# 3 Project Description

This chapter provides a detailed description of the proposed Laguna Creek Diversion Retrofit Project (Proposed Project), and includes information about the location and setting; existing facilities and operations; background; project purpose and objectives; project design and components; construction schedule and activities; operations and maintenance; approvals and permits; and the Santa Cruz Water Department's (SCWD) Standard Construction Practices. The chapter is based on the 30% design drawings and Basis of Design Report prepared by the City of Santa Cruz's (City's) consulting design engineer, as well as other background studies prepared for the Proposed Project (B&V 2020a, 2020b; Wood Rodgers 2002).

## 3.1 Project Location and Setting

The Proposed Project would be located in the community of Bonny Doon, California, in unincorporated Santa Cruz County, approximately 7 miles northwest of downtown Santa Cruz (straight-line distance) at an elevation of approximately 620 feet. The project site is located within the U.S. Geological Survey's Davenport Quadrangle. Figure 3-1 shows the project location and vicinity.

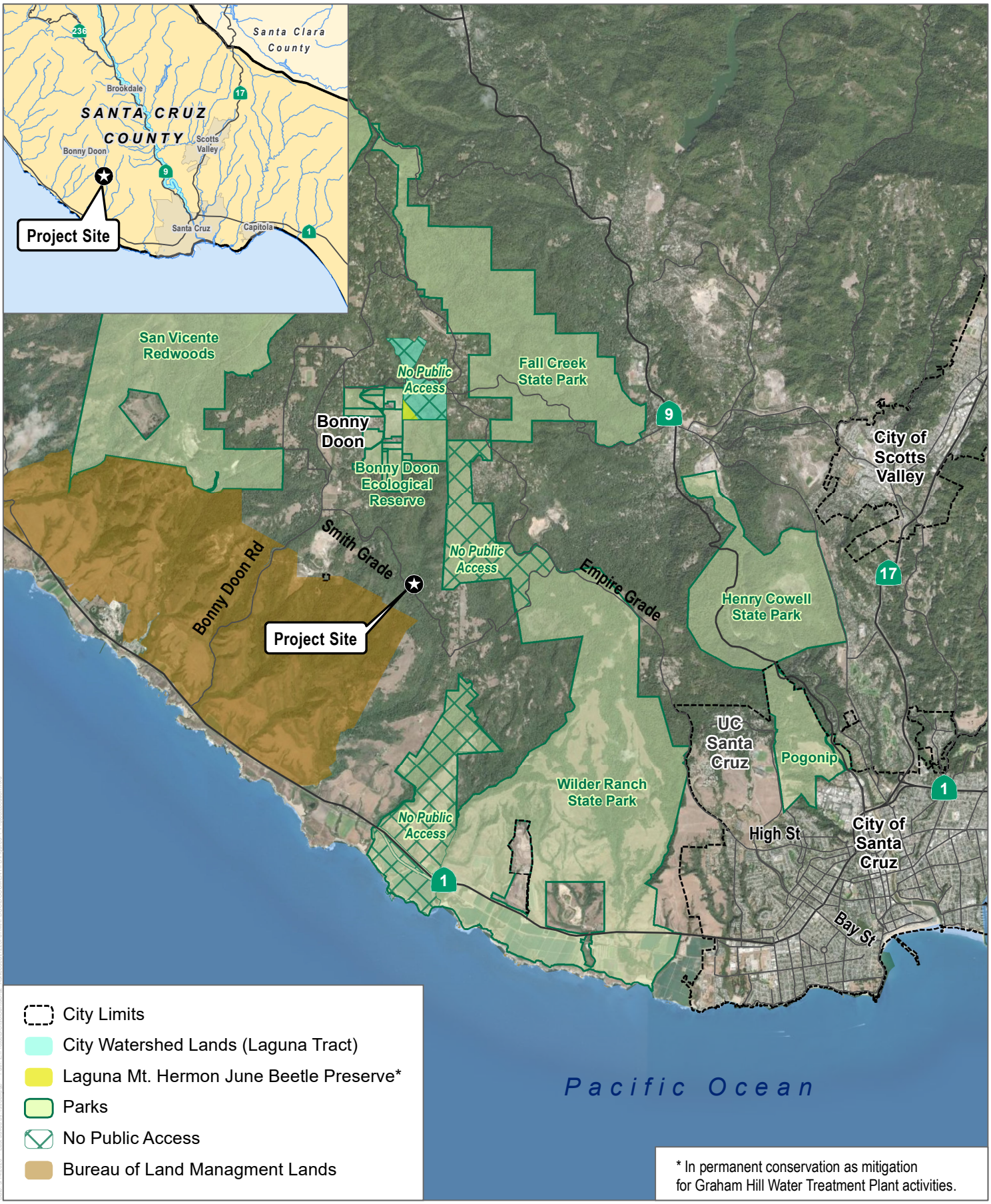
As shown in Figure 3-2, the approximately 2.1-acre project site contains the Laguna Creek Diversion Facility (Facility), which is operated by the SCWD and provides water from Laguna Creek to the SCWD's water supply system. The project site consists of the existing dam, intake structure, diversion flume, transmission pipeline, control building, access roads, and downstream plunge pool, as well as the surrounding area. Laguna Creek passes under Smith Grade approximately 400 feet downstream from the Facility through a box culvert maintained by the County of Santa Cruz (County). The project site is approximately 0.1 miles upstream of the confluence with Reggiardo Creek and approximately 4 miles upstream of the Pacific Ocean.

The project site is located on a portion of Assessor's Parcel Number 06210103, which is privately owned land. The City has deeded access and rights for operation of the Facility per an agreement from January 1889 (Henneuse 1889). Access to the project site is provided by three unimproved access roads off Smith Grade. The project site is approximately 5 miles from State Route 1 via Bonny Doon Road to Smith Grade, and approximately 12 miles from State Route 17 via State Route 1, Bay Street, and High Street/Empire Grade to Smith Grade.

The project site is surrounded predominantly by undeveloped, heavily forested land, with scattered, low-density residential development to the east, south, and west. The nearest residence to the project site is located along the southern edge of the project site, approximately 100 feet to the south across Smith Grade.

## 3.2 Existing Facilities

The Facility is one of four surface water collection/diversion sources supplying raw water to the City's North Coast System. The North Coast System provides approximately 15% to 35% of the City's overall water supply and contributes to systemwide operational flexibility due to its favorable water quality and year-round reliability. The Facility consists of a concrete and limestone dam and diversion flume, a reinforced concrete intake structure and debris screen, two debris/sediment-control bypasses with pneumatically operated gate valves, an electronic diversion control valve, and a control building. The Facility directs water from Laguna Creek into the North Coast System through the Laguna Pipeline.




SOURCE: ESRI 2020, City of Santa Cruz 2020

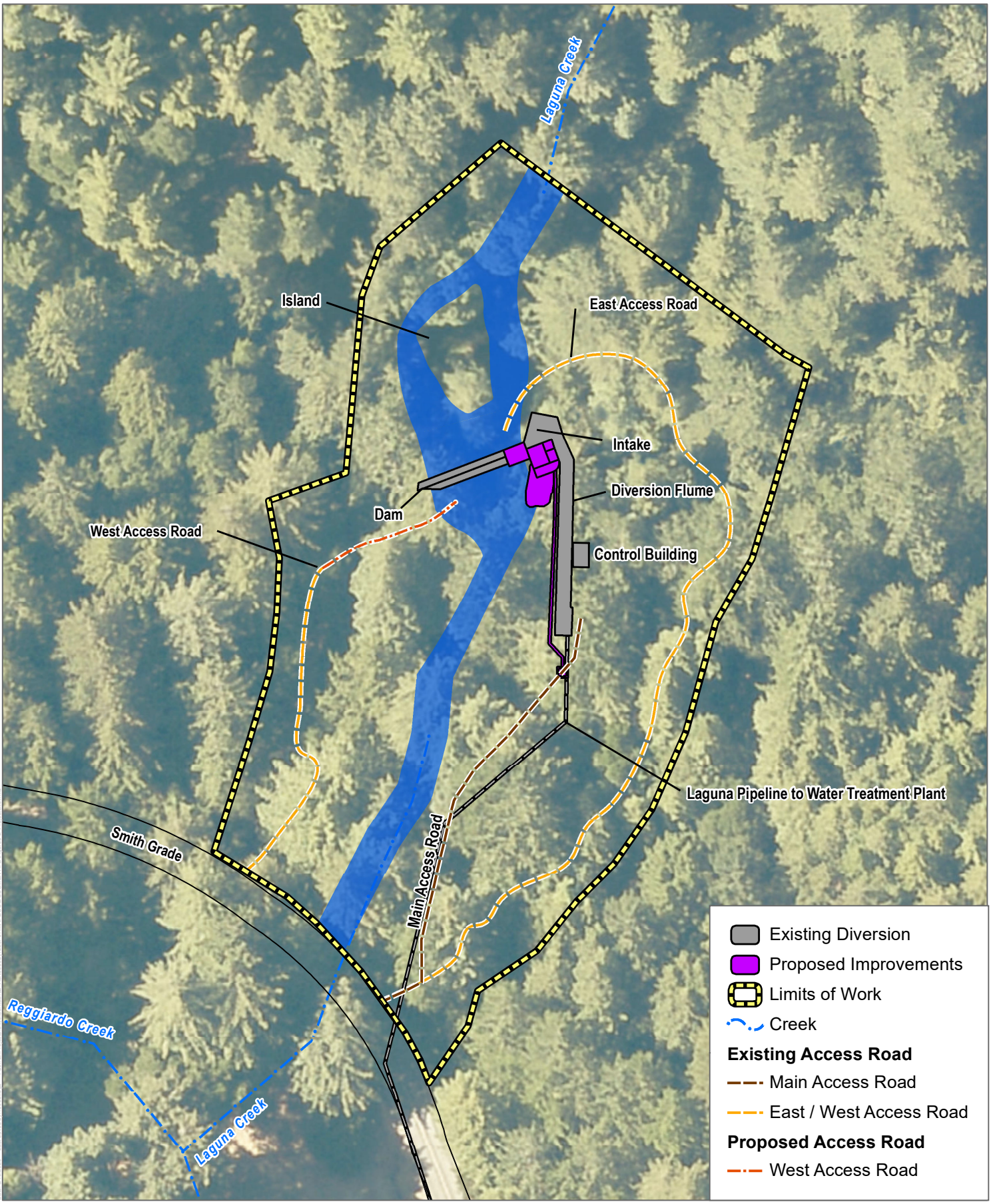
DUDEK

0 4,200 8,400 Feet

**FIGURE 3-1**

Project Location and Vicinity

Laguna Creek Diversion Retrofit Project - EIR




SOURCE: ESRI 2020, City of Santa Cruz 2020, Black & Veatch 2020

DUDEK

0 35 70 Feet

**FIGURE 3-2**

Project Site

Laguna Creek Diversion Retrofit Project - EIR

The Facility was completed in 1890 and originally included the dam and diversion flume constructed from native stone and the cast iron Laguna Pipeline. Improvements have been installed subsequently to aid in the continued functionality of the Facility, including the installation of an iron sluice gate in 1897, replacement of the original Laguna Pipeline and construction of a chlorination station (now the control building) in 1965, modification of the intake structure and access platform built at the dam's left/east abutment in 1980, installation of sediment-control bypass valves in the dam in 1983, installation of a cribwall upstream of the intake in 1986, and fiberglass decking and handrails on the diversion flume in 2002.

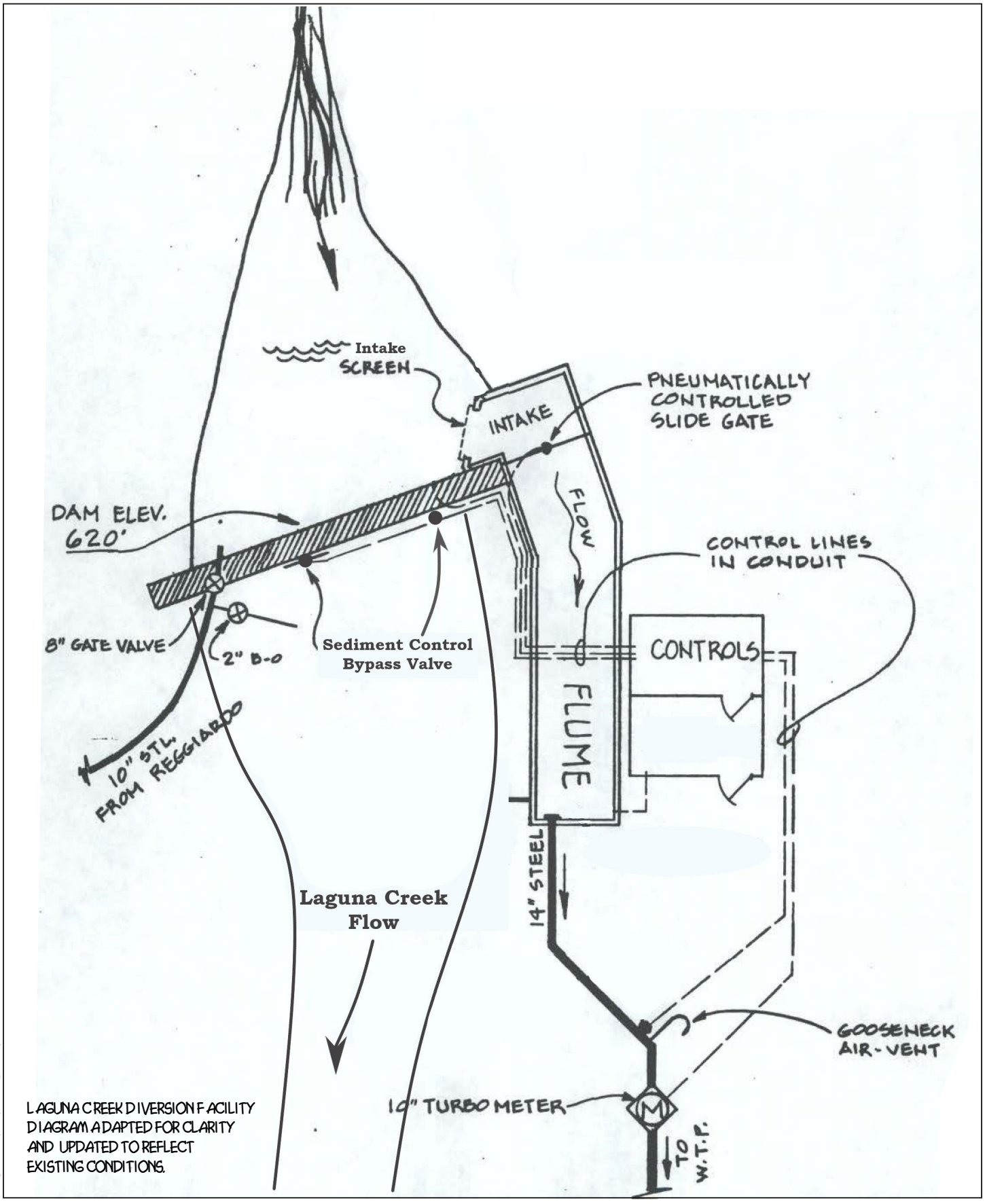
As described in Section 4.5, Cultural Resources, the dam is a physical example of pioneering water management infrastructure in California and appears individually eligible for listing in the National Register of Historic Places, the California Register of Historical Resources, and the Santa Cruz County Historic Resources Inventory, and therefore, is considered a historic resource for the purposes of the California Environmental Quality Act (CEQA).

Figure 3-3 shows the Facility layout and flows through the Facility. The dam is approximately 60 feet long and 12 feet high and spans the entire width of the Laguna Creek channel. The dam creates an impoundment upstream that passively directs water into a screened intake structure on the upstream side of the dam's left/east abutment (from the vantage point of looking downstream). The intake structure is connected to a concrete diversion flume that is approximately 100 feet long by 4 feet wide and channels the diverted water into the Laguna Pipeline, which connects to the North Coast Pipeline. The 14-inch-diameter steel Laguna Pipeline extends for approximately 3.8 miles from the diversion to the North Coast Pipeline. Overall, water is conveyed approximately 13 miles from the diversion at the Facility via gravity to the City's Coast Pump Station, where it is pumped for treatment at the City's Graham Hill Water Treatment Plant.[1]

The rate at which water is diverted from Laguna Creek to the Laguna Pipeline is controlled either manually or via the City's supervisory control and data acquisition (SCADA) system by an electronic diversion control valve and measured by a propeller-type flowmeter. This system allows adjustments to the diversion rate to ensure that adequate in-stream flow levels are maintained downstream of the Facility, as further described below. A control building houses operational equipment. Piping from the flume also allows for flow to be returned to Laguna Creek to meet in-stream flow requirements, as needed.

The City has historically diverted water from Laguna Creek as needed throughout the year based on established pre-1914 senior water rights. However, since 2007, the City has limited its diversions to maintain beneficial in-stream flows suitable for various salmonid life stages within the downstream anadromous reaches of Laguna Creek, based on ongoing agreements with the California Department of Fish and Wildlife (CDFW). Although the City is capable of diverting up to approximately 7 cubic feet per second based on current infrastructure, during the various salmonid life stages, water diversions are limited from Laguna Creek and often unavailable, as flows naturally recede below the agreed upon in-stream flows of 2 cubic feet per second. There is no typical diversion rate or diversion season, since the available flows are highly dependent on rainfall volume and timing.

[1] The Reggiardo Creek Pipeline conveys water diverted from the Reggiardo Creek diversion, approximately 850 feet from the Facility to the upstream side of the dam. Water from Reggiardo Creek was intended to supplement the water supply at Laguna Creek. The pipeline includes a valve at the discharge of the pipe allowing flow to be regulated and a 10-inch blowoff pipe. The Reggiardo Creek Pipeline is not physically connected to the Facility and is not a component of the Facility.




SOURCE: City of Santa Cruz 2020

**FIGURE 3-3**

Existing Schematic for the Facility

Laguna Creek Diversion Retrofit Project - EIR

The existing operation and maintenance of the Facility includes:

- Weekly station checks. When the City is diverting water from Laguna Creek, the weekly site visit also includes cleaning the intake screens.
- Raw water sampling every other week.
- Monthly visits to clean and calibrate turbidimeters, read the flow meters, test the generator, and conduct general landscape maintenance.
- Annual visits to calibrate flow meters, maintain valves and actuators, and service the generator.
- Road maintenance every 5 years.

The Facility includes two sediment-control bypass valves in the dam that are operated pneumatically to move sediment past the dam. In 2007, the City started routine excavation of sediment behind the dam, consistent with the Streambed Alteration Agreement issued by CDFW for the purposes of sediment management at the site (Notification Number 1600-2013-0291-R3).

## 3.3 Project Background

SCWD serves approximately 24,535 connections in the approximately 20-square-mile service area, which includes the City of Santa Cruz, adjoining unincorporated areas of Santa Cruz County, a small part of the City of Capitola, University of California Santa Cruz, and coastal agricultural lands north of the City of Santa Cruz. The population within this service area is approximately 98,000 persons. The City's average water production is approximately 5 to 7 million gallons per day during the winter and approximately 7 to 10 million gallons per day during the summer. The Facility is a critical component of the City's water supply and operational and maintenance issues present challenges, as described below.

The dam has impounded sediment and debris in the upstream reservoir, causing the streambed to fill in to the crest of the dam. Nevertheless, the overall condition of the Facility is structurally sound, with no signs of major deterioration or structural defects, and it has adequate strength and stability for continued service (B&V 2018). The following operational constraints related to management of sediment, fisheries protection, and maintenance challenges have been identified:

- In-Stream Transport of Sediment. The dam impedes natural movement of sediment downstream. Although two sediment-control bypass valves can be operated during periods of sediment transport (e.g., during storms) to allow sediment to pass through the dam, they are intermittently clogged with large materials during high-flow storm events and have limited capacity, resulting in sediment buildup behind the dam, often during one large storm event. Periodic dredging and sediment removal are required to conduct maintenance activities and to clear the intake screen of sediment.
- Fish Protection Consistent with Regulatory Requirements. The existing intake screen is aged and buried in sediment. The screen was designed to prevent entrainment of debris within the diverted water and has a woven-wire opening of approximately 0.5 inches. Weekly maintenance and cleaning of the existing intake screen is required to clear sediment from the intake structure when the Facility is in service.

The existing screen panels do not meet current regulatory requirements for screening of non-anadromous fish species; screen openings are too large to eliminate the potential for entrainment of juvenile fish and other aquatic organisms. Although federally or state-listed anadromous fish species are not present in the project area due to several downstream natural barriers, Laguna Creek contains populations of rainbow trout (*Oncorhynchus mykiss*), prickly sculpin (*Cottus asper*), and coastrange sculpin (*Cottus aleuticus*). Fish habitat downstream of the dam has also been degraded by sediment impoundment.

- Maintenance, Safety, and Access. The location of the existing control building impairs access to the diversion structures by mechanized maintenance equipment, the diamond-plate cover on the existing flume requires confined-space entry procedures when staff need to enter the structure, and the Facility does not have permanent fall-protection infrastructure in place for use during dam maintenance.

Since the early 2000s, CDFW has corresponded with the City requesting improvements to sediment management and fisheries protection at the Facility. Potential improvements were analyzed at a programmatic level in the 2005 Program Environmental Impact Report (EIR) for the North Coast System Repair and Replacement Project (SCWD 2005). The 2005 Program EIR considered improvements to be implemented over a period of 15 to 20 years, including replacement of the existing intake screen with a self-cleaning screen system that meets CDFW specifications for protection of fish and other aquatic organisms, an automatically operated spillway gate based on changes in flow and turbidity to help flush sediment downstream, and pipeline rehabilitation or replacement. As analyzed in the 2005 Program EIR, construction activities involved a cofferdam and a temporary creek bypass system, dewatering, earthwork, reinforced concrete demolition and construction, metal work fabrication and installation, stone protection, and miscellaneous electrical and mechanical services. To address the aforementioned operational and maintenance constraints, the City is now pursuing the implementation of the Proposed Project and has developed project-level definition of the Proposed Project, which is the subject of this project-level EIR.

Furthermore, the City's Anadromous Salmonid Habitat Conservation Plan, which is under preparation, includes improvements at the Facility as a biological objective associated with operating facilities to enable unimpaired sediment transport dynamics. Specifically, the draft plan calls for modifying the Facility at Laguna within 10 years of the signed Incidental Take Permit to provide sediment transport during high flows. The Proposed Project is intended to meet this biological objective.

# 3.4 Project Purpose and Objectives

The project purpose and need and project objectives are described below.

## 3.4.1 Purpose and Need

The Proposed Project is necessary to allow the City's continued ability to utilize the Facility for delivery of high-quality water to the City's water treatment plant. The purpose of the Proposed Project is to improve the reliability of the City's water supply by addressing sediment transport issues, fisheries protection requirements, safe access, and changing environmental conditions (B&V 2020a). Specifically, the Proposed Project would prevent impounded sediment from clogging the intake and disrupting the function of the Facility. To address the operational and maintenance constraints described in Section 3.3, Project Background, the City has developed the Proposed Project, which is the subject of this project-level EIR. The Proposed Project would address these issues as follows:

- Instream Transport of Sediment. The Proposed Project would change the type and orientation of the water intake so that sediment would not obstruct water intake through the screen. Although the dam would remain in place and most of the existing sediment would remain impounded behind the dam, the new system would be designed to allow for the movement of sediment past the dam in sync with the transport capacity of the creek, restoring natural fluvial functions of sediment transport and deposition that benefit downstream fisheries and aquatic habitats.
- Fish Protection Consistent with Regulatory Requirements. The Proposed Project would provide appropriate fish screening and improved ability to meet instream flow requirements.
- Maintenance, Safety, and Access. The Proposed Project would provide a flexible approach to manage the quantity and quality of water that can be diverted, minimize the use of power, and provide for economical and operational feasibility. The Proposed Project would also allow for fine-tuned control of diversion rates and would include improvements for safe access to the Facility.

### 3.4.2 Project Objectives

Section 15124 of the CEQA Guidelines indicates that EIR project descriptions must include a statement of the objectives sought by the lead agency for that project. A clearly written statement of objectives helps the lead agency develop a reasonable range of alternatives to evaluate in the EIR and aids the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of that project. The objectives for the Proposed Project are as follows:

- Protect a critical water supply for the City by addressing constraints at the Facility to maintain full system functionality and minimize service interruptions.
- Improve environmental conditions both at the intake with upgraded screen technology for fish protection and in downstream reaches by facilitating sediment movement to support aquatic species habitat.
- Improve overall operational efficiency by incorporating technology that allows for fine-tuned control of diversion rates to enhance the SCWD's ability to meet instream flow requirements and regulation of water levels downstream of the Facility.
- Improve safety and access at the Facility to facilitate the City's ability to maintain the Facility and conduct operational activities.
- Implement a project that is relatively cost-effective in terms of both capital and operation/maintenance costs.

## 3.5 Project Design and Components

The project design and key elements of the Proposed Project are described below.

### 3.5.1 Project Overview

As described above, the Proposed Project would improve the reliability of the City's diversion by allowing natural sediment transport past the dam and protecting fish species and habitat. The Proposed Project would allow for the regulation of flows up to the maximum diversion rate at the Facility as described above (see Section 3.2, Existing Facilities) while enhancing the ability to fine-tune diversion rates in order to maintain sustained diversions while continuing to meet in-stream flow requirements.

Once operable, the Proposed Project would concentrate the Laguna Creek flows over a newly created notch in the dam where the new Coanda screen intake structure would be installed on the downstream side of the dam's left/east abutment (from the vantage point of looking downstream). The Coanda screen would allow a controlled portion of the streamflow to fall through the screen while excluding a majority of sediments. The flow would collect in a chamber connected to a diversion pipeline that would extend approximately 100 feet downstream, alongside the existing diversion flume, and connect with the City's existing transmission pipeline. The rate of diversion would be regulated by a new diversion control valve. A separate blowoff piping system with valve and actuator would be installed to allow for the clearing of fine sediment that falls through the Coanda screen and into the chamber so that the sediment does not enter the intake pipeline. The control valve equipment would be installed within a concrete valve control vault along the creek bank.

As shown in Figure 3-4, Figure 3-5, and Figure 3-6, the Proposed Project would involve construction of a new intake structure with an embedded Coanda screen at the downstream face of the dam's left/east abutment. Other components of the Proposed Project would include installation of intake structure appurtenances, a new valve control vault and diversion pipeline, new monitoring and control equipment, riprap bank stabilization along the creek bank, and site access and safety improvements. Table 3-1 lists the key Proposed Project components that are described further below.

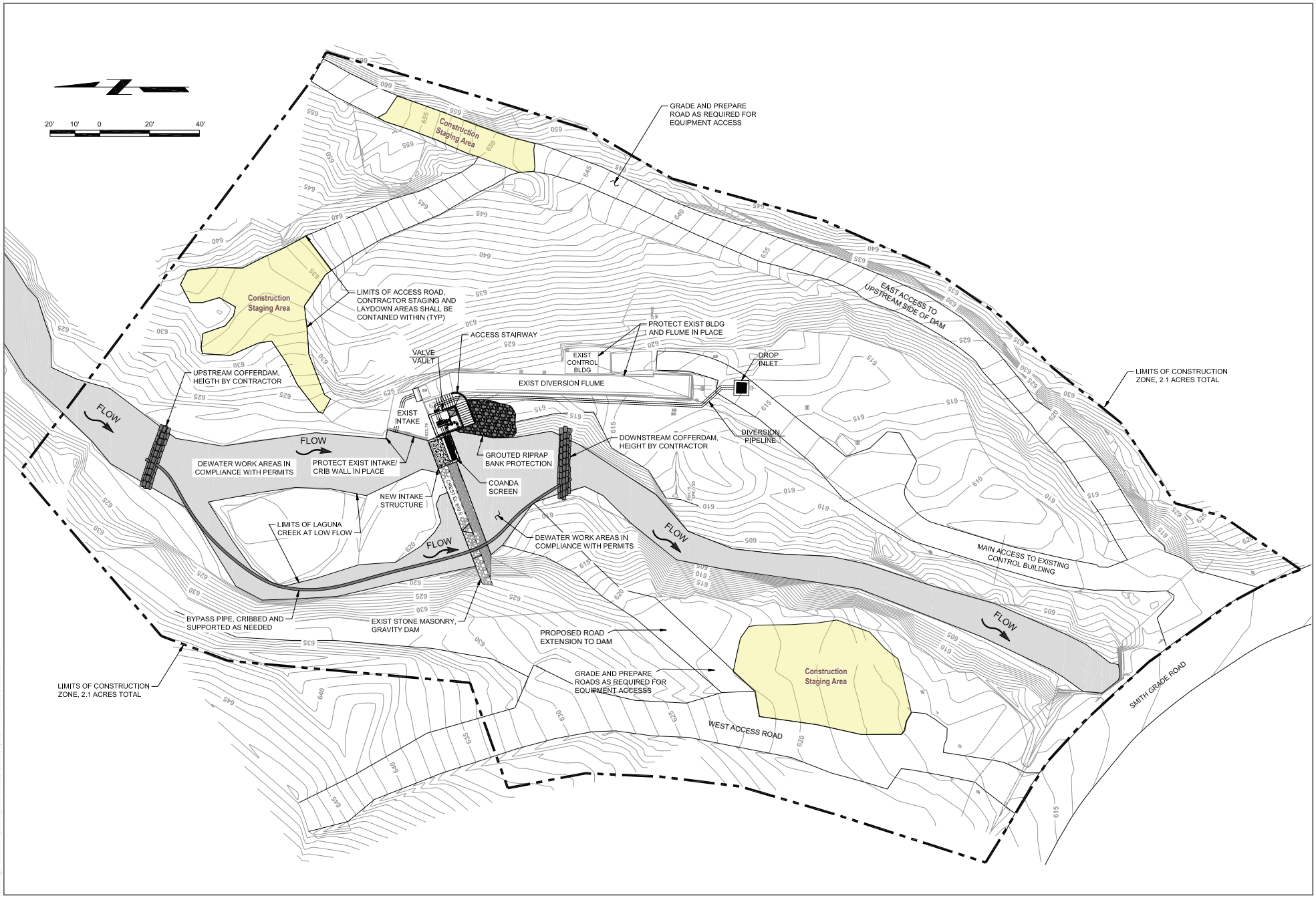
### 3.5.2 New Coanda Screen Intake Structure

The Coanda screen technology offers an efficient way of screening fine materials from diverted water with minimal clogging and maintenance. The screen is considered self-cleaning (Coanda Intakes, Ltd. n.d.). The design and orientation of the screen allows the natural flow of the creek (hydraulic action) to keep material moving over it, and requires no moving parts. The design criteria for the Coanda screen are based on CDFW's fish screen criteria, which include considerations for structure placement, approach velocity, sweeping velocity, screen openings and porosity, and screen construction (CDFW 2002). See Figure 3-6 for images of the Coanda screen technology.

The Coanda screen technology features a screen that is steeply inclined at the downstream face of a dam. A Coanda screen consists of finely spaced, wedge-shaped wires that deflect a portion of the water to a collection chamber below the screen. Flows pass over the crest of the dam and across a solid steel plate, referred to as an accelerator plate because it creates an increase in the flow rate as water passes over the dam crest. A portion of the water then flows across and through the slotted Coanda screen panel. Flow that passes through the screen is collected in a collection chamber and by a diversion pipe to conveyed to the Laguna Pipeline. See Section 3.5.4, Other Components, for additional description of the diversion pipe.

The Coanda screen would be embedded within a concrete support structure on the downstream side of the dam's left/east abutment, with the face of the screen sloped steeply downward such that water would pass over it at a high velocity, transporting sediment and debris downstream while skimming thin layers of water that would be directed into the collection chamber below.

Installation of the Coanda screen would require a portion of the dam crest to be notched to channel the creek flow over the screen. When the creek flow is relatively low, approximately 7 cubic feet per second or less, water would flow entirely through the notch and over the screen. At higher creek flows, water would cascade over the dam crest as well as through the notch and over the screen.



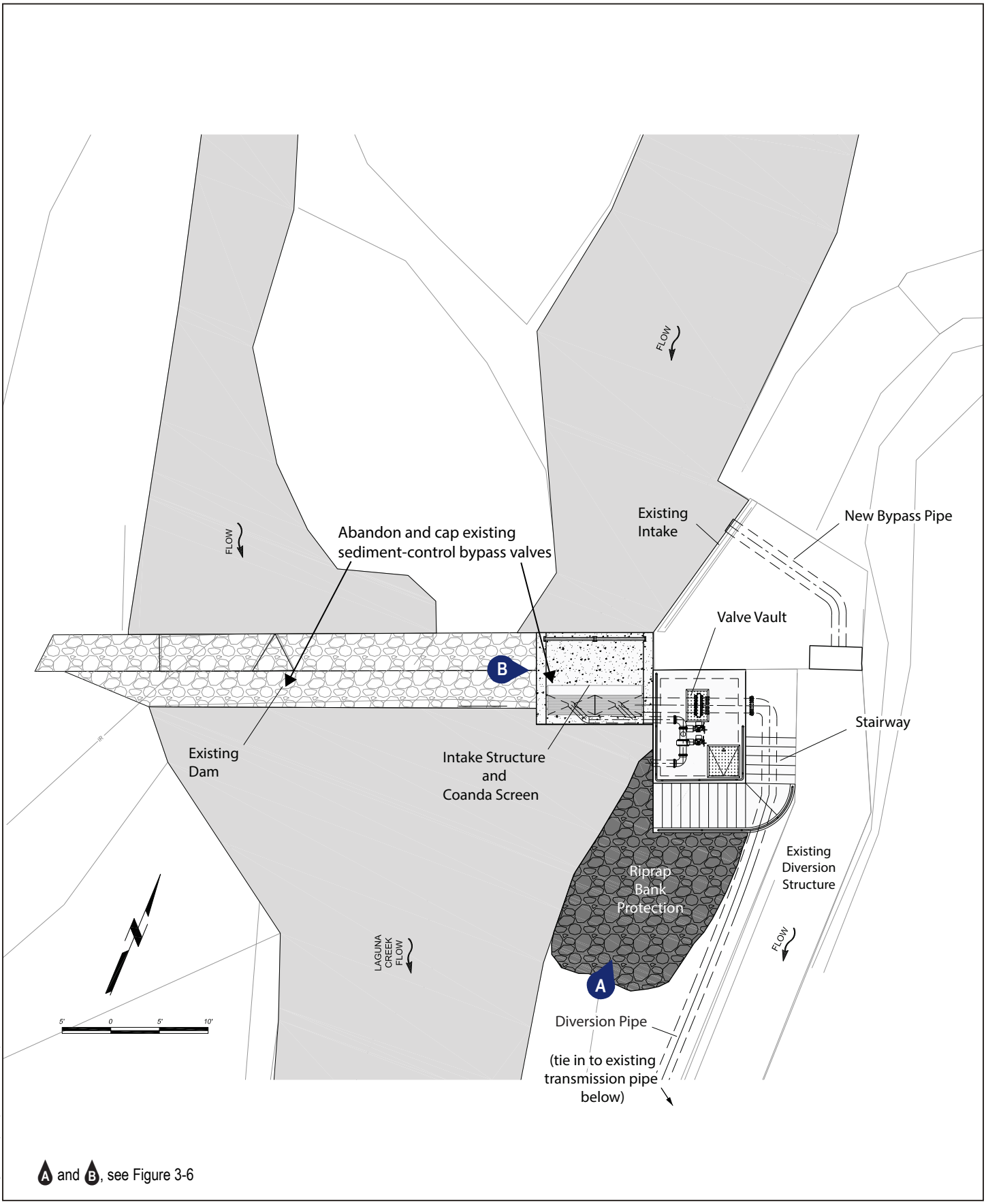

SOURCE: City of Santa Cruz 2020, Black & Veatch 2020

**REVISED FIGURE 3-4**

## Proposed Site Plan and Construction Access/Staging

Laguna Creek Diversion Retrofit Project - EIR

DUDEK



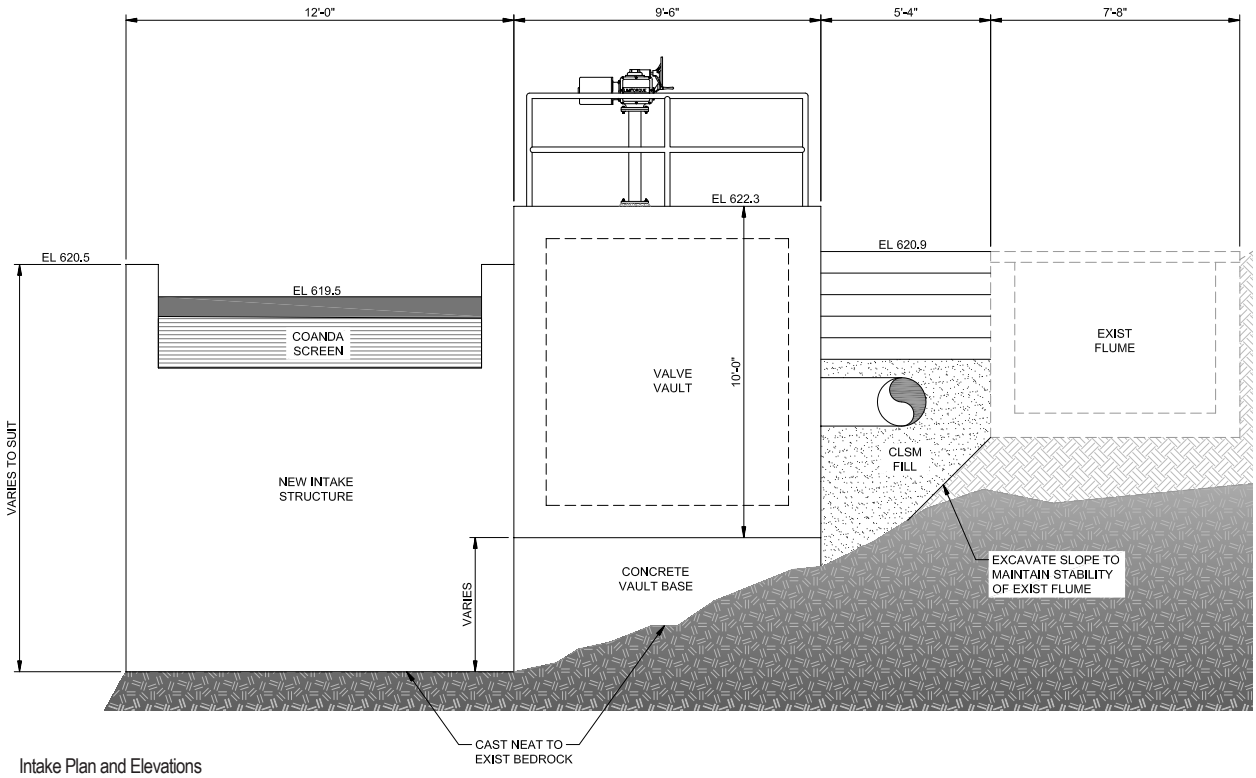

SOURCE: City of Santa Cruz 2020, Black & Veatch 2020

**FIGURE 3-5**

Proposed Project (Plan View)

Laguna Creek Diversion Retrofit Project - EIR

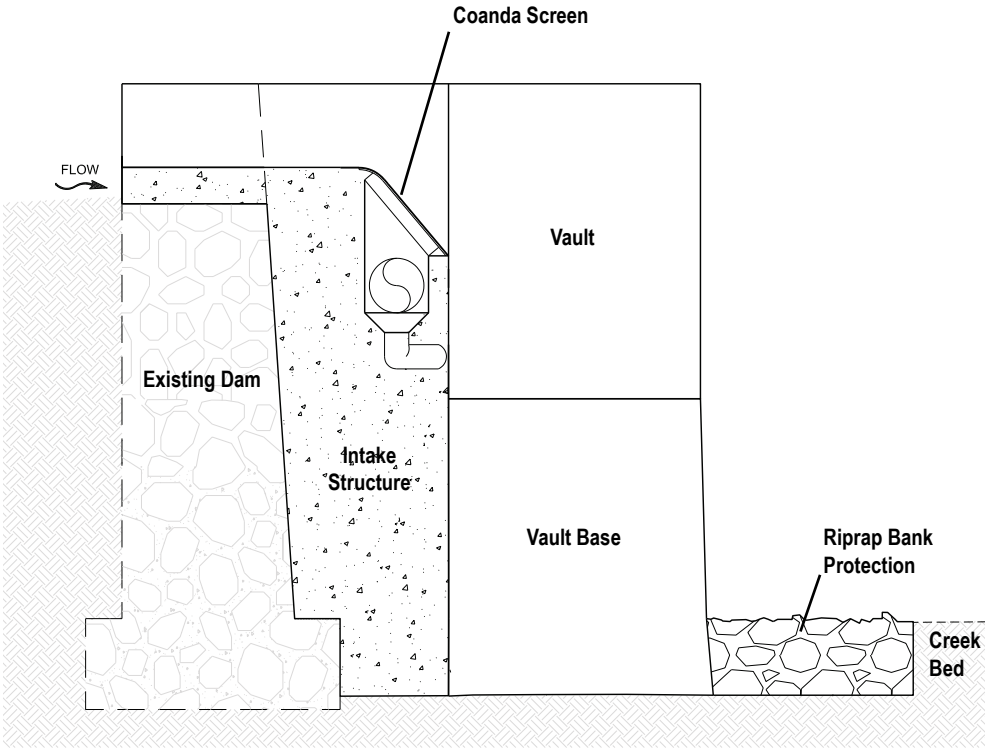
DUDEK




Intake Plan and Elevations

A from Figure 3-5

*(Dimensions are approximate.)*




Proposed Facility Improvements (Cross-section)

B from Figure 3-5

SOURCE: City of Santa Cruz 2020, Black & Veatch 2020

**FIGURE 3-6**

Proposed Project (Section Views)

Laguna Creek Diversion Retrofit Project - EIR

DUDEK

Table 3-1. Key Proposed Project Components

| Component | Description | Approximate Dimensions (if applicable) |
|---|---|---|
| *New Coanda Screen Intake Structure* | | |
| Support Structure | Reinforced concrete structure tied (or doweled) into existing dam | 12 feet wide × 10 feet long × 12 feet tall |
| Coanda Screen | Stainless steel wedge wire plate screen (0.5-millimeter openings), accelerator plate, pre-manufactured housing | 10 feet wide × 2.5 feet long |
| Other Features | Collection chamber, portion of diversion pipe (described below), sediment blowoff system | — |
| *Valve Vault and Creek Bank Components* | | |
| Valve Vault and Control Valves | Cast-in-place concrete, reinforced; access hatches/actuator pedestals; butterfly valve and electric actuator on the diversion pipe | 9.5 feet wide × 11.5 feet long x 10 feet tall |
| Vault Base | Structural concrete | Approximately 10 cubic yards (matching footprint of valve vault) |
| Access Stairs and Safety Improvements | Cast-in-place concrete, reinforced; removable handrails to provide access to downstream plunge pool; task lighting | Approximately 5 cubic yards (5 feet wide x 20 feet long) |
| Riprap Bank Stabilization | Grouted facing class riprap, 12-ounce non-woven geotextile fabric | Approximately 25 cubic yards (20 feet long x 10 feet wide) |
| *Other Components* | | |
| Diversion Pipe | Welded steel pipe and polyvinyl chloride pipe | 100 feet long, 18-inch-diameter pipe |
| Pre-Cast Drop Inlet | Pre-cast concrete inlet with 2-foot sump and cast-iron cover connecting new diversion pipe to existing Laguna Pipeline | 4 feet × 4 feet × 8 feet deep |
| Power and Controls | Conduits, conductors, devices | — |
| *Modified Existing Components* | | |
| Existing Intake | Install pipe for emergency diversion and backfill with concrete | — |
| Existing Sediment-Control Bypass Valves | Abandoned in place and capped | — |

Source: B&V 2020a.

A notch approximately 16 inches below the top of the dam and 12 feet wide would be cut in the dam. The new concrete intake support structure would be installed along the length of the notch at the downstream face of the dam. It would be approximately 12 feet wide (along the face of the dam), 12 feet tall, and 10 feet long (as it projects downstream from the dam). It would be tied to the bedrock and the face of the dam with rebar anchors that would be doweled into the dam. See Section 3.6, Project Construction, for additional details.

The Coanda screen technology would allow the intake screen to function regardless of sediment accumulation and buildup within the reservoir (i.e., upstream impoundment). The Coanda screen would divert some water that passes through the screen while the flow over it would transport the majority of entrained sediment downstream. Specifically, sediment greater than 0.25-millimeter grain size (50% of the screen opening size), which (based on

previous sediment studies) characterizes the vast majority of the sediments found in Laguna Creek upstream of the Facility, would flow over the screen. Removal of smaller sediment that accumulates within the screen housing would be facilitated by a blowoff system incorporated into the design. Periodic manual brushing of the screen would occur to keep the intake operating as designed.

## 3.5.3 Valve Vault and Creek Bank Components

The valve vault and other improvements along the downstream side of the dam's left/east abutment (eastern creek bank) are described below.

### 3.5.3.1 Valve Vault

A concrete vault would be cast-in-place and installed along the eastern creek bank to house the control-valve equipment. The approximately 9.5-foot-wide by 11.5-foot-long valve vault would be installed along the creek bank along the left/east abutment of the dam and adjacent to the existing intake structure, in a location that is accessible to City staff for maintenance and operation. The valve vault base would be constructed of structural concrete and anchored to bedrock with rebar. A cement curb up to 12 inches in height may be installed along the top of the valve vault to confine the 100-year storm event within Laguna Creek and to keep new infrastructure from flooding.

As described above, water from the collection chamber below the Coanda screen would enter the diversion piping and then pass through the valve vault. Then the water would flow through the diversion pipe to the existing transmission pipeline as described further below. A new control valve would be installed to allow diversion rates to be regulated at fine intervals. The sediment blowoff piping would also be housed in the valve vault.

### 3.5.3.2 Access Stairs and Safety Improvements

The Proposed Project would include access and safety improvements including a cast-in-place concrete stairway (approximately 5 feet wide and 20 feet long) to provide access to the downstream plunge pool and guard rails at various locations within the Facility, such as along the creek bank, at the new intake structure, across the dam, and at the valve vault.

These improvements would allow City staff and contractors to safely conduct regular biotic surveys, collect water quality samples, as well as to access the Coanda structure and dam for maintenance purposes (such as Coanda screen removal and/or cleaning of the chamber). Other safety features would include anchorage points for fall safety and task lighting along the valve vault and stairs. The lighting would be on timers and switches to provide lighting during emergency work.

### 3.5.3.3 Riprap Bank Stabilization

Limited reinforcement of the creek bank may be necessary and may entail installation of riprap bank stabilization at the east side of the creek to protect the bank from erosion. Stabilization of an area approximately 20 feet long by 10 feet wide (approximately 25 cubic yards) may be required.

## 3.5.4 Other Components

Other components of the Proposed Project including the diversion pipe, pre-cast drop inlet, and power and controls are described below.

### 3.5.4.1 Diversion Pipe

The new intake would be linked to a new diversion pipe that would extend approximately 100 feet downstream, which would be placed underground parallel to the existing diversion flume. Water from the collection chamber would be diverted into the new diversion pipe that would connect to the existing Laguna Pipeline downstream of the flume.

### 3.5.4.2 Pre-Cast Drop Inlet

A sediment trap structure would be installed at the interconnection of the new diversion pipe and the existing Laguna Pipeline within a pre-cast drop inlet feature that would allow for sediment removal using a hydro-vacuum truck or a hand-held shop vacuum, if needed.

### 3.5.4.3 Power and Controls

The Proposed Project would include additional electro-mechanical equipment for operations and remote-control capabilities. New monitoring and control equipment, including turbidity sensors, water meters, valve actuators, and telecommunications, would be connected to the existing communications system and electrical distribution system on site to provide essential data for operations.

An in-line control valve and electric actuator would be included to regulate flow into the City's diversion downstream of the flume. New electrical circuits would be installed for powering, monitoring, and remotely operating the new control valve actuators. The Facility's existing electrical distribution and SCADA equipment are deemed sufficient to accomplish automation and control functions at the Facility. The existing control building and SCADA equipment would accommodate new equipment required by the Proposed Project. The existing single-phase electrical service and data-grade telephone line would continue to provide power supply and communication capabilities for diversion control and automation.

## 3.5.5 Modified Existing Components

The existing intake would be modified and decommissioned in place once the proposed improvements are implemented. A bypass pipe would be incorporated in the intake to allow for emergency diversion of water and the intake would be backfilled with concrete. This bypass pipe would extend from the intake to the existing diversion flume to allow water to be conveyed to the City's water treatment plant in the event that the new intake structure needs to be taken out of service for repair. A new cement curb up to 12 inches in height may be installed along the top of the existing intake to confine the 100-year storm event within Laguna Creek and to keep new infrastructure from flooding.

In addition, the two existing sediment-control bypass valves on the downstream face of the dam would be removed and the bypass pipes abandoned in place and capped as follows:

- At the dam's right/west sediment-control bypass valve (from the vantage point of looking downstream), the existing gate and actuator and its hood would be removed, and a blind flange—a circular steel plate covering the exposed end of the valve—would be installed on the end of the bypass pipe. The conduits and electrical components would also be removed including the metal conduit/cable across the face of the dam.
- The dam's left/east sediment-control bypass valve is at the location where the new intake structure would be installed. Prior to installation of the intake structure, the piece of the bypass pipe that protrudes from the dam and the actuator would be removed and the pipe would be backfilled with concrete.

# 3.6 Project Construction

This section describes the anticipated Proposed Project construction schedule, construction activities and methods, construction routes, spoils, equipment, and Standard Construction Practices.

## 3.6.1 Construction Schedule

Construction is projected to occur in 2021 upon completion of the environmental review process, approval of the Proposed Project by the City Council, and acquisition of the necessary permits. The duration of c~~C~~onstruction would ~~take place~~ occur over approximately 3 months. Initial activities including improvement of access roads, site preparation including tree removal, and mobilization would occur as early as March 2021, and in-creek construction activities ~~planned to~~ would occur during the low-flow period (between the months of June to October). Construction work would be performed from 7:00 a.m. to 5:00 p.m. on weekdays. Work outside of these hours, including weekend work is not anticipated. However, if it is required, work outside of these hours would require approval from the SCWD Director.

It is expected work crews would generally consist of a staff of 5 workers during normal construction activities, possibly increasing to approximately 10 workers during concrete placements.

## 3.6.2 Construction Activities

Construction activities would generally include the following phases, which are described further in the section below: (1) improvement of access roads, site preparation, and mobilization; (2) installation of the cofferdam and temporary creek bypass system; (3) construction of the Coanda screen intake structure, including dam preparation, foundation work, and concrete formwork, and installation of the intake screen, piping, and valves; (4) modification of the existing intake and sediment-control valves; (5) installation of the valve vault; (6) installation of electrical; (7) installation of the access stairs and riprap bank stabilization; and (8) startup and testing, site restoration, and construction closeout. No blasting or pile-driving is required for construction.

The anticipated sequencing of construction activities for the purpose of the analyses in this EIR is listed below:

- Equipment mobilization to the site using ground transportation and development of access roads and staging areas.
- Installation of the temporary streamflow bypass system.
- Excavation on the upstream and downstream sides of the dam and notching the top of the dam to accommodate the Coanda screen, anchoring to the bedrock, formation of the new intake structure form with cement, and installation of the Coanda screen.

- Modification of the existing intake structure and sediment-control valves.
- Installation of the new valve vault and new sediment blowoff and diversion piping.
- Installation of electrical components.
- Testing of the new system.
- Backfilling of void space between the new valve vault and existing covered diversion flume, installation of stairs, and placement of riprap in areas where creek bank protection is required.
- Removal of temporary facilities, demobilization, site restoration, and revegetation of disturbed areas.

### 3.6.2.1 Access Road Improvements, Site Preparation, and Mobilization

Three private, unpaved roads on the site provide existing access from Smith Grade, as shown in Figure 3-4. These roads may be improved to allow access of equipment to the site, which may entail limited tree removal to accommodate road widening, grading, compaction, and placement of aggregate.

The east access road would provide construction access to the upstream side of the dam. The main gate and access road are well graded and would provide access to the existing control building. The west access road would be extended by approximately 100 feet to provide construction access to the downstream plunge pool from the west side.

In addition, construction staging/laydown areas would be established in areas that are already fairly level along the access roads, as shown in Figure 3-4. Staging areas would be used for storage of materials and products, treatment and storage of spoils, and equipment laydown. Clearing and grubbing would be completed for these areas and for the work area on the east side of the dam to allow for installation of the valve vault and riprap bank stabilization. Up to 14 trees (approximately 12 coast redwoods and 2 tan oaks) may need to be removed. During construction startup, equipment and supplies would be mobilized to the site on trucks, including a mobile office and porta-potties.

In addition to the on-site staging areas described above, off-site staging areas on City of Santa Cruz property may be used for construction worker parking and/or storage of materials. These staging areas have been previously paved or graded and are along the construction access routes described in Section 3.6.2.9, Construction Routes, for the Proposed Project.

Based on the City's Standard Construction Practices, described further below in Section 3.6.3, Standard Construction Practices, best management practices would be installed where necessary to prevent soil migration into the creek channel; these best management practices would most likely include silt fence or straw wattles. Vegetation that is removed may be left on site at construction completion or hauled off site.

### 3.6.2.2 Cofferdam and Temporary Creek Bypass System

Construction would be performed in the summer and early fall when creek flows are typically at their lowest, and natural creek flows would be maintained at all times during construction by a temporary creek bypass system.

As shown in Figure 3-4, this system would consist of two cofferdams—one installed upstream and one downstream of the dam—and a 12-inch-diameter, approximately 240-foot-long high-density polyethylene bypass pipe. The cofferdam would be expected to consist of gravel-filled sacks and sandbags or an alternative technology such as an inflatable dam. Water would be impounded behind the upstream cofferdam and flow by gravity through the

bypass pipe around the dam to a location below the construction area to the lower cofferdam, where it would rejoin the creek. To accommodate equipment access to the downstream face of the dam, the bypass pipe would be anchored using sandbags and buried near the west access route for vehicles.

Once the creek bypass system is functional, dewatering and leakage control pump systems would be installed in the construction work areas. Between the upstream cofferdam and the dam, a sump pit would be excavated to at least 1 foot below the lowest excavation point, which would be in front of the existing intake structure so that the construction area could be isolated from seepage. Additional spot pumping would also occur at the downstream side of the diversion dam. Dewatering and leakage control pumps would be electric submersible and be powered with electricity from the control building. To manage water quality from dewatering efforts during excavation activities, discharge piping from dewatering pumps would be treated appropriately prior to discharge back into the creek channel.

#### 3.6.2.3 New Coanda Screen Intake Structure

The new Coanda screen intake structure would require excavation of creek materials upstream and downstream of the dam to allow the dam to be notched and the bedrock to be exposed, anchoring of the structure's foundation to the bedrock and dam, installation of rebar and pouring concrete for the structure, and placement of the Coanda screen and other intake components.

Excavation at the upstream side of the dam would be required to expose the base of the existing intake structure and the area along the dam where it would be notched for the new Coanda screen. Impounded materials upstream of the dam would be temporarily excavated approximately 3 feet at the deepest point along the left/east abutment and existing intake. A mini-excavator or similar equipment is expected to be used to move the material away from the structures at safe temporary cut slopes. The downstream side of the dam would also be excavated to the bedrock for the Coanda screen concrete structure and foundation for the new valve fault.

As shown in Figure 3-5 and Figure 3-6, a notch would be incised into the crest of the dam adjacent to the existing intake on the left/east side of the dam facing downstream; the dam would be notched approximately 16 inches below the top of the dam for an approximately 12 -foot width. The dam crest would be sawcut to score neat lines for stone masonry removal. The use of a wire saw would avoid excess material removal and would prevent unraveling of stone masonry beyond the limits of the new intake structure and the slurry would be captured using a shop vacuum system and off-hauled from the site. Scaffolding would be installed on the downstream side of the dam to support construction workers. After wire saw cutting is complete, the section of the dam to be removed would be demolished by hand with pneumatic hand tools. The remaining rubble from the notch of the dam would either be off-hauled or cleaned and used as riprap for bank stabilization, described below.

After removal of the notch is complete, the downstream face of the dam where the new intake structure would be installed would be water-blasted to remove debris. Surface cleaning of the dam would be performed to achieve the best bonding possible between the new concrete structure and the dam but would not be critical as the new intake structure is self-supporting. The pressure washing methods would avoid eroding the mortar; the contractor would be required to test washing methods prior to the work and develop the least impactful method of dam cleaning.

Rebar anchors would be secured with epoxy to the dam, on the exposed surfaces, and on bedrock for the Coanda structure foundation; these anchors would be covered by the new intake structure. Temporary timber formwork with would be used for forming the new concrete surfaces. Forms and rebar would be installed, the intake collection

chamber and components would be embedded, and concrete would be placed using a line concrete pump. Once the intake structure is set, the Coanda screen would be installed.

#### 3.6.2.4 Modifications to Existing Intake and Sediment-Control Values

The existing intake structure would be closed and abandoned in place, and a bypass pipe for emergency diversion would be installed before the structure is backfilled with concrete to provide connectivity between the creek and the existing diversion flume in case the City needs to bypass the new intake during repairs or an emergency. Holes would be drilled in the top of the existing intake structure to fill the void space with concrete around the new pipe. A blind flange would be installed at the upstream end of the proposed 18-inch-diameter pipe to allow emergency bypass flows, if needed, through the emergency diversion pipe to the existing diversion flume. A piece of the existing transmission pipeline that connects to the flume would be removed and capped for the new diversion pipe connection. In the event of an emergency, the cap would be removed and a spool piece of the pipe would be placed into the gap to allow water to flow from the flume into the transmission pipe and into the City's water system.

The existing sediment-control valve on the left/east side of the dam would be removed and the new pipe penetration would be integrated within the new intake structure. The existing sediment-control valve and pipe at the right/west side of the dam would be abandoned in place and blind flanged.

#### 3.6.2.5 Valve Vault Installation

The valve vault would be embedded into the creek bank near the new intake but would be exposed or visible on the creek channel side. The foundation would have a stem wall configuration, and the vault and its foundation would be cast in place. The foundation would be anchored to bedrock with rebar.

Once the foundation for the new valve vault has been installed, mechanical installation would begin. The blowoff drain that would connect to the bottom of the Coanda collection chamber and piping and valves would be installed. The new diversion piping with diversion butterfly valve would be connected to the Coanda collection chamber and would extend parallel past the existing diversion flume to the existing Laguna Pipeline where it would connect via the pre-cast drop inlet. After vault construction is complete, valve stems, pedestals, and electric actuators would be installed. Hatches for the vault and handrails would be installed. The space between the new valve vault and the existing covered diversion flume would be backfilled with structural concrete.

#### 3.6.2.6 Electrical Installations

Electrical work would begin with running conduits from the existing control building to the valve vault, followed by installation of the required electrical and communication panels. Power for the electrical equipment would come from the existing electrical drop and metered for 208 volts/Single Phase/100 ampere service. The electrical work would include wire pulling, terminations, and remote terminal unit/SCADA control panel upgrades. New lighting and grounding would also be installed to provide for nighttime safety if sight access is required during an emergency or other activity.

#### 3.6.2.7 Access Stairs and Riprap Bank Stabilization

At the downstream end of the new valve vault, a stairway would be installed from the downstream pool up to the top of the valve vault. Once the stairs are cast, grouted riprap bank stabilization would be constructed along the

creek bank where slope protection is required. The bank armoring would serve as a transition from the sloped profile of the stairway to the near vertical slope of the existing creek bank downstream.

### 3.6.2.8 Startup and Testing, Site Restoration, and Construction Closeout

After construction is complete, startup and testing would commence. Typical startup and testing activities include: circuit merger and continuity testing, local-manual equipment checks, loop testing (i.e., manually simulate an input at the control panel and verify appropriate output occurs). Demonstration testing (e.g., of the diversion and sediment bypass valves) may occur during winter/spring months under more representative streamflow conditions.

Final erosion control best management practices described in Section 3.6.3 would be installed in areas of disturbed soils. Disturbed soils would be stabilized with erosion control materials, and hydroseeded, hand-seeded, or replanted with some combination thereof. The cofferdam and bypass system would be removed, and creek flows would flow over the new Coanda screen. The mobile office and any other temporary facilities would be removed, and workers and equipment would be demobilized. The site would be restored to as near pre-project conditions as is practical. Restoration planting and tree planting would occur as required.

### 3.6.2.9 Construction Routes

Access for vehicles carrying materials, equipment, and personnel to and from the project site would be provided via existing roadways in the vicinity. The primary routes for construction traffic would likely be from State Route 1 via Bonny Doon Road to Smith Grade, or from State Route 17 to State Route 1, Bay Street, then High Street/Empire Grade to Smith Grade. Roadways in the immediate vicinity of the site, including Bonny Doon Road, Empire Grade, and Smith Grade, are winding, two-lane roads that traverse densely forested land. To facilitate transport of construction equipment, public roads could be closed temporarily, but would not be closed for extended durations during construction.

### 3.6.2.10 Spoils Disposal

Temporary excavation of material (approximately 10 cubic yards) upstream of the dam would be stockpiled on site and the material would be returned to its original location after construction completion. Spoils would be generated during excavation of material on the downstream side of the dam. Approximately 40 cubic yards of material would be excavated downstream of the dam; 10 cubic yards would be reused as engineered fill and 30 net cubic yards of excavated sediments would be hauled off site to the City's Resource Recovery Facility (landfill), approximately 10 miles away. Spoils generated from pipeline trenching and other project excavations would be hauled off site to a disposal location in accordance with state and federal regulations.

### 3.6.2.11 Construction Equipment

The Proposed Project would require use of heavy equipment such as excavators, drill rigs, forklifts, graders, tractors, loaders, backhoes, dumpers, and generators. Haul trucks would be used to transport materials to the site and to transport spoils off site to a permanent disposal location. Water trucks would also be used at the site. Appendix B summarizes equipment and assumptions used for each construction phase.

Construction worker vehicle trips would be approximately 5 one-way trips per day, with up to 18 one-way trips per day if multiple construction phases overlap (during less than a month period). Approximately 35 one-way haul truck trips would be required during the 3-month construction period, with two to three trips per week.

## 3.6.3 Standard Construction Practices

The City has identified standard construction practices, presented in this section that would be implemented by the City and its contractors during construction activities associated with the Proposed Project.

### 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, 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 would have spill

kits available, be checked daily for leaks, and would 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. Avoid activities in the active (i.e., flowing) channel whenever possible.
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. Cofferdam 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 streamflows to flow by gravity around or through the work site. If gravity flow is not feasible, streamflows 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. 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 would 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 would 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 would 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.

## Project-Specific Practices for Biological Resources

27. To protect fish, the following shall be implemented:
    - Relocate fish to suitable habitat during dewatering activities.
    - Maintain adequate water depth within downstream plunge pool. A depth of 3 to 4 feet is preferred to conform to the existing pool depth and minimize potential for degrading the suitability of the pool for trout habitat. Greater depth also reduces the potential for harm to fish passing over the Coanda screen and entering the plunge pool below.
    - Maintain soft bank stabilization features identified during project design that provides potential habitat for trout.
    - Maintain native riparian shrubs and small trees in (as appropriate) and around riprap to provide overhead cover and shading when the plants have matured.
28. To protect trees that are retained on site, the following will be implemented:
    - Implement measures to minimize the potential for pathogen spread. Sanitize tools and equipment used in vegetation clearing including tree removal operations. If soil is collected on equipment, rinse equipment on site with a portable water tank or water truck, or at a designated rinsing station, to remove soil-borne pathogens and prevent transport to new sites. Alternatively, debris can be cleaned from tools/equipment via brushing, sweeping, or blowing with compressed air.
    - Implement additional prevention methods for sudden oak death and pitch canker. A qualified biologist, arborist, or forester should inspect loads of logs and equipment leaving the site to ensure that no host material is being transported without a permit if material is being transported to outside locations. If importing vegetative material for restoration purposes, ensure that material that has been produced in conformance with the latest horticultural standards in pest and disease avoidance and sanitation.
    - Implement recommendations from the Tree Inventory, Impact Assessment, and Protection Plan (Fouts 2020) prepared for the Proposed Project.
29. To prevent inadvertent entrapment of wildlife during construction activities, all excavated, steep-walled holes or trenches more than 2 feet deep and/or all open pipeline segments will be covered at the close of each working day with plywood or similar materials, to the extent feasible. These areas will be inspected for trapped wildlife before and after placement of exclusionary materials.

## Project-Specific Practices for Cultural Resources

30. To protect the dam during construction, the following will be implemented:
    - Notching crest of dam. The notch in the crest of the dam shall be sawcut to score neat lines for stone masonry removal. The use of a wire saw would avoid excess material removal and would prevent unraveling of stone masonry beyond the limits of the new intake structure. Given the strength and hardness of the dam, the cuts may first be initiated using chisel hammers to remove materials as necessary.

- Water-pressure washing of dam to remove debris. To remove loose material and organics such as dirt and moss water-blasting of the downstream face of the dam may be required. Prior to completing any water-blasting work, and at the direction of the City and under supervision of the Project inspector, the contractor shall test washing methods and develop the least impactful method of dam cleaning. The pressure washing methods shall avoid eroding the mortar. The contractor shall start with a low-pressure water wash, and if unsuccessful, use water of slightly higher pressure. As feasible, the test shall be conducted in an inconspicuous location. Pressure washing shall be limited to the area where the new intake structure will be cast, with approximately 1-foot buffer. A bonding agent such as a high solids, water-based emulsion admixture suitable for modifying Portland cement compositions, shall be spray applied to the dam face within the limits of the new concrete formwork for the new intake structure.

31. Documentation of the historical resource. The City will work with a qualified architectural historian to develop interpretative text and content for a dedicated webpage on the City's public website that explains the history of the site and its importance within the water management system. This text and supporting content (historic era images) will be utilized to develop a brochure with a one-time limited pressing for distribution to local libraries and museums. In addition, the City will include a brief history of the project site as an entry in its Santa Cruz Municipal Utilities Review, a quarterly newsletter that is sent to all customers in the Water Service Area.

### Project-Specific Practices for Wildfire Hazards

32. Internal combustion engine equipment shall include spark arrestors, fire suppression equipment (e.g., fire extinguishers and shovels) must be stored on site 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/).

## 3.7 Operations and Maintenance

After construction and commissioning of the Proposed Project, operations and maintenance of the Facility would be improved as follows 1) sediment would no longer obstruct the intake of water and routine excavation of sediment from behind the dam would not be required; and 2) new controls for diversion rates, new stairs, railings, and emergency lighting would support operations personnel and improve safety during maintenance within the valve vault, which is a confined space.

Other than these improvements, the operations and maintenance activities at the Facility would generally remain similar to existing operations, as described in Section 3.2, Existing Facilities, above. Specifically, operations and maintenance activities would entail 1) weekly station checks consisting of visual inspection of the Facility, collection of water meter and turbidimeter data, clearing of fallen leaves, needles, and branches on the intake screen and access roads; 2) bi-weekly raw water sampling; 3) monthly cleaning, inspections of equipment, testing of the generator, and landscape maintenance; 4) annual inspections of equipment and service of the generator; and 5) road maintenance every 5 years.

It is anticipated that these operations and maintenance activities would also occur with a similar frequency and intensity of activities under existing conditions. In addition, landscape restoration is anticipated to occur over approximately 2 to 5 years; landscape restoration activities would include weeding, monitoring, and installation of

irrigation or monthly/biweekly watering, which could require water to be trucked periodically to the site. If nighttime emergency work is required, task lighting that would be installed as part of the Proposed Project as described above would be used. Emergency work could include use of a Vactor truck with vacuum and high-pressure water jetting capabilities for cleaning out sediment from the intake.

Propane for the emergency backup generator would continue to be stored on the site (250-gallon aboveground tank). No other fuels, gas, oil, solvents, petroleum products, etc. would be stored on site. Overall, during operation of the Proposed Project, demand for electricity and water, generation of solid waste and wastewater, and vehicle trips to the site for maintenance would not substantially increase over existing conditions.

Because the majority of sediment in the creek would flow over the screen and not fall through the screen, only a minor amount of sediment is anticipated to fall into the collection chamber within the intake structure (i.e. approximately 97% of entrained sediment would pass over the screen). An adaptive management plan would be developed for the flushing out of the minor amount of sediments that could collect within the intake structure. This plan would be developed in collaboration with applicable resource agencies.

The City would continue to maintain in-stream flow levels established with CDFW pursuant to ongoing agreements and ultimately would maintain the in-stream flow levels established by the Anadromous Salmonid Habitat Conservation Plan that is currently under preparation. As described above, these in-stream flows are intended to protect anadromous salmonids and other species.

## 3.8 Project Permits and Approvals

In addition to CEQA, the Proposed Project would be subject to compliance and permitting requirements under federal, state, and local regulations. The anticipated agency permits/approvals necessary for the implementation of the Proposed Project are described below.

The City of Santa Cruz is the lead agency and is responsible for approving and implementing the Proposed Project. The Santa Cruz City Council is the decision-making body tasked with certification of the Final EIR, approval of the Proposed Project, and adoption of CEQA findings and the mitigation monitoring and reporting program.

In addition to the City, other public agencies that have review or approval authority of the Proposed Project are outlined below. This Draft EIR is intended to provide the information and environmental analysis necessary to assist state permitting agencies (also known under CEQA as "responsible agencies") in considering the approvals required for the Proposed Project.

- **U.S. Army Corps of Engineers.** Approval of a Clean Water Act Section 404 permit.
- **U.S. Fish and Wildlife Service.** Endangered Species Act Section 7 consultation.
- **State Historic Preservation Office.** National Historic Preservation Act Section 106 consultation.
- **California Central Coast Regional Water Quality Control Board.** Approval of a Clean Water Act Section 401 Water Quality Certification Permit.
- **California Department of Fish and Wildlife.** Approval of a California Fish and Game Code Section 1602 Lake or Streambed Alteration Agreement.
- **CAL FIRE.** Minor conversion permit exemption per (14 CCR Section 1104.1[a]) for removal of trees and replacement with developed uses.

- **County of Santa Cruz.** Approval of a Coastal Development Permit and an encroachment permit and County-approved Traffic Control Plan for ingress to/egress from the site.

Although the project site is 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 Sections 53091(d) and (e) provide that facilities for the production, generation, storage, treatment, or transmission of water supplies are exempt from local zoning and building ordinances.

# 3.9 References

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