San José-Santa Clara Regional Wastewater Facility

CIP

CAPITAL IMPROVEMENT PROGRAM

Quarterly Status Report:
July – September 2024

MISSION
Rebuild and revitalize the Regional Wastewater Facility and deliver the CIP on time and within budget.

CAPITAL IMPROVEMENT PROGRAM

HOW ARE WE DOING?

Key Performance Indicators (KPIs) Year-to-Date:

SAFETY
0 Incidents

EXPENDITURES
On Target

ENVIRONMENTAL
0 Permit Violations

LEGEND

●	On Target
▲	Alert
◆	At Risk

The San José-Santa Clara Regional Wastewater Facility (RWF) is the largest advanced wastewater treatment facility in the western United States. The RWF has been treating the South Bay's wastewater and protecting public health and the environment without interruption since 1956. The discharge of clean wastewater into the South San Francisco Bay contributes to diverse and thriving fish and wildlife ecosystems.

Much of the RWF's infrastructure is functioning well beyond its intended use. As a result of a long and thoughtful Master Plan process, a $2.1 billion, 30-year Capital Improvement Program (CIP) is underway to modernize and refurbish the RWF so its critical work can continue. Homes and businesses in Silicon Valley need a modern, reliable, state-of-the-art treatment plant to ensure a high quality of life and a thriving economy. The CIP is rebuilding RWF infrastructure and updating treatment processes with innovative, efficient new technologies. The first phase of the CIP started in 2014 and is nearing completion. The second phase will soon be underway.

This report summarizes the CIP's progress and highlights accomplishments from July to September 2024.

Staffing Integration and Synergy Lead to Meeting Goals Together

By Mariana Chavez-Vazquez, RWF General Manager

As we settle into the new fiscal year and continue to deliver the largest capital program in the City's history, we also continue our vision of cultivating and sustaining our tight knit team here at the RWF.

As mentioned in our last quarterly report, we made some recent organizational changes to improve the management of the three major groups located at the RWF: Operations and Maintenance (O&M), CIP, and the Environmental Laboratory. One of the largest changes was the creation of the General Manager role, which I took on starting in November 2023. The new role brings these groups under the same leadership umbrella, facilitating better collaboration and communication.

Across the teams based at the RWF, each group is benefiting from this shift, becoming more aware of other groups' work, their challenges, and their achievements. Stemming from our increased coordination and synergy, we're becoming more efficient. A prime example of this increased synergy is the revamped training series being developed by CIP, O&M, and Process Engineering staff.

Recognizing the need for a more comprehensive understanding of the RWF treatment processes and their interrelationships, this training is designed to bridge knowledge gaps caused by staff turnover, time lapses, and changes to facility processes over the years. By providing a common baseline of understanding, this training will streamline communications and decision-making between the various groups, ensuring that CIP and O&M activities proceed more smoothly.

Our ultimate goal continues to be running a safe, reliable and well-designed facility that provides a high level of service. I am grateful for the many staff who support me and our collective goals. I am inspired by witnessing new interactions and interesting ways our collaboration has evolved during this period. We've accomplished so much and there is still work to be done to rehabilitate and improve the RWF to continue protecting public health, the Bay and local wildlife.

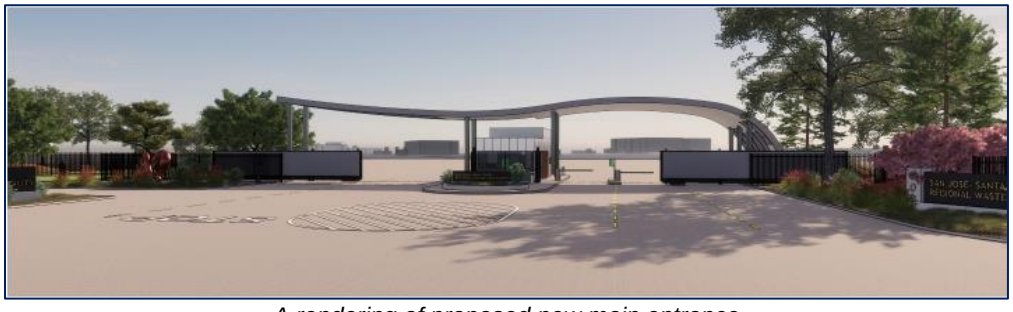
RWF Main Entrance Improvements - Making the RWF More Accessible

The RWF Main Entrance Improvements project modernizes the main entry and exit area of the facility, making it more accessible. Built in 1988, the existing main gate serves as the RWF's primary vehicle security checkpoint and has lasted beyond its service life. The new entrance will be upgraded to meet Americans with Disabilities Act requirements, the entry and exit lanes will be widened to improve traffic flow for large delivery trucks, and lighting will be improved for clearer nighttime visibility.

The project will also construct a new guard house, complete with security-monitoring workstations, restroom, and canopy covering the entry and exit lanes. Other upgrades to the main entrance area include construction of pedestrian walkways and relocation of existing utilities.

New exterior building signage will be installed throughout the RWF, improving building identification with the inclusion of wayfinding sign totems and posts. The signs were designed based on the 2015 RWF Architectural Program Guidelines as well as input from multiple City departments and RWF staff. Project Manager Shrimathi Balasubramanian believes the signage will be beneficial for navigating the large facility with 175 acres of operational area. "As one of the largest facilities on the west coast, the RWF's visitors, delivery truck drivers and staff can easily lose their way in this huge facility. Installing wayfinding signage posts and totems will be extremely valuable for navigation and informational purposes, especially for emergency vehicles and first responders," said Balasubramanian.

Construction on the project began in August 2024 and Substantial Completion is expected by the end of March 2026. By then, the new main entrance should be fully functional, which will allow the contractor to demolish the old entrance infrastructure.



A rendering of proposed new main entrance

How the CIP Delivers Projects

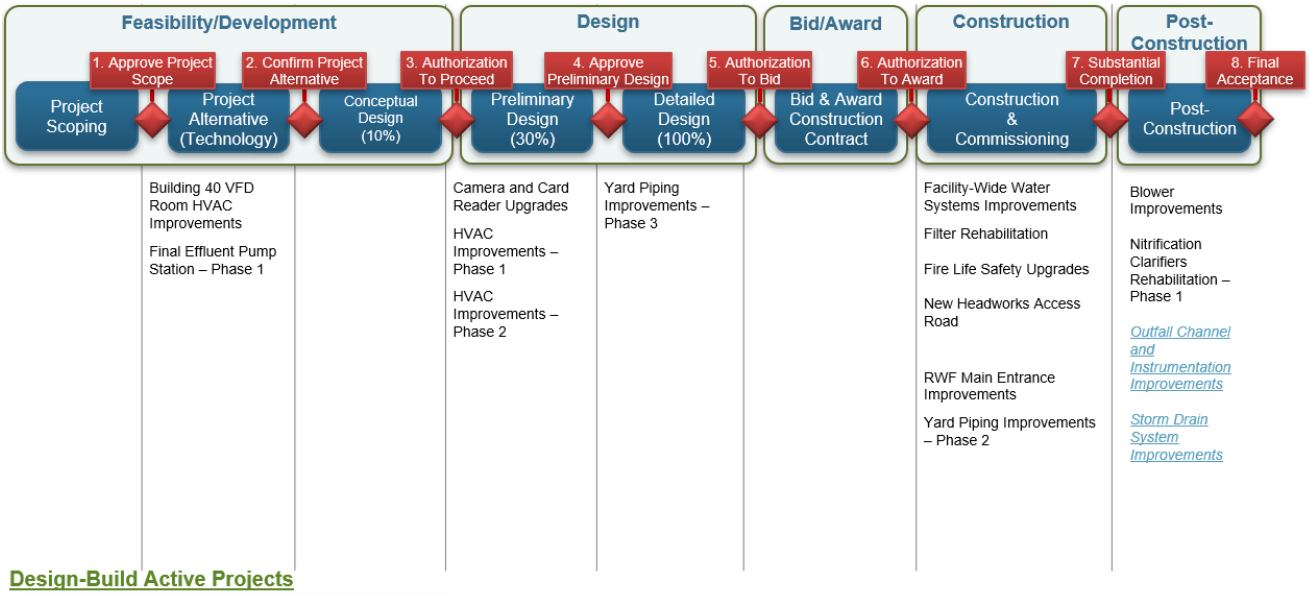
The CIP uses two project delivery methods:

- **Design-bid-build** is a commonly used delivery method in which an owner first procures a professional engineering firm to prepare detailed design plans and specifications for a project. The owner then solicits bids for the project and procures a general contractor to construct the project based on the design completed by the engineer.
- **Design-build** is a two-phase delivery method contracted with a single design-build firm in which the project's design, cost estimating, construction schedule and final guaranteed maximum price (GMP) are developed during the first phase. If the owner and design-builder agree on the schedule and the GMP during the first phase, the final design, construction and commissioning are completed during the second phase.

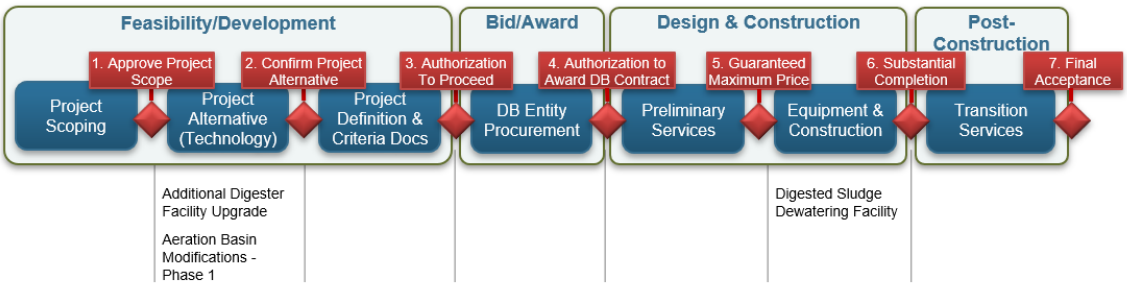
All CIP projects, regardless of project delivery method, follow a consistent process of consecutive delivery stages, each culminating in a stage gate, as presented in the project delivery models below. Stage gates are go/no-go points at which the project team must demonstrate that the project has met predefined evaluation criteria before advancing to the next delivery stage. The benefits of the stage gate process include consistency, quality assurance, ensuring that the scope continues to address existing needs, budget/schedule control, and Operations & Maintenance team engagement.

Active Projects by Delivery Model

Design-Bid-Build Active Projects



Design-Build Active Projects



*Projects shown *underlined and in blue and italics* have either been initiated or advanced this reporting period.

CIP PROJECTS

The CIP includes projects in both design and construction phases. This update outlines accomplishments for the past quarter in two sections: Projects in Design and Projects in Construction. For projects in construction and post-construction phases, the CIP uses cost and schedule baselines monitored through the City's Capital Project Management System. Access project performance information at the following link:

Project Performance Information

Projects in Design

- Additional Digester Facility Upgrades
  In July and August, the Owner's Advisor, Carollo, continued struvite analysis, condition assessments and seismic evaluation. In September, staff hosted an Open House event to outreach to potential design-builder vendors ahead of the advertisement of a Request for Qualification expected in February 2025.

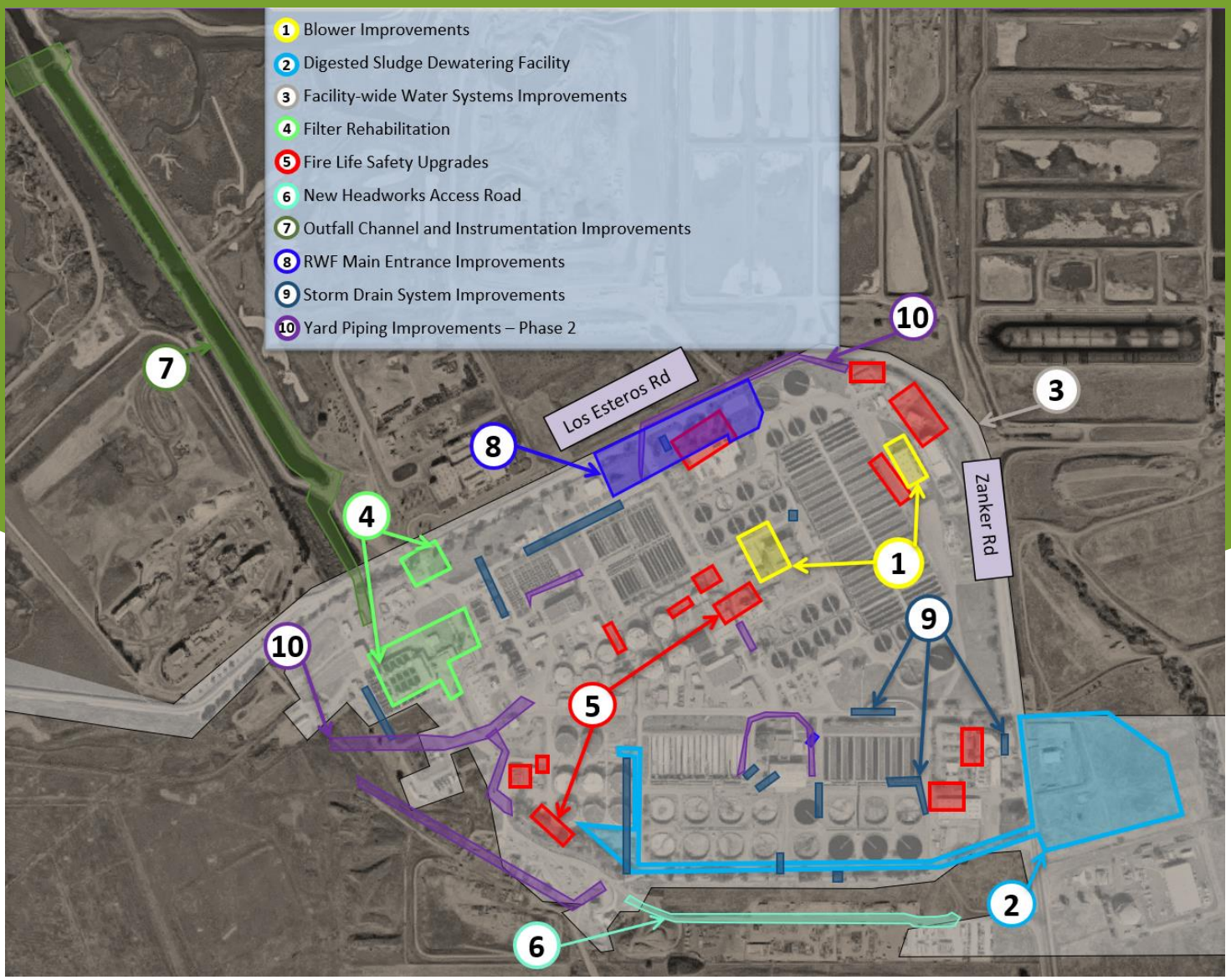
- Building 40 VFD Room HVAC Upgrades
  During this period, consultant Brown & Caldwell developed design alternatives for the new HVAC system. Alternative Analysis workshops were held in August and September to gather stakeholder input.

- Camera and Card Reader Upgrades
  During this period, consultant Jacobs developed the Security Philosophy Technical Memorandum and continued to plan Preliminary Design.

- Yard Piping Improvements - Phase 3
  In August, consultant Black and Veatch delivered the final Preliminary Design submittal and started to develop the Detailed Design.

Projects in Construction

This aerial map of the RWF shows the CIP's active construction projects.



1 Blower Improvements: Oxygenating wastewater with greater energy efficiency

Secondary Blower Building with improvements

RWF's aeration blower systems, which supply oxygen for breaking down organic material in wastewater, are more than 30 years old. This project will replace blower engines, gearboxes, and associated control equipment, extending the system's life and enhancing its energy efficiency.

Project Budget: $49.7 million
Achieved Beneficial Use: June 2024
Update:

- During this period, contractor Monterey Mechanical continued addressing punch list items and compiling remaining final deliverables. Project Final Acceptance is anticipated in October 2024.

2 Digested Sludge Dewatering Facility: Drying biosolids more efficiently and effectively

Dewatering Building south stairs

The RWF currently uses an open-air lagoon and drying bed process to stabilize biosolids before landfill disposal. The 2013 Plant Master Plan recommended moving to an enclosed mechanical dewatering process. This project will build a mechanical dewatering facility and support facilities.

Project Budget: $177.0 million
Expected Beneficial Use: October 2025
Update:

- In July, design-builder Walsh installed electrical conduits and made significant progress on the fire protection, HVAC, plumbing, and mechanical piping systems in the main dewatering building.
- In August, Walsh completed conduit installation at the electrical building, curb and gutter placement along G Street, and several electrical duct banks near the dewatering building.
- In September, Walsh completed paving on G Street and continued to make progress on mechanical and electrical installations in the dewatering and truck loadout buildings.

3 Facility-wide Water Systems Improvements: Improving performance and reliability

Exploratory trenching

The RWF has five water systems: potable water (1W), groundwater (2W), process water (3W), fire protection water (4W), and recycled water (RW). These systems were constructed at separate times as part of various expansions. The aim of this project is to review, rehabilitate, replace, and/or extend the RWF's water systems to improve current and future performance and reliability.

Project Budget: $90.4 million
Expected Beneficial Use: June 2027
Update:

- During this period, contractor Ranger Pipelines performed exploratory trenching to locate existing 3W lines. Staff continued to review several submittals including for switchgear and transformer components.

4 Filter Rehabilitation: Protecting health and the environment, increasing reliability and capacity

Electrical load migration in progress

The filtration process is one of the final steps in wastewater treatment. The RWF's tertiary filtration process consists of 16 granular media filters and ancillary equipment. Built in the 1970s and 1980s, these components are near the end of their useful lives. The project will rehabilitate structural, mechanical, electrical and instrumentation elements of the system.

Project Budget: $60.0 million
Expected Beneficial Use: December 2024
Update:

- In July, contractor Walsh completed electrical load migration to the new S6 switchgear and installed various underground conduits and a new duct bank at the filter basin.
- In August, Walsh continued to work through complex electrical issues related to switchgear and motor control centers.
- In September, Walsh completed installation and energization of S6 Transformer 2, and continued installation of cooling fans and louvers at the S12 enclosure.

5 Fire Life Safety Upgrades: Improving worker health and safety and the environment

Installing warehouse infrastructure

Several RWF buildings currently lack automated fire alarm systems to monitor and send out a notification in the event of a fire. Fire life safety upgrades are needed to bring the RWF into compliance with current building safety and fire codes.

Project Budget: $7.8 million
Expected Beneficial Use: October 2024
Update:

- In July and August, contractor Blocka continued to install new fire alarm infrastructure throughout the RWF.
- In September, Blocka completed functional testing of the fire alarm communication with the Central Station monitoring and two Workstations. The Central Station was brought online, and Blocka proceeded with operational testing. The Fire Department completed inspections of 12 out of 13 buildings, which all passed inspection.

6 New Headworks Access Road: Enabling Headworks access and improving traffic flow

Aerial view of future road location

With the Headworks 3 facility now operational, septic hauling and chemical trucks need a dependable path to travel to and from the site. This project will create a permanent roadway from the Zanker Road Gate to the new Headworks 3 transfer point. The roadway will include proper drainage to protect the surrounding areas, including the nearby nature preserve, from spillage and pollution.

Project Budget: $5.2 million
Expected Beneficial Use: April 2025
Update:

- In July and August, staff issued Notice to Proceed to the contractor, O.C. Jones and Sons, Inc., and held pre-construction meetings.
- In September, O.C. Jones started pre-construction activities, including site surveying, clearing and grubbing, and subgrade preparation.

7 Outfall Channel and Instrumentation Improvements: Reliable water quality reporting at the edge of the Bay

Installing Daylight Station electrical components

The end product of the wastewater treatment process travels through the outfall channel to the Artesian Slough and South San Francisco Bay. This project will replace older technology with a fiber optic system, install new instruments, improve the integrity of the weir structure, and construct a large vault structure to install new flow meter technology, making the meters accessible to staff.

Project Budget: $10.6 million
Achieved Beneficial Use: September 2024
Update:

- During this period, contractor Anvil Builders successfully calibrated and tested the four new flow meters at the Daylight Station. The project reached Beneficial Use in September.
- Anvil continued to do other minor works and compile remaining final deliverables.

8 RWF Main Entrance Improvements: Modernizing the RWF's main entryway

Architectural rendering of proposed entrance

Built in 1988, the existing main gate serves as the RWF's primary vehicle security checkpoint and has lasted beyond its service life. The new entrance will be upgraded to meet Americans with Disabilities Act requirements, the entry and exit lanes will be widened to improve traffic flow for large delivery trucks, and lighting will be improved for clearer nighttime visibility.

Project Budget: $14.0 million
Expected Beneficial Use: March 2026
Update:

- In August, staff issued the Notice to Proceed to the contractor, W.E. Lyons Construction Co.
- In September, W.E. Lyons began pre-construction activities including a bird survey.

9 Storm Drain System Improvements: Protecting critical infrastructure during 10-year through 100-year storm events

Power station testing

The RWF experiences localized flooding during heavy rainfall events due to runoff, requiring improvements to the existing storm drain system to protect the operational area. This project will improve the existing storm drain system by rehabilitating storm water pump stations, pipes, manholes, catch basins, and other components. The upgrades made by this project will protect RWF's critical structures and equipment during 10-year through 100-year storm events.

Project Budget: $14.1 million
Achieved Beneficial Use: July 2024
Update:

- In July, contractor Ranger Pipelines began pump testing and all startup activities. The project achieved Beneficial Use in July.
- In August and September, Ranger continued to work on punch list items. Project Final Acceptance is expected in January 2025.

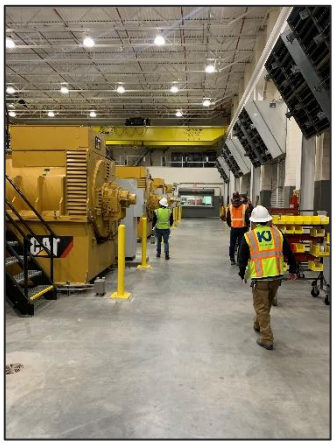
10 Yard Piping Improvements - Phase 2: Repairing and replacing critical pipelines at the RWF

48" pipe excavation

The RWF has 67,000 linear feet of process pipes that carry gas, liquids, sludge, air, steam and other process streams to and from the various treatment areas. These networks of pipeline are critical to RWF operations. Seventy percent of the pipes are more than 25 years old, and 10% are more than 50 years of age. This is the second of a multi-phase project to repair or replace pipe systems that have been identified as high priority or at high risk of failure.

Project Budget: $26.5 million
Expected Beneficial Use: January 2025
Update:

- In July contractor Michels Trenchless completed rehabilitation work and testing on the 102" nitrification influent pipe.
- In August, Michels completed rehabilitation and testing on the 96" raw sewer pipe.
- In September, Michels completed rehabilitation and testing on the 120" raw sewer pipe, 48" Santa Clara Force Main and the effluent junction structure.



Final Fire Life Safety Upgrades system inspections

What's Ahead?

In October – December 2024:

- Advertise the construction contract for Yard Piping Improvements - Phase 3.
- Achieve Beneficial Use on Filter Rehabilitation and Fire Life Safety Upgrades projects.
- File the Notice of Completion and Acceptance on Blower Improvements, Outfall Channel and Instrumentation Improvements, and Fire Life Safety Upgrades projects.

Fiscal Year 2024-2025 Program Performance Summary

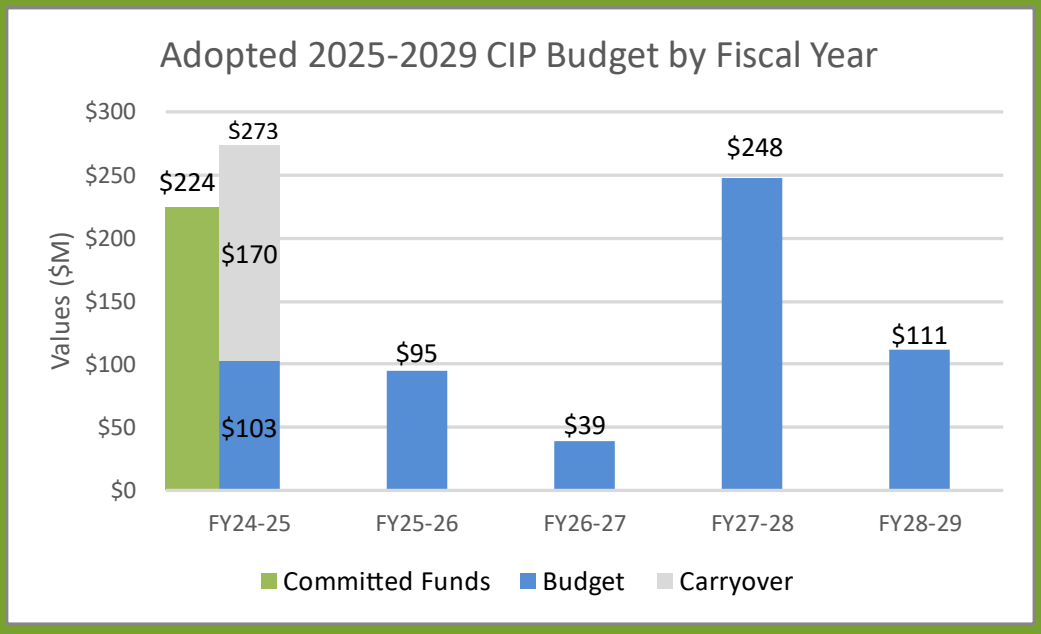
KPI	Target	Fiscal Year to Date			Fiscal Year End		
		Actual	Status	Trend	Forecast	Status	Trend
Stage Gates	90%	100% 7/7 [1]			100% 22/22		
Measurement: Percentage of initiated projects and studies that successfully pass each stage gate on their first attempt. Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75%							
Schedule	90%	100% 2/2 [2]			100% 6/6 [3]		
Measurement: Percentage of CIP projects delivered within 2 months of approved baseline Beneficial Use Milestone[4]. Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75%							
Budget	90%	50% 1/2 [5]			67% 6/9 [6]		
Measurement: Percentage of CIP projects that are accepted by the City within the approved baseline budget. Target:Green: >= 90%; Amber: 75% to 89%; Red: < 75							
Expenditures	$191M	$185M			$224M		
Measurement: CIP FY24-25 committed costs. Target: Committed costs meet or exceed 70% of planned budget. 70% of $273M = $191M. Therefore Fiscal Year End Green: >=$191M; Red: < $191M							
Safety	0	0			0		
Measurement: OSHA reportable incidents associated with CIP Delivery for the fiscal year.Criteria: Green: 0 injuries requiring hospitalization, 0 fatality; Amber: 1 to 2 injuries requiring hospitalization, 0 fatality; Red: >2 injuries requiring hospitalization, any fatality							
Environmental	0	0			0		
Measurement: Number of permit violations caused by CIP delivery for the fiscal year. Target: Green: 0 incidents; Amber: 1 to 2; Red: > 2							
Vacancy Rate[7]	10%	10% 7/72			10% 7/72		
Measurement: Ratio of the number of vacant approved positions to approved positions. Target: Green: <= 10%; Amber: 10% to 20%; Red: > 20%							

Program KPI – Fiscal Year 2024-2025 Information

Program Budget Performance

This section summarizes the cumulative monthly budget performance for FY 2024-25 based on the Adopted 2025-2029 CIP Budget.

Adopted 2025-2029 CIP Expenditures and Encumbrances

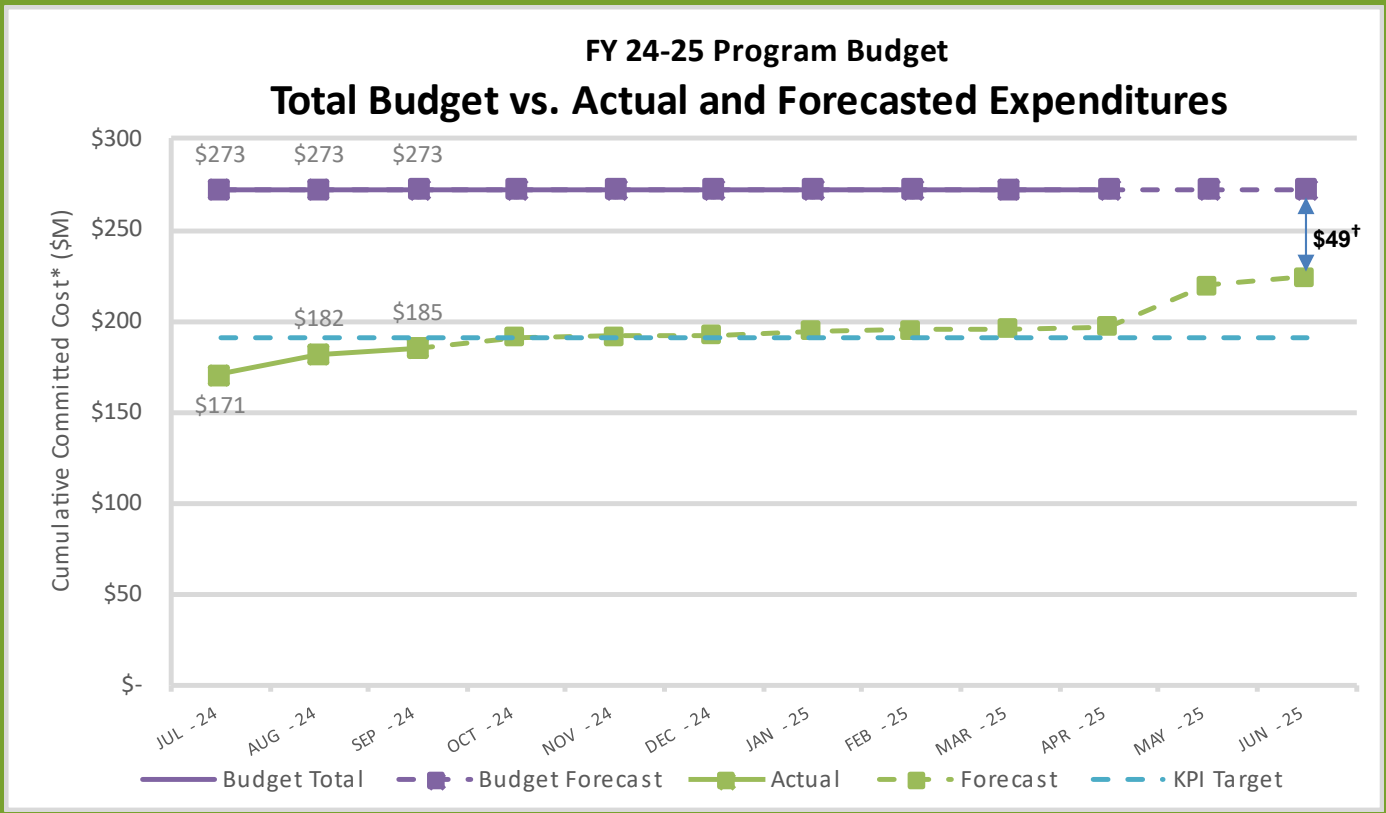


Budget Performance Information

Fiscal Year 2024-2025 Program Budget Performance

The FY 2024-25 CIP budget is composed of approximately $103 million in new and re-budgeted funds, plus encumbered carryover of $170 million, for a total of $273 million.

FY 2024-25 Program Budget



CIP Program Budget Information

Dewatering Project Enhances Biosolids Process

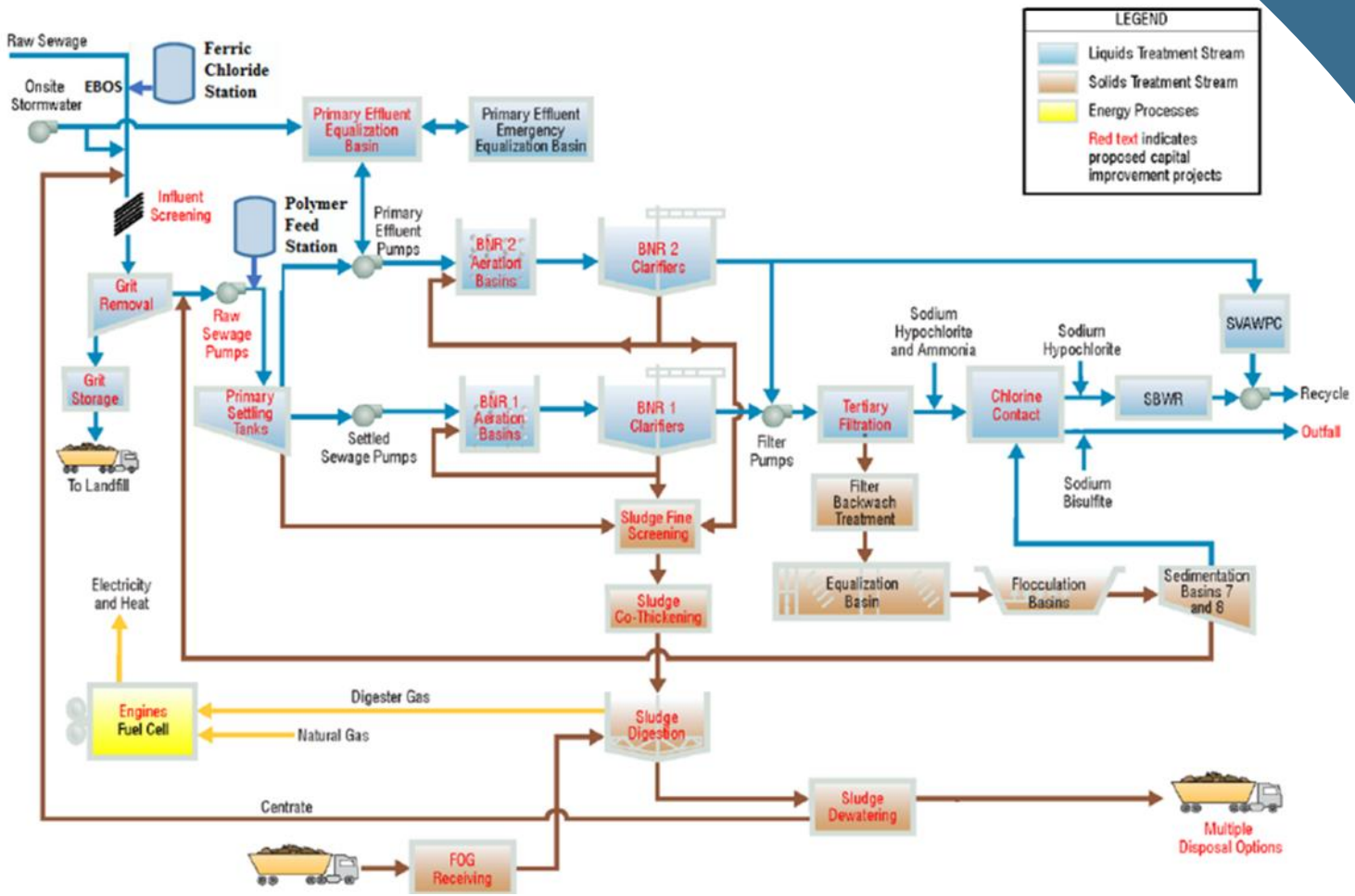
The Digested Sludge Dewatering Facility project, featured in this video, enhances the biosolids processing system to be a more efficient, effective process for reusing biosolids.

Want to learn more?

@sjenvironment @sjenvironment @sjenvironment

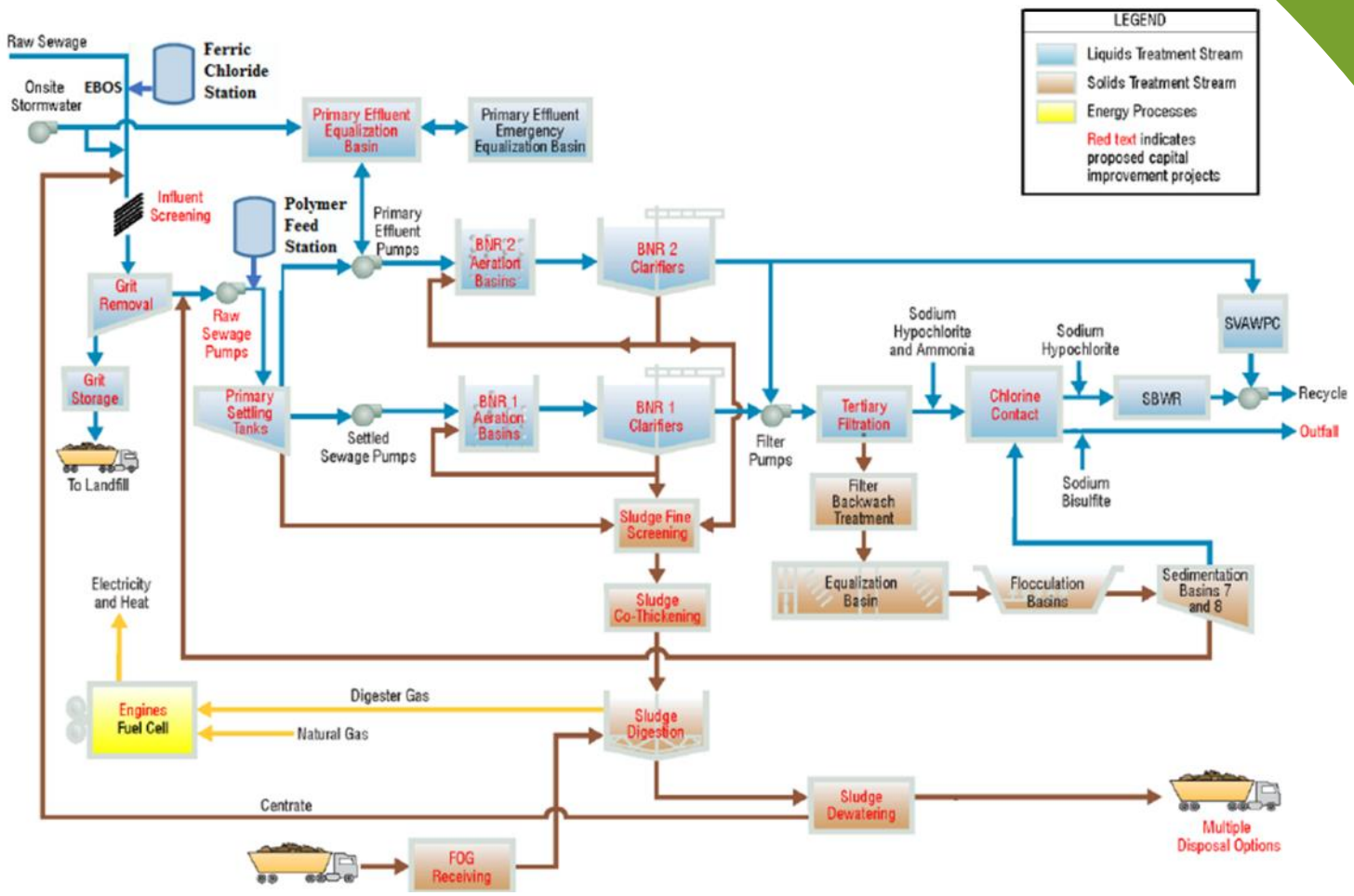
Regional Wastewater Facility Treatment

Current Treatment Process Flow Diagram



Regional Wastewater Facility Treatment

Proposed Treatment Process Flow Diagram



Glossary

Beneficial Use	When a CIP project is complete in accordance with contract documents and can be used or occupied by the City, it has achieved beneficial use.
Biogas	A renewable energy source produced by the breakdown of sewage waste in the absence of oxygen. Biogas is composed of methane, carbon dioxide and small amounts of hydrogen sulfide.
Biosolids	Treated sewage sludge.
Bufferlands	Open acreage used by wastewater treatment plants as a buffer between plant operations and nearby communities. Bufferlands minimize odor and operational impacts on plant neighbors and often serve as wildlife habitat.
Commissioning	The process of assuring that all systems and components of a facility, building or plant are designed, installed, tested, operated and maintained according to the owner's requirements.
DAFT	Dissolved air flotation thickener tanks. Dissolved air flotation, or DAF, is a treatment process that clarifies wastewater by removing suspended matter.
DCS	Distributed control system. A computerized system that allows treatment plant staff to remotely monitor and control treatment processes.
EIR	Environmental Impact Report. A public document required under the California Environmental Quality Act to describe potential environmental impacts associated with a project. An EIR also describes measures to mitigate the impacts.
Effluent	Treated wastewater that is discharged from a treatment plant.
Influent	Raw or untreated wastewater that flows into a treatment plant.
FOG	The Fats, Oils and Grease program administered by the City of San José's Environmental Services Department.
Headworks	Facilities that first receive influent at a wastewater treatment plant. The headworks screen and remove sticks, grit and other solid material from influent to protect downstream equipment in the treatment process.
NPDES permit	Under the federal Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program regulates point sources such as pipes and other conveyances that discharge pollutants into water. In California, NPDES permits for the discharge of treated wastewater are issued by the Regional Water Quality Control Boards.
Polymer	Primarily used to help manage the process of drying and consolidating sludge.
Preliminary treatment	The preparatory wastewater treatment stage, in which influent passes through headworks, which screen and remove sticks, rocks and debris; and grit chambers, which remove sand and gravel.
Primary treatment	The initial treatment for incoming wastewater, in which gravity settles solid material and rotating bars skim floating fats, oil and grease from influent.
Secondary treatment	The second stage of wastewater treatment, in which aeration tanks pump air into wastewater to promote the growth of naturally occurring bacteria that remove organic pollutants.
Stormwater	Water from rain that does not seep into the ground but instead flows into storm drains as runoff.
Tertiary treatment	The final stage in advanced wastewater treatment, in which wastewater flows through filter beds, then through chlorinated tanks to become 99% clean.
Wastewater	Water that enters the sanitary sewer system for treatment at a pollution control plant.
Wastewater Cake	Sludge that is compressed after dewatering.
WAS	Waste-activated sludge, or the excess quantity of bacteria and microbes removed from the secondary wastewater treatment process.