

APPENDIX N: Water Department Capital Investment Program Fact Sheets



Our Water, Our Future



3.x Water Supply Augmentation Strategy Projects

Current Status: Project Definition/Feasibility

Project Need

The City of Santa Cruz Water Department is evaluating several alternatives for augmenting existing water supplies. Alternatives include Aquifer Storage and Recovery (ASR), In-Lieu Water Transfers and Exchanges, Desalination and Recycled Water.

Background

As part of the Water Supply Augmentation Plan (2015) developed by the Water Supply Advisory Committee, the City is evaluating the feasibility of using ASR, recycled water, and in-lieu transfers and exchanges to augment its water supply. Nearly 90% of the City's water supply comes from surface water; an ASR project would "bank" water in an aquifer when excess surface water is available and then recover water from the aquifer when needed during extended drought periods. Similarly, an in-lieu project would, to some degree, "bank" water in an aquifer when groundwater-dependent neighboring water agencies that receive surface water from the City are able to rest their wells.

Additionally, a Recycled Water Feasibility Planning Study was completed in 2018 (Phase 1) and identified potential projects, ranging from irrigation, groundwater replenishment (GRRP), surface water augmentation, and direct potable reuse, using source water from the City's Wastewater Treatment Facility. Phase 2 is currently underway and further-develops the alternatives developed in Phase 1.

Project Description

ASR in the Mid-County and Santa Margarita Groundwater Basins is being considered by the City to take advantage of available water from its surface water sources, beyond what is needed to meet its system demands, and injecting and storing the water in the regional aquifers. For an in-lieu project, the City would

capture excess surface water, treat them to potable standards at the Graham Hill Water Treatment Plant, and convey through existing and potentially new water distribution systems to neighboring communities served by Scotts Valley Water District, San Lorenzo Valley Water District and Soquel Creek Water District.

Phase 2 of the Recycled Water Feasibility Study began in November 2019 and takes several of the alternatives from Phase 1 and advances them in design, cost estimate, and potential yield, to provide more accurate understanding of the long-term benefit(s) to the city. The study is scheduled to conclude in mid-2021.

Project Benefits

Benefits of the Water Supply Augmentation projects include:

- Providing a source of water for recovery by the City and other users of the basin during drought or high demand periods, addressing part or all water supply deficiencies.
- Reducing (or eliminating) periodic peak season water supply shortfalls.
- Beneficial use of treated wastewater.
- Providing supplemental water supply.

Escalated Estimate

Construction	\$ TBD
Other Costs*	\$ TBD
Total Project	<u>\$95,140,000</u>

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

Current Schedule Start Dates

Planning	Design	Construction	Post Construction
STARTED DEC 2019	START 2022	COMPLETE 2030	COMPLETE 2031

Revised 4/12/2021



Our Water, Our Future



1.5 Newell Creek Dam Inlet/ Outlet Replacement Project

Current Status: Construction

Project Need

The existing inlet/outlet works is approaching the end of its useful design life, as illustrated by three primary identified deficiencies: inlet/outlet conduit deterioration, an inoperable fifth inlet in the reservoir, and an inoperable and partially closed plug valve at the toe of the dam.

Background

Completed in 1961, the earth fill dam stands approximately 195 feet tall with a crest length of approximately 750 feet. Newell Creek Dam impounds Loch Lomond Reservoir with a maximum storage capacity of approximately 8,646 acre-feet. The dam is operated by the SCWD and regulated by the California Department of Water Resources Division of Safety of Dams (DSOD). SCWD hired AECOM in 2015 to perform an alternatives analysis, and subsequently to develop design documents and cost estimates for a full replacement.

Project Description

- Three new inlets that control and convey flows
- New outlet structure with valves and controls to provide for energy dissipation for water releases to the Newell Creek Pipeline (NCP) and beneficial releases to Newell Creek
- New seepage collection and monitoring system
- 1,500 foot-long 10- to 14-foot diameter tunnel with 48-inch and 10-inch inlet/outlet pipelines
- Replacement of approximately 2,000 linear-foot segment of the NCP
- New intake control building on dam crest
- Access road improvements including a new culvert crossing at spillway plunge pool
- Decommissioning the existing inlet/outlet works

Project Benefits

Benefits of this project include:

- Protects the City’s water supply system by addressing existing deficiencies
- Establishes long-term reliable storage of drinking water supply
- Meets DSOD drawdown requirements
- Improves overall operational efficiency and system performance
- Improves inspection and maintenance access

Escalated Estimate

Construction	\$ 70,000,000
Other Costs*	\$ 39,570,000
Total Project	\$109,570,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and management costs.

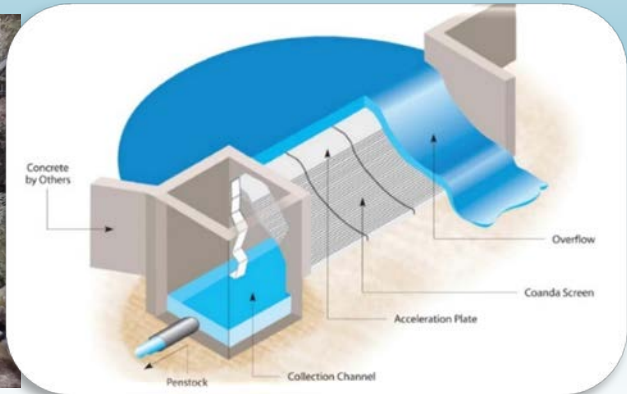
Potential Funding Source

DWSRF Loan and Pay as you go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
OCT 2015 JUL 2018	JUL 2018 JAN 2020	MAY 2020 NOV 2022	NOV 2022 NOV 2023

Revised: 4/12/2021



1.1 Laguna Creek Diversion Retrofit

Current Status: Construction

Project Need

The Laguna Creek Diversion Facility is one of four surface water collection/diversion sources supplying raw water to the City's North Coast water supply system. The Laguna Creek Dam and Diversion were constructed prior to modern environmental and safety requirements, resulting in reduced habitat complexity in downstream reaches and operational constraints such as insufficient site safety features. Since its early construction in 1889, the Laguna dam has intermittently impounded sediment and debris in the upstream reservoir. In more recent years, the streambed has aggraded to the crest of the dam. The 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. Recent assessments indicate that the facility is in "good structural condition." However, multiple deficiencies were identified including: sediment accumulation, limited remote operating & monitoring capabilities, and access & safety concerns.

Background

The City of Santa Cruz Water Department (SCWD or City) contracted with Black & Veatch in 2018 to assess the condition of the diversion and to develop and compare retrofit alternatives aimed at improving functionality and reliability. The goal of the alternatives analysis and concept development was to formulate viable improvements to achieve operational, regulatory, and performance objectives.

Project Description

The Project will change the type and orientation of the water intake using a Coanda screen so that sediment would not obstruct water intake through the screen. The new system will restore natural fluvial functions of sediment transport and deposition that benefit downstream fisheries and aquatic habitats. The Project will provide appropriate fish screening, provide a flexible approach to managing the quantity and quality of water that can be diverted, minimize the use of power, and will include improvements for safe access to the Facility. The project requires in-stream work and associated environmental protections and permitting.

The project was bid in April 2021 and awarded to Granit Rock Company.

Project Benefits

Benefits of this project include:

- Fish screening/passage improvements
- Sediment management
- Remote operation & monitoring
- Accessibility and safety improvements

Escalated Estimate

Construction	\$ 1,800,000
Other Costs*	\$ 2,010,000
Total Project	<u>\$ 3,810,000</u>

- Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

Bonds and Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
JUL 2018	JUL 2019	MAY 2021	SEP 2021
JUL 2019	FEB 2021	SEP 2021	OCT 2022

Revised 4/12/2021



1.2 North Coast System Majors Diversion Retrofit

Current Status: Project Definition / Feasibility

Project Need

The Majors Creek Diversion was originally constructed as a stone masonry dam near the end of the 19th century and retrofit and replaced as a conventional reinforced concrete structure in 1924. The dam directs water from Majors Creek into existing gravity pipelines which convey surface water to the Coast Pump Station and ultimately to the Graham Hill Water Treatment Plant.

Recent assessments have shown that the facility is in “good structural condition.” However, multiple deficiencies were identified including: sediment accumulation, limited remote operating & monitoring capabilities, and access & safety concerns. In addition, a project at this site would modernize the existing fish screening.

Background

The City of Santa Cruz Water Department (SCWD or City) contracted with Black & Veatch in 2018 to assess the condition of the diversion and develop and compare retrofit alternatives aimed at improving function and reliability. The goal of the alternatives analysis and concept development is to formulate viable improvements at the diversion that can achieve operational, regulatory, and performance objectives.

Project Description

This project will follow similar steps as the Laguna Diversion Retrofit project including development of a problem statement (purpose and need) and alternatives analysis. This project is closely tied to the North Coast Pipeline project.

Project Benefits

Benefits of this project include:

- Fish screening improvements
- Sediment management
- Remote operation & monitoring
- Improved accessibility & safety
- Other upgrades (e.g. future pumping & pipe alignment changes)

Escalated Estimate

Construction	\$ 2,900,000
Other Costs*	\$ 2,430,000
Total Project	<u>\$ 5,330,000</u>

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
JUL 2018 JUL 2019	MAR 2026 AUG 2027	DEC 2027 JAN 2030	JAN 2030 FEB 2031

Revised: 4/12/2021



1.3.1 Tait Diversion Retrofit

Current Status: Planning

Project Need

The Tait Diversion Dam and Intake (Diversion) is one of SCWD's critical water supply sources, supplying up to 12.2 cubic feet per second to the overall water supply. Due to its age (> 50 years), sanding issues and damage from large storm events; significant capital investment is needed to modernize this facility and maintain its reliability and functionality and to improve the fish passage and fish screening functions.

Background

SCWD contracted with HDR in 2018 to conduct a Condition Assessment of the Diversion. Results from this assessment indicated that structural deficiencies were present (e.g. exposed rebar, scouring, etc.), and updated techniques were necessary to prevent debris & sediment from clogging the intake. Improvements to the site would likely include modernization of the fish passage/screening functions based upon California Department of Fish and Wildlife (CDFG) and National Marine Fisheries Service (NMFS) criteria.

Project Description

This project conducts an alternatives analysis of the existing diversion including consideration of sanding issues, fish passage/screening improvements, and potential dam rehabilitation or replacement. The project will ensure reliable and efficient diversion of water from the San Lorenzo River at this location.

Project Benefits

Benefits of this project include:

- Fish passage/screening improvements
- Protection from flood damage
- Operational flexibility

Escalated Estimate

- Sand/grit management
- Improved equipment reliability (e.g. pumps, valves, etc.)

Construction	\$ 3,200,000
Other Costs*	\$ 3,430,000
Total Project	\$ 6,630,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
MAY 2019 JUL 2021	JUN 2026 JAN 2028	APR 2028 DEC 2028	DEC 2028 DEC 2029

Revised: 4/19/2021



Our
Water,
Our
Future



1.3.2 Coast Pump Station Rehabilitation/ Replacement

Current Status: Project Definition/ Feasibility

Project Need

The Coast Pump Station lies below the 100-year flood elevation and experienced significant flooding in 2012 and 2017 which caused significant equipment damage to generators, pumps, etc. This project will address the issue of flooding and other facility deficiencies including: replacement of damaged and/or corroded equipment/piping, repair of the backwash system, and other related projects in coordination with the Tait Diversion Rehab/Replacement Project.

Background

No efforts have been completed to date. The project stages to be completed include planning, design, and construction as shown on the following page.

Project Description

This project seeks to improve aging infrastructure as well as address potentially increased occurrences of flooding.

Project Benefits

Benefits of this project include:

- Flood protection
- Facility & equipment modernization
- Operation & maintenance improvements

Escalated Estimate

Construction	\$ 7,300,000
Other Costs*	\$ 3,070,000
Total Project	\$ 10,370,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
MAR 2029 AUG 2029	SEP 2029 SEP 2031	FEB 2032 OCT 2032	NOV 2032 JUN 2033

Revised: 4/12/2021



Our Water, Our Future



Beltz Well # 10 and #11 Rehab and Development

Current Status: Planning

Project Need

Boost production capacity of the Beltz well system.

Background

Beltz 10 and 11 were both drilled and developed approximately 15-years ago. Beltz 10 was subsequently converted from test well to a production well. Beltz 11 was left as a test well, due to higher than normal sulfur levels, which can cause taste and odors issues if not treated properly. Over time, well output from Beltz 10 has declined.

Project Description

This project involves evaluating the 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 mid-county groundwater basin, helping to ensure sustainable groundwater management. This project will close in FY2022 and the evaluation continued in the ASR project.

Project Benefits

Benefits of this project include:

- Sustainable groundwater management

Escalated Estimate

Construction	\$0
Other Costs*	\$360,000
Total Project	\$360,000

* Other costs may include planning, design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Completion
2018 JUN 2022	Included in ASR project	Included in ASR project	Included in ASR project

Revised: 4/12/21



Our
Water,
Our
Future



Beltz WTP Filter Rehabilitation

Current Status: Construction

Project Need / Background

The Beltz Water Treatment Plant treats groundwater from the Mid-County Groundwater Basin. The original treatment plant was constructed in the 1970s. During inspection of one of the two filter vessels a critical component called the filter underdrain was discovered to be severely corroded and failing.

Project Description

In fall 2020 the City contracted Ludorf and Scamanini Consulting Engineers (LSCE) to conduct a condition assessment and prepare an alternatives analysis. LSCE found that the filter shell was in good condition and recommended major rehabilitation of the internal components as the most cost effective and timely solution to return the filter to service. This project will replace the major internal components of the filter system, recoat the interior of the vessel and install new filter media.

Project Benefits

Benefits of this project include:

- Operational reliability
- Reduced risk of system interruption.

Escalated Estimate

Construction	\$390,000
Other Costs*	\$60,000
Total Project	<u>\$450,000</u>

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Completion
2021			2021

Revised: 4/12/21



Our Water, Our Future



1.4 Felton Diversion and Pump Station Improvements

Current Status: Planning

Background

The Felton Bladder Dam, shown in the left photo above, was replaced in 2018 after nearly 30 years of operation. Follow-up assessments of the pump station and fish ladder/screens are anticipated to start in 2021.

Project Description

The initial planning/feasibility includes the following tasks: assess existing mechanical and electrical infrastructure for capacity/condition, and review compliance issues related to the Endangered Species Act (fish ladder, intake screens).

Project Benefits

Benefits of this project include:

- Improved passage and protection for listed aquatic species
- Diversion redundancy
- Improved functionality and reliability

Escalated Estimate

Construction	\$ 2,250,000
Other Costs*	\$ 2,020,000
Total Project	<u>\$ 4,270,000</u>

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

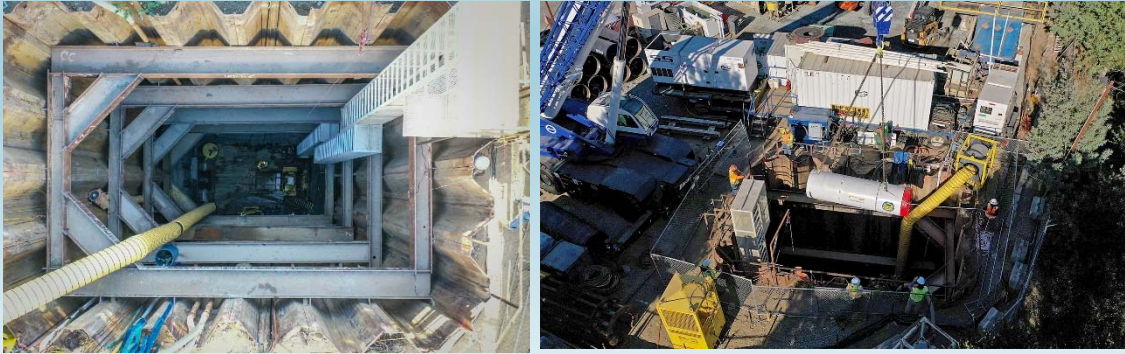
Potential Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
JUL 2021 APR 2022	AUG 2025 MAR 2027	SEP 2027 MAR 2028	MAR 2028 MAR 2029

Revised: 4/12/2021



2.3 Coast Pump Station Raw Water Pipeline Replacement

Current Status: Post-Construction

Project Need

This Coast Pump Station pipeline supplies raw water from the Coast Pump Station to the Graham Hill Water Treatment Plant where it is treated and supplied to City of Santa Cruz customers. This project replaced a segment of pipeline under the San Lorenzo River that had experienced several leaks in recent years.

Background

The City of Santa Cruz Water Department contracted with Kleinfelder Engineering to design the trenchless micro-tunnel and open-trench installation of this pipeline. The project was bid during February-March of 2020, with construction of the project beginning May of 2020 and finishing in March 2021.

Project Description

This project included installation of approximately 521 feet of 24-inch pipeline, about 221 feet of which was installed through trenchless micro-tunneling methods under the San Lorenzo River. The remaining 300 feet connected the micro-tunneled portion to the existing raw water lines on both sides of the river by open-cut trenching. The project footprint is entirely on City-owned and publicly-owned land, with off-site staging on private property.

Project Benefits

Benefits of this project include:

- Replaced an existing critical pipeline which transfers raw water for treatment and distribution to City of Santa Cruz customers.
- Restored reliability of primary water supply infrastructure.

Escalated Estimate

Construction	\$ 5,000,000
Other Costs*	\$ 2,140,000
Total Project	<u>\$ 7,140,000</u>

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

Bonds and Pay as you go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
N/A	SEP 2018 NOV 2019	MAR 2020 MAR 2021	MAR 2021 MAR 2022

Revised: 4/12/21



2.2 Newell Creek Pipeline Rehabilitation/ Replacement

Current Status: Design

Project Need

The Newell Creek Pipeline was constructed in the 1960's and experiencing increased frequency of breaks due to age, pipe condition (corrosion), and unstable geologic conditions along its alignment. This project will improve system reliability.

Background

The Newell Creek Pipeline conveys raw water to and from the Loch Lomond Reservoir which is the City's only water supply storage facility. This source is critical to meeting customer demands during dry seasons as well as during storm events. The pipeline was constructed through active mountainous terrain and has the complication of subsequent development surrounding much of the alignment.

Project Description

SCWD contracted with HDR in 2018 to perform an alternatives analysis of the nearly 9.5 miles of pipeline from the Newell Creek Dam to the Graham Hill Water Treatment Plant. This resulted in splitting the project into three segments and prioritizing their design and construction over the next 16 years. In addition, SCWD contracted with DUDEK in 2019 for the preparation of a program-level environmental review (PEIR).

The design and construction of the three segments are budgeted under separate capital projects: 2.2.1 Newell Creek Pipeline Felton/Graham Hill WTP (Design), 2.2.2 Newell Creek Pipeline Newell Creek Dam/Felton (Project

Definition/Feasibility), and 2.2.3 Brackney Landslide Area Risk Reduction (Design).

Project Benefits

Benefits of this project include:

- Definition and prioritization of construction segments and environmental review to support design and construction.

Escalated Estimate

Construction	\$	NA
Other Costs*	\$	1,680,000
Total Project	\$	<u>1,680,000</u>

* Other costs may include planning/preliminary engineering, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

	Planning/Env	Design	Construction	Post Construction
JUN 2018				
MAY 2022				

Revised: 4/12/2021

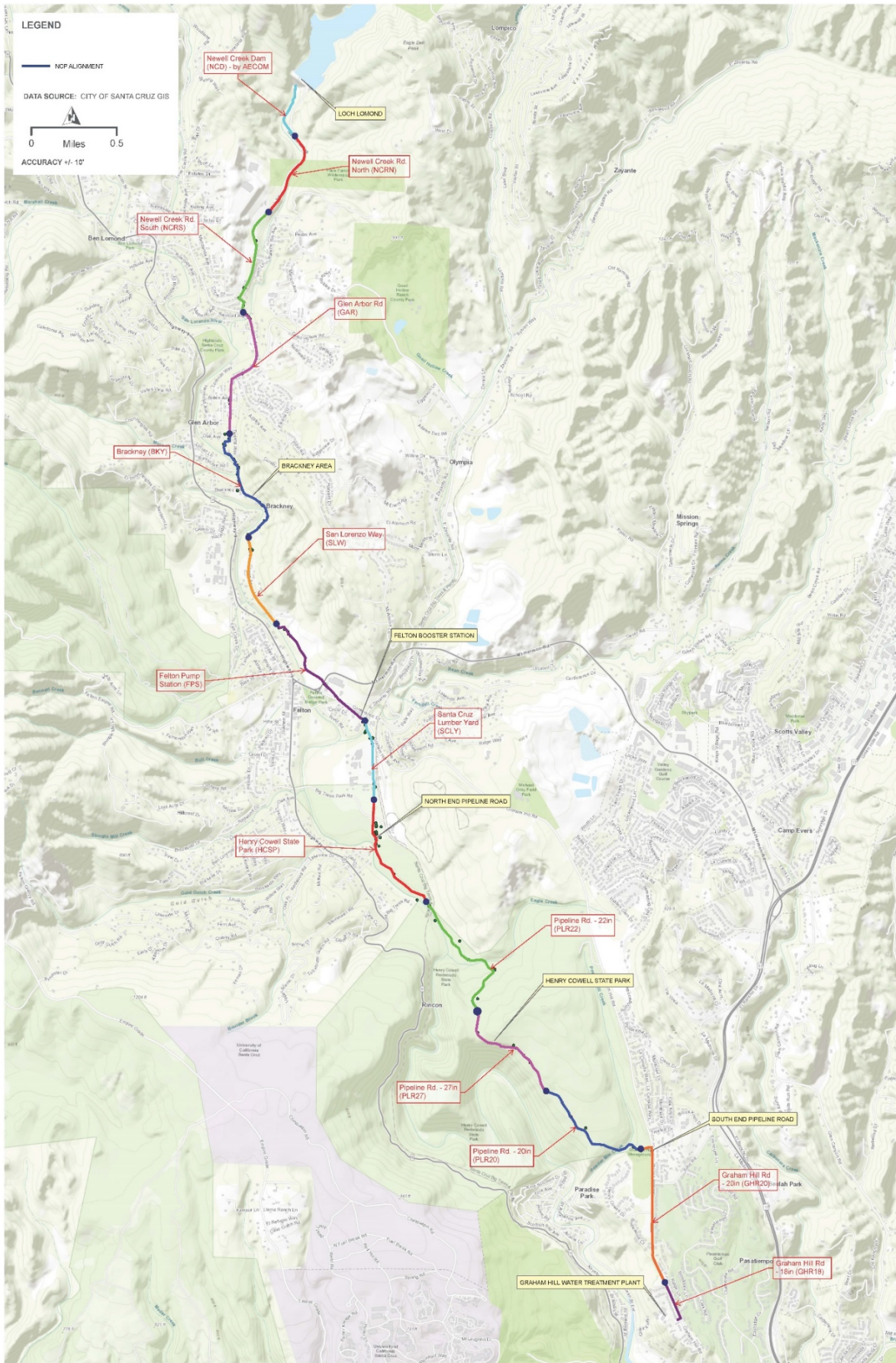


Figure: Existing full alignment of Newell Creek Pipeline



Our Water, Our Future



2.2.1 Newell Creek Pipeline, Felton-Graham Hill Water Treatment Plant

Current Status: Design

Project Need

The Newell Creek Pipeline is experiencing an increased frequency of breaks due to age, corrosion and land movement along its alignment through active geology. This project is intended to ensure continued reliability of this critical water supply transmission main. The reach of pipeline between Felton Booster Pump Station (FBPS) and the Graham Hill Water Treatment Plant (GHWTP) is considered a high priority for replacement due to its increasing frequency of breaks and limited access for repairs.

Background

The Newell Creek Pipeline conveys raw water to and from the Loch Lomond Reservoir which is the City's only water supply storage facility. This source is critical to supply the water system during dry seasons as well as storm events. The pipeline was constructed through active mountainous terrain and has the complication of subsequent development surrounding much of the alignment. And this segment lies within property now owned by California State Parks.

Project Description

The entire Newell Creek Pipeline extends 9.5 miles from the Newell Creek Dam to the Graham Hill Water Treatment Plant. This phase of the overall project replaces the pipeline between FBPS and the GHWTP in a 4.4 mile run mostly along Graham Hill Road.

Project Benefits

Benefits of this project include:

- Continued reliability of critical water supply infrastructure.

Escalated Estimate

Construction	\$ 21,200,000
Other Costs*	\$ 9,450,000
Total Project	<u>\$ 30,650,000</u>

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs

Potential Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
SEP 2019 MAY 2020	DEC 2020 APR 2022	AUG 2022 DEC 2023	DEC 2023 DEC 2024

Revised: 4/12/21

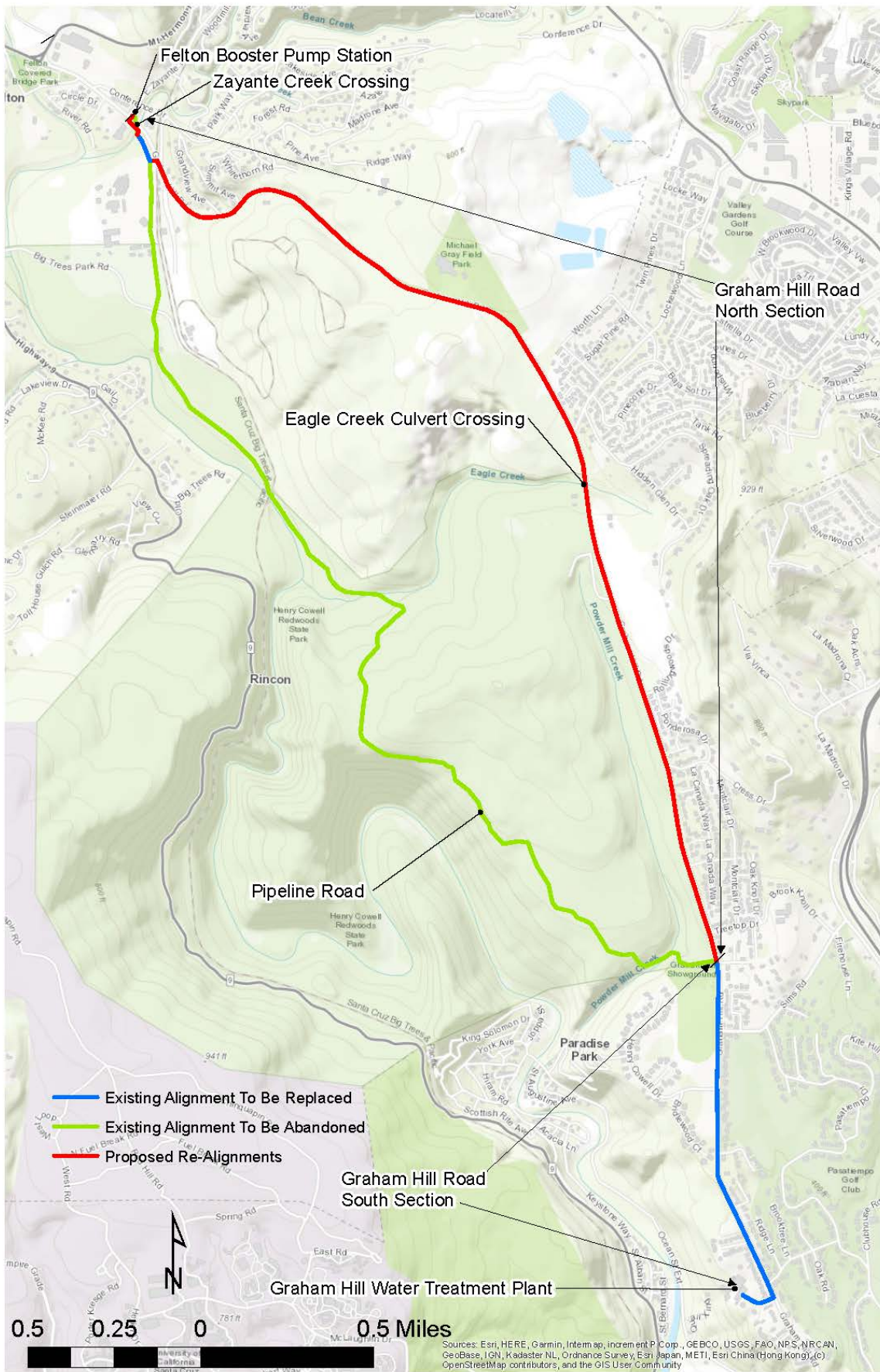
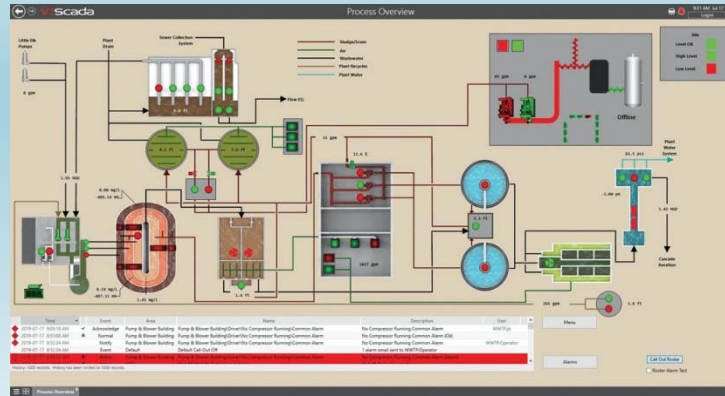


Figure: Existing Pipe Alignment (Blue); Proposed Pipe Alignment (Red)



GHWTP SCADA Radio System Replacement

Current Status: Planning

Project Need / Background

Radio equipment is used at the Graham Hill Water Treatment Plant (GHWTP) to communicate with remote operations locations. The existing radio equipment infrastructure is no longer supported and the sole manufacturer is no longer in business.

Project Description

The goal of this the project is replace the radio equipment used to transmit and receive control and status information between the GHWTP and remote sites. The scope of this project involves approximately 30 remote water site locations including the replacement and programming of base radio equipment located at the GHWTP.

Project Benefits

Benefits of this project include:

- Increased operations reliability

Escalated Estimate

Construction	NA
Other Costs*	\$150,000
Total Project	\$150,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grant, Loans, or Pay As You Go

**Current Schedule
Start-Finish Dates**

Planning	Design	Construction	Completion
2022			2022

Revised: 4/12/21



Our
Water,
Our
Future



2.2.2 Newell Creek Pipeline Replacement / Loch Lomond - Felton

Current Status: Not Initiated

Project Need

The Newell Creek Pipeline is experiencing an increased frequency of breaks due to age, corrosion and land movement along its alignment through active geology. This project is intended to ensure continued reliability of this critical water supply transmission main.

Background

The Newell Creek Pipeline conveys raw water to and from the Loch Lomond Reservoir which is the City's only water supply storage facility. This source is critical to supply the water system during dry seasons as well as storm events. The pipeline was constructed through active mountainous terrain and has the complication of subsequent development surrounding much of the alignment with minimal road widths.

Project Description

The entire Newell Creek Pipeline extends 9.5 miles from the Newell Creek Dam to the Graham Hill Water Treatment Plant. . This phase of the overall project replaces the pipeline between Loch Lomond and Felton Booster Pump Station.

Project Benefits

Benefits of this project include:

- Continued reliability of critical water supply infrastructure.

Escalated Estimate

Construction	\$ 28,500,000
Other Costs*	\$ 12,230,000
Total Project	\$ 40,730,000

* Other costs may include planning/preliminary engineering, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning/Env	Design	Construction	Post Construction
NA	2028 [START]	-	-
NA	-	-	2033 [FINISH]

Revised: 4/12/2021

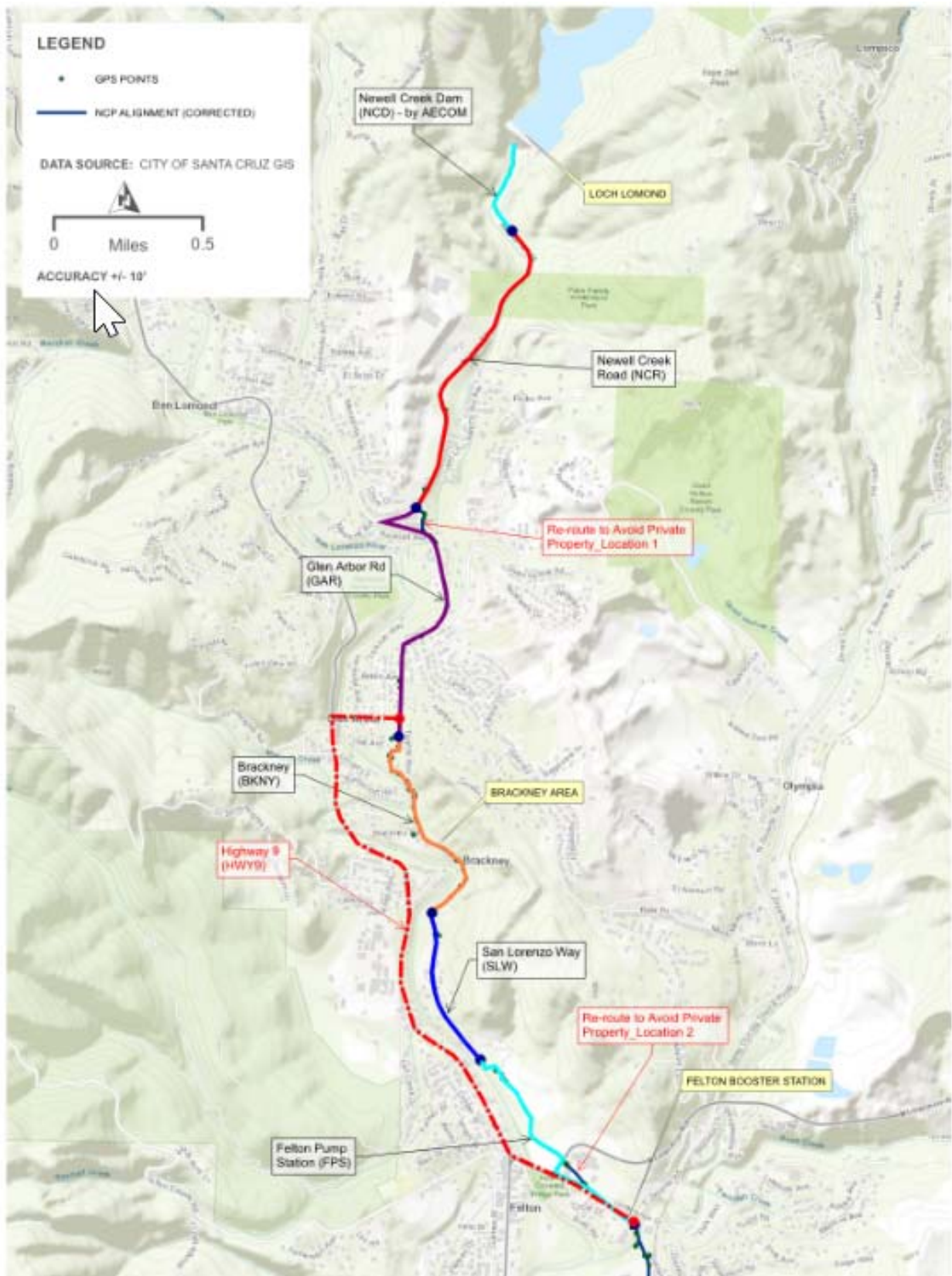


Figure: Existing Pipe Alignment (Blue); Proposed Pipe Alignment (Red)



2.2.3 Brackney Landslide Area Pipeline Risk Reduction Project

Current Status: Design

Project Need The Newell Creek Pipeline is experiencing an increased frequency of breaks due to age, corrosion and land movement along its alignment through active geology. This project is intended to ensure continued reliability of this critical water supply transmission main. This segment of the Newell Creek Pipeline in the Brackney area of Felton is prone to landslides and has received grant funding for replacement within more stable bedrock.

Background The Newell Creek Pipeline conveys raw water to and from the Loch Lomond Reservoir which is the City's only water supply storage facility. This source is critical to supply the water system during dry seasons as well as storm events. The Brackney area segment sustained damage during January 1982 and January 2017 storm events resulting in pipeline leaks and supply interruptions.

Project Description The project replaces 875 feet of the Newell Creek Pipeline at the Brackney Landslide Area with a new 22-inch steel carrier pipeline enclosed in a new 36-inch steel casing buried deep into the bedrock formation (~20 ft cover). The replacement pipeline will either be installed by microtunneling or in an excavated trench.

Design phase activities include field investigation (topographic survey and geotechnical investigation), preliminary design, final design, bidding documents, and project management.

Project Benefits

Benefits of this project include:

- Increase reliability of critical water supply infrastructure.

Escalated Estimate

Construction \$ 3,900,000

Other Costs* \$ 1,970,000

Total Project \$ 5,870,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs

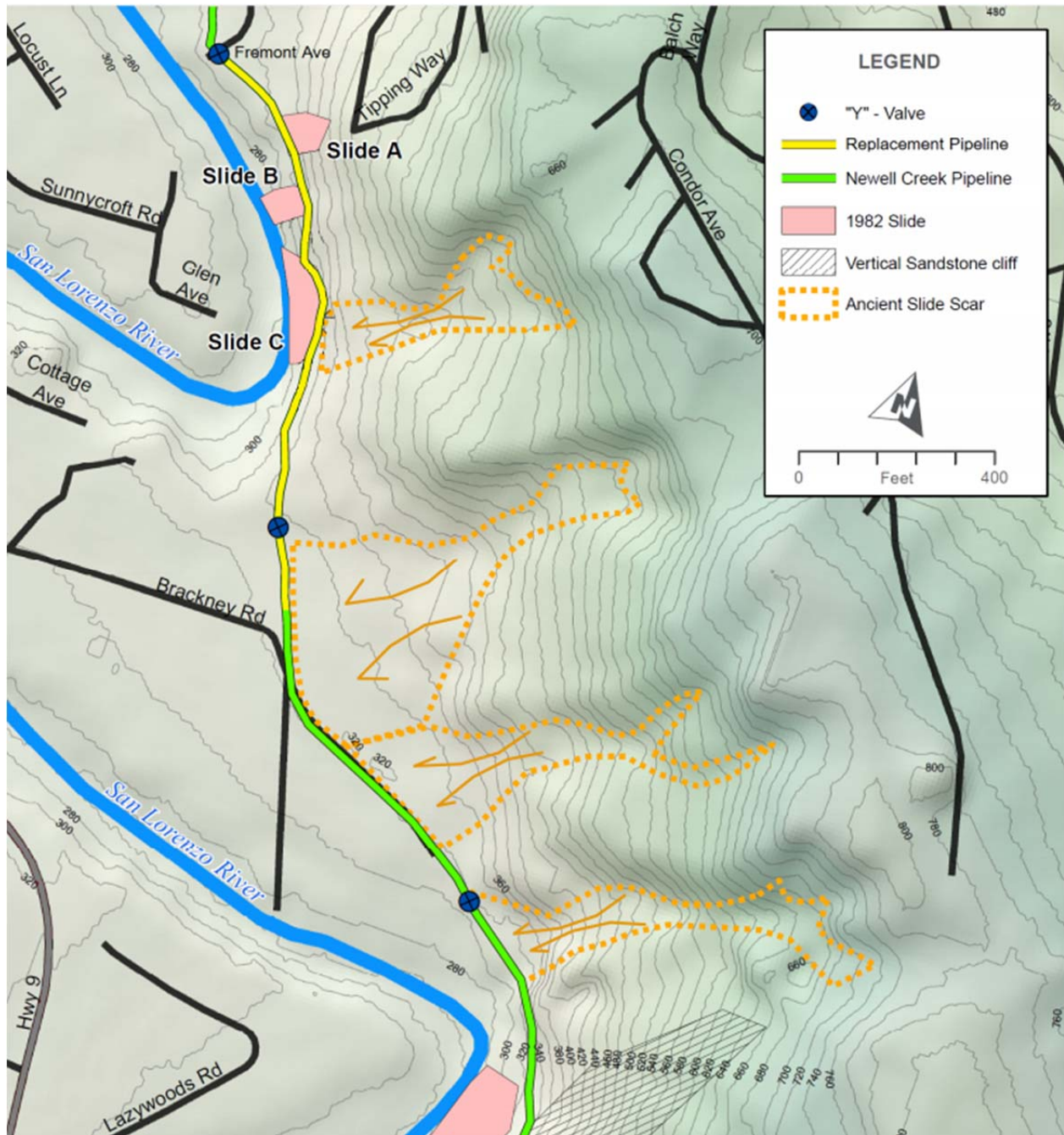
Potential Funding Source

FEMA Hazard Mitigation Grant Program (HMGP) and matching Pay as you go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
APR 2020 MAY 2020	DEC 2020 APR 2022	SEP 2022 JUL 2023	AUG 2023 AUG 2024

Revised: 4/12/21



Existing Newell Creek Pipeline with Replacement Pipeline Section at Brackney Landslide



Our
Water,
Our
Future



2.x North Coast System Rehabilitation/Replacement Projects

Current Status: Planning

Project Need

Rehabilitation and/or replacement of leaking and unreliable pipelines.

Background

The City operates an 18-mile long pipe network and four surface water diversion structures on Liddell, Reggiardo, Laguna, and Majors Creeks (collectively referred to as the North Coast System) which provides up to 25 percent of Santa Cruz's overall water supply. The system of pipelines and diversions are reaching the end of their expected life and require increased routine maintenance and emergency repairs.

In 2005, Carollo Engineers prepared a preliminary engineering study and Environmental Science Associates prepared a programmatic Environmental Impact Report (PEIR) for the North Coast System. To date, six miles of pipe, or 30% of the system, has been replaced. The Laguna Diversion is planned for construction in summer 2021.

Since the completion of the planning study and the PEIR, a number of changes have occurred with the North Coast System: operationally, the City now diverts on average less water from the north coast streams in order to protect federally listed endangered Coho Salmon and threatened Steelhead; land has transferred owners from mostly private to public in some locations (Bureau of Land Management, State Parks, and Living Landscapes Initiative); and, the Majors pipeline was significantly damaged during 2019/2020 rains,

rendering water from this system unavailable until further planning can be conducted.

Project Description

In September 2020, Carollo Engineers was contracted to update the prior planning study and capture the changes described above. Through and alignment alternatives analysis, hydraulic modeling, and updated cost estimating, the update will provide a clear plan for replacement and/or rehabilitation of the remainder of the system. The design and construction of future projects is currently split into Phases 4 and 5 and estimated implementation of 2029 through 2034.

Project Benefits

Benefits of this project include:

- Enhance water system reliability-maintain source diversity
- Preserve access to high quality water
- Minimize leaks and water loss
- Reduce risk of resource impacts due to leaks

Escalated Estimate

Project 2.1 - Planning

Construction	\$	NA
Other Costs*	\$	640,000
Total Project	\$	640,000

Project 2.1.1 – Phase 4

Construction	\$	13,500,000
Other Costs*	\$	6,640,000
Total Project	\$	20,140,000

Project 2.1.2 –Phase 5

Construction	\$	14,100,000
Other Costs*	\$	6,770,000
Total Project	\$	20,870,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
JUL 2020 SEP 2021	SEE PROJECT DESCRIPTION ABOVE	SEE PROJECT DESCRIPTION ABOVE	SEE PROJECT DESCRIPTION ABOVE

Revised: 4/12/2021



Our Water, Our Future



4.1 Graham Hill WTP Tube Settlers Replacement

Current Status: Post Construction

Project Need

This project replaced the old tube settler material that was at the end of its useful life.

Background

The City of Santa Cruz Water Department hired Kennedy Jenks to analyze tube settler replacement alternatives and develop the design and bidding documents for this “replace in kind” project. The project was awarded to W.M. Lyles Co during a public bid process in the Fall of 2018.

Project Description

This project replaced the existing tube settler modules with new unidirectional tube settler modules. The project included:

- Replacement of existing tube settlers, reusing existing support beams
- Replacement of existing sludge collection system piping

Project Benefits

Benefits of this project include:

- Reliable, new equipment
- Decreased maintenance liability
- Reliable tube settlers will work in conjunction with new flocculators

Escalated Estimate

Construction	\$ 1,300,000
Other Costs*	\$ 330,000
Total Project	<u>\$ 1,630,000</u>

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

Bonds and Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
APR 2017	DEC 2018	JUL 2019	NOV 2019
AUG 2018	JUN 2019	NOV 2019	NOV 2020

Revised: 4/12/21



4.2 Graham Hill WTP Flocculator Replacement Project

Current Status: Post Construction

Project Need

This project replaces old flocculator equipment at the water treatment plant with new, reliable equipment.

Background

The City of Santa Cruz Water Department hired Kennedy Jenks to analyze flocculator replacement alternatives and develop the design and bidding documents for this “replace in kind” project. The project was awarded to W.M. Lyles Co in the Fall of 2019.

Project Description

This project replaces the existing horizontal flocculators with new horizontal flocculators.

This project consists of the following items:

- Remove existing flocculator shafts, paddles and motors
- Reuse existing support columns and steel beams
- Install new flocculators and motors
- Install new wiring from basement to the new equipment

Project Benefits

Benefits of this project include:

- Reliable, new equipment
- Decreased maintenance liability
- Reliable flocculators will work in conjunction with newly-replaced tube settlers in the sedimentation basins

Escalated Estimate

Construction	\$ 1,480,000
Other Costs*	\$ 500,000
Total Project	\$ 1,980,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

Bonds and Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
NOV 2018 JAN 2019	FEB 2019 AUG 2019	MAR 2020 MAR 2021	MAR 2021 AUG 2021

Revised: 4/12/21



Our
Water,
Our
Future



4.3 Graham Hill WTP Concrete Tanks Replacement

Current Status: Construction

Project Need

The Graham Hill Water Treatment Plant's four post-tensioned concrete tanks are nearly 60 years old. Three of the tanks, Filtered Water, Reclaim, and Solids Storage Tanks are visually deteriorating as the tanks approach the end of their service life.

Background

As part of the City of Santa Cruz's overall plan to ensure compliance with changing water quality regulations and to maintain plant reliability, several improvements are needed to expand the existing Graham Hill Water Treatment Plant. The City of Santa Cruz Water Department hired Kennedy Jenks to complete a Concrete Tanks Assessment and Evaluation report summarizing visual and structural deficiencies with the four Concrete Tanks. Based on the results of this report, design was initiated and recently completed for design of the replacement of three concrete tanks and associated pump stations, piping, equipment, electrical upgrades, and site improvements.

Project Description

This project includes the construction of the three concrete tanks (0.75 MG Filtered Water Tank, 0.7 MG Reclaim Tank, and 0.7 MG Solids Storage Tank), relocation and redesign of the existing Reclaim and Wash Water Supply Pump Stations, design of new Decant and Solids Pump Stations, as

well as replacement of related equipment, piping, and other appurtenances. In addition, a new electrical building and several retaining walls will be constructed, and the existing access roadway to the site will be widened.

Project Benefits

Benefits of this project include:

- Three new structurally acceptable concrete tanks
- Filtered Water Tank with chlorine contact raceway
- Increased operational flexibility and redundancy with improvements to pump stations and piping layouts

Escalated Estimate

Construction	\$ 28,300,000
Other Costs*	\$ 17,910,000
Total Project	\$ 46,210,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

DWSRF Loan and matching Pay as you go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
N/A	MAR 2017 AUG 2020	FEB 2021 SEP 2024	SEP 2024 SEP 2025

Revised: 4/12/2021



4.4 Graham Hill WTP Facilities Improvement Project

Current Status: Design

Project Need

The Graham Hill Water Treatment Plant (GHWTP) was commissioned in 1960 and has provided high quality potable water to the City of Santa Cruz for the last 60 years. Many modifications to GHWTP have been made over the years in response to changing regulations, permit requirements and to increase system reliability. The facility requires improvements that allow the plant to continue to reliably meet current, as well as future treatment objectives.

Background

SCWD hired HDR in 2018 to identify and develop a plan for overall improvements to the GHWTP to address the aging facilities so that the plant can continue to reliably meet current, as well as, future treatment objectives.

Projects Major Processes and Components

- Replacement of rapid mix basin with flash mix structure
- Replacement of existing pretreatment processes with high rate clarification (HRC)
- Conversion of existing filters to dual media filters
- Replacement of recycled stream treatment process including polymer system
- Construction of residuals dewatering facility, including mechanical belt press, equalization tanks, feed pump station, building, cake pumps, and load leveling system
- Replacement or new construction of chemical storage tanks, chemical transfer pumps, and chemical piping for all plant chemicals
- Construction of structural improvements for existing operations building
- Construction of new two-story operations building
- Replacement of existing filter gallery
- Construction of ancillary improvements, including replacement/rehab of existing pipelines, storm drain improvements, flood protection, replacement of HVAC units, and various electrical and instrumentation improvements

Project Benefits

- Upgrade treatment processes to reliably meet current and future regulations.
- Resilience to address changing source water quality and emerging contaminant concerns.
- Reduce operational stress for operators.

Escalated Estimate

Construction	\$ 106,600,000
Other Costs*	\$ 39,570,000
Total Project	\$ 146,170,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Sources

US EPA WIFIA loan, DWSRF loan and Pay as you go

Contract Type

Progressive Design-Build

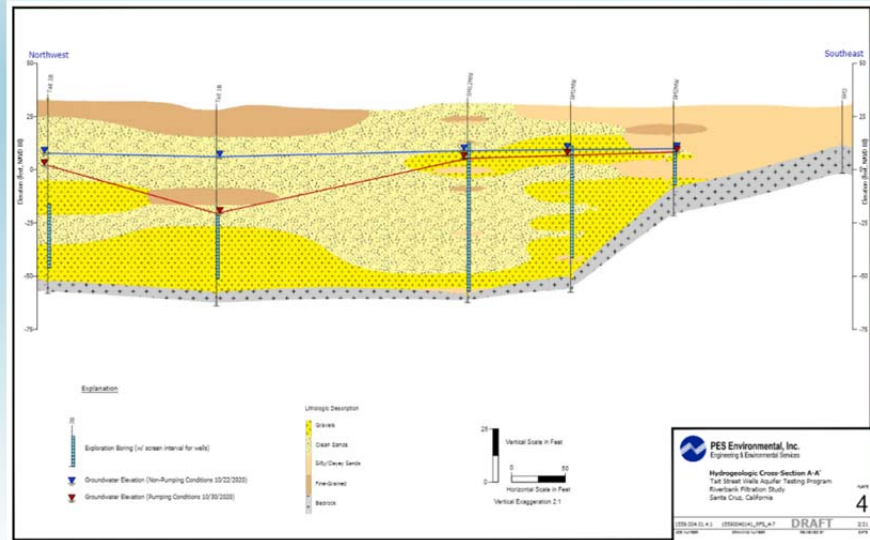
Current Schedule Start-Finish Dates

Project Schedule Key Dates:
 Design-Build proposals due April 2021
 Phase I Services NTP in June 2021

Current Project Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
MAR 2018 MAY 2020	JUN 2021 SEP 2023	MAY 2024 NOV 2027	NOV 2027 NOV 2028

Revised 4/12/2021



4.5 Riverbank Filtration

Current Status: Planning

Project Description

This project assesses the feasibility of new riverbank filtration wells along the San Lorenzo River near two different existing surface water diversions at Tait and Felton. Field work is occurring in two phases during the fall of calendar years 2020 and 2021. Feasibility study is scheduled for completion in spring 2022. If found feasible, locations and design parameters for installation of vertical or horizontal wells would be recommended. Construction would be scheduled and budgeted in future years.

Project Background

The City operates two surface diversions and three vertical wells along the San Lorenzo River (SLR). The three wells provide a consistent source of low turbidity, high quality water and are more reliable source of water from the (SLR) than the diversions that can be impacted by storms, fire and flooding.

Project Need

Given the increased frequency of flooding and impaired water in the SLR associated with fires and storms, the Department is evaluating the feasibility of expanding the use of riverbank filtration as a means of collecting water from the SLR. Collection of water in this manner will further guarantee a reliable source of supply through buried infrastructure, and will improve the water

quality because of the natural filtration through the alluvial material.

Project Benefits

Potential benefits of this project include:

- Improved reliability of municipal water supply
- Expanded sourcewater supply option
- Improved sourcewater quality

Escalated Estimate

Construction	\$ 3,600,000
Other Costs*	\$ 3,790,000
Total Project	<u>\$ 7,390,000</u>

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Completion
AUG/2018	JUL/2022	MAR/2024	NOV/2026
MAR/2022	SEP/2023	NOV/2026	NOV/2027

Revised: 4/12/2021



Our Water, Our Future



University Tank No. 4 Rehabilitation/ Replacement

Current Status: Planning

Project Need

University Tank No. 4 (U4) is a 0.4MG steel reservoir with a diameter of 54 feet and a shell height of 24 feet. The reservoir was constructed in 1965 by the Pittsburgh-Des Moines Steel Company and predominantly serves the University of California – Santa Cruz (UCSC). Recent video inspections of U4 in 2019 show signs of corrosion on the tank floor, shell and roof necessitating a full rehabilitation or replacement project to ensure ongoing reliability.

Due to its location in the Coastal Zone, site constraints (size, environmental, etc.) and limited system redundancy to take the tank offline, significant pre-planning (environmental permitting and review, constructability reviews, alternative selection, etc.) is necessary to complete the project.

Background

Carollo Engineers completed an evaluation of the entire University Water System in 1996 including U4. Results from this report included recommendations for increasing the capacity of U4 to 1MG and a conceptual level design of its placement.

Diving inspection by Liquivision Technology was completed in 2019. Video

results from the inspection show that the floor plates are corroded. Other structural members (shell, roof, etc.) show signs of corrosion as well. A full structural inspection and assessment is underway and design will start later in 2021.

Project Description

This project includes engineering analysis and condition assessment of the University 4 tank to ensure continued reliable service. Project includes analysis of alternatives, design of project, construction easements from UCSC, environmental permitting and review, plans and specifications for rehabilitation/replacement project, and construction.

Project Benefits

Benefits of this project include:

- Improved system reliability and redundancy
- Expanded storage capacity
- Water quality improvements
- O&M upgrades (e.g. access, safety, etc.).

Escalated Estimate

Construction	\$ 3,800,000
Other Costs*	\$ 2,520,000
Total Project	\$ 6,320,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grant, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
MAR 2020 MAY 2021	OCT 2021 NOV 2022	AUG 2023 MAY 2024	MAY 2024 MAY 2025

Revised: 4/12/2021



5.2 Meter Replacement Project

Current Status: Construction

Project Need

The water metering system, consisting of meters and radios, is failing: water meters are slowing down or not registering at all, resulting in widespread revenue loss, excessive and costly maintenance, and inefficient meter reading and billing.

Background

The Water Department has completed a comprehensive business case evaluation which compares the costs and benefits of the current year-after-year meter replacement approach versus a systematic two-year meter replacement program. The business case finds that a two-year replacement program is less expensive and achieves greater customer and utility benefit than the year-after-year approach.

Project Description

The meter replacement project consists of procurement of meters and lids, , installation services, and project management services. System-wide installation is scheduled to take 12-18 months.

Project Benefits

Benefits of this project include:

- \$6.5M avoided labor costs; \$3M improved meter registration; \$1M reduced overtime, seasonal labor and vehicle cost
- Improved customer service; advanced leak detection and water loss reduction; reduced carbon footprint; improved safety; improved ratemaking analysis

Escalated Estimate

Construction	\$ 11,600,000
Other Costs*	\$ 2,110,000
Total Project	\$ 13,710,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

Bonds and Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction
FEB 2018 MAY 2019	SEP 2019 SEP 2020	JUL 2021 JUL 2022

Revised: 4/12/21



Our
Water,
Our
Future



Engineering and Distribution Main Replacement Projects

Current Status: Ongoing program

Project Need

The City owns 272 miles of treated water main infrastructure that continues to age and deteriorate. Ongoing maintenance replacement is needed to mitigate the risk of catastrophic failures and excessive break rates.

Background

This project is part of the recurring program to replace distribution system water mains identified and prioritized based on data driven models by the Department to maintain water system reliability, deliver adequate fire flows, improve circulation and water quality, and reduce maintenance and emergency repair costs. Main Replacement Planning to define and prioritize specific projects was completed in December 2020. Prioritization was determined based on a combination of characteristics such as age, material, and leak history, which influence a pipe's likelihood of failure, as well as a combination of circumstances such as poor soils, heavy traffic, and customer outages, which influence a pipe's consequence of failure.

Project Description

In alignment with the Main Replacement Planning work and prioritization, this project includes recurring annual funding for:

- *Rehabilitation and replacement* of water transmission mains. Pipes 10" or larger are typically installed by contractors according to bid plans and specifications.
- *Replacement* of deteriorated or undersized water mains, as identified and prioritized by the Department and implemented by the Distribution Section.
- *Relocation* of water mains, service lines, and appurtenances as necessitated by City, County or other Agency improvements such as road improvement, storm drain improvement projects, and/or other projects that conflict with existing water infrastructure.
- *Re-imbursement* of main replacements needed to accommodate customer-requested service connections to inadequate mains. (Funds, to the extent of the appropriation, are disbursed to customers on a first-come, first-served basis.)

Project Benefits

Benefits of this project include:

- Maintaining water system reliability,
- Delivering adequate fire flows,
- Improving circulation and water quality, and
- Reducing maintenance costs

Escalated Estimate

Construction	Per project
Other Costs*	Per project
Total Project	\$ 35,050,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grant, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
COMPLETED DEC 2020	Ongoing: Budgeted & Funded Annually each FY	Ongoing: Budgeted & Funded Annually each FY	2038

Revised: 4/12/2021



Figure 5-1. Areas requiring additional water age investigation

Distribution System Water Quality Improvements

Current Status: Planning

Project Need / Background

Certain zones of the water distribution system have the potential to experience elevated water age, and low chlorine residuals. To avoid high water age, these areas are flushed to improve water turnover and maintain water quality. This practice consumes operations staff time, and increases water loss.

Project Description

This project will identify and evaluate potential infrastructure improvements (for example, tank aerators) to improve water turnover, enhance water quality, reduce water waste, and improve operations efficiency. Subsequent phases will include design and construction.

Project Benefits

Benefits of this project include:

- Reduced time that treated water stays in the system
- Enhanced water quality
- Reduced water waste, and
- Improved operations efficiency

Escalated Estimate

Construction	NA
Other Costs*	\$ 90,000
Total Project	\$ 90,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Completion
2020			2022

Revised: 4/12/21



Our
Water,
Our
Future



Facility and Infrastructure Improvements

Current Status: Ongoing Program

Project Need/Background

The Facility and Infrastructure Improvements “FI&I” project serves as a placeholder project to allow the Department to address minor system issues that may not be defined by longer range planning documents, facility master plans or condition assessments. When minor system issues are identified and sufficiently defined a new CIP project is created and budget is reassigned from the FII at that time.

Project Description

Below are previously completed or active project examples of the types of projects that would be considered Facility and Infrastructure improvement projects

- Pressure regulating station upgrades/replacements
- Union Locust backup power supply
- System Radio Replacements
- Storage Building at Bay Street Reservoir

Project Benefits

Benefits of this project include:

- Provide budget placeholder for small by critical projects
- Ensure long term budgeting is inclusive and complete

Escalated Estimate

Construction	Per project
Other Costs*	Per project
Total Project	\$ 7,890,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grant, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Completion
2022			2038

Revised: 4/12/21



Our
Water,
Our
Future



Security Camera and Building Access Upgrades

Current Status: Construction

Project Need

Existing access control system is at 'end of life'. A modern access control system is needed to control access to critical water treatment plant sites, provide monitoring and alarm notifications when intrusions are detected. Video surveillance allows for real-time viewing and investigation of intrusion activity.

Background

The City of Santa Cruz has selected the Genetec Access Control solution and Ojo Technologies has been selected to install and configure Genetec access control equipment. Four Water department sites have been migrated and using the Genetec Solution.

Project Description

This project involves the continuation of the evaluation and implementation of security camera and building access upgrades at various water department facilities.

Project Benefits

Benefits of this project include:

- Improved security and facility access

Escalated Estimate

Construction	\$0
Other Costs*	\$550,000
Total Project	\$550,000

* Other costs may include planning, design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

Pay As You Go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Completion
2018			JUN 2022

Revised: 4/12/21



Our
Water,
Our
Future



4.3.1 Graham Hill Water Treatment Plant Entrance Improvements Project

Current Status: Construction

Project Need

The Graham Hill Water Treatment Plant (GHWTP) is a critical facility that must remain accessible and secure at all times. The existing entrance gate malfunctions and the single-lane road creates a choke point, especially during deliveries and periods of high vehicle activity.

Background

In order to maintain security and access to the treatment plant, the City of Santa Cruz is making modifications to the entrance gate, road, and controls systems. The City hired West Yost Associates in 2020 to design these improvements; the design was completed in March 2021.

Project Description

The GHWTP entrance road will be modified to a two-lane, two-way driveway with lane markings. The existing gate will be replaced with two separate gates to allow for simultaneous entering and exiting traffic. The existing access control system and cameras will be used but relocated, with provisions for future replacement. Engineered gravel strips will be included on both the north and south side of the entrance roadway to provide temporary staging for construction vehicles.

Project Benefits

Benefits of this project include:

- Increased reliability and security at GHWTP entrance
- Improved access due to wider road
- Updated electrical and communications

Escalated Estimate

Construction	\$ 250,000
Other Costs*	\$ 215,000
Total Project	\$ 465,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

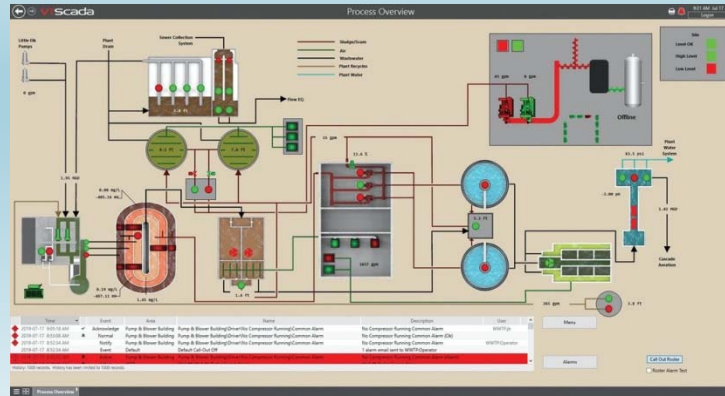
Potential Funding Source

Bonds and Pay as you go

Current Schedule Start-Finish Dates

Planning	Design	Construction	Post Construction
N/A	NOV 2020 FEB 2021	MAY 2021 SEP 2021	SEP 2021 DEC 2021

Revised: 4/12/2021



GHWTP SCADA Radio System Replacement

Current Status: Planning

Project Need / Background

Radio equipment is used at the Graham Hill Water Treatment Plant (GHWTP) to communicate with remote operations locations. The existing radio equipment infrastructure is no longer supported and the sole manufacturer is no longer in business.

Project Description

The goal of this the project is replace the radio equipment used to transmit and receive control and status information between the GHWTP and remote sites. The scope of this project involves approximately 30 remote water site locations including the replacement and programming of base radio equipment located at the GHWTP.

Project Benefits

Benefits of this project include:

- Increased operations reliability

Escalated Estimate

Construction	NA
Other Costs*	\$150,000
Total Project	\$150,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

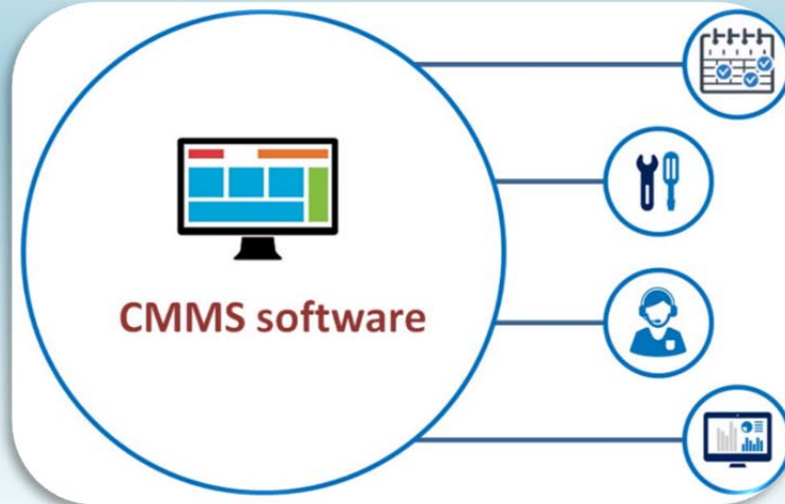
Potential Funding Source

TBD: Bonds, Grant, Loans, or Pay As You Go

**Current Schedule
Start-Finish Dates**

Planning	Design	Construction	Completion
2022			2022

Revised: 4/12/21



Computerized Maintenance Management System Software Replacement

Current Status: Planning

Project Need / Background

In 2019 an operations and maintenance technology evaluation found the current work order and preventive maintenance system called Maintenance Connection, used by the Water-Distribution Section as well as several Public Works sections to be insufficiently supporting the City's needs.

Project Description

This system will be replaced with one that is more intuitive, GIS-based, and aligned with existing work processes while also enhancing coordination between various City sections using the software.

Project Benefits

Benefits of this project include:

- Increased efficiency and long term cost savings associated with maintenance practices

Escalated Estimate

Construction	NA
Other Costs*	\$390,000
Total Project	\$390,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grants, Loans, or Pay As You Go

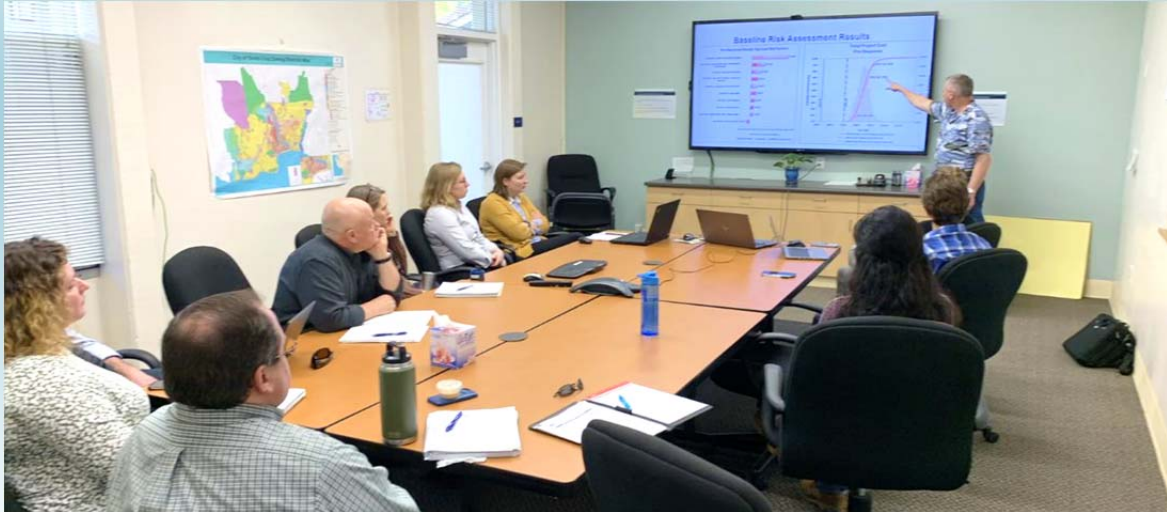
Current Schedule Start-Finish Dates

Planning	Design	Construction	Completion
2022			2022

Revised: 04/12/21



Our Water, Our Future



Water Program Administration

Current Status: Ongoing Program

Project Need

To achieve system reliability for aging infrastructure and system resiliency in the face of climate change the Water Department is delivering a significantly larger capital program over the next 10-15 years. A program management consultant was hired to implement consistent and efficient delivery of services, and temporarily supplement City staff resources.

Background

The City has contracted with HDR Inc. for 5 years to provide Program Management Services. Contract was initiated in December 2017 and includes annual service orders to reflect services needed during the coming fiscal year.

Project Description

As Program Manager, HDR supplements City staff and brings the additional technical and managerial resources required to implement an expanded Capital Investment Program.

The annual service order for FY22 consists of the following items:

- General program administration
- Risk management
- Document management / SharePoint administration
- Training
- Quality program
- Program controls (schedule, cost, change management)
- Support of the department's finance and accounting systems

Project Benefits

- Design management, general electrical and operations support
- Collaborative design review software support
- General construction management oversight
- Environmental advisory support
- Asset management, computerized maintenance management system implementation

Benefits of this project include:

- Maximized annual project delivery volume
- Increased rate of completion of projects

Escalated Estimate

Construction	\$0
Other Costs* (Cumulative)	\$23,850,000
Total	\$23,850,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grant, Loans, or Pay As You Go

Current Schedule Start-Finish Dates

Ongoing Administration
01/2018 [START]
06/2029 [END]

Revised: 04/12/21



Water Program Management Reserve

Current Status: Ongoing Program

Project Need / Background

A best practice of capital program implementation is to establish and budget management reserve. Both the American Association of Cost Estimating Engineers and Project Management Institute recommend budgeting for this contingency fund independent of individual project estimates that would cover unanticipated cost changes due to scope change, schedule slippage, and program risks.

Project Description

The Water Program Management Reserve will function as a contingency fund to cover unplanned cost changes in any separate project under the Capital Investment Program. Management Reserve amount is set according to industry best practice and reviewed annually in conjunction with updates to financial and risk management modeling to quantify the capital program risks. The total value of Management Reserve is aligned with the quantification of program risks over the duration of the current CIP (through FY 2033). The currently budgeted management reserve amount in conjunction with other project contingencies correlates to an 85 percentile risk confidence level. In other words the current program budget is carrying sufficient contingency to cover 85% of potential cost and schedule risks. Comparable water programs in California, and Oregon are budgeting at similar risk confidence levels.

Project Benefits

Benefits of this project include:

- Improved confidence to deliver program within budget and maintained project schedules

Remaining Reserve Balance

Construction	NA
Other Costs*	<u>\$47,740,000</u>
Total Project	\$47,740,000

* Other costs may include design, engineering services during construction, construction management, construction contingency, environmental, permitting, legal, land transaction, city administration, and program management costs.

Potential Funding Source

TBD: Bonds, Grant, Loans, or Pay As You Go

**Current Schedule Start-
Finish Dates**

Planning	Design	Construction	Completion
2019			2030

Revised: 04/12/21