character, location, amount, and timing of future development. The ordinance includes: (1) the establishment of urban and rural boundaries (Chapter 17.02); (2) the program for developing the annual population growth goal (Chapter 17.04); and (3) affordable housing requirements and incentives (Chapters 17.10 and 17.12). The Rural Services Line and an Urban Services Line set forth in the County Code (Chapter 17.02) define areas that are or have the potential to be urban, and areas that are and should remain rural. The establishment of these distinct boundaries serves to encourage new development to locate in urban areas, and to protect agricultural land and natural resources in the rural areas. In general, the areas within the Urban Services Line are served by public water systems and sanitary sewer facilities and receive an urban level of fire protection. In unincorporated County, the majority of the areas within the City's and SqCWD's water service areas fall within the Urban Services Line.

The establishment of the annual population growth goal (Chapter 17.04) is intended to limit population growth during that year to an amount determined to represent the County's fair share of statewide population growth. Each year's population growth goal is determined to assist and encourage the production of a number of housing units equal to, on the average, but not less than 15 percent of the newly constructed units during any 3 consecutive years for purchase or rent by persons with average or below-average incomes. The County Board of Supervisors adopted a Year 2020 population growth rate of 0.5%, which translates to 255 residential building permit

allocations. Including unused allocations from 2019, projected to total 197, an estimated total of 452 housing unit allocations would be available in 2020 (County of Santa Cruz 2019).

# 5.4 Growth Inducement Analysis

This section examines potential direct and indirect growth-inducing effects of the Proposed Project. The Proposed Project consists of the following primary components:

- Water rights modifications, including modifications related to place of use (POU), method of diversion, points of diversion and re-diversion, underground storage and purpose of use, extension of time and stream bypass requirements for fish habitat (referred to in this EIR as Agreed Flows).
- Water supply augmentation components, including ASR (new ASR facilities at unidentified locations and Beltz ASR facilities at the existing Beltz well facilities), and water transfers and exchanges and associated intertie improvements.
- Surface water diversion improvements, including the Felton Diversion fish passage improvements and the Tait Diversion and Coast Pump Station improvements.

## 5.4.1 Potential Direct Growth-Inducing Impacts

The Proposed Project would not involve construction of new residential or commercial development and, therefore, would not directly foster or induce population growth or economic expansion or growth. It is estimated that the Proposed Project may require the addition of approximately three new employees, one for the Agreed Flows implementation and two for the new ASR facilities maintenance, as described in Chapter 3, Project Description. Given the maintenance nature of these jobs, it is expected that these new employees would be drawn from the local area and likely would not require recruitment from outside of the area. The Proposed Project would not result in a substantial number of new permanent employees that would in turn induce population growth from outside the region that would induce construction of new housing. Even if it is conservatively assumed that the three new staff would relocate from outside the area, the population increase from three new households of approximately 8 residents[7] is nominal and would be well within regional population growth forecasts. Thus, the Proposed Project would not foster population growth as a result of creation of new jobs.

## 5.4.2 Potential Indirect Growth-Inducing Impacts

This section analyzes whether the Proposed Project components would indirectly result in growth by removing an obstacle to growth (e.g., through expansion of public services into an area that does not currently receive these services) or by providing an expanded water supply that could indirectly induce population growth. CEQA Guidelines Section 15126.2(d) indicates that it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment. Per CEQA Guidelines Appendix G, the growth-inducing potential of a project could be significant if the project induces substantial unplanned growth or a concentration of population in excess of what is assumed in appropriate general plans or in projections made by regional planning agencies such as AMBAG. Significant growth impacts could also occur if the project provides infrastructure or service capacity to accommodate growth beyond the levels currently planned by local or regional plans and policies.

[7] Based on the City average household size of 2.45 persons per household.

### 5.4.2.1 Removal of Obstacles to Growth and/or Expansion of Service Area

The primary purpose of the Proposed Project is to improve flexibility in operation of the City's water system while enhancing stream flows for local anadromous fisheries. The City is a municipal utility that provides water service to an approximate 20-square-mile area, unincorporated areas of the County, a small part of Capitola, and coastal agricultural lands north of the City. The Proposed Project would not expand or change the areas served by the City and would not lead to introduction of service into areas that are not currently served. It is noted that, in general, any proposed changes to the areas served by the City are subject to separate approval by both the City Council and the Santa Cruz LAFCO. In addition, existing publicly owned open space lands to the west and north provides a natural geographic limit to the City's water service area. Within most of the areas served by the City, there are no existing obstacles to population, housing or economic growth linked to the availability of water in the areas served by the City other than the long-standing City prohibition against new water connections along the North Coast and growth limitations imposed by the County of Santa Cruz in unincorporated areas, neither of which would be changed as a result of the Proposed Project.

Similarly, the potential water transfers between the City and other water districts would not result in a change to the service area boundaries of these districts. There are no known obstacles to growth in the other water districts linked to the availability of water in these districts. While water supply is constrained due to overdrafted groundwater conditions in the SqCWD and CWD service areas, construction of a supplemental water supply, Pure Water Soquel, is currently underway to provide a water supply other than groundwater to help restore sustainable groundwater levels. In addition, as indicated above, growth limitations imposed by the County of Santa Cruz in unincorporated areas limit growth rates and annual building permits in unincorporated areas.

Therefore, the Proposed Project would not result in expansion of service or remove obstacles to growth.

### 5.4.2.2 Indirect Impacts due to Changes/Increase in Water Supply

#### Summary of Potential Changes in Water Supply

As indicated above, the Proposed Project includes three components: water rights modifications, water supply augmentation, and surface water diversion improvements. Hydrological and water supply models were run to identify water supply production with the Proposed Project, including the Agreed Flows. The results are summarized in Table 5-3 and details and methods used in the modeling are provided in Appendix D. Overall, the Proposed Project could result in an increase in water supply production of an average of approximately 96 mg in all years and 514 mg in critically dry years over existing conditions; however, the total supply with the Proposed Project would be equal to the City's projected service area demand of 3,200 mgy that is forecasted in the City's 2015 UWMP. This increase in water supply production is consistent with one of the primary objectives of the Proposed Project, which is to support the implementation of the City's Water Supply Augmentation Strategy to deliver a safe, adequate reliable and environmentally sustainable water supply (see Chapter 3, Project Description). This change in water supply production with the Proposed Project would occur within the areas served by the City, except that water transfers and new ASR facilities could occur in other areas and in association with the other water districts. Potential indirect growth-inducing impacts within the areas served by the City and other water district service areas is assessed below.

## Table 5-3. City Water Supply with Proposed Project

| Water Supply | 2018 Baseline (mg) | Proposed Project (mg)[1] |
|---|---|---|
| ***Average of All Years*** | | |
| Treated Surface Water from Graham Hill Water Treatment Plant | 2,977 | 3,589 |
| • *Minus* Water Injected into Underground Storage Via ASR | NA | -233 |
| • *Minus* Water Transferred to Other Suppliers | NA | -424[2] |
| *Total Treated Surface Water to City Customers* | *2,977* | *2,932* |
| *Total Beltz Groundwater Extraction to City Customers* | *127* | *92* |
| *Total ASR Extraction to City Customers* | *NA* | *176* |
| **Total Supply** | **3,104** | **3,200** |
| ***Average of Critically Dry Years*** | | |
| Treated Surface Water from Graham Hill Water Treatment Plant | 2,501 | 2,673 |
| • *Minus* Water Injected into Underground Storage Via ASR | NA | -132[3] |
| • *Minus* Water Transferred to Other Suppliers | NA | -25[2, 3] |
| *Total Surface Water to City Customers* | *2,501* | *2,516* |
| *Total Beltz Groundwater Extraction to City Customers* | *185* | *166* |
| *Total ASR Extraction to City Customers* | *NA* | *518* |
| **Total Supply** | **2,686** | **3,200** |

**Source:** Gary Fiske and Associates 2021b.
**Notes:** mg = million gallons.

1 A negative number is presented for ASR injections given that injection volumes are not available until they are extracted. Likewise, water transfers to other agencies are also shown as negative numbers given that those volumes are transferred and not available to the City.

2 The maximum volume of water for water transfers provided above is based on the hydrologic and water supply modeling conducted for the Proposed Project (Appendix D). However, this chapter uses the existing infrastructure capacities of the existing systems as the basis for the proposed maximum volume of water that could be transferred due to the Proposed Project. That number (440 mg) is slightly larger than the maximum volume of water presented above.

3 ASR injections and water transfers may take place during what turns out to be critically dry or dry years given that critically dry or dry conditions may not be determined until a portion of the water year has elapsed. For example, rains in October and November could provide the conditions where the City would inject and/or transfer water while subsequent months of reduced rainfalls, indicating a critically dry or dry water year, may cause the City to cease these operations.

The Proposed Project's water supply augmentation components include the ASR programmatic component 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. Installation and operation of these facilities would be enabled by the Proposed Project's expansion of the POU of the City's appropriative water rights. The City would not be able to implement and operate ASR facilities under its post-1914 water-right licenses and permits without the State Water Resources Control Board (SWRCB) approving underground storage supplements to those licenses and permits. ASR would include new ASR facilities at unidentified locations and Beltz ASR facilities at the existing Beltz well facilities. Overall, ASR is a programmatic component of the Proposed Project; however, as a subcomponent of ASR, Beltz ASR facilities is a project component of the Proposed Project. The Beltz ASR project component involves the installation of upgrades to the existing Beltz system at the existing Beltz 8, 9, 10, and 12 facilities to allow for injection of treated water from the City's GHWTP and subsequent recovery (extraction) for use in the areas served by the City.

The estimated ASR annual injection and future potential extraction yields of ASR with the Proposed Project are shown in Table 5-3 and have been assumed in the hydrological and water supply modeling results summarized in Table 5-4. The ASR infrastructure capacity is designed to meet the agreed-upon worst-year gap of 1.2 billion gallons per year. The City's modeling assumes that there is sufficient groundwater storage capacity in either the Santa Cruz

Mid-County Groundwater Basin, or the Santa Margarita Groundwater Basin, to support ASR injections and extractions indicated in Table 5-4. At this time, however, only the locations of the Beltz ASR facilities are known. Table 5-4 therefore indicates that the City's analysis of the full Proposed Project assumes the "Total Aquifer Storage and Recovery" capacities, with the portions of those capacities described as "TBD" being associated with programmatic new ASR facility locations. Actual capacity and operational characteristics for new ASR facilities and Beltz ASR facilities would be based on completion of the ASR pilot programs, design-level groundwater modeling, and the ASR design process.

### Table 5-4. Proposed Aquifer Storage and Recovery Capacity and Estimated Operation

| | Proposed Capacity (mgd) | | Estimated Operation (mgy) | | | |
|---|---|---|---|---|---|---|
| | *Injection* | *Extraction* | *Average* | | *Maximum* | |
| | | | *Injection* | *Extraction* | *Injection* | *Extraction* |
| Total Aquifer Storage and Recovery (ASR) | 4.5 | 8.0 | 233 | 176 | 702 | 1,064 |
| New ASR Facilities at Unidentified Locations | TBD | TBD | TBD | TBD | TBD | TBD |
| Beltz ASR Facilities at Existing Beltz Well Facilities | 2.10 | 2.17[1] | 188 | 137 | 358 | 315 |

**Source:** Gary Fiske and Associates 2021a, 2021b.
**Notes:** mgd = million gallons per day; mgy = million gallons per year; TBD = to be determined.

[1] Based on the physical limitations of the Beltz well facilities, the maximum extraction capacity at Beltz 8, 9, 10, and 12 is 3.27 mgd. Given that the existing groundwater system at these facilities extracts 1.1 mgd, 2.17 mgd of the total capacity is available for the proposed ASR facilities at these Beltz facilities.

## Potential Indirect Growth Inducement Within Areas Served by the City

The underlying purpose of the Proposed Project is to improve flexibility in operation of the City's water system while enhancing stream flows for local anadromous fisheries. The City has negotiated Agreed Flows with CDFW and NMFS, which are long-term minimum bypass flow[8] requirements to better protect federally listed Central California Coast coho salmon and Central California Coast steelhead in all watersheds from which the City diverts water. The Agreed Flows would be incorporated into both pre-1914 rights on the North Coast streams and post-1914 permits and licenses on the San Lorenzo River and Newell Creek to improve instream habitat and flow conditions for these fish species. Incorporating the Agreed Flows into all City water rights would further constrain the City's surface water supply that currently is limited primarily in single dry years and multiple dry-year periods. Consequently, the City needs to improve operational flexibility of the water system within existing rights, permits, and licenses to allow better use of limited water resources. To do this, the City is proposing water rights modifications to the existing rights, permits, and licenses to expand the authorized POU; to better utilize existing diversions by, among other things, incorporating groundwater storage; and to extend the City's time to put water within the scope of the City's Felton water-right permits to full beneficial use. This would enable the City to implement or partially implement Elements 1 and 2 of its adopted 2015 UWMP to provide adequate supplies to meet demand projections in its service area under normal, dry and multiple-dry years, as acknowledged in the project objectives for the Proposed Project (see Chapter 3, Project Description).

[8] A bypass flow refers to requirements that water that would otherwise be diverted instead be bypassed from the diversion and left in the stream.

The Proposed Project would expand the POUs of the City's pre-1914 and post-1914 appropriative water rights to include the areas served by the City, two local groundwater basins, and the service areas of neighboring water agencies, as shown on Figure 3-3 in Chapter 3, Project Description. The Proposed Project would also change the stated method of diversion to explicitly allow direct diversion under the existing Newell Creek License and Felton Permits. This change would explicitly authorize longstanding operations by the City under that license and those permits by explicitly authorizing direct diversion to the GHWTP. Another modification would provide an extension of time in which the City could make full beneficial use of 3,000 afy diversion under its Felton Permits to the year 2043. While the City has been diligently using water from the Felton Diversion for beneficial use, to date, the City has used just over half the permitted amount on an annual basis, due largely to extensive water conservation efforts within the City. In the future, even with continued conservation, with the implementation of the Agreed Flows the City expects to need the full entitlement. The Proposed Project also would authorize ASR at the Beltz wells through the addition of underground storage supplements to the Tait Licenses and the Felton Permits.

These modifications would not change the total limits on the volume of water that could be diverted under existing water rights. They would, however, allow flexibility to directly divert water to the GHWTP and potential storage of water through ASR to provide more reliability and flexibility of use of existing water sources as a result of the incorporation of Agreed Flows for fishery protection. None of the Proposed Project components represent a new source of water. ASR, which is proposed in part to help protect groundwater sources in the overdrafted Mid-County Groundwater Basin and/or Santa Margarita Groundwater Basin and in part to provide the City with supply during dry periods, would provide enhanced storage of water available under the City's existing rights. The proposed surface water diversion improvements at the Felton Diversion and the Tait Diversion are primarily for fish passage improvements and would not affect water supply that could lead to indirect population growth. The improvements at the Tait Diversion include an increase in the capacity of the existing pump station in order to support diversions that would result from the proposed water rights modifications, but these improvements would not increase the authorized amount of diversions under the City's appropriative water rights. The Felton Diversion improvements would not increase capacity of the diversion.

The results of the hydrological and water supply modeling as summarized in Table 5-3 show a slight increase of 96 mgy in available supply that would occur on average in all years. This would cover a potential normal year water deficit as identified in the current 2015 UWMP. Similarly, the modeling results for a critically dry year show that the water supply deficit projected in the 2015 UWMP (528 mgy) would be generally met under the Proposed Project with approximately 514 mgy of water potentially provided. In either case, the combined effects of the Proposed Project components would bring total water supply levels to the projected 3,200 mgy identified in the UWMP as needed to meet existing and projected water demand. Thus, the proposed water rights modifications and ASR facilities would provide needed supplemental water supplies during times of identified water supply shortfalls.

While the demand projections are associated with growth already anticipated in the areas served by the City, the Proposed Project would provide for planned population growth as set forth in the 2015 UWMP. Although water service agencies are responsible for accommodating and serving projected growth, an increase in service capacity beyond that needed to serve planned growth may cause or otherwise influence growth by removing development constraints. A project that would induce substantial unplanned population growth, either directly or indirectly would be considered a potentially significant impact under the CEQA Guidelines Appendix G. Population projections included in the City's 2015 UWMP are lower than current AMBAG regional population forecasts for the City in the years 2030 and 2035 as shown on Table 5-1 and Table 5-2. The potential annual increases of water supply availability as a result of the Proposed Project would not exceed regional projections or indirectly induce substantial unplanned growth, because the water demand estimated in the City's adopted UWMP and used for water supply modeling for the Proposed Project is consistent with and does not exceed AMBAG projections and planned growth.

Therefore, the Proposed Project would result in a less-than-significant impact related to potential inducement of unplanned population growth based on regional population projections. Furthermore, the City's 2015 UWMP forecasts a continued reduction in water demand despite population growth due to implementation of planned water conservation strategies (City of Santa Cruz 2016).

The level of planned population growth identified in the City's 2015 UWMP that would be supported by the Proposed Project also is consistent with local general plans. The City's 2015 UWMP water demand projections are based on updated models of actual and forecast use, taking into account information on water usage and effects of conservation, water rates, and other factors expected to impact the demand for water, as well as AMBAG population and housing projections and water demand estimates developed for the University of California, Santa Cruz (UCSC) facilities. The water demand modeling report included as part of the City's 2015 UWMP identifies an increase of approximately 1,150 residential units in the City between 2020 and 2030, which is less than approximately 1,410+ potential residential units that could be constructed within the City under the existing General Plan as identified in the City's General Plan Housing Element (City of Santa Cruz 2016b). The City's 2015 UWMP also forecasts an increase of approximately 700 residential units in the City's service area outside of City limits, although this is not further segregated by unincorporated County or City of Capitola areas. However, the County of Santa Cruz and Capitola Housing Elements to the General Plan indicate that approximately 4,295 and 152 residential units, respectively, could be constructed under existing General Plans for these areas (Santa Cruz County 2016, Capitola 2015). The County projection is for urban and mixed-use developments in which the portion of the unincorporated area in the City's service area is located. Therefore, as a general indicator of consistency with local general plans, the City's 2015 UWMP projections for residential units are less than what could potentially be developed under existing general plans, and the Proposed Project would result in a less-than-significant impact related to potential inducement of unplanned population growth based on general plan growth projections. It is also noted that the current water demand projection for the UCSC for the year 2040 is approximately 20 mgy less than the 308 mgy forecast for UCSC in the City's 2015 UWMP based on water demand projections for the currently proposed 2021 Long Range Development Plan (LRDP) (UCSC 2021). Further, the land use plans, regulations, and development decisions are controlled by the City, Capitola, Scotts Valley, and County of Santa Cruz in their respective service areas, and, as previously indicated, the County's growth management regulations require adoption of an annual growth rate in the unincorporated areas with a specified number of residential building permits that can be issued in most of the project area.

#### 5.4.2.3 Potential Indirect Growth Inducement Within Service Areas of Other Water Districts

The Proposed Project with modification of the City's appropriative water rights would facilitate the opportunity for potential future water transfers and exchanges with neighboring water agencies, including SVWD, SLVWD, SqCWD, and CWD. When water is available and conditions of future agreements are met, these transfers include a range of water volumes of approximately 98 mgy to 277 mgy (0.5 to 1.5 mgd from November 1–April 30) has been identified that could potentially be transferred by the City to SqCWD and/or CWD via an upgraded intertie with some yet unknown volume of water potentially returned or exchanged to the City during dry periods. Additionally, up to approximately 163 mgy (0.9 mgd from November 1–April 30) of water could be transferred by the City to SVWD and/or SLVWD via future intertie facilities with some volume of water potentially returned to or exchanged with the City during dry periods. The amount of water that may be returned through exchanges is unknown at this time. The Santa Cruz Mid-County Groundwater Basin GSP indicates 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. The conditions of such

transfers and exchanges would be established in future agreements between the City and one or more of the neighboring water agencies, if such a project or projects are pursued. Additional environmental analysis would be required before such transfers could proceed.

The priority water supply augmentation strategy set forth by the WSAC and included in the City's 2015 UWMP recommended developing and implementing conjunctive use[9] of surface and groundwater resources in mid and northern Santa Cruz County. A significant barrier to implementing more conjunctive use of the City's San Lorenzo River sources of supply is the current limitations on the POUs in the City's Tait Licenses and Felton Permits, which are post-1914 appropriative water rights. In particular, the SqCWD and CWD are not included in the POU for any of the San Lorenzo River water rights, which include rights related to Newell Creek, Felton Diversion and Tait Diversion.

The Proposed Project would facilitate future water transfers primarily to address overdrafted groundwater conditions in the Santa Cruz Mid-County and Santa Margarita Groundwater Basins and potentially support exchanges. The Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan (GSP) was completed and adopted by the Santa Cruz Mid-County Groundwater Agency in November 2019 and submitted to the Department of Water Resources on January 30, 2020 (MGA 2020). The GSP sets sustainability management criteria for each of the five sustainability indicators applicable to the basin and identifies projects and management actions to achieve and maintain basin sustainability. Baseline projects and management actions (Group 1), in conjunction with other projects and management actions planned to reach sustainability (Group 2), include water conservation and demand management, installation and redistribution of municipal groundwater pumping, Pure Water Soquel, Beltz ASR and other ASR elsewhere in the Santa Cruz Mid-County Groundwater Basin, water transfers/in lieu groundwater recharge and distributed stormwater managed aquifer recharge. Additional potential projects and management actions may be evaluated in the future (Group 3). The Proposed Project's water supply augmentation components, Santa Cruz ASR facilities (including Beltz ASR) and water transfers, are consistent with recommendations in the GSP. The GSP will guide ongoing management of the Santa Cruz Mid-County 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 Santa Margarita Groundwater Agency (SMGWA) is a groundwater sustainability agency that has three member agencies—SVWD, SLVWD, and the County of Santa Cruz. Since the early 1980s, SVWD has actively managed groundwater resources. In 1994, the agency formally adopted a Groundwater Management Plan in accordance with Assembly Bill 3030, also known as the Groundwater Management Act under California Water Code Section 10750 (SMGWA 2020). The main goal of the Groundwater Management Plan is to better manage the aquifers providing the community's drinking water through the management of quantity and quality of the groundwater supply. 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 are being re-evaluated as the SMGWA develops its GSP, which must be completed and submitted to the Department of Water Resources by 2022 (SMGWA 2020).

As explained in Section 3.4.3.3, Water Transfers and Exchanges and Intertie Improvements, it is estimated that approximately 98 mgy to 277 mgy (0.5 to 1.5 mgd from November 1–April 30) could be transferred by the City to SqCWD and/or CWD. Additionally, up to approximately 163 mgy (0.9 mgd from November 1–April 30) of water could be transferred by the City to SVWD and/or SLVWD. Potential future water transfers with SqCWD, CWD, SLVWD, and/or SVWD generally would serve to reduce groundwater pumping in existing overdrafted aquifers to allow

[9] Conjunctive use refers to a range of actions and projects that provide for the coordinated management of surface water and groundwater supplies to increase total supplies and enhance water supply reliability. Conjunctive use actions and projects can also be used to sustainably manage groundwater supplies.

recovery, which is consistent with goals and recovery strategies identified in the Santa Cruz Mid-County Groundwater Basin GSP and goals established by the SMGWA. As such, future water transfers would enable groundwater basin recovery and would not be considered growth inducing. Existing plans for CWD, SLVWD and SVWD report adequate supplies to support planned growth in the service area, but recognize that long-term groundwater management is needed to alleviate overdraft conditions. As such, future potential water transfers between the City and these agencies as a result of the Proposed Project would support regional groundwater management goals and plans and would not be considered growth inducing.

Water transfers to SqCWD under the Proposed Project, in addition to water provided by Pure Water Soquel when it is operational (expected in 2022), could provide an additional source of water beyond what has been identified in the SqCWD 2015 UWMP as the amount needed to support planned growth with aquifer recovery. The objective of the water transfers, however, is to allow the SqCWD to reduce groundwater pumping. Water transfers from the City to neighboring agencies would not support new development because they would occur when the City's supplies would be in excess of the City's own needs, which will vary season to season and year to year. As indicated above, it is estimated that approximately 98 mgy to 277 mgy could be transferred to SqCWD and/or CWD. The water transfer could aid in further managing groundwater resources, and is also intended to provide an additional potential supplemental source to the City during multiple dry-year periods if such water is returned to the City, which would be determined in future agreements with neighboring water agencies. Furthermore, as indicated above, development within the unincorporated areas served by the SqCWD is regulated by the County of Santa Cruz, including limitations imposed by growth management ordinances that require annual limits on issuance of residential building permits. In this way, development within unincorporated areas is controlled and limited. Therefore, the Proposed Project would not indirectly induce substantial population growth.

### 5.4.3 Conclusion

The Proposed Project would not directly foster economic or population growth or construction of additional housing, as it would not result in construction of new residential or commercial development and would not result in a substantial number of new permanent employees that would induce population growth or construction of new housing. The Proposed Project would not indirectly induce population growth through the expansion of public services into an area that does not currently receive these services. There are no obstacles to population growth that would be removed or affected as a result of the Proposed Project.

An increase in available water supplies within the areas served by the City over existing conditions would occur as a result of the combined Proposed Project components. These supplies, however, would provide needed water to meet projected demand during times of shortfall without an overall expansion in water supplies or total permitted water rights. The proposed water rights modifications would support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers) and Element 2 (active recharge of regional aquifers via ASR) to deliver a safe, adequate, reliable and environmentally sustainable water supply. Thus, the proposed water rights modifications and ASR facilities would provide needed supplemental water supplies during times of identified water supply shortfalls.

While demand projections are associated with growth already anticipated in areas served by the City, the Proposed Project would provide for planned population growth as set forth in the 2015 UWMP, which is consistent with and lower than current AMBAG regional population forecasts. Therefore, the Project would not induce substantial unplanned population growth, resulting in a less-than-significant impact related to potential inducement of unplanned population growth. The level of planned population growth identified in the City's 2015 UWMP that would

be supported by the Proposed Project also is consistent with local general plans. Furthermore, the UWMP forecasts a continued reduction in water demand despite population growth due to implementation of planned water conservation strategies. Therefore, the Proposed Project would not serve growth in excess of what is forecasted for the areas served by the City.

A primary purpose of the Proposed Project is to provide water supplies during dry periods and multiple drought years and to provide flexibility in implementing a conjunctive water use strategy within the areas served by the City and with other regional partners to promote sustainable groundwater management due to overdrafted regional aquifers. Existing plans for SVWD, SLVWD, SqCWD and CWD report adequate supplies to support planned growth in their respective service areas, but recognize that long-term groundwater management is needed to alleviate overdrafted groundwater conditions. As such, future potential water transfers between the City and these agencies as a result of the Proposed Project would support regional groundwater managements goals and plans and would not be considered growth inducing.

## 5.5 References

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# 6 Other CEQA Considerations

Section 15126 of the California Environmental Quality Act (CEQA) Guidelines requires that all aspects of a project must be considered when evaluating its impact on the environment, including planning, acquisition, development, and operation. The environmental impact report (EIR) must discuss (1) significant environmental effects of the proposed project and mitigation measures proposed to minimize the significant effects, (2) significant environmental effects that cannot be avoided if the proposed project is implemented, (3) significant irreversible environmental changes that would result from implementation of the proposed project, (4) growth-inducing impacts of the proposed project, and (5) alternatives to the proposed project.

This chapter summarizes the significant environmental effects that cannot be avoided if the Santa Cruz Water Rights Project (Proposed Project) is implemented (i.e., significant unavoidable impacts). It also addresses whether significant irreversible environmental changes of the Proposed Project are required to be evaluated for the Proposed Project. An evaluation of the significant environmental effects of the Proposed Project, applicable mitigation measures, the level of impact significance before and after mitigation, and evaluation of cumulative impacts, is provided in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures. Chapter 5, Growth Inducement, addresses the growth-inducing impacts of the Proposed Project, if any, and Chapter 8, Alternatives, addresses alternatives to the Proposed Project.

## 6.1 Significant Unavoidable Impacts

The CEQA Guidelines require a description of any significant impacts, including those that can be mitigated but not reduced to a level of insignificance (Section 15126.2[c]). Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described. This EIR identified significant unavoidable impacts associated with construction noise impacts from the well drilling activities of the new aquifer storage and recovery (ASR) facilities and the Beltz 9 ASR facility (see Impact NOI-2 in Section 4.10, Noise) and construction of new or expanded water facilities that would result in significant impacts (see Impact UTL-1 in Section 4.13, Utilities and Energy).

## 6.2 Significant Irreversible Environmental Changes

The CEQA Guidelines require a discussion of significant irreversible environmental changes with project implementation, including uses of nonrenewable resources during the initial and continued phases of the project (Section 15126.2[d]). However, CEQA Guidelines Section 15127 indicates that information concerning irreversible changes needs to be included only in EIRs prepared in connection with:

(a) The adoption, amendment, or enactment of a plan, policy, or ordinance of a public agency;

(b) The adoption by a Local Agency Formation Commission of a resolution making determinations; or

(c) A project which will be subject to the requirement for preparing an environmental impact statement pursuant to the requirements of the National Environmental Policy Act of 1969, 42 United States Code Sections 4321–4347.

As the Proposed Project is not one of the above project types, this EIR is not required to include an analysis of significant irreversible environmental changes.

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# 7 Climate Change Considerations

This chapter evaluates the potential effects of climate change on and/or related to the Santa Cruz Water Rights Project (Proposed Project). Pursuant to the California Environmental Quality Act (CEQA) Guidelines Section 15125(a)(1), Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, evaluates the impacts of the Proposed Project as compared to the baseline physical environmental conditions, which are the conditions that existed at the time the Notice of Preparation for this environmental impact report (EIR) was published (2018). CEQA Guidelines Section 15125(a)(1) also indicates that lead agencies can use baselines consisting of both existing and projected future conditions that are supported by reliable projections based on substantial evidence in the record. This chapter considers projected future conditions that could result with climate change, which are based in part on hydrologic, water supply, and fisheries habitat modeling conducted for the Proposed Project (see Appendix D). Projected future climate change conditions could also potentially affect how the Proposed Project is implemented over time and therefore this chapter also considers whether changes in the implementation of the Proposed Project could result in additional direct, indirect or cumulative impacts.

## 7.1 Introduction and Background

### 7.1.1 Potential Effects of Climate Change

Section 4.6, Greenhouse Gas Emissions, describes the potential effects of climate change on environmental resources, which is also provided below.

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The 2014 Intergovernmental Panel on Climate Change (IPCC) Synthesis Report (IPCC 2014) indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. Signs that global climate change has occurred include warming of the atmosphere and ocean, diminished amounts of snow and ice, rising sea levels, and ocean acidification (IPCC 2014).

In California, climate change impacts have the potential to affect sea-level rise, agriculture, snowpack and natural availability of water, forestry, wildfire risk, public health, frequency of severe weather events, and electricity demand and supply. The primary effect of global climate change has been a rise in average global tropospheric temperature. Reflecting the long-term warming trend since pre-industrial times, observed global mean surface temperature for the decade 2006–2015 was 0.87°C (1.6°F) (likely between 0.75°C [1.4°F] and 0.99°C [1.8°F]) higher than the average over the 1850–1900 period (IPCC 2018). Scientific modeling predicts that continued emissions of greenhouse gases (GHGs) at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the 20th century. Human activities are estimated to have caused approximately 1.0°C (1.8°F) of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C (1.4°F to 2.2°F) (IPCC 2018). Global warming is likely to reach 1.5°C (2.7°F) between 2030 and 2052 if it continues to increase at the current rate (IPCC 2018).

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The Office of Environmental Health Hazard Assessment identified various indicators of climate change in California, which are scientifically based measurements that track trends in various aspects of climate change. Many indicators reveal discernible evidence that climate change is occurring in California and is having significant, measurable impacts in the state. Changes

in the state's climate have been observed, including an increase in annual average air temperature with record warmth from 2012 to 2016, more frequent extreme heat events, more extreme drought, a decline in winter chill, an increase in cooling degree days and a decrease in heating degree days, and an increase in variability of statewide precipitation (OEHHA 2018).

Warming temperatures and changing precipitation patterns have altered California's physical systems—the ocean, lakes, rivers, and snowpack—upon which the state depends. Winter snowpack and spring snowmelt runoff from the Sierra Nevada and southern Cascade Mountains provide approximately one-third of the state's annual water supply. Impacts of climate on physical systems have been observed such as high variability of snow-water content (i.e., amount of water stored in snowpack), decrease in snowmelt runoff, glacier change (loss in area), rise in sea levels, increase in average lake water temperature and coastal ocean temperature, and a decrease in dissolved oxygen in coastal waters (OEHHA 2018).

Impacts of climate change on biological systems, including humans, wildlife, and vegetation, have also been observed, including climate change impacts on terrestrial, marine, and freshwater ecosystems. As with global observations, species responses include those consistent with warming: elevational or latitudinal shifts in range, changes in the timing of key plant and animal life cycle events, and changes in the abundance of species and in community composition. Humans are better able to adapt to a changing climate than plants and animals in natural ecosystems. Nevertheless, climate change poses a threat to public health as warming temperatures and changes in precipitation can affect vector-borne pathogen transmission and disease patterns in California as well as the variability of heat-related deaths and illnesses. In addition, since 1950, the area burned by wildfires each year has followed an increasing trend overall.

The California Natural Resources Agency (CNRA) has released four California Climate Change Assessments (2006, 2009, 2012, and 2018), which have addressed the following: acceleration of warming across the state, more intense and frequent heat waves, greater riverine flows, accelerating sea-level rise, more intense and frequent drought, more severe and frequent wildfires, more severe storms and extreme weather events, shrinking snowpack and less overall precipitation, and ocean acidification, hypoxia, and warming. To address local and regional governments' need for information to support action in their communities, the Fourth Assessment (2018) includes reports for nine regions of the state.

Key projected climate changes for the Central Coast Region (which includes Santa Cruz County where the Proposed Project is located) include the following from the CNRA (CNRA 2018), unless otherwise indicated:

- Maximum and minimum temperatures for the Central Coast will continue to increase through the next century, with greater increases in the inland region relative to the coast.
- Precipitation is expected to increase slightly, but precipitation variability will increase substantially. (For example, the frequency of abrupt shifts from dry to wet years is expected to increase roughly 35% by 2075, the frequency of extremely dry years is expected to increase roughly 100%, and the frequency of extremely wet years is expected to increase by more than 100% [Swain et al., 2018]).
- The future of fog is uncertain because system feedbacks and their response to climate change are not well characterized. Fog can be intercepted by coastal zone flora (which obtain up to one-third of their moisture from fog) and can also prevent low stream flows, which can keep salmonids from desiccating during dry periods.
- Periodic El Niño events dominate coastal hazards across the Central Coast while atmospheric rivers, expected to increase, are the dominant drivers of locally extreme rainfall events.
- Recently observed and projected acceleration in sea-level rise poses a significant threat to the regions' coastal communities. Future flooding is also a serious concern.

- Estuarine systems will be affected by accelerated sea-level rise, warming of water and air, ocean acidification, and changes in runoff. Some Central Coast marshes may drown or become shallow mudflats, leading to a loss of the ecosystem services that marshes provide, including carbon sequestration.
- Many beaches will narrow considerably. As many as two-thirds will be completely lost over the next century, along with the ecosystems supported by those beaches. The landward erosion of beaches will be driven by accelerating sea-level rise combined with a lack of ample sediment, effectively drowning the beaches between the rising ocean and the backing cliffs and/or urban hardscape.
- Projected future droughts are likely to be a serious challenge to the region's already stressed water supplies.
- Water supply shortages, already common during drought, will be exacerbated. Higher temperatures may result in increases in water demand for agriculture and landscaping. Reduced surface water will lead to increases in groundwater extractions that may result in increased saltwater intrusion (also known as seawater intrusion). Lower surface flows will lead to higher pollutant concentrations and will impact aquatic species.
- Frequent and sometimes large wildfires will continue to be a major disturbance and post-fire recovery time may be lengthened.
- Central Coast native plants are a large part of the world's floristic provinces. Plant species' responses to climate change will in general depend on the climate in which a population evolved and its own unique climate tolerances. Coastal shrubland resilience depends on climate effects to physiological responses that are modified by biotic interactions and the extent of anthropogenic land use. Grasslands closer to the coast will be less affected than interior grasslands where warming is already documented.
- Climate change outcomes for forests will depend largely on multiple abiotic drivers (increased air temperatures, altered fog patterns, changes in winter precipitation), and biotic factors (invasive species and insect and pest outbreaks).
- Terrestrial wildlife is already experiencing local extinctions. Species may have robust climate refugia in the region's mountains characterized by cooler temperatures and higher levels of precipitation.
- The aquatic life of streams and rivers is threatened by projected extreme swings from drought to floods, and exacerbated by fire and erosion that buries habitat in sediments. Climate impacts can threaten the survival of already endangered steelhead and coho salmon, and further reduce the diversity and abundance of sensitive aquatic insects.
- Impacts to the region's public health include increases in heat-related illnesses for agricultural workers, harmful particulate matter from wildfires, and an increase in ground-level $O_3$. Infectious/vector-borne diseases such as Valley Fever and Pacific Coast tick fever are expected to increase, and an increase in harmful algal blooms will have detrimental effects on animals and people exposed to toxins released from the algae.
- Residential electricity demand is likely to be affected by more frequent heat waves due to increases in cooling requirements, and warming temperatures are likely to affect electricity supply from gas-fired plants.
- Agricultural production is highly sensitive to climate change, including amounts, forms, and distribution of precipitation, changes in temperatures, and increased frequency and intensity of climate extremes.

Average annual air temperature in California has increased through the 20th century with the rate of increase accelerating since the 1980s (OEHHA 2018). Air temperature projections for the 21st century show continued increases from 2 to 4 °C in the San Francisco Bay Area (Flint and Flint 2012). The increase in minimum (nighttime) temperatures have increased at a faster rate than maximum (daytime) temperatures. Since air temperature is the major determining factor for water temperature, temperature of aquatic systems is likely to show similar trends. The ability of aquatic species to persist in presently occupied habitats will depend on the rate of increase and the ability of the species to adapt to changing conditions.

## 7.1.2 Building Climate Change into Water Supply Planning

Prior to approximately 2013, water supply planning and the estimation of future water shortages for the City of Santa Cruz (City) was based on the 73 years of hydrologic record available for the Santa Cruz region. Using temperature and precipitation data and resulting hydrology from the past 73 years, the City used available tools and experience to predict future conditions. While this approach allowed the City to simulate longer droughts by synthetically creating time-sequences of dry periods, it was not capable of incorporating more severe droughts in terms of dryer, warmer climates.

Ongoing studies including evaluations of paleoclimate records and future climate model projections indicate that longer-term drought conditions have occurred in the past and are likely to occur again. Additionally, the 73-year period of record is characterized by rainfall patterns well above long-term averages and therefore the worst droughts reflected in the past 73 years likely understate future conditions.

The incorporation of climate change into water supply planning began during the Water Supply Advisory Committee (WSAC) process. A goal of the WSAC was to develop a supply augmentation work plan that was adaptable to future climate conditions (WSAC 2015). Through the supply planning work of the WSAC and the initial development of the pending Anadromous Salmonid Habitat Conservation Plan (ASHCP), the City focused on a worst-case climate change dataset, which for the Cal-Adapt datasets is the downscaled Geophysical Fluid Dynamics Laboratory Coupled Model (GFDL2.1 or CMIP3) for the A2 emissions scenario (see Section 7.1.3, Climate Change Modeling, for additional information). It should be noted that the Cal-Adapt program was just getting up and running at that time to help state agencies respond to climate change.

The experiences and insights of the WSAC technical team have shown that the City's current supply system is vulnerable to future climate conditions projected in this region. By relying on local sources that are dominated by surface water and limited by a single reservoir, the City water system is vulnerable to any combination of conditions that result in drier or warmer climate, more intense rainfall over shorter periods of time, etc., which will likely result in significant impacts to the City's ability to meet demands.

After completion of the WSAC process, the City continued the evaluation of supply reliability under climate change conditions with additional model scenarios including but not limited to the use of the Coupled Model Intercomparison Project 5 (CMIP5) data set. An objective of this work is to understand the reasonable boundaries of future climate conditions with respect to timing, duration, and depth of supply deficits. The findings, whereas different in terms of magnitude of shortage and reliability of existing supplies among the scenarios, all conclude that the City's current water supply situation is inadequate for meeting the longer-term challenges of climate change.

To respond to a future that includes drier and warmer conditions, the degree to which we cannot accurately predict, the City is doing two things:

1. Framed by the WSAC findings, the City is considering water supply alternatives that can be implemented incrementally to meet a future climate that is unknown. Aquifer storage and recovery (ASR) facilities for example can be constructed incrementally to meet demands. If and when surface water sources decline and can no longer meet the needs of a groundwater replenishment system, recycled water or seawater desalination may also be needed (see Section 3.2.1, Water Supply Planning Background, for a description of the City's Water Supply Augmentation Strategy).
2. Adopting a new approach to assessing the vulnerability of our system in future work that incorporates an exhaustive exploration of future conditions to stress test the water system. What is expected to come from this analysis is a better understanding of the capabilities of the current system to meet future climate conditions, and under what conditions the current system begins to break down.

## 7.1.3 Climate Change Modeling

As described in Chapter 3, Project Description, to both develop and analyze the Proposed Project presented in this EIR, the City has utilized a modeling system comprised of a hydrologic model, a water supply model, and a biological effects model. Together, these tools have allowed the City to understand the potential effects of Proposed Project features on both water supply availability and anadromous fisheries. Improved understanding of potential effects allowed for refinements in the Proposed Project that are reflected in Chapter 3, Project Description, to maximize available water supply while protecting local anadromous fisheries. The same modeling tools were utilized during development of the Agreed Flows and WSAC Water Supply Augmentation Strategy, providing for consistency and stability across planning efforts.

Given the potential implications of climate change on the City's water supply, climate change modeling reported here includes scenarios using the historical hydrologic record (1937 to 2015) (historic hydrology) and a climate change hydrologic record (2020 to 2070) (climate change hydrology). Specifically, three different climate change projections that represent plausible future conditions for the Santa Cruz region were analyzed and included precipitation, minimum air temperature and maximum air temperature. Values for each of these three climate parameters represent spatial averages over model grid cells which contribute runoff to the Big Trees gaging station on the San Lorenzo River. Projection 1 (CMIP3) reflects dry and warm conditions, but generally lacks year to year rainfall variability, a climate attribute that is expected for Central California during the climate change projection period. Projection 2 (CMIP5) reflects more variable conditions in terms of precipitation, but air temperatures are generally cool. Projection 3 (climate catalog approach developed as part of the Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan) is similar to Projection 1, but with greater proportion of winter months that are wet and warm.

Projection 1 (CMIP3) was used during the WSAC process. Projection 2 (CMIP5) was used for the Proposed Project and represents a statistical combination of four different climate projections of precipitation, minimum air temperature and maximum air temperature. Using a combination of more than one climate projection is advantageous because it helps to mediate risks associated with, in particular, future uncertainty of year-to-year precipitation patterns and magnitudes. By comparison, an evaluation of 10 different climate projections for the Santa Cruz region at the Cal-Adapt website reveals ten distinctly different future plausible conditions. Use of Projection 2 reduces the risks of relying on any one climate projection and supports more informed decisions. (As an aside, Projection 3 was considered during the development of the Proposed Project from the standpoint of understanding water supply impacts with greater proportion of winter months that are wet and warm as represented in Projection 3. However, because the resulting water supply gap was similar to that projected using Projection 2, Projection 2 remained the scenario around which the Proposed Project was developed.)

Where relevant, Chapter 4 refers to modeling results using the historical hydrologic record. This chapter refers to modeling results using the climate change hydrologic record (2020 to 2070), where relevant to the analysis. See Section 3.5, Proposed Project Modeling, for additional information about the modeling of the Proposed Project and Appendix D for hydrologic, water supply, and fisheries habitat modeling of the effects of the proposed water rights modifications based on the reasonably foreseeable operations of the City's water system.

## 7.1.4 Proposed Project Implementation with Climate Change

With some exceptions explained below, key modeling assumptions reflecting City water-system operations for the 2018 baseline and the Proposed Project are the same for the modeling conducted based on the historic hydrology and for the modeling conducted based on climate change hydrology. Specifically, water demand, water rights, bypass flow requirements, infrastructure assumptions, and operational constraints remain consistent for Proposed Project modeling with the historical hydrologic record or climate change hydrologic record.

Chapter 3, Project Description, indicates that ASR would have a total proposed injection infrastructure capacity of 4.5 million gallons per day (mgd) and a proposed extraction infrastructure capacity of 8.0 mgd, which is defined to meet the agreed-upon worst-year gap of 1.2 billion gallons per year and based on the water supply modeling using historic hydrology provided in Appendix D. Based on the results of the climate change modeling in Appendix D, it is possible that ASR injection and extraction capacities needed to achieve the same water supply reliability goal for the Proposed Project under climate change conditions could be greater for injection capacity and less for extraction capacity (i.e., 6.0 mgd and 7.0 mgd, respectively). Likewise, peak diversions could also be greater at times to provide for potentially larger ASR injection capacity. Other elements of the Proposed Project would remain unchanged based on the climate change modeling.

The City will continue to refine its water supply planning over time in response to ongoing assessments of the vulnerability of the system under future climate conditions. Such refinements could modify the approach to implementing the Proposed Project and/or lead to the pursuit of additional water supply options as defined in the City's Water Supply Augmentation Strategy (see Section 3.2.1, Water Supply Planning Background, for a description of the City's Water Supply Augmentation Strategy).

# 7.2 Environmental Analysis

## 7.2.1 Impacts Not Found to be Significant

Section 4.1, Impacts Not Found to be Significant, indicates that issues related to aesthetics, population and housing, and public services were found not to be significant for the project and programmatic components of the Proposed Project. Given that the same number and type of project and programmatic infrastructure components would be needed for the Proposed Project, impacts related to aesthetics would also be less than significant under climate change conditions. No impacts related to population and housing would result under climate change conditions as the project and programmatic infrastructure components would not displace existing people or housing and would not require the construction of replacement housing elsewhere. Additionally, impacts related to public services would also be less than significant under climate change conditions, as the Proposed Project would not include any new land uses that would generate a substantial new demand for public services that would require new or physically altered public service facilities to meet acceptable performance objectives. There are no climate change conditions that would modify the reported conclusions presented in Section 4.1.

## 7.2.2 Air Quality

While the impacts of climate change on the region's public health include increases in harmful particulate matter from wildfires and an increase in ground-level ozone as described in Section 7.1.1, Potential Effects of Climate Change, the Proposed Project would not increase these risks. The less-than-significant impacts identified and evaluated in Section 4.2, Air Quality (Impacts AIR-1 through AIR-5), are due to construction emissions associated with the project and programmatic infrastructure components. Limited operational emissions from the Proposed Project were also identified related to vehicle trips primarily associated with routine inspection and maintenance activities at infrastructure locations by City staff. Given that the same number and type of project and programmatic infrastructure components would be needed for the Proposed Project, the impacts would be the same under climate change conditions, as reported in Section 4.2. There are no climate change conditions that would modify the reported conclusions presented in Section 4.2.

## 7.2.3 Biological Resources

### 7.2.3.1 Operational Impacts on Special-Status Fish

Effects of projected hydrology with climate change are evaluated for several special-status fish species below. In general, the climate change scenario used in this analysis has greater variability than the historic hydrology and results in higher flows during wet and normal years compared to the historic hydrology and lower flows during dry and critical years. Other changes anticipated under climate change include sea-level rise, which is likely to significantly alter lagoon conditions, and temperature increases (see Section 7.2.8, Hydrology and Water Quality). These changes, however, are unrelated to City operations and will occur regardless of the Proposed Project. The following analysis only considers the effects of the Proposed Project in relation to the 2018 baseline under climate change hydrology. The impacts presented are in comparison to those presented for historic hydrology in Impact BIO-1A (see Section 4.3, Biological Resources). There are no climate change conditions that would modify the reported conclusions presented in Section 4.3, Biological Resources.

#### Tidewater Goby

Analysis of the Proposed Project's effects on Tidewater goby presented in Section 4.3, Biological Resources, indicates that 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 the lagoon under historical hydrological conditions. Under projected climate change hydrology, the Proposed Project's effects compared to the baseline are similar to historical hydrology. 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 7.2% reduction in average lagoon inflows in spring (April through June) of normal years, and a 7.4% reduction in average inflows in summer (July through September) of wet years (Table 7-1). Changes in dry and critical years range from an increase in average lagoon inflow of 0.8% in spring of critically dry years to a 1.2% decrease in summer 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 cubic feet per second (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 change 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 with the Proposed Project in spring of normal and wet years and would decrease slightly in winter in dry and critical years. Changes at other times would be insignificant (less than 0.5%). Much of the increase in spring 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 considerations and under a climate change scenario, the Proposed Project would not result in a substantial adverse effect on tidewater goby, 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 under a climate change hydrologic scenario.

**Table 7-1. Average Inflow to the San Lorenzo River and Laguna Creek Lagoons under Climate Change Hydrology (cfs)**

| Season | Year Type | San Lorenzo River Lagoon | | Laguna Creek Lagoon | |
|---|---|---|---|---|---|
| | | *Baseline* | *Proposed Project* | *Baseline* | *Proposed Project* |
| Spring | Wet | 344.7 | 333.3 | 11.9 | 12.8 |
| | Normal | 86.2 | 80.0 | 3.3 | 4.1 |
| | Dry | 10.6 | 10.5 | 0.9 | 0.9 |
| | Critical | 9.5 | 9.5 | 0.8 | 0.8 |
| Summer | Wet | 73.3 | 67.9 | 2.7 | 2.7 |
| | Normal | 17.4 | 16.4 | 1.3 | 1.3 |
| | Dry | 7.3 | 7.3 | 0.5 | 0.5 |
| | Critical | 5.7 | 5.7 | 0.4 | 0.4 |

**Note:** cfs = cubic feet per second.

## Pacific Lamprey

Analysis of the Proposed Project's impacts on Pacific lamprey indicates that changes in flows in the San Lorenzo River are not of sufficient magnitude to result in adverse effects on Pacific lamprey either as rearing juveniles or migrating adults or juveniles under historical hydrological conditions. Pacific lamprey have not been reported from the North Coast streams (Liddell, Laguna, and Majors Creeks). Pacific lamprey may use the reach between the Felton Diversion and the Tait Diversion, and the reach downstream of the Tait Diversion for migration, spawning, and rearing. With climate change hydrology, the flows between the Felton Diversion and the Tait Diversion would be very similar under the 2018 baseline and Proposed Project conditions (Table 7-2). Flows downstream of the Tait Diversion would be slightly lower with the Proposed Project at higher flows (10% to 60% exceedance) but very similar at lower flows (70% to 100% exceedance) (Table 7-3). Flow changes of this magnitude would not be likely to significantly affect lamprey migration, spawning, or rearing.

**Table 7-2. Daily Flow Exceedance Frequency Downstream of Felton Diversion under Climate Change Hydrology (cfs)**

| Percentile | Baseline | Proposed Project |
|---|---|---|
| 10% | 407.2 | 407.3 |
| 20% | 179.9 | 179.9 |
| 30% | 87.6 | 86.8 |
| 40% | 47.5 | 47.6 |
| 50% | 29.3 | 31.6 |
| 60% | 21.3 | 21.6 |
| 70% | 15.9 | 15.9 |
| 80% | 11.1 | 11.1 |
| 90% | 7.9 | 7.9 |
| 100% | 3.6 | 3.6 |

**Note:** cfs = cubic feet per second.

**Table 7-3. Daily Flow Exceedance Frequency Downstream of Tait Diversion under Climate Change Hydrology (cfs)**

| Percentile | Baseline | Proposed Project |
|---|---|---|
| 10% | 452.1 | 441.1 |
| 20% | 197.3 | 188.4 |
| 30% | 92.7 | 85.7 |
| 40% | 46.1 | 40.4 |
| 50% | 25.9 | 25.7 |
| 60% | 17.1 | 14.8 |
| 70% | 11.6 | 10.5 |
| 80% | 8.5 | 8.5 |
| 90% | 8.3 | 8.3 |
| 100% | 3.6 | 3.6 |

**Note:** cfs = cubic feet per second.

Given the small differences in flows between the baseline and Proposed Project under climate change hydrology, the Proposed Project would not likely have a substantial adverse effect on Pacific lamprey, cause lamprey populations to drop below self-sustaining levels, or threaten to eliminate or substantially reduce the number or restrict the range of lamprey. Therefore, the Proposed Project would have a less-than-significant impact on Pacific lamprey.

## Monterey Roach

Analysis of the Proposed Project's effects presented in Section 4.3, Biological Resources, concluded that the relatively small flow differences under the Proposed Project and historical hydrology would not likely have a significant effect on Monterey roach. Similarly, differences in flow between the 2018 baseline and the Proposed Project under projected climate change conditions are also small (Table 7-2, Table 7-3). Roach are tolerant of a range of environmental conditions. The relatively small flow changes under the Proposed Project with climate change hydrology would not likely have a substantial adverse effect on Monterey roach, cause roach populations to drop below self-sustaining levels, or threaten to eliminate or substantially reduce the number or restrict the range of roach. Therefore, the Proposed Project would have a less-than-significant impact on Monterey roach.

## Steelhead and Coho

### Habitat Effects of Proposed Project

Habitat modeling was conducted to evaluate effects of the Proposed Project on steelhead and coho as compared to 2018 baseline conditions under projected climate change conditions (Appendix D-3). The Proposed Project was defined the same as for analysis of historical hydrology (Section 4.3, Biological Resources, Analytical Methods and Appendix D-3). Table 7-4 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 projected climate change conditions for 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.

## Table 7-4. Listed Fish Habitat Effects of the Proposed Project Compared to Baseline under Climate Change Hydrology

| Stream Reach | Year Type | Steelhead | | | | Coho | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | *Adult migration (m)* | *Spawning/incubation (i)* | *Rearing (r)* | *Smolt migration (s)* | *Adult migration (m)* | *Spawning/incubation (i)* | *Rearing (r)* | *Smolt migration (s)* |
| Laguna Anadromous | Wet | 9.4% | 3.3% | ○ | ○ | ○ | + | −2.9% | ○ |
| | Normal | 12.3% | 6.5% | ○ | ○ | ○ | + | −2.0% | ○ |
| | Dry | ○ | – | ○ | ○ | ○ | + | ○ | ○ |
| | Critically dry | ○ | – | ○ | ○ | ○ | + | ○ | ○ |
| Liddell Anadromous | Wet | 8.2% | 4.7% | – | ○ | | | | |
| | Normal | 8.0% | 2.0% | ○ | ○ | | | | |
| | Dry | ○ | ○ | – | ○ | | | | |
| | Critically dry | ○ | ○ | – | ○ | | | | |
| Majors Anadromous | Wet | ○ | + | – | ○ | | | | |
| | Normal | ○ | + | ○ | ○ | | | | |
| | Dry | ○ | ○ | ○ | ○ | | | | |
| | Critically dry | ○ | ○ | ○ | ○ | | | | |
| San Lorenzo below Tait Street | Wet | ○ | | – | ○ | ○ | | | ○ |
| | Normal | ○ | | – | ○ | ○ | | | ○ |
| | Dry | 4.0% | | – | −4.0% | ○ | | | −4.0% |
| | Critically dry | 7.1% | | – | ○ | 3.2% | | | ○ |
| San Lorenzo below Felton | Wet | + | 2.5% | ○ | ○ | 4.3% | – | – | ○ |
| | Normal | 7.4% | 5.9% | - | ○ | 13.0% | + | – | ○ |
| | Dry | 42.5% | 28.6% | ○ | ○ | 29.4% | ***2.7%*** | o | ○ |
| | Critically dry | 48.4% | 22.5% | ○ | ○ | 32.0% | ***2.5%*** | o | ○ |
| Newell Anadromous | Wet | 4.9% | 2.1% | ○ | 2.9% | 24.5% | + | – | 2.9% |
| | Normal | 7.3% | 6.2% | + | 6.2% | ○ | 9.5% | + | 6.2% |
| | Dry | ○ | 17.2% | 7.6% | ○ | ○ | 35.7% | + | ○ |
| | Critically dry | ○ | 10.7% | 8.3% | ○ | ○ | 18.1% | + | ○ |

**Source:** Appendix D-3 (Hagar Environmental Science 2020).

**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.

The results for climate change hydrology have similar patterns to the results for historical hydrology. The majority of effects of the Proposed Project involve an improvement in habitat conditions for steelhead and coho compared to the baseline (Table 7-4). Negative effects are limited to coho rearing in Laguna Creek in normal and wet years and smolt migration in the San Lorenzo River downstream of the Tait Diversion in dry years. The decrease in habitat value for rearing coho is due to increases in flow during April for adult migration. Optimal conditions for coho rearing occur at lower flow than required for adult migration. 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 salmon, 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.

The smolt index downstream of the Tait Diversion is decreased in dry years with the Proposed Project and climate change due to modification of the smolt bypass flows during very dry conditions (see Appendix C). The increased capacity at the Tait Diversion under the Proposed Project results in more frequent flows below the smolt threshold on the four days per week when smolt bypass flows are not required. There would still be a relatively large number of days (about 120 out of 150 possible) when conditions are suitable for smolt migration under the Proposed Project. This would be a minor effect on smolt migration that is unlikely to have biological significance. It would not be considered a "substantial effect" under CEQA standards of significance. Specifically, a change of this magnitude in the smolt 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 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 under climate change hydrology as it would under historic hydrology (see Table 7-4). Based on climate change hydrology, the habitat modeling indicates that the Proposed Project would not have a substantial adverse effect on habitat indices for steelhead or coho, interfere substantially with migration of steelhead or coho, 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 Proposed Project would have a less-than-significant impact on steelhead and coho habitat. There are no climate change conditions that would modify the reported operational impact conclusions in Section 4.3, Biological Resources, for Impacts BIO-1A.

### Water Temperature Effects of Proposed Project

As described in Appendix D-3, steelhead are generally expected to survive and grow well at temperatures up to about 19°C to 21°C if food is abundant, but at temperatures 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. As indicated in Appendix D-3 and Section 4.3, Biological Resources, operation of the Loch Lomond Reservoir (reservoir spill and the existing required 1 cfs fish release) is the only City activity associated with the Proposed Project that has the potential to influence water temperatures.

Average annual air temperature in California has increased through the 20th century with the rate of increase accelerating since the 1980s (OEHHA 2018). Air temperature projections for the 21st century show continued increases from 2 to 4°C in the San Francisco Bay Area (Flint and Flint 2012). The increase in minimum (nighttime) temperatures have increased at a faster rate than maximum (daytime) temperatures. Since air temperature is the major determining factor for water temperature, temperature of aquatic systems is likely to show similar trends.

The ability of aquatic species to persist in presently occupied habitats will depend on the rate of increase and the ability of the species to adapt to changing conditions.

The Santa Cruz mountains currently represent the southern margin for the range of coho with temperature and associated habitat features (redwood forest) being a major determinant, if not the major determining factor, in the extent of their range. 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. Water temperature in many of the streams in Santa Cruz County are presently at or near the level limiting coho persistence (City of Santa Cruz 2021) and may partially explain why coho are no longer present. Increasing temperatures will only exacerbate these effects. Steelhead have slightly greater tolerance of high temperature than coho but they are also near the southern edge of their present range and, at least in the San Lorenzo River, near their upper thermal tolerance range.

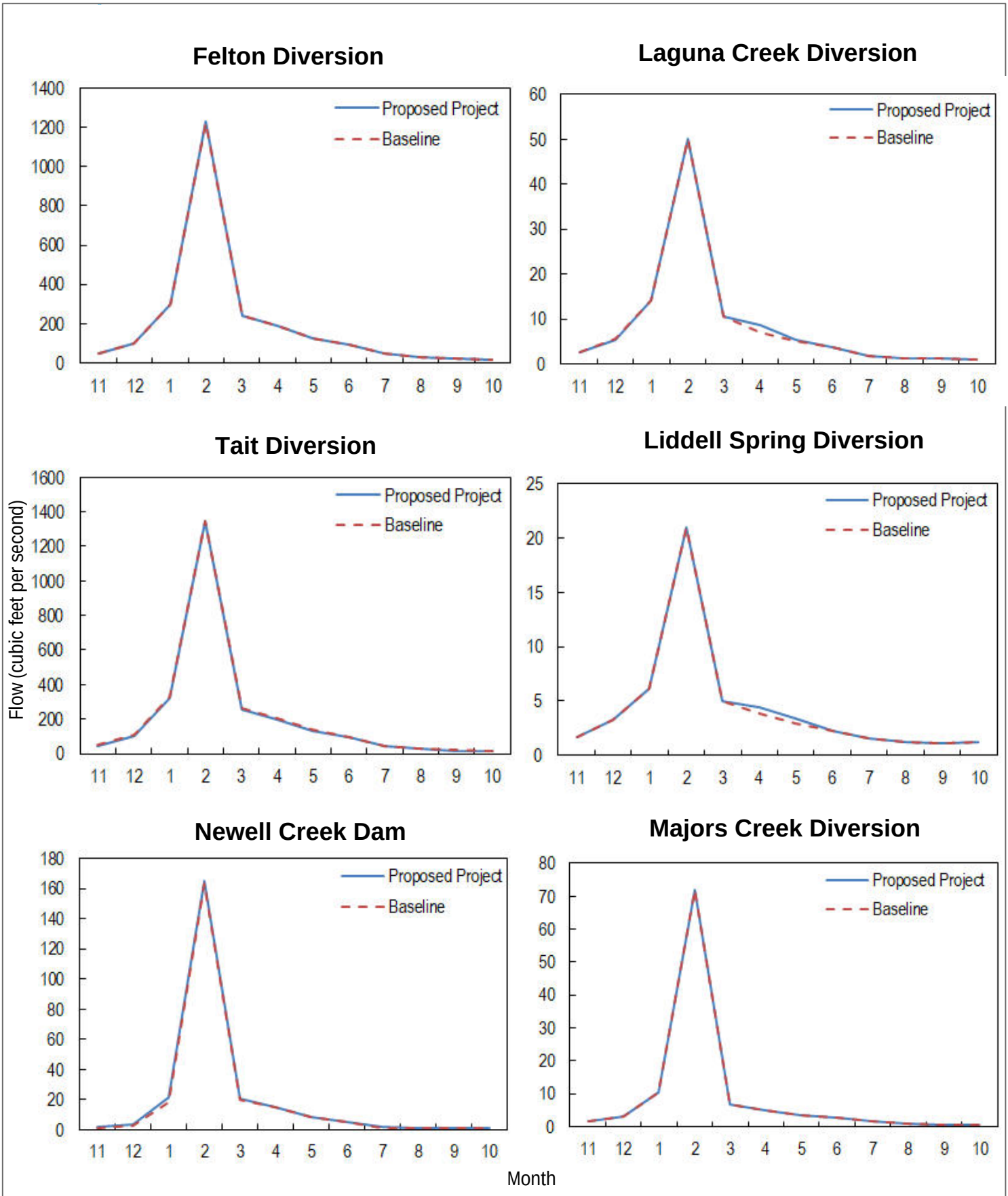
These effects are unrelated to and will occur regardless of the Proposed Project. However, there may be synergies between aspects of the Proposed Project and climate change that have an effect on steelhead or coho. With the Proposed Project, storage in Loch Lomond Reservoir is predicted to be high with greater frequency than under the baseline, with the result that spill from the reservoir would be more frequent with the Proposed Project (see Section 7.2.8, Hydrology and Water Quality [Table 7-5]). This could benefit steelhead and coho during the adult migration, spawning, and smolt migration life-stages, though the increase in spill frequency is relatively small.

At times when the reservoir is spilling and the existing 1 cfs fish release is not sufficient to maintain temperature in Newell Creek below 21°C, Operational Practice #6 presented in Chapter 3, Project Description, 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. As a result, 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. Therefore, the Proposed Project would have a less-than-significant impact on steelhead and coho habitat. There are no climate change conditions that would modify the reported operational impact conclusions in Section 4.3, Biological Resources, for Impact BIO-1A.

### 7.2.3.2 Operational Impacts on Other Special-Status Species and Habitats

Operational impacts of the water rights modifications to habitat for riparian-dependent special-status wildlife and plant species (Impacts BIO-1B and BIO-1C), riparian and sensitive vegetation communities (Impact BIO-2), jurisdictional aquatic resources (Impact BIO-3), and wildlife movement (Impact BIO-4) 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.

The difference in residual flows with Proposed Project operations would be minimal relative to 2018 baseline conditions, based on climate change hydrology (see Figure 7-1). This conclusion is similar to that for the Proposed Project based on historic hydrology. As residual flows would not be substantially altered with climate change hydrology, operational impacts to riparian-dependent special-status wildlife and plant species, riparian and sensitive vegetation communities, jurisdictional aquatic resources, and wildlife movement would also be less than significant. There are no climate change conditions that would modify the reported operational impact conclusions in Section 4.3, Biological Resources, for Impacts BIO-1 through BIO-5.




Note: Based on an average of all years in the climate change hydrologic record (2020 to 2070).

SOURCE: Gary Fiske and Associates 2021

FIGURE 7-1

Average Monthly Residual Flows Under Climate Change Conditions

#### 7.2.3.3 Construction Impacts

Given that the same number and type of project and programmatic infrastructure components would be needed for the Proposed Project, construction impacts would be the same under climate change conditions, as reported in Section 4.3, Biological Resources. There are no climate change conditions that would modify the reported construction impact conclusions in Section 4.3 for Impacts BIO-1 through BIO-5 or required mitigation measures (MM BIO-1 through MM BIO-14).

### 7.2.4 Cultural Resources

All less-than-significant or potentially significant impacts identified and evaluated in Section 4.4, Cultural Resources and Tribal Cultural Resources, are due to construction of project and programmatic infrastructure components. Given that the same number and type of project and programmatic infrastructure components would be needed for the Proposed Project, the impacts would be the same under climate change conditions. There are no climate change conditions that would modify the reported impact conclusions presented in Section 4.4 for Impacts CUL-1 through CUL-4 or required mitigation measures (MM CUL-1 and MM CUL-2).

### 7.2.5 Geology and Soils

All less-than-significant or potentially significant impacts identified and evaluated in Section 4.5, Geology and Soils, are due to construction and operation of project and programmatic infrastructure components. Given that the same number and type of project and programmatic infrastructure components would be needed for the Proposed Project, the impacts would be the same or the similar under climate change conditions, as reported in Section 4.5 for Impacts GEO-1 through GEO-6.

Impact GEO-2 indicates that if ASR operations were to raise water elevations to within 40 feet of the ground surface and the soils are prone to liquefaction (as illustrated in Figure 4.5-3), liquefaction would potentially occur due to the operation of new ASR facilities. ASR-induced liquefaction could result in damage to existing overlying structures and infrastructure, including utilities. As a result, Section 4.5, Geology and Soils indicates that this programmatic component would potentially cause substantial adverse effects, including the risk of loss, injury, or death resulting from liquefaction and associated lateral spreading and impacts would be potentially significant, but could be reduced to a less-than-significant level with the implementation of an identified mitigation measure (MM GEO-1).

As indicated in Section 7.1.1, Potential Effects of Climate Change, it is possible that groundwater levels could decrease with climate change as surface water supply shortages, already common during drought, will be exacerbated, which could lead to increases in groundwater extractions and associated decreases in groundwater levels (CNRA 2018). However, such effects are not necessarily anticipated with the implementation of the Santa Cruz Mid-County Groundwater Sustainability Plan (GSP) and the pending Santa Margarita GSP, which will guide ongoing management of the groundwater basins with a goal to achieve and maintain the sustainability goals of both basins within 20 years (see Section 7.2.8, Hydrology and Water Quality, for additional information). (ASR in the Santa Margarita Groundwater Basin is a programmatic element of the Proposed Project and would not be implemented in that basin until after that basin's GSP is adopted.) Regardless, to be conservative, the impact of the Proposed Project associated with ASR-induced liquefaction under climate change conditions would be still be considered potentially significant, and could be reduced to a less-than-significant level with the implementation of the same identified mitigation measure in Section 4.5, Geology and Soils. Therefore, there are no climate change conditions that would modify the reported impact conclusions presented in Section 4.5 or required mitigation measures (MM GEO-1 and MM GEO-2).

### 7.2.6 Greenhouse Gas Emissions

All less-than-significant impacts identified and evaluated in Section 4.6, Greenhouse Gas Emissions, are due to construction and operation of project and programmatic infrastructure components. Given that the same number and type of project and programmatic infrastructure components would be needed for the Proposed Project, the impacts would be the same or the similar under climate change conditions, as reported in Section 4.6 for Impacts GHG-1 through GHG-3.

As indicated in Section 7.1.4, Proposed Project Implementation with Climate Change, it is possible that ASR injection and extraction capacities needed to achieve the same water supply reliability goal for the Proposed Project under climate change conditions could be greater for injection capacity and less for extraction capacity (i.e., 6.0 mgd and 7.0 mgd, respectively), based on the results of the climate change modeling presented in Appendix D. If that were the case, electrical energy use would increase by approximately 2% over that estimated in Section 4.6, Greenhouse Gas Emissions, and Appendix E. This increase in energy use would result in a negligible increase in GHG emissions of approximately 3 metric tons of carbon dioxide equivalent (MT $CO_2e$), and therefore the Proposed Project under climate change conditions would also not exceed the applied threshold of 900 MT $CO_2e$ per year, as indicated in Impact GHG-1.

GHG emissions from water bodies such as the Loch Lomond Reservoir and coastal lagoons could increase if water temperatures were to increase and worsen eutrophication (Havens 2021).[1] As indicated in Section 7.2.8, Hydrology and Water Quality, the Proposed Project would result in greater storage in Loch Lomond Reservoir under climate change conditions, as would also be the case for historic hydrologic conditions reported in Section 4.8, Hydrology and Water Quality. Therefore, given this greater storage, the Proposed Project would not cause increases in reservoir water temperatures as could result from a drop in reservoir levels. However, increasing air temperatures resulting from climate change could increase water temperatures in the reservoir regardless of the Proposed Project. Given that Loch Lomond Reservoir is maintained for water supply it is treated with chemicals (i.e., copper and hydrogen peroxide) to prevent eutrophication under a permit from Regional Water Quality Control Board for using aquatic pesticides. Therefore, regardless of the Proposed Project, climate change conditions would not result in an increase in GHG emissions from Loch Lomond Reservoir due to eutrophication.

Additionally, as indicated in Section 7.2.3, Biological Resources (Table 7-1), the average inflow into the San Lorenzo River and Laguna Creek lagoons would not be substantially altered with the Proposed Project during wet and normal conditions and would not be altered at all during dry and critical conditions. Therefore, the Proposed Project would not contribute to increased lagoon water temperature and as such would not exacerbate any existing eutrophication processes in coastal lagoons causing an increase in GHG emissions. See Section 7.2.8, Hydrology and Water Quality, for additional information about climate change effects on coastal lagoons. Overall, there are no climate change conditions that would modify the reported impact conclusions presented in Section 4.6.

### 7.2.7 Hazards, Hazardous Materials, and Wildfire

The less-than-significant or potentially significant impacts identified and evaluated in Section 4.7, Hazards, Hazardous Materials, and Wildfire, are due to construction of project and programmatic infrastructure components. Given that the same number and type of project and programmatic infrastructure components

[1] Eutrophication occurs when the amounts of nutrients such as nitrogen and phosphorus increase in lakes, estuaries, and other ecosystems, and those ecosystems respond with increased growth of plants and algae.

would be needed for the Proposed Project, the impacts would be the same or similar under climate change conditions, as reported in Section 4.7 (Impacts HAZ-1 through HAZ-5).

While frequent and sometimes large wildfires will continue to be a major disturbance in the Central Coast region and post-fire recovery time may be lengthened under climate change conditions, the known infrastructure component sites are not located in a state responsibility area (SRA) and are not located in an area designated as a very high fire hazard severity zone (FHSZ). However, up to four new ASR facilities may be constructed on lands that encompass lands within the SRA but would not be located in an area designated as a very high FHSZ. Construction and operation of the Proposed Project would not exacerbate wildfire risks or include habitable structures that could expose people or structures to wildfire. There are no climate change conditions that would modify the reported impact conclusions presented in Section 4.7 or required mitigation measures (MM HAZ-1 and MM HAZ-2).

### 7.2.8 Hydrology and Water Quality

The less-than-significant or potentially significant impacts identified and evaluated in Section 4.8, Hydrology and Water Quality, are due to construction and operation of project and programmatic components. Given that the same project and programmatic components would be needed for the Proposed Project, the impacts would be the same or similar under climate change conditions, as reported in Section 4.8 (Impacts HYD-1 through HYD-5).

As indicated in Section 7.1.1, Potential Effects of Climate Change, it is possible that groundwater levels could decrease with climate change as surface water supply shortages, already common during drought, will be exacerbated, which could lead to increases in groundwater extractions and associated decreases in groundwater levels and increased seawater intrusion. Lower surface flows could also lead to higher pollutant concentrations (CNRA 2018). However, as indicated in Section 7.1.2, Building Climate Change into Water Supply Planning, a goal of the WSAC was to develop a supply augmentation work plan that was adaptable to future climate conditions to meet demand and avoid the above conditions. Consistent with Elements 1 and 2 of the City's Water Supply Augmentation Strategy, the Proposed Project includes project and programmatic components to provide for ASR and water transfers and exchanges, which are identified projects in the Santa Cruz Mid-County GSP and will contribute sustainability benefits in both the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin. ASR involves active recharge of the groundwater basins using existing infrastructure and potential new infrastructure to inject surface water, treated to drinking water standards, and storage of this water during wetter periods in local groundwater basins, which would act as underground storage reservoirs. This stored water can then be available for use by the City in drier periods via extraction. Water transfers and exchanges include passive recharge of regional aquifers by transferring water to other water districts in the area so they can rest their groundwater wells, help the aquifers recover, and potentially store water for use by the City in dry periods. The intent of these approaches is to store water for use during dry periods to limit reliance on surface water and native groundwater during those periods.

As indicated in Impact HYD-2 the Proposed Project overall would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, as ASR and water transfers and exchanges would be completed in compliance with the Santa Cruz Mid-County Groundwater Basin GSP and, when it is adopted, the Santa Margarita Groundwater Basin GSP, as relevant to the potential site locations for new ASR facilities, per Operational Practice #2 (see Chapter 3, Project Description for details of this practice). (ASR in the Santa Margarita Groundwater Basin is a programmatic element of the Proposed Project and would not be implemented in that basin until after that basin's GSP is adopted.) As required by the Sustainable Groundwater Management Act, both of these GSPs include or would include quantifiable minimum thresholds related to groundwater levels, groundwater quality

(including seawater intrusion), surface/groundwater connection, subsidence, and changes in storage, such that undesirable effects would not occur, and groundwater basin sustainability would be maintained. Part of the sustainability goal of the Santa Cruz Mid-County Groundwater Basin GSP is to account for changing groundwater conditions related to projected climate change and sea-level rise in basin planning and management. Model simulations upon which the GSP was based indicate that supplemental water supplies, such as would be provided by the Proposed Project, or groundwater use curtailment is needed to reach and maintain protective groundwater elevations and achieve groundwater sustainability in the face of climate change (MGA 2019). While the Proposed Project could have potentially significant localized groundwater quality or restrictive impacts[2] on nearby wells associated with Beltz 12 ASR, these impacts could be reduced to less-than-significant levels with identified mitigation measures (MM HYD-1 and MM HYD-2) and climate change conditions would not modify these conclusions.

Impact HYD-3 in Section 4.8, Hydrology and Water Quality, indicates that in the event that stream diversions resulted in a substantial decrease in stream flows or Loch Lomond Reservoir levels, water quality impacts could occur, including increased temperature due to shallower water, and altered salinity, dissolved oxygen, and pH concentrations. Modeling performed for the Proposed Project based on climate change hydrology indicates that the difference in residual flows with the water rights modifications and other elements of the Proposed Project would be minimal relative to 2018 baseline conditions (see Figure 7-1). As indicated in Section 7.2.3, Biological Resources (Table 7-1), the average inflow into the San Lorenzo River and Laguna Creek lagoons would not be substantially altered with the Proposed Project during wet and normal conditions and would not be altered at all during dry and critical conditions. Additionally, the Proposed Project would increase Loch Lomond Reservoir levels as shown in Table 7-5, which indicates that Loch Lomond would spill more frequently compared to baseline conditions, based on an average of all years in the climate change hydrological record (2020 to 2070). Reservoir spilling in late spring and summer can increase water temperatures below the Newell Creek Dam in Newell Creek but the implementation of Operational Practice #6 would offset the potential warming effects of reservoir spills below Newell Creek Dam at that time of the year.

### Table 7-5. Percent of Days that Loch Lomond Reservoir Spills under Climate Change Hydrology

| Month | Climate Change Hydrology | |
|---|---|---|
| | *2018 Existing Conditions* | *Proposed Project Conditions* |
| Jan | 28.1% | 38.2% |
| Feb | 54.3% | 60.4% |
| Mar | 50.9% | 53.0% |
| Apr | 53.0% | 53.0% |
| May | 52.5% | 53.5% |
| Jun | 45.9% | 49.9% |
| Jul | 0.0% | 30.0% |
| Aug | 0.0% | 16.4% |
| Sep | 0.0% | 11.6% |
| Oct | 0.0% | 1.8% |
| Nov | 2.7% | 5.4% |
| Dec | 9.9% | 16.8% |

**Source:** Gary Fiske and Associates 2021.

[2] Demonstrated restrictive effects are defined as damage to the private well or pump caused by groundwater levels falling below the top of the well screens, or diminution of well yield, as further described in Section 4.8, Hydrology and Water Quality.

Therefore, as concluded in Section 4.8, the Proposed Project would not substantially alter the existing drainage patterns of the City's surface water sources such that potentially adverse water quality impacts would result.

Other changes anticipated with climate change, including air and water temperature increases and accelerated sea-level rise, could affect San Lorenzo River and North Coast stream lagoon conditions. As indicated in Section 7.1.1, Potential Effects of Climate Change, estuarine systems will be affected by accelerated sea-level rise, warming of water and air, ocean acidification, and changes in runoff. Some Central Coast marshes may drown or become shallow mudflats, leading to a loss of the ecosystem services that marshes provide, including carbon sequestration (CNRA 2018). While that is the case, the Proposed Project would not increase these risks, as residual flows and lagoon inflows would not be substantially altered, as described above. Overall, there are no climate change conditions that would modify the reported impact conclusions in Section 4.8 or required mitigation measures (MM HYD-1 through MM HYD-3).

### 7.2.9 Land Use, Agriculture and Forestry, and Mineral Resources

The less-than-significant or potentially significant impacts identified and evaluated in Section 4.9, Land Use, Agriculture and Forestry, and Mineral Resources, are due to construction of project and programmatic infrastructure components. Given that the same number and type of project and programmatic infrastructure components would be needed for the Proposed Project, the impacts would be the same or similar under climate change conditions, as reported in Section 4.9 (Impacts LU-1, LU-2, and LU-3).

As indicated in Section 7.1.1, Potential Effects of Climate Change, climate change outcomes for forests will depend largely on multiple abiotic drivers (increased air temperatures, altered fog patterns, changes in winter precipitation), and biotic factors (invasive species and insect and pest outbreaks) (CNRA 2018). While forests could be affected by climate change, the Proposed Project would not increase these effects. There are no climate change conditions that would modify the reported impact conclusions in Section 4.9 or the required mitigation measure (MM LU-1).

### 7.2.10 Noise

The less-than-significant or potentially significant impacts identified and evaluated in Section 4.10, Noise and Vibration, are due to construction of project and programmatic infrastructure components. Given that the same number and type of project and programmatic infrastructure components would be needed for the Proposed Project, the impacts would be the same under climate change conditions, as reported in Section 4.10 for Impacts NOI-1, NOI-2, and NOI-3. There are no climate change conditions that would modify the reported impact conclusions in Section 4.10 or required mitigation measures (MM NOI-1 through MM NOI-3).

### 7.2.11 Recreation

The less-than-significant and beneficial impacts identified and evaluated in Section 4.11, Recreation, are due to construction and operation of project and programmatic components. Given that the same project and programmatic components would be needed for the Proposed Project, the impacts would be the same or similar under climate change conditions, as reported in Section 4.11 (Impacts REC-1 through REC-3).

As indicated in Section 4.11, boats and related infrastructure can only operate safely throughout the full season when Loch Lomond Reservoir level is approximately 564 feet above mean sea level (amsl) or higher at the beginning of the recreational season (March 1 to mid-October). When the lake level is below approximately 564 feet amsl at the beginning of the season the City either, depending on actual lake levels, does not allow for boating at all that season or discontinues boating mid-season when boat launching is no longer possible.

Table 7-6 compares the percentage of days in each calendar month at the reservoir that fall below approximately 564 feet amsl under 2018 existing and Proposed Project conditions, based on an average for each of those months in all years in the climate change record (2020 to 2070). During the recreational use period from March 1 to mid-October, on average there are approximately 18.1% of days under 2018 existing conditions with climate change hydrology where a full season of boating and related operations would not occur because lake levels fall below approximately 564 feet amsl in March, at the beginning of the season. In comparison, under Proposed Project conditions with climate change, on average there would be approximately 14.5% of days where a full season of boating and related operations would not occur because lake levels fall below approximately 564 feet amsl in March, an improvement over existing conditions. Therefore, with climate change conditions, the Proposed Project would also have a beneficial effect on boating in Loch Lomond Reservoir, given that it would improve conditions for boating compared to existing conditions by increasing lake levels, which would allow for a full season of boating more frequently. Given this beneficial effect, the Proposed Project would not conflict with existing recreational uses at Loch Lomond Reservoir, as described in Section 4.11. There are no climate change conditions that would modify the reported impact conclusions in Section 4.11.

### Table 7-6. Percentage of Days that Loch Lomond Reservoir Falls Below Approximately 564 Feet (amsl) under Climate Change Hydrology

| Month | Climate Change Hydrology | |
|---|---|---|
| | *2018 Existing Conditions* | *Proposed Project Conditions* |
| Jan | 30.9% | 20.1% |
| Feb | 18.1% | 13.8% |
| Mar | 18.1% | 14.5% |
| Apr | 20.3% | 19.4% |
| May | 22.3% | 19.6% |
| Jun | 27.4% | 21.4% |
| Jul | 31.6% | 24.7% |
| Aug | 41.1% | 31.2% |
| Sep | 46.9% | 35.1% |
| Oct | 47.1% | 36.4% |
| Nov | 47.4% | 36.7% |
| Dec | 47.8% | 36.3% |

**Source:** Gary Fiske and Associates 2021.
**Note:** amsl = above mean sea level.

### 7.2.12 Transportation

The less-than-significant impacts identified and evaluated in Section 4.12, Transportation, are due to construction of the project and programmatic infrastructure components. Given that the same number and type of project and programmatic infrastructure components would be needed for the Proposed Project, the impacts would be the same under climate change conditions, as reported in Section 4.12. There are no climate change conditions that would modify the reported impact conclusions in Section 4.12 for Impacts TRA-1 through TRA-5.

### 7.2.13 Utilities and Energy

The significant, less-than-significant and beneficial impacts identified and evaluated in Section 4.13, Utilities and Energy, are due to construction and operation of project and programmatic infrastructure components. Given that the same number and type of project and programmatic infrastructure components would be needed for the Proposed Project, most of the impacts would be the same or similar under climate change conditions, as reported in Section 4.13, Utilities and Energy (Impacts UTL-1 and Impacts UTL-3 through UTL-10).

However, as indicated in Section 7.1.4, Proposed Project Implementation with Climate Change, it is possible that ASR injection and extraction capacities needed to achieve the same water supply reliability goal for the Proposed Project under climate change conditions could be greater for injection capacity and less for extraction capacity (i.e., 6.0 mgd and 7.0 mgd, respectively), based on the results of the climate change modeling in Appendix D. If that were the case, electrical energy use would increase by approximately 2% over that estimated in Section 4.6, Greenhouse Gas Emissions, and Appendix E. This potential increase in energy use would not result in wasteful, inefficient, or unnecessary consumption of energy resources and would not result in conflicts with or otherwise obstruct a state or local plan for renewable energy or energy efficiency and the impacts would be less than significant, as described in Section 4.13 for Impacts UTL-6 and UTL-7.

Additionally, the Proposed Project, including all project and programmatic components, would provide adequate water supplies under climate change conditions to serve direct demand from new City staff associated with the Proposed Project and projected water demand in the areas served by the City during currently constrained dry periods. Specifically, the Proposed Project would meet the projected water demand of 3,200 million gallons per year that is forecasted in the City's 2015 Urban Water Management Plan and eliminate potential water shortfalls during dry and multiple-dry years. Therefore, the Proposed Project's impact related to water supply under climate change conditions would also be beneficial, as reported in Section 4.13 for Impact UTL-2. Overall, there are no climate change conditions that would modify the reported impact conclusions in Section 4.13 or required mitigation measures (MM BIO-1 through MM BIO-14; MM CUL-1 and MM CUL-2; MM GEO-1 and GEO-2; MM HAZ-1 and MM HAZ-2; MM HYD-1 through MM HYD-3; MM LU-1; and MM NOI-1 through MM NOI-3).

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# 8 Alternatives

This chapter describes alternatives to the proposed Santa Cruz Water Rights Project (Proposed Project), consistent with California Environmental Quality Act (CEQA) Guidelines Section 15126.6. This chapter presents the objectives of the Proposed Project, a summary of its significant environmental impacts, and a description of the alternatives that were considered but eliminated from further consideration, followed by an analysis of the four alternatives evaluated, including the No Project Alternative. A comparison of the four alternatives to the Proposed Project is provided and the environmentally superior alternative is identified.

According to CEQA Guidelines Section 15126.6, an environmental impact report (EIR) shall describe a range of reasonable alternatives to the project or to the location of the project, that would feasibly attain most of the basic objectives of the project and could avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. This section of the guidelines further requires that the discussion focus on alternatives capable of eliminating significant adverse impacts of the project or reducing them to a level of insignificance even if these alternatives would impede to some degree the attainment of the project objectives or would be more costly. The alternatives analysis also should identify any significant effects that may result from a given alternative.

The lead agency is responsible for selecting a reasonable range of potentially feasible project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. The range of alternatives is governed by a "rule of reason" that requires the EIR to set forth only those potentially feasible alternatives necessary to permit a reasoned choice. The alternatives shall be limited to those that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only those that the lead agency determines could feasibly attain most of the basic objectives of the project while substantially lessening any of the significant effects of the project. An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation.

An EIR is not required to consider alternatives which are infeasible. "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors (CEQA Guidelines Section 15364). Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site (or already owns the alternative site). None of these factors establishes a fixed limit on the scope of reasonable alternatives. Under CEQA case law, the concept of feasibility also "encompasses 'desirability' to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors." (*City of Del Mar v. City of San Diego* [1982] 133 Cal.App.3d 410, 417; *California Native Plant Society v. City of Santa Cruz* [2009] 177 Cal.App.4th 957.) In assessing the feasibility of alternatives, agency decisionmakers may also take account of the extent to which the alternatives meet or further the agency's underlying purpose or objectives in considering a proposed project. (*Sierra Club v. County of Napa* [2004] 121 Cal.App.4th 1490, 1506-1509; *Citizens for Open Government v. City of Lodi* [2012] 296 Cal.App.4th 296, 314-315; *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* [2008] 43 Cal.4th 1143, 1165, 1166.)

# 8.1 Project Objectives

As described above, alternatives considered in the EIR should be feasible, and should attain most of the basic project objectives. The project objectives, identified in Chapter 3, Project Description, of this EIR are as follows:

1. Improve the flexibility with which the City operates the water system to facilitate the City's ability to meet drinking water demand while providing flow conditions protective of coho and steelhead.
2. Provide flow conditions that are protective of coho and steelhead within all streams from which the City diverts water, as negotiated with the California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Service (NMFS) during the preparation of the pending Anadromous Salmonid Habitat Conservation Plan (ASHCP), which is the habitat conservation plan being developed under the federal Endangered Species Act (FESA) and California Endangered Species Act (CESA).
3. To improve the City's limited storage and support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers and exchanges) and Element 2 (active recharge of regional aquifers via aquifer storage and recovery [ASR]) in order to deliver a safe, adequate, reliable and environmentally sustainable water supply.
4. Facilitate opportunities within the City and regionally for conjunctive use[1] of the City's surface water rights in combination with groundwater, including by addressing significant barriers to implementing conjunctive use due to the place of use associated with the City's water-right permits and licenses to, among other things, assist in implementation of the "Water Transfers/In Lieu Groundwater Recharge" element of the Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan.
5. Provide more options for where and how the City can utilize its existing appropriative water rights.
6. Provide for the underground storage of surface water primarily to support more reliable and improved water supply by allowing the City to use such stored water during dry periods and also to contribute to the protection of groundwater quality from seawater intrusion per the Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan (GSP) and to allow for the implementation of the "Aquifer Storage and Recovery" element of the Santa Cruz Mid-County Groundwater Basin GSP.
7. Remove potential operational constraints on City water rights that do not explicitly recognize direct diversion.
8. Allow additional time for the City to fully reach beneficial use under existing water-right permits at Felton.
9. Improve fish screening at the Felton Diversion and Tait Diversion and improve fish passage at the Felton Diversion. Consideration of fish passage improvements at Tait Diversion would be incorporated into future projects as required.
10. Address reliability and operational deficits at the Tait Diversion and Coast Pump Station to meet other project objectives.
11. Implement state policy favoring integrated regional water management by involving the City and other local agencies in "significantly improving" the "reliability of water supplies" by "diversifying water portfolios, taking advantage of local and regional opportunities, and considering a broad variety of water management strategies," specifically by making more extensive conjunctive use of the surface-water, groundwater and groundwater-storage resources available to the City and, when Agreed Flows and City demands are met,

[1] Conjunctive use refers to a range of actions and projects that provide for the coordinated management of surface water and groundwater supplies to increase total supplies and enhance water supply reliability. Conjunctive use actions and projects can also be used to sustainably manage groundwater supplies.

making excess surface water under the City's surface-water rights available to neighboring agencies who are dependent on overdrafted groundwater basins. (Water Code Section 10531(c).)

12. Consider other related actions or activities that would be foreseeable as a logical part in a chain of contemplated actions should the Proposed Project be approved, including facilities that would provide for ASR, water transfers, and water exchanges.

## 8.2 Overview of Significant Project Impacts

The range of alternatives studied in the EIR must be broad enough to permit a reasoned choice by decision-makers when considering the merits of the project. The analysis should focus on alternatives that are potentially feasible. Under CEQA, alternatives that are remote or speculative should not be discussed in the analysis of alternative. Furthermore, alternatives should focus on reducing or avoiding significant environmental impacts associated with the project as proposed. As described in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, the Proposed Project would result in the following significant or potentially significant environmental impacts:

- **Impact BIO-1A: Special-Status Species – Fish.** 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.
- **Impact BIO-1B: Special-Status Species – Other Wildlife.** 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.
- **Impact BIO-1C: Special-Status Species – Plants.** 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.
- **Impact BIO-2: Riparian and Sensitive Vegetation Communities.** 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.
- **Impact BIO-3: Jurisdictional Aquatic Resources.** Construction of the Proposed Project could have a substantial adverse effect on state or federally protected wetlands through direct removal, filling, or hydrological interruption.
- **Impact CUL-1: Historical Built Environment Resources.** Construction of some of the Proposed Project infrastructure components could cause a substantial adverse change in the significance of historical built environment resource.
- **Impact CUL-2: Archaeological Resources and Human Remains.** Construction of Proposed Project infrastructure components could cause a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, and/or disturb human remains.
- **Impact CUL-3: Tribal Cultural Resources.** Construction of Proposed Project infrastructure components could cause a substantial adverse change in the significance of a tribal cultural resource.
- **Impact GEO-1: Seismic Hazards.** Construction and operation of the Proposed Project could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking, landslides, or seismic related ground failure, including liquefaction and associated lateral spreading.

- **Impact GEO-4: Paleontological Resources.** Construction of the Proposed Project could potentially directly or indirectly destroy a unique paleontological resource or site during construction. However, the Proposed Project would not directly or indirectly destroy a unique geological feature.
- **Impact HAZ-2: Upset and Release of Hazardous Materials.** Construction of the Proposed Project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- **Impact HAZ-3: Hazardous Materials Near Schools.** Construction and operation of the Proposed Project could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- **Impact HYD-2: Decrease Groundwater Supplies, Interfere with Groundwater Recharge, or Conflict with Groundwater Plan.** Construction and operation of the Proposed Project would not decrease groundwater supplies or interfere substantially with groundwater recharge such that sustainable groundwater management of the basin would be impeded. However, the Proposed Project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan by potentially affecting local groundwater quality or causing restrictive effects in nearby wells.
- **Impact HYD-3: Alteration to the Existing Drainage Pattern of the Site Area.** Construction and operation of the Proposed Project could substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (a) result in substantial erosion or siltation on or off site; (b) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; (c) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (d) impede or redirect flood flows.
- **Impact NOI-1: Substantial Permanent Increase in Ambient Noise Levels.** Operation of the Proposed Project would result in generation of a substantial permanent increase in ambient noise levels during long-term operation in the vicinity of one of the programmatic infrastructure components.
- **Impact NOI-2: Substantial Increase in Ambient Noise Levels in Excess of Standards.** Construction of the Proposed Project would result in generation of a substantial temporary increase in ambient noise levels in the vicinity of some project and programmatic infrastructure components in excess of applicable standards established in local general plans or noise ordinances.
- **Impact NOI-2: Substantial Increase in Ambient Noise Levels in Excess of Standards.** Operation of the Proposed Project would result in generation of a substantial permanent increase in ambient noise levels in the vicinity of one of the programmatic infrastructure components in excess of applicable standards.
- **Impact NOI-3: Groundborne Vibration.** Construction of the Proposed Project would result in the potential generation of excessive groundborne vibration or groundborne noise levels.
- **Impact UTL-1: New or Expanded Facilities.** Construction and operation of the Proposed Project would result in new or expanded water facilities that would result in significant impacts, but would not require or result in new or expanded wastewater treatment, storm drainage, electric power, natural gas, or telecommunications facilities or a new sewer trunk line.

Most of the potentially significant impacts listed above can be reduced to less-than-significant levels through incorporation of mitigation measures identified in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures. However, the Proposed Project would have significant and unavoidable impacts with respect to the following impacts, both of which are a result of well drilling activities for the new ASR facilities and the Beltz 9 ASR facility and associated construction noise impacts.

- **Impact NOI-2: Substantial Increase in Ambient Noise Levels in Excess of Standards.** Construction of the Proposed Project would result in generation of a substantial temporary increase in ambient noise levels in the vicinity of some project and programmatic infrastructure components in excess of applicable standards established in local general plans or noise ordinances.
- **Impact UTL-1: New or Expanded Facilities.** Construction and operation of the Proposed Project would result in new or expanded water facilities that would result in significant impacts, but would not require or result in new or expanded wastewater treatment, storm drainage, electric power, natural gas, or telecommunications facilities or a new sewer trunk line.

# 8.3 Alternatives Considered but Eliminated

This section discusses alternatives that were considered but were eliminated from detailed consideration because they did not meet most of the basic project objectives; were found to be infeasible for technical, environmental, or social reasons; or they did not avoid or substantially lessen significant environmental impacts of the Proposed Project. Section 15126.6(c) of CEQA Guidelines indicates that the range of potential alternatives shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible, and briefly explain the reasons underlying the lead agency's determination. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (1) failure to meet most of the basic project objectives, (2) infeasibility (see introduction to this Chapter), or (3) inability to avoid significant environmental impacts.

The City considered 11 alternatives, 7 of which were eliminated from further consideration as explained below. In developing the alternatives, the comments received in response to the EIR Notice of Preparation (NOP) were reviewed and included alternatives to individual project or programmatic components or alternative supplemental water supplies. As a result of the scoping comments received for the Proposed Project and the City's ongoing water supply planning process, the City considered the following alternatives, which were eliminated from further consideration as alternatives to the Proposed Project, as explained below:

1. Modification to Proposed Project Components
    - Alternative Bypass Flows
    - Place of Use (POU) Alternatives
    - Additional Intertie Connections
    - Ranney Collectors (also known as river bank filtration) on the San Lorenzo River
2. Other Water Supply Sources
    - Additional Water Storage and Groundwater Recharge at Inactive Quarries
    - Recycled Water
    - Seawater Desalination

## 8.3.1 Modifications to Proposed Project Components

### 8.3.1.1 Alternative Bypass Flows

The State Water Resources Control Board, in its response to the NOP, asked that the EIR include details of the scientific basis or studies completed for determining an appropriate flow regime that would be protective of Central California Coast steelhead (steelhead), Central California Coast coho salmon (coho), and any other applicable fish and wildlife species that may be affected by the flows. The State Water Resources Control Board asked that the baseline instream conditions be clearly described, and any reasonable alternative flow regimes should also be analyzed.

As explained in Section 3.4.2.6, Bypass Requirements (Agreed Flows), and Appendix C, minimum bypass flow requirements comprise a schedule of minimum instream flows (bypass flows[2]) that would avoid and minimize effects on steelhead and coho due to operation of the City's Laguna Creek, Liddell Spring, Majors Creek, Tait and Felton Diversions, as well as the Loch Lomond Reservoir. The minimum instream flow requirements are those flows needed to maintain habitat for steelhead and coho during all freshwater life stages (migration, spawning, incubation, and rearing) over a range of Hydrologic Condition Types, which are based on the record of cumulative daily average flow by water year (October 1 to September 30).

Early work in developing the City's ASHCP focused on understanding the relationship between flow and habitat quality downstream of each diversion. The goal was to develop instream flow targets through an iterative process that considered both the habitat values of instream flows and the ability of the City to meet its water supply obligations. Instream flow alternatives were modeled using the City's water supply operations model (Confluence® Model) to understand the effect of various flow alternatives on the City's water supply obligations (see Appendix D-2 for additional information about this model). The City also developed a fisheries habitat effects model to analyze the effect that the various flow alternatives would have on coho and steelhead habitat (see Appendix D-3 for additional information about this model). This process was the combined effort of a technical working group convened by the City beginning in 2005 and composed of resource agency personnel representing NMFS and CDFW, City staff, and consultants.

As a result, the City submitted a proposal for instream bypass flows and other conservation measures in June 2012 to the technical working group (see Appendix C). CDFW responded to this proposal with comments and proposed modifications to the flow proposal (see Appendix C), and the City worked to resolve comments provided by CDFW and completed modeling studies of several iterations of the CDFW proposal that ultimately became the proposal known as DFG-5. In 2014, the City Council convened a Water Supply Advisory Committee (WSAC) to engage a multi-disciplinary, stakeholder-driven process that would advise the Council on future water supply development. Based on the information developed through field studies and iterative model runs, the WSAC convened by the City recommended that the City adopt the flow alternative that was the most protective of coho and steelhead (CDFW DFG-5) and develop a new water supply that would make it practicable for the City to provide the flows for these species while meeting its water supply obligations.

Since CDFW DFG-5 was developed, additional instream flow needs were identified by NMFS and CDFW. These were evaluated in the context of water supply reliability and overall biological benefit and ultimately included in the current flow requirements of the Agreed Flows. The City negotiated the long-term minimum bypass flow requirements (Agreed Flows) with CDFW and NMFS as part of the ASHCP process based on species studies and

[2] A bypass flow refers to requirements that water that would otherwise be diverted instead be bypassed by the diversion and left in the stream.

hydrological modeling for different flow alternatives conducted over the past 15 years, thus arriving at mutually acceptable flows that are more protective of fish species compared to baseline conditions considered in the ASHCP (i.e., unimpaired stream flows prior to City diversions) and 2018 baseline conditions used in this EIR for analysis of the Proposed Project. As discussed in Section 4.3, Biological Resources, the Proposed Project would result in an improvement in habitat conditions for steelhead and coho in most cases, compared to the 2018 baseline condition (see Table 4.3-7), and no significant impacts were identified with regards to effects of the Proposed Project, including Agreed Flows, on fish habitat. As described in Chapter 3, Project Description, a key project objective is to provide flow conditions that are protective of coho and steelhead as negotiated with the CDFW and NMFS during the preparation of the ASHCP. Therefore, consideration of alternative flow regimes was not deemed necessary, as alternative flow regimes have already been studied with the most protective (Agreed Flows) selected, and this potential alternative would not avoid significant impacts as no significant impacts have been identified related to the Proposed Project, which includes the Agreed Flows. Additionally, such alternative bypass flows would potentially conflict with the negotiated Agreed Flows, the implementation of which is a key project objective. Thus, this potential alternative is eliminated from further consideration.

It is also noted that provision of the Agreed Flows would generally require reduced diversions compared to the 2018 baseline from the North Coast sources and from the San Lorenzo River at Tait at certain times and corresponding increased use of stored water from Loch Lomond Reservoir and use of groundwater. This would result in reduced storage in Loch Lomond Reservoir available for use during dry periods. Overall, the implementation of the Agreed Flows would further reduce the City's dry-year water supply reliability over 2018 baseline conditions, as it would further limit the amount of water that the City can divert and, as a result, the other Proposed Project components are proposed to provide a suite of options that can be used conjunctively to provide adequate water supplies during dry-year and multiple dry-year periods. Effects of implementation of the Agreed Flows without the proposed changes to water rights, as requested by the State Water Resources Control Board, is addressed in Section 8.4.2, Alternative 1: Agreed Flows Only Without Other Proposed Project Components.

#### 8.3.1.2 Place of Use Alternatives

The Proposed Project would expand the POUs of the City's pre-1914 and post-1914 appropriative surface-water rights to include all areas served by the City, two local groundwater basins, and the service areas of neighboring water agencies, as shown in Figure 3-3 in Chapter 3, Project Description. A significant barrier to implementing conjunctive use of the City's surface and groundwater sources of supply is existing limits on the POUs for the City's appropriative surface-water rights. The Proposed Project would align the POUs of all of those appropriative water rights to cover the same area and expand those authorized POUs to include the Santa Cruz Mid-County Groundwater Basin, and Santa Margarita Groundwater Basin as well as the service areas of the Soquel Creek Water District (SqCWD), Scotts Valley Water District (SVWD), San Lorenzo Valley Water District (SLVWD), and Central Water District (CWD). Expanded POUs are also necessary for improving the potential for conjunctive use of the region's resources with adjoining water agencies and within the region's groundwater basins, as it would allow implementation of Santa Cruz ASR as a component of the Proposed Project, which could make some additional recovered groundwater available to the City and potentially to the region during drought and critically dry years. Expanded POUs are also necessary to implement the water transfers and exchanges component of the Proposed Project.

Several POU alternatives were considered. Elimination of two local overdrafted groundwater basins and service areas of neighboring water agencies as part of POUs was considered, but eliminated from further consideration because the alternative would not meet the basic project objectives related to supporting the City's Water Supply Augmentation Strategy Elements 1 and 2, that would in turn provide supplies needed as a result of

implementation of the Agreed Flows. In order to implement water transfers and ASR components of the Proposed Project, the City requires modifications to its appropriative rights to include these basins and water suppliers' service areas as POUs. This alternative also would preclude opportunities for conjunctive use of surface water and groundwater within the City and region.

Expansion of POUs to include additional parties was suggested in a comment on the NOP as a way of providing the operational flexibility to substantially enhance desirable environmental outcomes. As currently proposed, the expanded POUs would include all of the City's neighboring water agencies. There are, however, no other neighboring water agencies adjacent to the areas served by the City to include. A similar comment on the NOP was to evaluate the environmental merits of a regional "Universal POU" to include: aquifers, groundwater agencies, the County, public but independent pumpers (e.g., Cabrillo College, University of California, Santa Cruz [UCSC]), future entities as appropriate, private pumpers, and environmentally threatened and/or endangered species habitat. As shown in Figure 3-3 in Chapter 3, Project Description, the expanded POUs included as part of the Proposed Project would improve the potential for conjunctive use of the region's resources with adjoining water agencies and within the region's groundwater basins and includes most of the entities noted in the comment. For example, the developed portion of UCSC is within the area served by the City, and Cabrillo College is within the SqCWD service area included in the expanded POU. It should be noted that POUs and related expansions are not provided for habitat for environmentally threatened or endangered species; however, the Proposed Project includes amendments of the City's water rights to incorporate the Agreed Flows as bypass flows to protect those species. Additionally, as proposed, the expanded POUs as part of the Proposed Project directly relate to the Proposed Project objectives of augmenting the City's water supplies through passive or active groundwater recharge in the areas from which the City obtains its water supplies. Therefore, changes to or expansion of the POU amendments proposed as part of the Proposed Project were eliminated from further consideration.

#### 8.3.1.3 Additional Intertie Connections

Modification of the City's appropriative water rights with the Proposed Project would facilitate the opportunity for potential future water transfers and exchanges with neighboring water agencies, including SVWD, SLVWD, SqCWD, and CWD. Such transfers and exchanges would likely be provided for via agreements with defined terms related to timing, volume of water, water year conditions, return of water, etc., that would be developed between the City and one or more of the neighboring agencies. New or improved interties between the water systems of the City and of neighboring water agencies may be needed to facilitate future water transfers and exchanges once City water rights are modified. The Proposed Project includes various intertie improvements between the City and SVWD, and between the City, SqCWD and CWD. Interconnection of the SVWD and the SLVWD systems has already been constructed and permitted for emergency use. Additional permitting would be required to use the existing intertie for non-emergency use such as could be pursued as part of a potential future water supply transfer and exchange project.

Adding additional intertie connections with Mount Hermon, Trout Gulch Water Mutual Company, and PureSource Water was suggested in a comment on the NOP to enhance conjunctive use. As proposed, the intertie improvements included in the Proposed Project would connect the City to the water service areas of larger water agencies immediately adjacent to the areas served by the City, which would help to achieve the Proposed Project objectives of augmenting the City's water supplies through passive recharge of regional aquifers via water transfers and exchanges. Given the small size of Mount Hermon, Trout Gulch Water Mutual Company, and PureSource Water and the distance from the City's service area, interties to these water agencies are not warranted to meet the Proposed Project objectives. Therefore, additional intertie improvements were eliminated from further consideration.

#### 8.3.1.4 Ranney Collectors/River Bank Filtration in the San Lorenzo River

A comment received on the NOP asked that "Ranney Collectors" be evaluated to augment surface water collection from the San Lorenzo River during large storm events or post-wildland fire events when streamflow turbidity levels are high as a method of increasing security of quality water supply. A Ranney Collector is a patented type of radial collector well used to extract water from a direct connection to a surface water source (e.g., a river) by extending radially under the surface floor (e.g., river bed) and the radial or horizontal wells flow to a conventional well before being pumped to the surface (WSAC 2015). It represents an alternative type of diversion by using a different intake technology and the maximum capacity of these wells would have to comply with the City's San Lorenzo River water rights and permits at the Tait Diversion and Felton Diversion. Ranney Collectors on the San Lorenzo River were considered by the WSAC as a method of addressing the higher turbidities of winter water that are difficult to treat at the Graham Hill Water Treatment Plant (WSAC 2015). As a result, the City Water Department Capital Improvement Program already includes a River Bank Filtration Study to assess the feasibility of locating new vertical wells along the San Lorenzo River near the Tait Diversion. However, an alternative diversion method would not change any of the Proposed Project components related to water rights modifications, supply augmentation or diversion improvements, which would continue to be proposed despite an alternative method to extract/divert water from the San Lorenzo River. Therefore, this suggestion does not represent an alternative to any of the Proposed Project components and therefore would not have the potential to lessen any of the significant effects of the Proposed Project. As such, Ranney Collectors were eliminated from further consideration as an alternative to the Proposed Project.

### 8.3.2 Other Water Supply Sources

#### 8.3.2.1 Additional Storage Groundwater Recharge at Inactive Quarries

A comment received on the NOP asked that the EIR evaluate use of "neighboring inactive quarries" for additional water storage and groundwater recharge. The City has evaluated this option in the past as part of the Integrated Water Plan (IWP) process that was undertaken in 1997 with the plan being adopted in 2005. During the IWP planning process, reservoir storage in the Olympia Quarry near Felton was considered to provide additional storage to augment the storage provided by Loch Lomond Reservoir. At the time, numerous technical and institutional issues were identified that caused storage at Olympia Quarry to be deemed not viable. Therefore, it was not considered further by the City (City of Santa Cruz 2011).

A Phase 1 Conjunctive Use and Enhanced Aquifer Recharge study was prepared for the County of Santa Cruz as the initial phase of a long-term feasibility study process to evaluate methods to increase groundwater levels in the southern Santa Margarita Groundwater Basin, primarily to increase water supply reliability in the Scotts Valley area (Kennedy/Jenks Consultants 2011). This was one of fifteen projects funded by a Proposition 50 Integrated Regional Water Management Program Water Bond grant from the State Water Resources Control Board to the Community Foundation of Santa Cruz County (Kennedy/Jenks Consultants 2011). The study considered Hanson Quarry as a preferred site for aquifer-groundwater storage. Currently, SLVWD and the County of Santa Cruz are developing a Conjunctive Use Plan for the San Lorenzo River Watershed to increase stream baseflow for fish and increase reliability of surface and ground water supplies for the SLVWD. Under consideration is injection of excess surface water during wet periods and extraction of groundwater during dry periods in the Olympia area.

The Proposed Project does include new ASR facilities, the location of which are not known at this time. It is possible that future exploration of use of inactive quarries could be considered in the context of a new ASR facility that could be developed in the Santa Margarita Groundwater Basin under the Proposed Project. Thus, the potential use of

inactive quarries in the Santa Margarita Groundwater Basin as a stand-alone separate alternative to the Proposed Project was eliminated from further consideration, as the quarries could be considered as a potential part of the new ASR facilities component.

#### 8.3.2.2 Recycled Water

The SqCWD, in its comments on the NOP, suggested that recycled water be considered as an alternative means of meeting the Agreed Flows and fish enhancements proposed as part of the Proposed Project. According to the SqCWD's comment, this could include, but not be limited to, the use of recycled water for irrigation, purified water for groundwater recharge or reservoir augmentation, and river/creek augmentation. The City's Water Supply Augmentation Strategy includes continued water conservation and the evaluation of additional water supply alternatives including the development of groundwater storage via passive recharge from water transfers and exchanges and active recharge from aquifer storage and recovery (Elements 1 and 2), as identified in Proposed Project Objective #3. Recycled water or desalination is included in Element 3 as a back-up water source. Thus, recycled water is included as a supplemental source to be pursued as Element 3 of the City's Water Supply Augmentation Strategy in the event the groundwater storage strategies described above prove insufficient to meet the goals of cost-effectiveness, timeliness, or yield.

A recycled water facilities planning study was completed in 2018 (Kennedy/Jenks Consultants), and the City initiated a Phase II study, which is being prepared, to refine cost estimates for recycled water alternatives and to understand the long-term utility of recycled water. The 2018 study included recommendations for near-term projects and upgrades that could provide approximately 106 million gallons per year of supplemental water for non-potable customers, including at the City's Wastewater Treatment Facility and adjacent park, as well as customers along Bay Street and UCSC (Kennedy/Jenks Consultants 2018). The study indicated that the City would also explore other reuse opportunities in the mid-term, including groundwater replenishment at the City's Beltz wellfield and a groundwater storage and recovery project in the Santa Margarita Groundwater Basin, and coordination with Pure Water Soquel Project. Other long-term opportunities for direct potable reuse and reservoir augmentation did not demonstrate any real or substantial benefits. These opportunities therefore would be reserved for future consideration if and when appropriate state regulations are established and issues related to reservoir augmentation at Loch Lomond Reservoir can be resolved (e.g. confirming capacity for advanced treated water in the reservoir, demonstrating ability to meet dilution and other parameters) (Kennedy/Jenks Consultants 2018).

In 2019, the City approved an agreement with SqCWD to allow SqCWD to utilize a portion of the treated effluent produced by the City's Wastewater Treatment Facility (WWTF) for groundwater replenishment as part of the Pure Water Soquel project approved by the SqCWD. Pure Water Soquel will pump a portion of secondary effluent water from the City's WWTF to a new Advance Water Purification Facility located in Live Oak where it will undergo standard treatment for groundwater replenishment in the Santa Cruz Mid-County Groundwater Basin. The agreement also included the additional benefit of providing a facility to produce Title 22 recycled water for the City's use at the WWTF. In the future, a portion of that water could be used for irrigation water for La Barranca Park or for a truck fill station (City of Santa Cruz 2020).

The Phase II recycled water feasibility study underway is reviewing several of the mid-term alternatives described above and will be complete at the end of 2021 or early 2022. Therefore, the City is pursuing recycled water as a backup supply if Water Supply Augmentation Strategy Elements 1 and 2, which are the water augmentation components of the Proposed Project, do not meet the City's goals to meet the estimated worst-year gap of 1.2 billon gallon per year for potable water. Additionally, the near-term recycled water projects identified to date would provide

only about 106 million gallons per year of non-potable supply, which would not address the City's estimated potable water demand shortfall during dry periods. Therefore, based on what is known to date about recycled water, this potential alternative would not meet the basic project objectives to deliver a safe, adequate, reliable and environmentally sustainable water supply. For this reason, this alternative was eliminated from further consideration as an alternative to the Proposed Project. However, it remains a part of the Water Supply Augmentation Strategy and will be reconsidered if/when other supply alternatives prove unsuccessful in meeting the demands of the City.

#### 8.3.2.3 Seawater Desalination

The SqCWD, in its comments on the NOP, suggested that desalinated water be considered as an alternative means of meeting the Agreed Flows and fish enhancements proposed as part of the Proposed Project. The City and SqCWD partnered to undertake environmental review for the proposed scwd$^2$ Regional Seawater Desalination Project, which involved the construction and operation of a desalination plant and related facilities to provide up to 2.5 million gallons per day of potable water. Between 2007 and 2013, desalination background studies on treatment, brine disposal, energy use, intake design, and offshore geophysical conditions, and other studies were conducted to support the development of the project's Draft EIR, which was released for public review and comment in May 2013. However, the City chose to suspend the pursuit of seawater desalination in late 2013 to allow for a broader public discussion on the topic of water supply for the City, which resulted in the formation of the WSAC and development and adoption of the current Water Supply Augmentation Strategy that the City is pursuing.

A desalination project is one of the elements of the City's Water Supply Augmentation Strategy to meet the system demands during periods of water shortages (Element 3). The WSAC's Water Supply Augmentation Strategy required that all elements be pursued in parallel so that sufficient information would be known about each element to allow for informed decision making on the project(s) to be pursued. As a result, a desalination feasibility update to the scwd$^2$ Regional Seawater Desalination Project was completed in 2018 to assess the feasibility, cost, timeline, and approach (Dudek 2018). It considered the construction and operation of a seawater reverse osmosis (SWRO) desalination plant and related facilities to provide up to 3.3 million gallons per day of potable water to the City; a larger capacity project was identified compared to the scwd$^2$ Regional Seawater Desalination Project to fill the worst-case supply gap. The study concluded that a desalination project would meet most of the City's WSAC objectives, is technically feasible and could provide sufficient water supply capacity to fill the identified supply-demand gap of 1.2 billion gallons per year during modeled worst-year conditions. It also indicated that, while the project is technically feasible, additional feasibility review of intake methods may be required to determine the feasibility of the subsurface intake approach, which is currently the preferred method under the California Ocean Plan, with which a desalination project must comply. The desalination feasibility study also indicated that a City seawater desalination project would not meet the City's timeliness objective, since it would not be completed and operational by 2025 (Dudek 2018). Therefore, based on what is known to date about seawater desalination, this potential alternative would not meet the basic project objectives to deliver a safe, adequate, reliable and environmentally sustainable water supply. For this reason, this potential alternative to the Proposed Project was eliminated from further consideration as an alternative to the Proposed Project. However, it remains a part of the Water Supply Augmentation Strategy and will be reconsidered if/when other supply alternatives prove unsuccessful in meeting the demands of the City.

# 8.4 Alternatives Selected for Further Analysis

This section describes the alternatives to the Proposed Project that were selected and analyzed according to CEQA Guidelines Section 15126.6(a) after elimination of some considered alternatives as explained in Section 8.3, Alternatives Considered but Eliminated. The analyzed alternatives, including the No Project Alternative, represent a reasonable range of alternatives to the Proposed Project that would feasibly attain most of the Proposed Project's basic objectives, and would avoid or substantially lessen the significant adverse environmental effects of the Proposed Project, as listed in Section 8.2, Overview of Significant Project Impacts, and described in detail in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures. As most identified impacts of the Proposed Project relate to the actual construction of various project and programmatic infrastructure components, the alternatives selected consider no or reduced infrastructure components.

The following four alternatives, which are summarized in Table 8-1 and described in detail below, were selected for comparative analysis in this EIR:

- **No Project Alternative –** The No Project Alternative are the circumstances under which the Proposed Project does not proceed.
- **Alternative 1 –** Agreed Flows only without other Proposed Project components.
- **Alternative 2 –** Agreed Flows with all Proposed Project components except there is no place of use expansion, which means that there are no water transfers to neighboring agencies, and that ASR is possible only within the areas served by the City.
- **Alternative 3 –** Agreed Flows with all Proposed Project components except ASR.

Additionally, the standard operational and construction practices identified in Chapter 3, Project Description, would apply to Alternatives 1 through 3, where relevant to each alternative.

### Table 8-1. Summary of Alternatives

| Proposed Project Components | Inclusion of Proposed Project Components in Alternatives | | | |
|---|---|---|---|---|
| | *No Project Alternative* | *Alternative 1* | *Alternative 2* | *Alternative 3* |
| Agreed Flows | No | Yes | Yes | Yes |
| Place of Use Expansion | No | No | No | Yes |
| Other Water Rights Modifications | No | No | Yes | Yes |
| Aquifer Storage and Recovery | No | No | Yes, but only in areas served by City | No |
| Water Transfers and Exchanges and Intertie Improvements | No | No | No | Yes |
| Surface Water Diversion Improvements | No | No | Yes | Yes |
| Relevant Standard Operational and Construction Practices | No | Yes | Yes | Yes |

As indicated in Chapter 3, Project Description and Appendix D, the City has utilized a modeling system comprised of a hydrologic model, a water supply model, and a biological effects model that focuses on coho and steelhead to develop and analyze the Proposed Project. Similar to the Proposed Project, Alternatives 1, 2, and 3 were modeled and compared to the 2018 baseline conditions (also referred to as existing conditions).[3] The baseline represents City water rights, water supply operations, and bypass flows that were in place at the time the NOP was released (2018). The City's existing pre-1914 appropriative water rights authorize diversions from several North Coast streams and the City's post-1914 appropriative water rights allow diversions from Newell Creek and the San Lorenzo River under existing water rights licenses and permits (see Chapter 3, Project Description). Water supply operations under the baseline consider existing infrastructure capacities. Bypass flows under the baseline are defined by the interim bypass flow agreement between the City and CDFW, which was included in the April 30, 2018 Tolling Agreement between CDFW and the City of Santa Cruz (see Appendix C for this agreement). All other conditions are based on those existing in 2018. Key modeling results are presented below in Table 8-2, Table 8-3, and Table 8-4 and Figure 8-1 and described in the subsequent analysis.

## Table 8-2. Peak-Season Water Supply Shortage (in million gallons)

| Worst Drought Years in Historical Record | 2018 Baseline Conditions | Proposed Project | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| 1976 | 843 | 0 | 844 | 0 | 515 |
| 1977 | 1,170 | 0 | 1,179 | 932 | 1,166 |
| **Total** | **2,013** | **0** | **2,023** | **932** | **1,681** |

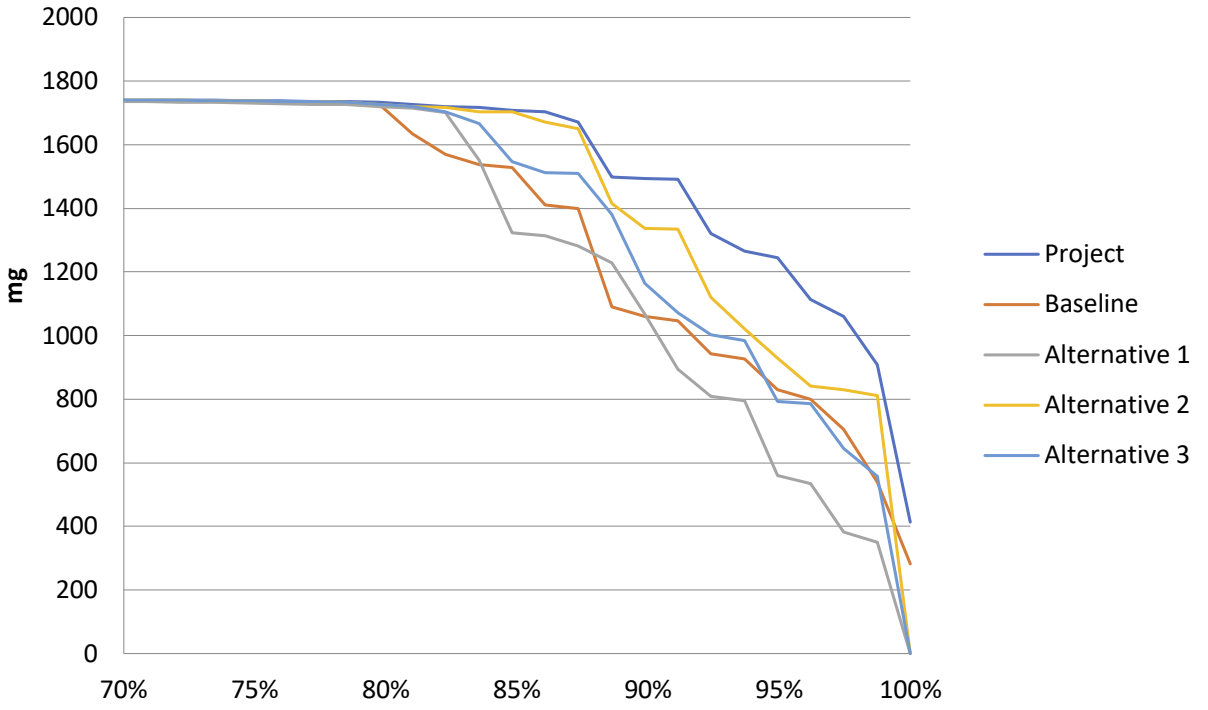
**Source:** Gary Fiske and Associates 2021a.
**Note:** The No Project Alternative was not modeled and compared to 2018 baseline conditions, given that there are many unknowns associated with this alternative and making the needed assumptions required for modeling would be speculative. Therefore, the No Project Alternative is not reflected in this table.

## Table 8-3. Percent of Days that Loch Lomond Reservoir Spills (Based on Average of All Years in the Historic Record)

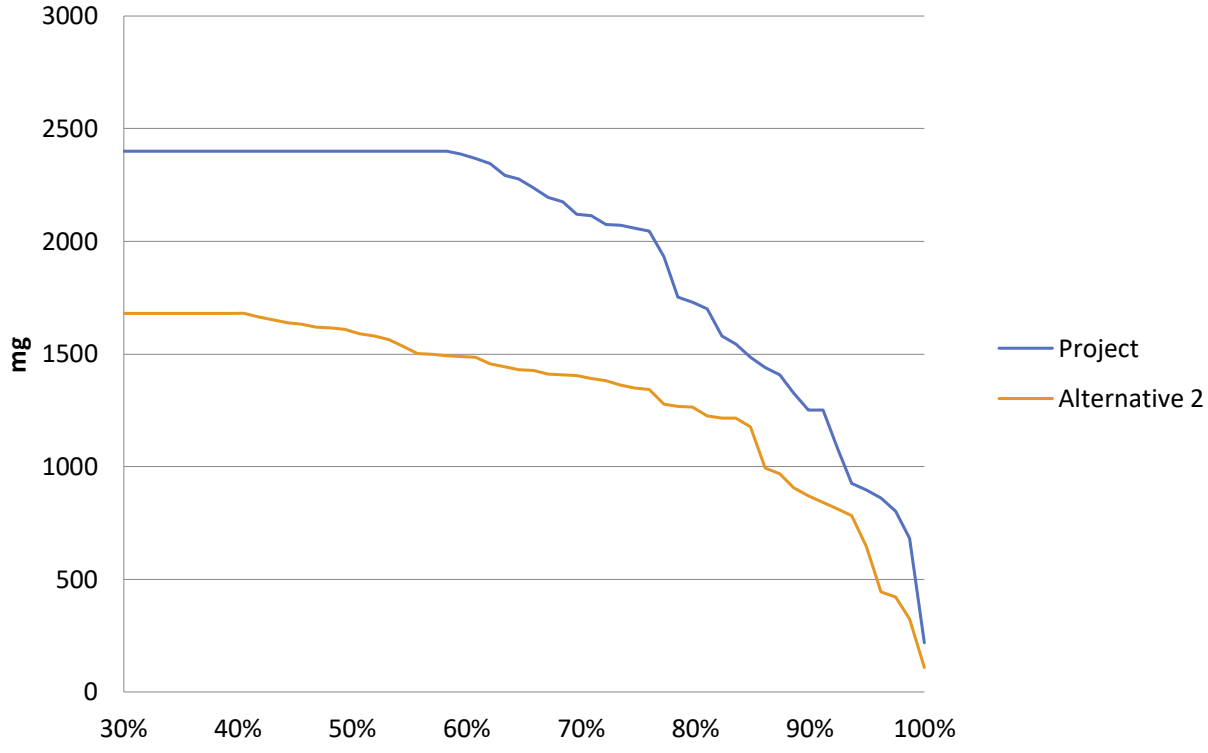
| Month | 2018 Baseline Conditions | Proposed Project Conditions | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| Jan | 41.4% | 53.4% | 44.3% | 53.2% | 51.1% |
| Feb | 60.3% | 70.4% | 61.5% | 69.9% | 67.3% |
| Mar | 68.6% | 80.0% | 70.7% | 79.5% | 76.6% |
| Apr | 64.5% | 76.1% | 64.1% | 76.0% | 75.6% |
| May | 48.8% | 76.5% | 46.3% | 76.3% | 75.9% |
| Jun | 18.9% | 37.8% | 18.9% | 37.9% | 37.8% |
| Jul | 0.0% | 3.6% | 0.0% | 3.6% | 3.6% |
| Aug | 0.0% | 0.1% | 0.0% | 0.1% | 0.1% |
| Sep | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Oct | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Nov | 1.5% | 4.5% | 1.9% | 5.4% | 3.8% |
| Dec | 14.8% | 31.4% | 16.9% | 31.0% | 25.2% |

**Source:** Gary Fiske and Associates 2021b.
**Note:** The No Project Alternative was not modeled and compared to 2018 baseline conditions, given that there are many unknowns associated with this alternative and making the needed assumptions required for modeling would be speculative. Therefore, the No Project Alternative is not reflected in this table.

[3] The No Project Alternative was not modeled and compared to 2018 baseline conditions, given that there are many unknowns associated with this alternative and making the needed assumptions required for modeling would be speculative.




Loch Lomond Reservoir Storage Exceedance Probabilities*




Aquifer Storage and Recovery Storage Exceedance Probabilities*

*Exceedence probablilities are the probabilities that the usable storage volume will exceed the y-axis values.

**Table 8-4. Percentage of Days that Loch Lomond Reservoir Falls Below Approximately 564 Feet (amsl) (Based on Average of All Years in the Historic Record)**

| Month | 2018 Baseline Conditions | Proposed Project Conditions | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| Jan | 22.2% | 9.4% | 22.0% | 11.3% | 18.1% |
| Feb | 15.9% | 6.6% | 16.3% | 9.6% | 13.6% |
| Mar | 12.0% | 4.5% | 13.8% | 7.2% | 10.2% |
| Apr | 10.9% | 2.7% | 10.5% | 7.6% | 9.3% |
| May | 9.5% | 3.5% | 10.5% | 7.6% | 9.0% |
| Jun | 10.8% | 4.6% | 11.4% | 8.9% | 10.1% |
| Jul | 11.6% | 7.1% | 12.5% | 9.3% | 11.4% |
| Aug | 14.0% | 8.9% | 15.0% | 11.4% | 12.8% |
| Sep | 21.8% | 11.9% | 19.5% | 13.5% | 17.6% |
| Oct | 29.0% | 14.8% | 26.1% | 14.6% | 23.7% |
| Nov | 30.4% | 13.7% | 27.3% | 12.9% | 23.5% |
| Dec | 26.1% | 11.6% | 26.0% | 12.7% | 22.4% |

**Source:** Gary Fiske and Associates 2021b.
**Notes:** amsl = above mean sea level.
The No Project Alternative was not modeled and compared to 2018 baseline conditions, given that there are many unknowns associated with this alternative and making the needed assumptions required for modeling would be speculative. Therefore, the No Project Alternative is not reflected in this table.

Each alternative is examined for its ability to reduce environmental impacts relative to the Proposed Project and to meet project objectives. Table 8-5 shows each alternative's ability to meet the project objectives, relative to the Proposed Project's ability to fully achieve the objectives. Table 8-6 provides a comparison of impacts of the Proposed Project and the identified alternatives. (Table 8-5 and Table 8-6 are presented at the end of this chapter.)

## 8.4.1 No Project Alternative

The No Project Alternative is described below, followed by a discussion of its impacts relative to the Proposed Project and its ability to meet the project objectives. As indicated previously, the No Project Alternative was not modeled and compared to 2018 baseline conditions, given that there are many unknowns associated with this alternative and making the needed assumptions required for modeling would be speculative.

### 8.4.1.1 Description

CEQA Guidelines Section 15126.6(e) generally provides that "[t]he 'no project' analysis shall discuss the existing conditions at the time the notice of preparation is published, … as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services." Section 15126(e)(3)(B) provides that, where, as here, a proposed project is something "other than a land use or regulatory plan," the "No Project" Alternative is "the circumstance under which the project does not proceed." The purpose of describing and analyzing a No Project Alternative is to allow decision-makers to compare the impacts of approving the Proposed Project with the impacts of not approving the Proposed Project (CEQA Guidelines Section 15126.6[e][1]). "[W]here failure to proceed with the project will not result in preservation of existing environmental conditions, the analysis should

identify the practical result of the project's non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment." (CEQA Guidelines Section 15126.6[e][3][B]).

The underlying purpose of the Proposed Project is to improve flexibility in operation of the City's water system while enhancing stream flows for local anadromous fisheries. Incorporating the Agreed Flows into all City water rights is necessary to benefit local fisheries, specifically for coho and steelhead, but would further constrain the City's limited surface water supply. Consequently, the City needs to improve operational flexibility of the water system within existing rights, permits, and licenses to allow better use of limited water resources. To do this, the Proposed Project includes modifications to the existing water rights, permits, and licenses to expand the authorized POU, to better utilize existing diversions, to authorize groundwater storage and to extend the City's time to put water to full beneficial use.

Under the No Project Alternative, all conditions are generally based on those existing in 2018 and include existing water rights and existing infrastructure capacities. Unlike the 2018 baseline, however, this alternative cannot rely on the approval of a subsequent interim agreement related to bypass flows, such as is currently in place with CDFW. Additionally, none of the project and programmatic components of the Proposed Project would be implemented, including:

- Water rights modifications, including modifications related to POU, method of diversion, points of diversion and rediversion, underground storage and purpose of use, extension of time, and stream bypass requirements for fish habitat (Agreed Flows).
- Water supply augmentation components, including ASR (new ASR facilities at unidentified locations and Beltz ASR facilities at the existing Beltz well facilities), and water transfers and exchanges, and associated intertie improvements.
- Surface water diversion improvements, including the Felton Diversion fish passage improvements and the Tait Diversion and Coast Pump Station improvements.

The Agreed Flows would not be implemented under the No Project Alternative. While they are currently expected to be required as part of the pending ASHCP (City of Santa Cruz 2021b) and related incidental take permits, which is anticipated to be approved by late 2022 or early 2023, the ASHCP and incidental take permits would not be able to be implemented or committed to under the No Project Alternative. This is because the approval of the Proposed Project is required to ensure the Agreed Flows would be practicable and such approval was a condition precedent for the finalization of the ASHCP and submittal of applications for incidental take permits. Additionally, as noted above, this alternative cannot rely on the approval of a subsequent interim agreement related to bypass flows, such as is currently in place with CDFW, as continuation of the interim agreement related to bypass flows would not be practicable and such agreement would not be renewed. While the final Operations and Maintenance HCP (OMHCP) developed with the USFWS and associated incidental take permit includes minimum bypass flows, these flows do not encompass all life stages and therefore are not as protective as the interim bypass flows and the Agreed Flows (City of Santa Cruz 2021a). As such, delivery of water to customers under the No Project Alternative could lead to conflicts with species protection goals and could lead to enforcement and/or litigation regarding the scope of requirements under the FESA and CESA to avoid take of federally and state-listed species. Additionally, the fish screening at the Felton Diversion and Tait Diversion and fish passage at the Felton Diversion would not be improved under the No Project Alternative.

Under the No Project Alternative, the existing significant barrier to implementing more conjunctive use of the City's sources of supply would remain in place without the proposed water rights modifications related to expansion of POUs, underground storage and points of rediversion. Likewise, the barriers to improving conjunctive use of the region's resources with adjoining water agencies and within the region's groundwater basins would also remain. Specifically, ASR and water transfers and exchanges and associated intertie improvements could not be implemented under the No Project Alternative. Additionally, without the other water rights modifications (relating to method of diversion, points of diversion, and extension of time), under the No Project Alternative, the operational flexibility anticipated by the Proposed Project would not be provided, such as the option of diverting water under the existing Felton Diversion water rights at either the Felton Diversion or downstream at the Tait Diversion. Therefore, the No Project Alternative would not provide the ability to divert water under the Felton Permits with or without activation of the Felton Diversion inflatable dam. The No Project Alternative therefore would not help the City to fully utilize the 3,000 acre-feet per year diversion provided under the Felton Permits, and would not allow water to remain in the San Lorenzo River longer, bypassing the Felton Diversion before being diverted at the Tait Diversion and therefore would not provide associated fisheries benefits. Further, under the No Project Alternative, no extension of time would be provided for the City to put all of its 3,000 acre-feet per year entitlement to divert water at the Felton Diversion to full beneficial use. This could result in the City losing some of its authorized diversion amount under the Felton Permits, which the City expects will be needed in the future.

Given the above, the No Project Alternative would not provide for any elements of the Proposed Project that would allow the City to expand its storage capacity to deliver a safe, adequate (i.e., filling the worst-year water supply gap), reliable and environmentally sustainable water supply. As a result, the No Project Alternative would require the City to prioritize and immediately pursue Water Supply Augmentation Strategy Element 3 options (i.e., recycled water or seawater desalination), which are currently considered as back-up water sources, if passive and active recharge solutions identified in Elements 1 and 2 and included in the Proposed Project are not sufficient (see Section 8.3.2.2, Recycled Water, and Section 8.3.2.3, Seawater Desalination).

#### 8.4.1.2 Impact Analysis

Under the No Project Alternative, the Proposed Project would not be implemented, and the project and programmatic infrastructure components would not be constructed. Therefore, the potentially significant impacts associated with constructing and/or operating new or upgraded infrastructure facilities identified in this EIR would not occur (see Table 8-6), including those related to biological resources (Impacts BIO-1A, BIO-1B, BIO-1C, BIO-2, and BIO-3), cultural resources (Impacts CUL-1, CUL-2, and CUL-3), seismic hazards (Impact GEO-1), paleontological resources (Impact GEO-4), hazardous materials release (Impact HAZ-2), conflict with a groundwater plan (Impact HYD-2), alteration to drainage patterns (Impact HYD-3), conversion of farmland or forest land (Impact LU-2), permanent increase in noise (Impact NOI-1), permanent or temporary increase in noise in excess of standards (Impact NOI-2), vibration (Impact NOI-3), and new or expanded facilities (Impact UTL-1). In particular, the significant unavoidable construction noise impact due to well drilling activities for the new ASR facilities and the Beltz 9 ASR facility (Impacts NOI-2 and UTL-1) would not occur with the No Project Alternative. In addition, most of the other impacts related to the Proposed Project (identified as less than significant) would not occur as shown in Table 8-6.

However, the No Project Alternative would also not realize the benefits of the Proposed Project to biological resources due to improved conditions for fish in the San Lorenzo River, Newell Creek and the North Coast streams with the implementation of the Agreed Flows as part of the Proposed Project, and improved fish passage and/or fish screening at the Felton Diversion and Tait Diversion, as described in Section 4.3, Biological Resources (see Impact BIO-1A). Specifically, the No Project Alternative would likely result in a significant and unavoidable impact

for fish as the Agreed Flows would not be implemented and the interim bypass flow agreement with CDFW would not be renewed. The No Project Alternative would also not realize the benefits of the Proposed Project to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2). In contrast to the beneficial impact of the Proposed Project, the No Project Alternative impact on recreational uses at Loch Lomond would be potentially significant and unavoidable, as lake levels are likely to decline over baseline conditions given that the City's reliance on Loch Lomond Reservoir would likely continue to increase over time until an alternative source of water supply is developed (i.e., recycled water or seawater desalination). As the No Project Alternative would not include ASR or water transfers it would not have the potential to contribute sustainability benefits in the Santa Margarita Groundwater Basin and the Santa Cruz Mid-County Groundwater Basin, whereas the Proposed Project would have such potential (see Impact HYD-2). Lastly, the No Project Alternative would not provide additional water supply to meet projected demand in the areas served by the City during currently constrained dry periods (see Impact UTL-2). In contrast to the beneficial impact of the Proposed Project, the No Project Alternative water supply impact would be potentially significant and unavoidable until an alternative source of water supply is developed.

Given that the City's water supply objectives would not be met with the No Project Alternative, the City's likely prioritization and pursuit of recycled water or seawater desalination under Water Supply Augmentation Strategy Element 3 could result in some additional impacts that would not result from the Proposed Project. For example, if seawater desalination were selected, marine biological and hydrological impacts offshore in the Monterey Bay National Marine Sanctuary would likely result, as documented in the Proposed scwd[2] Regional Seawater Desalination Project Draft Environmental Impact Report (URS 2013). The impacts of various recycled water options would be evaluated if and when one or more of the recycled water options are pursued by the City as part of Element 3 of the Water Supply Augmentation Strategy.

#### 8.4.1.3 Ability to Meet Project Objectives

The No Project Alternative would not meet any of the identified project objectives (see Table 8-5). In particular, the No Project Alternative would not improve the operational flexibility of the City's system, support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers) and Element 2 (active recharge of regional aquifers via ASR) to deliver a safe, adequate (i.e., filling the worst-year water supply gap), reliable and environmentally sustainable water supply, and meet state policy favoring integrated regional water management (Objectives #1, #3, #7, #8, #11, and #12). The water supply gap would remain under the No Project Alternative (see Table 8-2) and the City would not be able to contribute to regional conjunctive use and groundwater basin recovery in both the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin (Objectives #4, #6 and #11). Additionally, the No Project alternative would not meet the objectives related to providing improved/protective conditions for fisheries and would not address operational deficiencies at the Tait Diversion and Coast Pump Station (Objectives #2, #9 and #10).

### 8.4.2 Alternative 1: Agreed Flows Only Without Other Proposed Project Components

Alternative 1 is described below, followed by a discussion of its impacts relative to the Proposed Project and its ability to meet the project objectives.

### 8.4.2.1 Description

Alternative 1 consists of implementation of the Agreed Flows, consistent with the Proposed Project. None of the other components of the Proposed Project, as summarized above in the No Project Alternative, would be implemented under Alternative 1 (see Table 8-1). All other conditions are generally based on those existing in 2018 and include existing water rights and existing infrastructure capacities, with the exception that all the City's cumulative infrastructure improvements are also included in the modeling for this Alternative, similar to the Proposed Project. These include improvements related to the Newell Creek Pipeline and the Graham Hill Water Treatment Plant (See Appendix D for additional information about the modeling conditions for Alternative 1).

As for the No Project Alternative, Alternative 1 would not provide for any elements of the Proposed Project that would allow the City to expand its storage capacity to deliver a safe, adequate (i.e., filling the worst-year water supply gap), reliable and environmentally sustainable water supply. As a result, Alternative 1 would require the City to prioritize and immediately pursue Water Supply Augmentation Strategy Element 3 options (recycled water or seawater desalination), which are currently considered as back-up water sources, if passive and active recharge solutions identified in Elements 1 and 2 and included in the Proposed Project are not sufficient (see Sections 8.3.2.2, Recycled Water, and 8.3.2.3, Seawater Desalination).

While Alternative 1 would not meet the project objectives, the State Water Resources Control Board, a responsible agency, requested that such an alternative be evaluated in this EIR, during the scoping period and therefore it is included in this analysis (see Section 2, Introduction, for a summary of the scoping comments received and Appendix A for detailed comments). CEQA encourages lead agencies to include in their Draft EIRs information specifically requested by responsible agencies. (See, e.g., CEQA Guidelines Sections 15082(b) and 15125(d)(1)(C).) Alternative 1 will be helpful to the State Water Resources Control Board as it assesses the City's water rights applications, and should give that agency a better understanding of the water supply benefits and environmental benefits of the components of the Proposed Project not included within Alternative 1.

### 8.4.2.2 Impact Analysis

#### Biological Resources

**Fisheries Impacts**

Based on the modeling included in Appendix D-3, the long-term operational effects of Alternative 1 on habitat conditions for steelhead and coho would be nearly identical to those of the Proposed Project and involve an improvement of habitat conditions for these species relative to baseline conditions, as described in Impact BIO-1A. However, the improvement in habitat effects in Newell Creek downstream of Newell Creek Dam would be less under Alternative 1 than under the Proposed Project or Alternatives 2 and 3. This is because the elements of the Proposed Project like ASR operations that add operational flexibility by providing additional storage and result in higher storage levels in Loch Lomond Reservoir and increased frequency and/or duration of spill, would not occur under Alternative 1 (see Figure 8-1). As a result of less frequent reservoir spills under Alternative 1, habitat values in Newell Creek would show less improvement over the baseline compared to the Proposed Project and Alternatives 2 and 3.

Alternative 1 would have the same negative effects as the Proposed Project (relative to the baseline) to rearing habitat index in wet years for coho in Laguna Creek (a 2.7% decline) (see Appendix D-3, Table 5). Additionally, there would be a 6.2% decline in the adult migration index for coho downstream of the Tait Diversion in critically dry years that would not result from the Proposed Project (see Appendix D-3, Table 5). The decline in the adult migration index for coho downstream of the Tait Diversion in Alternative 1 would likely result from more frequent restrictions on migration bypass flows due to lower storage levels in Loch Lomond Reservoir under Alternative 1 in a limited number of years (see Figure 8-1), as described previously. Under the Agreed Flows, requirements for adult migration bypass flows at the Tait Diversion can be relaxed under low storage levels in Loch Lomond Reservoir from December through March. If Alternative 1 results in more frequent Loch Lomond Reservoir storage levels below the trigger for lower migration bypass flows, bypass flows below the Tait Diversion would be modified more often (see Appendix D-2). The reason the adult migration index for coho can be reduced while the index for steelhead is not is that migration opportunities lost in December can be compensated for by gains in April for steelhead but not for coho, which migrate primarily before March. Provision of adult migration bypass flows in April under the Agreed Flows may also contribute to lower storage levels in Loch Lomond Reservoir in the early winter with Alternative 1 compared to the baseline.

Similar to the Proposed Project, the above habitat effects would not likely be biologically meaningful and would not be considered "substantial" under CEQA standards of significance or meet any of the significance thresholds under CEQA. Specifically, changes of this magnitude 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 the San Lorenzo River or, substantially reduce the number or restrict the range of coho. Additionally, as concluded in Appendix D-3, with the implementation of Standard Operational Practice #6 as part of Alternative 1, potential adverse water temperature effects on steelhead and coho due to minor changes in the frequency of reservoir spills would be avoided. Therefore, Alternative 1 would also have a less-than-significant impact on steelhead and coho during operations, but habitat conditions below the Tait Diversion would be somewhat reduced under Alternative 1.

While Alternative 1 would realize some of the benefits of the Proposed Project to biological resources due to improved conditions for fish in the San Lorenzo River, Newell Creek and the North Coast streams with the implementation of the Agreed Flows, this Alternative would not result in improved fish passage and/or fish screening at the Felton Diversion and Tait Diversion (see Impact BIO-1A). Additionally, given that this Alternative would not result in improved fish passage and/or fish screening at these diversions and would not result in intertie improvements, no potentially significant construction impacts on special-status fish associated with these improvements (see Impact BIO-1A) would result and the mitigation measures identified for the Proposed Project to address construction impacts would not be required.

### Other Biological Resource Impacts

Other long-term operational impacts of Alternative 1 on other special-status species (Impacts BIO-1B and BIO-1C), riparian and sensitive habitat (Impact BIO-2), jurisdictional aquatic resources (Impact BIO-3), and wildlife movement (Impact BIO-4) are also expected to be less than significant, similar to the Proposed Project given that the difference in residual flows with Alternative 1 would be minimal relative to 2018 baseline conditions. Additionally, no potentially significant impacts would result from Alternative 1 associated with constructing new or upgraded infrastructure components (see Table 8-6), including those related to other special-status species (Impacts BIO-1B and BIO-1C), riparian and sensitive habitat (Impact BIO-2), jurisdictional aquatic resources (Impact BIO-3) and the mitigation measures identified for the Proposed Project would not be required.

## Other Impacts

As the Proposed Project's infrastructure components would not be constructed or operated under Alternative 1, the other potentially significant impacts associated with constructing and/or operating new or upgraded infrastructure facilities identified in this EIR would not occur (see Table 8-6), including those related to cultural resources (Impacts CUL-1, CUL-2, and CUL-3), seismic hazards (Impact GEO-1), paleontological resources (Impact GEO-4), hazardous materials release (Impact HAZ-2), conflict with a groundwater plan (Impact HYD-2), alteration to drainage patterns (Impact HYD-3), conversion of farmland or forest land (Impact LU-2), permanent increase in noise (Impact NOI-1), permanent or temporary increase in noise in excess of standards (Impact NOI-2), vibration (Impact NOI-3), and new or expanded facilities (Impact UTL-1). In particular, the significant unavoidable construction noise impact due to well drilling activities for the new ASR facilities and the Beltz 9 ASR facility (Impacts NOI-1 and UTL-1) would not occur with the Alternative 1. In addition, most other impacts related to the Proposed Project (identified as less than significant) would not occur under Alternative 1 as shown in Table 8-6.

However, Alternative 1 would not realize the benefits of the Proposed Project to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2). Notably, conditions in Loch Lomond Reservoir for recreation would likely degrade over baseline conditions given that the City would need to rely on the reservoir more heavily than under 2018 baseline conditions with the Agreed Flows in place and none of the other components of the Proposed Project implemented under Alternative 1. During the recreational use period from March 1 to mid-October, on average there are approximately 12% of days under baseline conditions where a full season of boating and related operations do not occur because lake levels fall below approximately 564 feet amsl in March, at the beginning of the season. In comparison, under Alternative 1, on average there would be approximately 13.8% of days where a full season of boating and related operations would not occur because lake levels fall below approximately 564 feet amsl in March (see Table 8-4). In contrast to the beneficial impact of the Proposed Project, the impact of Alternative 1 on recreational uses at Loch Lomond Reservoir would be potentially significant and unavoidable until an alternative source of water supply is developed (i.e., recycled water or seawater desalination). As Alternative 1 would not include ASR or water transfers it would not have the potential to contribute sustainability benefits in the Santa Margarita Groundwater Basin and the Santa Cruz Mid-County Groundwater Basin, whereas the Proposed Project would have such potential (see Impact HYD-2). Lastly, Alternative 1 would not provide additional water supply to meet projected demand in the areas served by the City during currently constrained dry periods (see Impact UTL-2). In contrast to the beneficial impact of the Proposed Project, the Alternative 1 water supply impact would be potentially significant and unavoidable until an alternative source of water supply is developed.

Given that the City's water supply objectives would not be met with the Alternative 1, the City's likely prioritization and pursuit of recycled water or seawater desalination under Water Supply Augmentation Strategy Element 3 could result in some additional impacts that would not result from the Proposed Project. For example, if seawater desalination were selected, marine biological and hydrological impacts offshore in the Monterey Bay National Marine Sanctuary would likely result, as documented in the Proposed scwd$^2$ Regional Seawater Desalination Project Draft Environmental Impact Report (URS 2013). The impacts of various recycled water options would be evaluated if and when one or more of the recycled water options are pursued by the City as part of Element 3.

#### 8.4.2.3 Ability to Meet Project Objectives

While Alternative 1 would technically meet the project objective to provide flow conditions that are protective of coho and steelhead within all streams from which the City diverts water (Agreed Flows) (Objective #2), it is possible that without the other elements of the Proposed Project the City would not be able to comply with the Agreed Flows at certain times and therefore Alternative 1 would only moderately meet this objective. Under Alternative 1, the City would have to rely on surface water sources in Loch Lomond Reservoir more heavily, as compared to the Proposed Project.

Alternative 1 would not meet any of the other identified project objectives (see Table 8-5). In particular, the Alternative 1 would not improve the operational flexibility of the City's system, support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers) and Element 2 (active recharge of regional aquifers via ASR) to deliver a safe, adequate (i.e., filling the worst-year water supply gap), reliable and environmentally sustainable water supply, and meet state policy favoring integrated regional water management (Objectives #1, #3, #7, #8, #11 and #12). The water supply gap would remain and would likely increase under Alternative 1 (see Table 8-5) and the City would not be able to contribute to regional conjunctive use and groundwater basin recovery in both the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin (Objectives #4, #6 and #11). Alternative 1 would also not improve fish screening at the Felton Diversion and Tait Diversion and improve fish passage at the Felton Diversion or address operational deficits at the Tait Diversion and Coast Pump Station (Objectives #9 and #10).

### 8.4.3 Alternative 2: All Proposed Project Components Except Place of Use Expansion

Alternative 2 is described below, followed by a discussion of its impacts relative to the Proposed Project and its ability to meet the project objectives.

#### 8.4.3.1 Description

Alternative 2 includes most components of the Proposed Project, as summarized above in the No Project Alternative, except there would be no place of use expansion focused on expanding the City's groundwater-storage capacity through a larger number of ASR sites, and on supporting regional water supply reliability in neighboring districts and groundwater basins (see Table 8-1). The place of use for City water rights would still be refined to ensure those rights have consistent POUs.[4] Alternative 2 would not include water transfers to neighboring water agencies and ASR would be possible only within the areas served by the City (see Figure 3-3 in Chapter 3, Project Description). Therefore, Alternative 2 would include Beltz ASR facilities and potentially new ASR facilities within the areas served by the City. Given the limited area to implement ASR, the modeling considers a reduced injection and extraction capacity, as described in more detail in Appendix D. All other modeling conditions for Alternative 2 are consistent with the Proposed Project.

[4] The Newell Creek License (License No 9847) still would be inconsistent because its POU includes areas in the upper San Lorenzo Valley and Scotts Valley.

### 8.4.3.2 Impact Analysis

#### Biological Resources

**Fisheries Impacts**

Based on the modeling included in Appendix D-3, the long-term operational effects of Alternative 2 on habitat conditions for steelhead and coho are nearly identical to those of the Proposed Project and involve an improvement of habitat conditions for these species, as described in Impact BIO-1A. Alternative 2 has the same negative effect as the Proposed Project (relative to the baseline) to rearing habitat index in wet years for coho in Laguna Creek (a 2.7% decline) (see Appendix D-3, Table 6). Additionally, there would be a 5.5% decline in the adult migration index for coho downstream of the Tait Diversion in critically dry years that would not result from the Proposed Project (see Appendix D-3, Table 6); this decline is somewhat reduced as compared to Alternative 1. The decline in the adult migration index for coho downstream of the Tait Diversion in Alternative 2 is most likely a result of more frequent restrictions on migration bypass flows due to lower storage levels in Loch Lomond Reservoir under Alternative 2 in early winter in a limited number of years compared to the Proposed Project (see Figure 8-1).

Similar to the Proposed Project, the above habitat effects are not likely to be biologically meaningful and would not be considered "substantial" under CEQA standards of significance or meet any of the significance thresholds under CEQA. Specifically, changes of this magnitude 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 the San Lorenzo River or substantially reduce the number or restrict the range of coho. Additionally, as concluded in Appendix D-3, with the implementation of Operational Practice #6 as part of Alternative 2, potential adverse water temperature effects on steelhead and coho due to an increase in frequency of reservoir spills would be avoided. Therefore, Alternative 2 would also have a less-than-significant impact on steelhead and coho during operations, but habitat conditions below the Tait Diversion would be somewhat reduced under Alternative 2 relative to the Proposed Project.

Alternative 2 would realize some of the benefits of the Proposed Project to biological resources due to improved conditions for fish in the San Lorenzo River, Newell Creek and the North Coast streams with the implementation of the Agreed Flows. This Alternative would also result in improved fish passage and/or fish screening at the Felton Diversion and Tait Diversion during operations (see Impact BIO-1A). As Alternative 2 would also include the Tait Diversion and Coast Pump Station improvements, it would result in similar potentially significant construction impacts on special-status fish and would require the same mitigation measures as the Proposed Project (see Impact BIO-1A) to reduce the impacts to less-than-significant levels.

**Other Biological Resource Impacts**

Other long-term operational impacts of Alternative 2 on other special-status species (Impacts BIO-1B and BIO-1C), riparian and sensitive habitat (Impact BIO-2), jurisdictional aquatic resources (Impact BIO-3), and wildlife movement (Impact BIO-4) are also expected to be less than significant, similar to the Proposed Project given that the difference in residual flows with Alternative 2 would be minimal relative to 2018 baseline conditions. Additionally, the potentially significant impacts associated with constructing new or upgraded infrastructure components with Alternative 2 would be somewhat reduced given that intertie improvements would not be constructed and likely fewer new ASR facilities would be constructed (see Table 8-6). These somewhat reduced potentially significant impacts include those related to other special-status species (Impacts BIO-1B and BIO-1C), riparian and sensitive habitat (Impact BIO-2), and

jurisdictional aquatic resources (Impact BIO-3). Alternative 2 would require the same mitigation measures identified as the Proposed Project to reduce the potentially significant impacts to less-than-significant levels.

### Other Impacts

As indicated above, the intertie improvements would not be constructed, and likely fewer new ASR facilities would be constructed under Alternative 2. Therefore, most other potentially significant impacts associated with constructing and/or operating new or upgraded infrastructure facilities identified in this EIR would be somewhat reduced with this Alternative (see Table 8-6), including those related to cultural resources (Impacts CUL-1, CUL-2, and CUL-3), seismic hazards (Impact GEO-1), paleontological resources (Impact GEO-4), hazardous materials release (Impact HAZ-2), conflict with a groundwater plan (Impact HYD-2), conversion of farmland or forest land (Impact LU-2), permanent or temporary increase in noise in excess of standards (Impact NOI-2), vibration (Impact NOI-3), and new or expanded facilities (Impact UTL-1). However, the potentially significant impact associated with alteration of drainage patterns (Impact HYD-3) would be avoided with Alternative 2 as this impact would only result with the City/SVWD intertie and City/SqCWD/CWD intertie components, which would not be constructed. Likewise, the potentially significant impact associated with conversion of farmland and forest land (Impact LU-2) would be avoided with Alternative 2, as this impact would only result with new ASR facilities located in more rural areas, which would not be construction under this alternative. Alternative 2 would require most of the same mitigation measures identified as the Proposed Project to reduce most of the above potentially significant impacts to less-than-significant levels, with the exception of the mitigation measures to address Impact HYD-3 and Impact LU-2. The significant unavoidable construction noise impact due to well drilling activities for the new ASR facilities and the Beltz 9 ASR facility (Impacts NOI-1 and UTL-1) would be somewhat reduced given that there would be fewer new ASR facilities; however, it would remain significant and unavoidable with the Alternative 2. Most other impacts related to the Proposed Project (identified as less than significant) would also be somewhat reduced under Alternative 2 as shown in Table 8-6, given the reduced facility construction and operation.

However, Alternative 2 would not realize the same benefits of the Proposed Project to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2). During the recreational use period from March 1 to mid-October, on average there are approximately 12% of days under baseline conditions where a full season of boating and related operations do not occur because lake levels fall below approximately 564 feet amsl in March, at the beginning of the season. In comparison, under Alternative 2, on average there would be approximately 7.2% of days where a full season of boating and related operations would not occur because lake levels fall below approximately 564 feet amsl in March (see Table 8-4). Similar to the Proposed Project, the impact of Alternative 2 on recreational uses at Loch Lomond Reservoir would also be beneficial given that it would improve conditions for boating compared to existing conditions; however, the improvement under Alternative 2 would be less than for the Proposed Project.

As Alternative 2 would not include water transfers and only limited ASR, it would not have as much of a potential to contribute sustainability benefits in the Santa Cruz Mid-County Groundwater Basin and would not have potential to contribute such benefits in the Santa Margarita Groundwater Basin, whereas the Proposed Project would have such potential (see Impact HYD-2). Lastly, Alternative 2 would not provide as much additional water supply and would therefore not meet projected demand in the areas served by the City during currently constrained dry periods (see Impact UTL-2). In contrast to the beneficial impact of the Proposed Project, the Alternative 2 water supply impact would also likely be potentially significant and unavoidable until an alternative source of water supply is developed; however, the peak-season shortage for Alternative 2 would be less than for Alternatives 1 and 3 (see Table 8-2).

#### 8.4.3.3 Ability to Meet Project Objectives

While Alternative 2 would technically meet the project objective to provide flow conditions that are protective of coho and steelhead within all streams from which the City diverts water (Agreed Flows) (Objective #2), it is possible that without water transfers and less ASR operations the City would not be able to comply with the Agreed Flows at certain times and therefore Alternative 2 would only moderately meet this objective. Under Alternative 2, the City would have to rely on surface water sources in Loch Lomond Reservoir more heavily, as compared to the Proposed Project.

Alternative 2 would fully meet the project objectives regarding removal of operational constraints on City water rights that do not explicitly recognize direct diversion (Objective #7), allowance for additional time for the City to fully reach beneficial use in existing water-rights permits at Felton (Objective #8), and improved fish passage and/or screening at the Felton and Tait Diversions and addressing operational deficiencies at the Tait Diversion and Coast Pump Station (Objectives #9 and #10). However, given that no water transfers and exchanges and intertie improvements, and fewer new ASR facilities would be implemented under Alternative 2, it would only moderately meet objectives related to: improving the operational flexibility of the City's system (Objective #1), supporting the implementation of the City's Water Supply Augmentation Strategy (Objective #3), finding more options for where and how the City can utilize its existing appropriative water rights (Objective #5), providing for underground storage of surface water via ASR in conformance with the Santa Cruz Mid-County GSP (Objective #6), implementing state policy favoring integrated regional water management (Objective #11), and considering other related actions or activities that would be foreseeable if the Proposed Project is approved (Objective #12) (see Table 8-5). Additionally, Alternative 2 would not meet the objective to facilitate opportunities within the City and regionally for conjunctive use of the City's surface water and groundwater (Objective #4), given that water transfers would not be implemented under this alternative.

Given the above, Alternative 2 would not fully support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers) and Element 2 (active recharge of regional aquifers via ASR) to deliver a safe, adequate (i.e., filling the worst-year water supply gap), reliable and environmentally sustainable water supply (Objective #3). Some amount of water supply gap would remain under Alternative 2 (see Table 8-5) and the City would not be able to contribute as much to regional conjunctive use, as compared to the Proposed Project. While the City could somewhat contribute to groundwater basin recovery in the Santa Cruz Mid-County Groundwater Basin through some ASR operations, but no water transfers to neighboring agencies, it would not contribute to groundwater basin recovery in the Santa Margarita Groundwater Basin under this Alternative, given that new ASR facilities could not be sited outside of the areas served by the City.

### 8.4.4 Alternative 3: All Proposed Project Components Except Aquifer Storage and Recovery

Alternative 3 is described below, followed by a discussion of its impacts relative to the Proposed Project and its ability to meet the project objectives.

#### 8.4.4.1 Description

Alternative 3 includes most components of the Proposed Project, as summarized above in the No Project Alternative, except there would be no ASR (see Table 8-1). Therefore, Alternative 3 would not include Beltz ASR facilities or other new ASR facilities within or beyond the areas served by the City. Alternative 3 accordingly also

would not include the City obtaining the State Water Resources Control Board's approval of the addition of underground storage supplements on any of its water-right permits or licenses. All other modeling conditions for Alternative 3 are consistent with the Proposed Project.

### 8.4.4.2 Impact Analysis

#### Biological Resources

**Fisheries Impacts**

Based on the modeling included in Appendix D-3, the long-term operational effects of Alternative 3 on habitat conditions for steelhead and coho are nearly identical to those of the Proposed Project and involve an improvement of habitat conditions for these species relative to baseline conditions, as described in Impact BIO-1A. Alternative 3 has the same negative effect as the Proposed Project (relative to the baseline) to rearing habitat index in wet years for coho in Laguna Creek (a 2.7% decline) (see Appendix D-3, Table 7). Additionally, there would be a 4.2% decline in the adult migration index for coho downstream of the Tait Diversion in critically dry years that would not result from the Proposed Project (see Appendix D-3, Table 6); this decline is somewhat reduced as compared to Alternatives 1 and 2. The decline in the adult migration index for coho downstream of the Tait Diversion in Alternative 3 is most likely a result of more frequent restrictions on migration bypass flows due to lower storage levels in Loch Lomond Reservoir under Alternative 3 in early winter in a limited number of years compared to the Proposed Project (see Figure 8-1).

Similar to the Proposed Project, the above habitat effects are not likely to be biologically meaningful and would not be considered "substantial" under CEQA standards of significance or meet any of the significance thresholds under CEQA. Specifically, changes of this magnitude 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 the San Lorenzo River or, substantially reduce the number or restrict the range of coho. Additionally, as concluded in Appendix D-3, with the implementation of Operational Practice #6 as part of Alternative 3, potential adverse water temperature effects on steelhead and coho due to an increase in frequency of reservoir spills would be avoided. Therefore, Alternative 3 would also have a less-than-significant impact on steelhead and coho during operations, but habitat conditions below the Tait Diversion would be somewhat reduced under Alternative 3 relative to the Proposed Project.

Alternative 3 would realize some of the benefits of the Proposed Project to biological resources due to improved conditions for fish in the San Lorenzo River, Newell Creek and the North Coast streams with the implementation of the Agreed Flows. This Alternative would also result in improved fish passage and/or fish screening at the Felton Diversion and Tait Diversion during operations (see Impact BIO-1A). As Alternative 3 would also include the Tait Diversion and Coast Pump Station improvements, it would result in similar potentially significant construction impacts on special-status fish and would require the same mitigation measures as the Proposed Project (see Impact BIO-1A) to reduce the impacts to less-than-significant levels.

**Other Biological Resource Impacts**

Other long-term operational impacts of Alternative 3 on other special-status species (Impacts BIO-1B and BIO-1C), riparian and sensitive habitat (Impact BIO-2), jurisdictional aquatic resources (Impact BIO-3), and wildlife movement (Impact BIO-4) are also expected to be less than significant, similar to the Proposed Project given that the difference in residual flows with Alternative 3 would be minimal relative to 2018 baseline conditions.

Additionally, the potentially significant impacts associated with constructing new or upgraded infrastructure components with Alternative 3 would be somewhat reduced for impacts related to special-status wildlife or nesting birds (Impact BIO-1B), given that no ASR facilities would be constructed with this alternative. All other potentially significant impacts associated with constructing new or upgraded infrastructure components with Alternative 3 would be similar to those of the Proposed Project, as these impacts relate to the intertie improvements and the Felton and Tait Diversion improvements, which would also be implemented under Alternative 3. These potentially significant impacts include those related to other special-status plants species (Impacts BIO-1C), riparian and sensitive habitat (Impact BIO-2), and jurisdictional aquatic resources (Impact BIO-3). Alternative 3 would require the same mitigation measures identified as the Proposed Project to reduce these potentially significant impacts to less-than-significant levels.

### Other Impacts

As indicated above, the ASR upgrades and improvements would not be constructed under Alternative 3. Therefore, most other potentially significant impacts associated with constructing and/or operating new or upgraded infrastructure facilities identified in this EIR would be somewhat reduced with this Alternative (see Table 8-6), including those related to cultural resources (Impacts CUL-1, CUL-2, and CUL-3), paleontological resources (Impact GEO-4), hazardous materials release (Impact HAZ-2), alteration to drainage patterns (Impact HYD-3), permanent or temporary increase in noise in excess of standards (Impact NOI-2), vibration (Impact NOI-3), and new or expanded facilities (Impact UTL-1). The potentially significant impact associated with conflict with a groundwater plan (Impact HYD-2) would be avoided with Alternative 3, as this localized impact would only result with ASR facilities, which would not be constructed under this alternative. Likewise, the potentially significant impact associated with conversion of farmland and forest land (Impact LU-2) would be avoided with Alternative 3, as this impact would only result with new ASR facilities. The significant unavoidable construction noise impact due to well drilling activities for the new ASR facilities and the Beltz 9 ASR facility (Impacts NOI-1 and UTL-1) would be avoided under this alternative as no well drilling for these facilities would be required under Alternative 3. Alternative 3 would require most of the same mitigation measures identified as the Proposed Project to reduce the above potentially significant impacts to less-than-significant levels, with the exception of the mitigation measures to address Impact HYD-2 and Impact LU-2.

Potentially significant impacts related to seismic hazards (Impact GEO-1) would be reduced to less than significant under Alternative 3, as this impact relates to ASR facilities, which would not be included in Alternative 3. Therefore, MM-GEO-1 would not be required to reduce this impact. In addition, most other impacts related to the Proposed Project (identified as less than significant) would also be somewhat reduced under Alternative 3 as shown in Table 8-6, given the reduced facility construction and operation.

However, Alternative 3 would not realize the same benefits of the Proposed Project to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2). During the recreational use period from March 1 to mid-October, on average there are approximately 12% of days under baseline conditions where a full season of boating and related operations do not occur because lake levels fall below approximately 564 feet amsl in March, at the beginning of the season. In comparison, under Alternative 3, on average there would be approximately 10.2% of days where a full season of boating and related operations would not occur because lake levels fall below approximately 564 feet amsl in March (see Table 8-4). Similar to the Proposed Project, the impact of Alternative 3 on recreational uses at Loch Lomond Reservoir would also be beneficial given that it would improve conditions for boating compared to existing conditions; however, the improvement under Alternative 3 would be less than for the Proposed Project.

As the Alternative 3 would not include ASR, it would not have as much of a potential to contribute sustainability benefits in the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin, whereas the Proposed Project would have such potential (see Impact HYD-2). Lastly, Alternative 3 would not provide as much additional water supply and would therefore not meet projected demand in the areas served by the City during currently constrained dry periods (see Table 8-6) (see Impact UTL-2). In contrast to the beneficial impact of the Proposed Project, the Alternative 3 water supply impact would also likely be potentially significant and unavoidable until an alternative source of water supply is developed.

#### 8.4.4.3 Ability to Meet Project Objectives

While Alternative 3 would technically meet the project objective to provide flow conditions that are protective of coho and steelhead within all streams from which the City diverts water (Agreed Flows) (Objective #2), it is possible that without ASR operations the City would not be able to comply with the Agreed Flows at certain times and therefore Alternative 3 would only moderately meet this objective. Under Alternative 3, the City would have to rely on surface water sources more heavily, as compared to the Proposed Project.

Alternative 3 would fully meet the project objectives regarding facilitating opportunities within the City and regionally for conjunctive use of the City's surface water and groundwater through transfers (Objective #4), removal of operational constraints on City water rights that do not explicitly recognize direct diversion (Objective #7), and improved fish passage and/or screening at the Felton and Tail Diversions and addressing operational deficiencies at the Tait Diversion and Coast Pump Station (Objectives #9 and #10). However, given that no ASR facilities, including Beltz ASR, would be implemented under Alternative 3 it would only moderately meet objectives related to: improving the operational flexibility of the City's system (Objective #1), supporting the implementation of the City's Water Supply Augmentation Strategy (Objective #3), finding more options for where and how the City can utilize its existing appropriative water rights (Objective #5), implementing state policy favoring integrated regional water management (Objective #11) and considering other related actions or activities that would be foreseeable if the Proposed project is approved (Objective #12) (see Table 8-5). Additionally, Alternative 3 would not meet the objective to provide for underground storage of surface water via ASR in conformance with the Santa Cruz Mid-County GSP (Objective #6). Alternative 3 may not meet the objective of allowing for additional time for the City to fully reach beneficial use in existing water-rights permits at Felton. Water diverted at Felton to underground storage via ASR may be an element of maximizing use of the Felton permits (Objective #8).

Given the above, Alternative 3 would not fully support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers) and Element 2 (active recharge of regional aquifers via ASR) to deliver a safe, adequate (i.e., filling the worst-year water supply gap), reliable and environmentally sustainable water supply (Objective #3). Some amount of water supply gap would remain under Alternative 3 (see Table 8-2) and the City would not be able to contribute as much to regional conjunctive use, as compared to the Proposed Project. While the City could somewhat contribute to groundwater basin recovery in both the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin under this Alternative, with the implementation of water transfers that contribution would be limited without ASR facilities.

# 8.5 Environmentally Superior Alternative

The CEQA Guidelines (Section 15126.6[a]) requires that an EIR's analysis of alternatives identify the "environmentally superior alternative" among all of those considered. In addition, Section 15126.6(e)(2) states that if the environmentally superior alternative is the No Project Alternative, the EIR must also identify an environmentally superior alternative among the other alternatives. Furthermore, Public Resources Code Sections 21002 and 21081 require lead agencies to adopt feasible mitigation measures or feasible alternatives in order to substantially lessen or avoid otherwise significant adverse environmental effects, unless specific economic, legal, social, technological, or other conditions make such mitigation measures or alternatives infeasible.

Table 8-6 presents a comparison of project impacts between the Proposed Project and the alternatives. The No Project Alternative would reduce or avoid impacts to some environmental resources, as would Alternatives 1, 2, and 3. Additionally, the significant unavoidable construction noise impact due to well drilling activities for the new ASR facilities and the Beltz 9 ASR facility (Impacts NOI-1 and UTL-1) would be avoided under the No Project Alternative, and Alternatives 1 and 3 as no well drilling for these facilities would be required under these alternatives. However, none of the alternatives would realize the same benefits of the Proposed Project to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2). Specifically, the beneficial impacts of the Proposed Project related to recreational uses due to increased lake levels at Loch Lomond Reservoir (see Impact REC-2) would be potentially significant and unavoidable for the No Project Alternative and Alternative 1, and while this impact under Alternatives 2 and 3 would also be beneficial, the improvement of conditions for boating under these alternatives would be less than for the Proposed Project. Additionally, the alternatives would not provide sufficient additional water supply to meet projected demand in the areas served by the City during currently constrained dry periods (see Impact UTL-2), and this impact would be potentially significant and unavoidable for all of the alternatives until an alternative source of water supply is developed. Given this, the No Project Alternative is not the environmentally superior alternative and therefore an environmentally superior alternative among the other alternatives does not need to be identified under CEQA Guidelines Section 15126.6(e)(2).

Regardless, the City has concluded that the Proposed Project is the environmentally superior alternative. Most importantly, because none of the alternatives includes the full panoply of the components of the Proposed Project (such as water transfers and ASR) intended to facilitate regional groundwater stabilization and conjunctive use, the Proposed Project has the greatest environmental benefit to regional groundwater conditions. In addition, the Proposed Project would avoid the potentially significant and unavoidable water supply impact of all of the alternatives and the potentially significant and unavoidable recreation impact of the No Project Alternative and Alternative 1 and would reduce all impacts to less-than-significant levels with identified mitigation measures, with the exception of temporary construction noise impacts from ASR well-drilling activities. In the City's judgment, the groundwater benefits of the Proposed Project outweigh in importance the limited significant and unavoidable noise impacts associated with temporary ASR well-drilling activities. Given the enormous importance of stabilizing groundwater basins in California, as the Legislature found in enacting the Sustainable Groundwater Management Act, the City is unable to conclude that the short-term noise impacts of the Proposed Project compel the conclusion that alternatives with fewer or no ASR facilities are environmentally superior to the Proposed Project.

## Table 8-5. Ability of Alternatives to Meet Project Objectives

| Objective | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| **Objective #1:** Improve the flexibility with which the City operates the water system to facilitate the City's ability to meet drinking water demand while providing flow conditions protective of coho and steelhead. | Excellent | Poor | Poor | Moderate | Moderate |
| **Objective #2:** Provide flow conditions that are protective of coho and steelhead within all streams from which the City diverts water, as negotiated with CDFW and NMFS during the preparation of the pending ASHCP, which is the habitat conservation plan being developed under the FESA and CESA. | Excellent | Poor | Moderate | Moderate | Moderate |
| **Objective #3:** To improve the City's limited storage and support the implementation of the City's Water Supply Augmentation Strategy Element 1 (passive recharge of regional aquifers via water transfers and exchanges) and Element 2 (active recharge of regional aquifers via ASR) in order to deliver a safe, adequate, reliable and environmentally sustainable water supply. | Excellent | Poor | Poor | Moderate | Moderate |
| **Objective #4:** Facilitate opportunities within the City and regionally for conjunctive use of the City's surface water rights in combination with groundwater, including by addressing significant barriers to implementing conjunctive use due to the place of use associated with the City's water-right permits and licenses to, among other things, assist in implementation of the "Water Transfers/In Lieu Groundwater Recharge" element of the Santa Cruz Mid-County Groundwater Basin GSP. | Excellent | Poor | Poor | Poor | Excellent |
| **Objective #5:** Provide more options for where and how the City can utilize its existing appropriative water rights. | Excellent | Poor | Poor | Moderate | Moderate |
| **Objective #6:** Provide for the underground storage of surface water primarily to support more reliable and improved water supply by allowing the City to use such stored water during dry periods and also contribute to the protection of groundwater quality from seawater intrusion per the Santa Cruz Mid-County Groundwater Basin GSP and to allow for the implementation of the "Aquifer Storage and Recovery" element of the Santa Cruz Mid-County Groundwater Basin GSP. | Excellent | Poor | Poor | Moderate | Poor |

Table 8 5. Ability of Alternatives to Meet Project Objectives (continued)

| Objective | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| **Objective #8:** Allow additional time for the City to fully reach beneficial use under existing water-right permits at Felton. | Excellent | Poor | Poor | Excellent | Poor |
| **Objective #9:** Improve fish screening at the Felton Diversion and Tait Diversion and improve fish passage at the Felton Diversion. Consideration of fish passage improvements at Tait Diversion would be incorporated into future projects as required. | Excellent | Poor | Poor | Excellent | Excellent |
| **Objective #10:** Address reliability and operational deficits at the Tait Diversion and Coast Pump Station to meet other project objectives. | Excellent | Poor | Poor | Excellent | Excellent |
| **Objective #11:** Implement state policy favoring integrated regional water management by involving the City and other local agencies in "significantly improving" the "reliability of water supplies" by "diversifying water portfolios, taking advantage of local and regional opportunities, and considering a broad variety of water management strategies," specifically by making more extensive conjunctive use of the surface-water, groundwater and groundwater-storage resources available to the City and, when Agreed Flows and City demands are met, making excess surface water under the City's surface-water rights available to neighboring agencies who are dependent on overdrafted groundwater basins. (Water Code Section 10531(c).) | Excellent | Poor | Poor | Moderate | Moderate |
| **Objective #12:** Consider other related actions or activities that would be foreseeable as a logical part in a chain of contemplated actions should the Proposed Project be approved, including facilities that would provide for ASR, water transfers, and water exchanges. | Excellent | Poor | Poor | Moderate | Moderate |

**Notes:** ASHCP = Anadromous Salmonid Habitat Conservation Plan; ASR = aquifer storage and recovery; CDFW = California Department of Fish and Wildlife; CESA = California Endangered Species Act; FESA = Federal Endangered Species Act; NMFS = National Marine Fisheries Service.

## Table 8-6. Comparison of Impacts from the Alternatives

| Environmental Issue | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| *Air Quality* | | | | | |
| **Impact AIR-1: Conflict with an Applicable Air Quality Plan.** Construction and operation of the Proposed Project would result in emissions of criteria pollutants, but would not exceed adopted thresholds of significance and therefore would not conflict with the MBARD's AQMP. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact AIR-2: Criteria Pollutant Emissions.** Construction and operation of the Proposed Project would result in emissions of criteria pollutants, but would not exceed adopted thresholds of significance, violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, the Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact AIR-3: Exposure of Sensitive Receptors.** Construction and operation of the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact AIR-4: Result in Other Emissions Adversely Affecting a Substantial Number of People.** Construction and operation of the Proposed Project would not result in other emissions that would adversely affect a substantial number of people. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact AIR-5: Cumulative Air Quality Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to air quality, with the exception of substantial pollutant concentrations (Significance Standard C), but the Proposed Project's contribution to this impact would not cumulatively considerable. | LS | NI | NI | LS ↓ | LS ↓ |

Table 8 6. Comparison of Impacts from the Alternatives (continued)

| Environmental Issue | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| *Biological Resources* | | | | | |
| **Impact BIO-1A: Special-Status Species – Fish.** 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. | LSM | NI | LS | LSM ↓ | LSM |
| Operation of the Proposed Project would not have such substantial adverse effects. | LS | SU | LS ↑ | LS ↑ | LS ↑ |
| **Impact BIO-1B: Special-Status Species – Other Wildlife.** 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. | LSM | NI | NI | LSM ↓ | LSM ↓ |
| Operation of the Proposed Project would not have such substantial adverse effects. | LS | LS | LS | LS | LS |
| **Impact BIO-1C: Special-Status Species – Plants.** 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. | LSM | NI | NI | LSM ↓ | LSM ↓ |
| Operation of the Proposed Project would not have such substantial adverse effects. | LS | LS | LS | LS | LS |
| **Impact BIO-2: Riparian and Sensitive Vegetation Communities.** 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. | LSM | NI | NI | LSM ↓ | LSM ↓ |
| Operation of the Proposed Project would not have such substantial adverse effects. | LS | LS | LS | LS | LS |

Table 8 6. Comparison of Impacts from the Alternatives (continued)

| Environmental Issue | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| **Impact BIO-3: Jurisdictional Aquatic Resources.** Construction of the Proposed Project could have a substantial adverse effect on state or federally protected wetlands through direct removal, filling, or hydrological interruption. | LSM | NI | NI | LSM ↓ | LSM ↓ |
| Operation of the Proposed Project would not have such substantial adverse effects. | LS | LS | LS | LS | LS |
| **Impact BIO-4: Wildlife Movement.** 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. | LS | NI | NI | LS | LS |
| Operation of the Proposed Project would have no adverse effects. | NI | NI | NI | NI | NI |
| **Impact BIO-5: Cumulative Biological Resources Impacts.** 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. | LS | NI | NI | LS ↓ | LS ↓ |
| Operation of the Proposed Project would not result in a significant cumulative impact. | LS | LS | LS | LS | LS |
| *Cultural Resources and Tribal Cultural Resources* | | | | | |
| **Impact CUL-1: Historic Built Environment Resources.** Construction of some of the Proposed Project infrastructure components could cause a substantial adverse change in the significance of historical built environment resource. | LSM | NI | NI | LSM ↓ | LSM ↓ |
| **Impact CUL-2: Archaeological Resources and Human Remains.** Construction of Proposed Project infrastructure components could cause a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, and/or disturb human remains. | LSM | NI | NI | LSM ↓ | LSM ↓ |
| **Impact CUL-3: Tribal Cultural Resources.** Construction of Proposed Project infrastructure components could cause a substantial adverse change in the significance of a tribal cultural resource. | LSM | NI | NI | LSM ↓ | LSM ↓ |

Table 8 6. Comparison of Impacts from the Alternatives (continued)

| Environmental Issue | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| **Impact CUL-4: Cumulative Cultural Resource and Tribal Cultural Resource Impacts.** Construction of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to cultural resources and tribal cultural resources, but the Proposed Project's contribution would not be cumulatively considerable. | LS | NI | NI | LS ↓ | LS ↓ |
| *Geology and Soils* | | | | | |
| **Impact GEO-1: Seismic Hazards.** Construction and operation of the Proposed Project could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking, landslides, or seismic related ground failure, including liquefaction and associated lateral spreading. | LSM | NI | NI | LSM ↓ | LS |
| **Impact GEO-2: Unstable Geologic Unit or Soils.** Construction and operation of the Proposed Project would not cause adverse effects involving landslides or be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Proposed Project, and potentially result in on- or off-site landslide, slope failure/instability, subsidence, or collapse. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact GEO-3: Expansive Soil.** Construction of Proposed Project infrastructure components may be located on expansive soil, as defined by the 2019 California Building Code, but would not create substantial direct or indirect risks to life or property caused in whole or in part by the Proposed Project's exacerbation of the existing environmental conditions. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact GEO-4: Paleontological Resources.** Construction of the Proposed Project could potentially directly or indirectly destroy a unique paleontological resource or site during construction. However, the Proposed Project would not directly or indirectly destroy a unique geological feature. | LSM | NI | NI | LSM ↓ | LSM ↓ |

Table 8 6. Comparison of Impacts from the Alternatives (continued)

| Environmental Issue | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| **Impact GEO-5: Cumulative Geologic Hazards.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to geology and soils, but the Proposed Project's contribution to this impact would not be cumulatively considerable. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact GEO-6: Cumulative Paleontological Resources Impacts.** Construction of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to paleontological resources, but the Proposed Project's contribution to this impact would not be cumulatively considerable. | LS | NI | NI | LS ↓ | LS ↓ |
| *Greenhouse Gas Emissions* | | | | | |
| **Impact GHG-1: Greenhouse Gas Emissions.** Construction and operation of the Proposed Project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact GHG-2: Conflict with an Applicable Greenhouse Gas Reduction Plan.** Construction and operation of the Proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact GHG-3: Cumulative Greenhouse Gas Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would result in a significant cumulative impact related to greenhouse gas emissions, but the Proposed Project's contribution to this impact would not be cumulatively considerable. | LS | NI | NI | LS ↓ | LS ↓ |
| *Hazards, Hazardous Materials and Wildfire* | | | | | |
| **Impact HAZ-1: Routine Transport, Use, Production, or Disposal of Hazardous Materials.** Construction and operation of the Proposed Project would require use and transportation of petroleum products and small quantities of hazardous materials but would not result in a significant hazard to the public or environment. | LS | NI | NI | LS ↓ | LS ↓ |

Table 8 6. Comparison of Impacts from the Alternatives (continued)

| Environmental Issue | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| **Impact HAZ-2: Upset and Release of Hazardous Materials.** Construction of the Proposed Project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. | LSM | NI | NI | LSM ↓ | LSM ↓ |
| **Impact HAZ-3: Hazardous Materials Near Schools.** Construction and operation of the Proposed Project could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. | LSM | NI | NI | LSM ↓ | LSM ↓ |
| **Impact HAZ-4: Impair Emergency Response.** Construction of the Proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact HAZ-5: Wildfire Hazards.** Construction and operation of the Proposed Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires; however, some programmatic components may be located in or near state responsibility areas. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact HAZ-6: Cumulative Hazardous Materials and Emergency Response Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to routine transport, use, disposal, or accidental release of hazardous materials, or related to interference with an adopted emergency response plan or emergency evacuation plan. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact HAZ-7: Cumulative Wildfire Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, could result in a significant cumulative impact related to exposing people or structures to a significant risk of loss, injury, or death involving wildland fires, but the Proposed Project's contribution would be less than cumulatively considerable. | LS | NI | NI | LS ↓ | LS ↓ |

Table 8 6. Comparison of Impacts from the Alternatives (continued)

| Environmental Issue | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| *Hydrology and Water Quality* | | | | | |
| **Impact HYD-1: Surface Water Quality Standards and Waste Discharge Requirements.** Construction and operation of the Proposed Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality. In addition, the Proposed Project would not conflict with or obstruct implementation of a water quality control plan related to surface water. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact HYD-2: Decrease Groundwater Supplies, Interfere with Groundwater Recharge, or Conflict with Groundwater Plan.** Construction and operation of the Proposed Project would not decrease groundwater supplies or interfere substantially with groundwater recharge such that sustainable groundwater management of the basin would be impeded. However, the Proposed Project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan by potentially affecting local groundwater quality or causing restrictive effects in nearby wells. | LSM | NI | NI | LSM ↓ | LS |
| **Impact HYD-3: Alteration to the Existing Drainage Pattern of the Site Area.** Construction and operation of the Proposed Project could not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (a) result in substantial erosion or siltation on or off site; (b) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; (c) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (d) impede or redirect flood flows. | LSM | NI | NI | LS | LSM |
| **Impact HYD-4: Flood, Tsunamis, and Seiche Zones.** Construction and operation of the Proposed Project in flood hazard, tsunami, or seiche zones would not risk release of pollutants due to project inundation. | LS | NI | NI | LS ↓ | LS ↓ |

Table 8 6. Comparison of Impacts from the Alternatives (continued)

| Environmental Issue | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| **Impact HYD-5: Cumulative Hydrology and Water Quality Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to hydrology and water quality. | LS | NI | NI | LS ↓ | LS ↓ |
| *Land Use, Agriculture and Forestry, and Mineral Resources* | | | | | |
| **Impact LU-1: Conflicts with Land Use Plans, Policies, or Regulations.** Construction and operation of the Proposed Project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact LU-2: Conversion or Loss of Farmland or Forest Land and Conflicts with Zoning for Agricultural Land, Forest Land, or Timberland.** Construction of the Proposed Project could convert prime, unique, or important agricultural land to non-agricultural use, convert forest land to non-forest land, conflict with existing zoning for agricultural or timber production uses or conflict with a Williamson Act contract. | LSM | NI | NI | LS | LS |
| **Impact LU-3: Loss of Mineral Resources.** Construction of the Proposed Project could potentially result in the location of infrastructure components on lands containing mineral resources in existing quarries; however, the Proposed Project would not result in the loss of availability of a mineral resource. | LS | NI | NI | LS | LS |
| **Impact LU-4: Cumulative Land Use Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to conflicts with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact LU-5: Cumulative Agriculture and Forestry Impacts.** Construction of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would result in a significant cumulative impact related to loss of Farmland and forest land, but the Proposed Project's contribution would not be cumulatively considerable. | LS | NI | NI | LS | LS |

Table 8 6. Comparison of Impacts from the Alternatives (continued)

| Environmental Issue | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| **Impact LU-6: Cumulative Mineral Resource Impacts.** Construction of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to loss of availability of mineral resources. | LS | NI | NI | LS | LS |
| *Noise* | | | | | |
| **Impact NOI-1: Substantial Permanent Increase in Ambient Noise Levels.** Operation of the Proposed Project would result in generation of a substantial permanent increase in ambient noise levels during long-term operation in the vicinity of one of the programmatic infrastructure components. | LSM | NI | NI | LSM | LSM |
| **Impact NOI-2: Substantial Increase in Ambient Noise Levels in Excess of Standards.** Construction of the Proposed Project would result in generation of a substantial temporary increase in ambient noise levels in the vicinity of some project and programmatic infrastructure components in excess of applicable standards established in local general plans or noise ordinances.<br><br>Operation of the Proposed Project would result in generation of a substantial permanent increase in ambient noise levels in the vicinity of one of the programmatic infrastructure components in excess of applicable standards. | SU[1]<br><br>LSM | NI<br><br>NI | NI<br><br>NI | SU ↓[1]<br><br>LSM | LSM<br><br>LSM |
| **Impact NOI-3: Groundborne Vibration.** Construction of the Proposed Project would result in the potential generation of excessive groundborne vibration or groundborne noise levels. | LSM | NI | NI | LSM ↓ | LSM ↓ |
| **Impact NOI-4: Cumulative Noise Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to noise and vibration. | LS | NI | NI | LS ↓ | LS ↓ |
| *Recreation* | | | | | |
| **Impact REC-1: Conflicts with Existing Recreational Uses.** Operation of the Proposed Project would not change or conflict with existing recreational uses. | B | SU | SU | B ↓ | B ↓ |

Table 8 6. Comparison of Impacts from the Alternatives (continued)

| Environmental Issue | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| **Impact REC-2: Increased Use of Existing Parks or Recreational Facilities.** Operation of the Proposed Project would not increase the use of parks or recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact REC-3: Cumulative Recreation Impacts.** Operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not change or conflict with existing recreational uses, but could increase the use of parks or recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. However, the Proposed Project's contribution would not be cumulative considerable. | LS | LS ↑ | LS ↑ | LS ↑ | LS ↑ |
| *Transportation* | | | | | |
| **Impact TRA-1: Conflict with Program, Plan, Ordinance, or Policy Addressing the Circulation System.** Construction and operation of the Proposed Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact TRA-2: Vehicle Miles Traveled.** Construction and operation of the Proposed Project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b) or cause an increase in VMT which is greater than 15% below the regional average VMT. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact TRA-3: Geometric Design Hazards.** Construction and operation of the Proposed Project would not substantially increase hazards due to a geometric design feature or incompatible use. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact TRA-4: Emergency Access.** Construction of the Proposed Project would not result in inadequate emergency access. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact TRA-5: Cumulative Transportation Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to transportation. | LS | NI | NI | LS ↓ | LS ↓ |

Table 8 6. Comparison of Impacts from the Alternatives (continued)

| Environmental Issue | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| *Utilities and Energy* | | | | | |
| **Impact UTL-1: New or Expanded Facilities.** Construction and operation of the Proposed Project would result in new or expanded water facilities that would result in significant impacts, but would not require or result in new or expanded wastewater treatment, storm drainage, electric power, natural gas, or telecommunications facilities or a new sewer trunk line. | SU[1] | NI | NI | SU ↓[1] | LSM |
| **Impact UTL-2: Water Supplies.** Operation of the Proposed Project would provide sufficient water supplies to serve the Proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years. | B | SU | SU | SU | SU |
| **Impact UTL-3: Wastewater Treatment Capacity.** Operation of the Proposed Project would have adequate wastewater treatment capacity to serve project demand. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact UTL-4: Solid Waste Generation.** Construction and operation of the Proposed Project would not generate solid waste in excess or state or local standards, or of the capacity of local infrastructure, or impair attainment of solid waste reduction goals. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact UTL-5: Compliance with Solid Waste Regulation.** Construction and operation of the Proposed Project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact UTL-6: Result in Wasteful, Inefficient or Unnecessary Consumption of Energy Resources.** Construction and operation of the Proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact UTL-7: Conflict with an Applicable Renewable Energy or Energy Efficiency Plan.** Construction and operation of the Proposed Project would not result in conflicts with or otherwise obstruct a state or local plan for renewable energy or energy efficiency. | LS | NI | NI | LS ↓ | LS ↓ |

Table 8 6. Comparison of Impacts from the Alternatives (continued)

| Environmental Issue | Proposed Project | No Project Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| **Impact UTL-8: Cumulative Water and Wastewater Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to water and wastewater. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact UTL-9: Cumulative Landfill Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to landfill capacity. | LS | NI | NI | LS ↓ | LS ↓ |
| **Impact UTL-10: Cumulative Energy Impacts.** Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to energy. | LS | NI | NI | LS ↓ | LS ↓ |

**Notes:** B = beneficial impact; NI = no impact; LS = less than significant; LSM = less than significant with mitigation; SU = significant and unavoidable; ↑ = greater; ↓ = lesser.

[1] The significant unavoidable construction noise impact associated with the Proposed Project (Impact NOI-2), and related impact of new or expanded utilities (Impact UTL-1) would result only from well drilling activities at new ASR facilities and at Beltz 9 ASR facility. The impacts of all other components and construction activities would be either less than significant or less than significant with mitigation.

# 8.6 References

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# 9 List of Preparers

## 9.1 City of Santa Cruz Staff

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| Chris Coburn | Deputy Water Director/Operations Manager |
| Sarah Easley Perez | Principal Planner |
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## 9.2 City of Santa Cruz Consultant Team

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| Hydrologic Modeling | Shawn Chartrand, Balance Hydrologics, Inc. |
| Fisheries Modeling | Jeff Hagar, Hagar Environmental Science (see Section 9.3) |
| EIR Preparer | Dudek (see Section 9.3) |
| CEQA Legal Review | James Moose, Remy Moose Manley, LLP |
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