



San José-Santa Clara  
Regional Wastewater Facility

# CIP

## CAPITAL IMPROVEMENT PROGRAM

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Quarterly Status Report:  
October – December 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



The San José-Santa Clara Regional Wastewater Facility (RWF) is one of 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 October to December 2024.

## LEGEND



On Target



Alert



At Risk





## It was a banner year for the Capital Improvement Program with full steam ahead to 2025

By Mariana Chavez-Vazquez,  
RWF General Manager

As we welcome a new year, I recognize how much we've accomplished in 2024, as the Capital Improvement Program continues improving the RWF.



*Emergency diesel generators, a key consideration in the upcoming assessment of RWF Emergency Power Strategy*

To start the new year, I want to first acknowledge several programmatic studies taking place; the Tunnels Condition Assessment, the Warehouse Needs Assessment, and the Emergency Power Strategy, all of which will provide valuable information to the program. These types of studies are an integral part of CIP's planning efforts, allowing us to identify and prioritize capital needs. Programmatic studies allow us to evaluate the extent and criticality of these needs and determine the scope and timing of potential CIP projects, while also ensuring alignment with the overall strategic goals of the Plant Master Plan.

The RWF has over 150 miles of pipelines housed in tunnels. Some portions of the tunnels will continue to be in service, while other portions are expected to be decommissioned.

For tunnels that will remain in service, the **Tunnels Condition Assessment** will assess the structural condition of selected tunnels and tunnel ventilation systems, ensuring code compliance, proper functionality, and structural stability. After the field inspections are performed, the consultant will draft a technical memo discussing the assessed tunnel conditions, any deficiencies discovered and recommendations for a project scope to make any repairs. The study is expected to be completed by the third quarter of 2025.

The ongoing modernization at the RWF has created opportunities to repurpose space for other uses, such as warehousing. The **Warehouse Needs Assessment** will assess current and future warehousing needs and location(s) and determine the suitability of former blower buildings that might provide additional storage space. The technical memo will summarize the existing warehousing capacity throughout the RWF, any future storage needs for the next 10 to 15 years and recommend potential project scopes. This is expected to be completed after the third quarter of 2025.

With the addition of new facilities, such as the Digested Sludge Dewatering Facility, and concerns about the reliability of the PG&E electrical grid, ensuring that the RWF has sufficient standby power capacity is critical for maintaining safe operations and regulatory compliance during a blackout event. The **Emergency Power Strategy** will determine the RWF's operational electricity needs and develop an optimum approach to restoring operations in the event of a power outage. The technical memo delivered will provide testing results determining the lowest possible electrical demand required for various operational scenarios tested and recommend potential operational changes and/or capital investments if demand exceeds existing supply. The study is expected to be completed in the fourth quarter of 2025.

The collaboration required to ensure these intricate studies are successful is particularly remarkable. Many programmatic studies require working closely with other groups, such as Operations and Maintenance, to shut down critical equipment and processes in order to complete the studies. Diligent attention to detail is crucial and I am proud of the sheer volume of work done by the CIP team and its partners to deliver such high-caliber results.



## Additional Digester Facility Upgrade Project - Improving the capabilities of the RWF's treatment system

The Additional Digester Facility Upgrade Project builds off the Digester and Thickener Facilities Upgrade Project, completed in April 2022, to enhance the RWF's solids treatment capabilities. The project will rehabilitate or replace four to six of the RWF's mesophilic digesters, integrating these digesters with the thermophilic digesters to complete the Temperature Phased Anaerobic Digestion (TPAD) system, which improves biogas production.

The project will also construct a new Fats, Oils, and Grease (FOG) receiving facility to boost RWF's renewable energy sources and further increase biogas production. This improvement will advance RWF's energy sustainability goals, improve operational efficiency, reliability, and capacity for future growth.

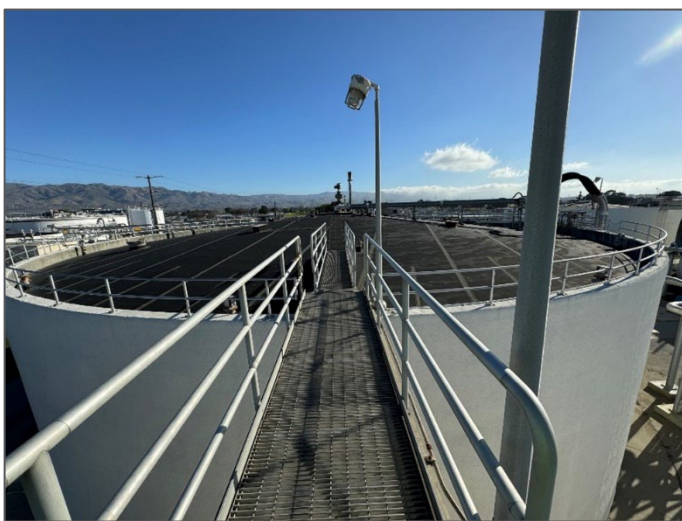


*RWF mesophilic digesters*

The CIP team is partnering with the owner's advisor, Carollo Engineers, to advance the project. Workshops engaging stakeholders from CIP and Operations & Maintenance Leadership teams have focused on defining project parameters in the project definition report. In September, the City hosted a vendor open house to share information with potential Design-Build entities ahead of advertising the Request for Qualifications (RFQ) and Request for Proposals.

"The project Open House in September provided an opportunity to engage with prospective design-builders about the Additional Digester Facility Upgrade project and address queries, including project technical details relevant to the upcoming procurement stages," said Project Manager Joel Cabrera.

The Feasibility and Development phase is nearly complete, with the final packet expected in January 2025. Design-Build RFQ advertisement is expected in February 2025, with Council award of the Design-Build contract anticipated in fall 2025.



*Close-up view of a mesophilic digester*

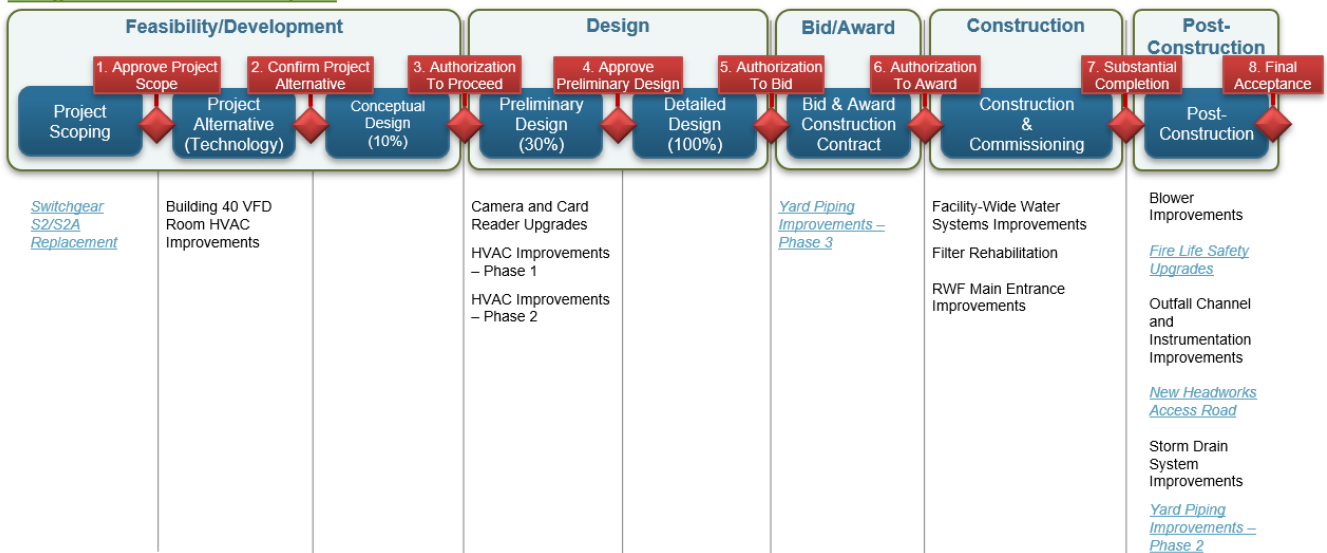
The CIP uses two project delivery methods:

- **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.

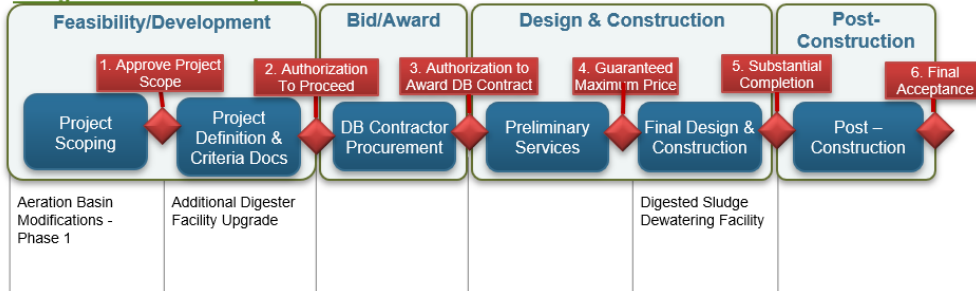
All CIP projects, regardless of project delivery method, follow a consistent process of consecutive delivery stages, each culminating in a stage gate, as presented in the project delivery models below. Stage gates are go/no-go points at which the project team must demonstrate that the project has met 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**

During this period, the owner's advisor, Carollo Engineers, prepared technical submittals for technology evaluation, alternatives analysis, civil/mechanical, electrical/instrumentation and controls, and struvite control, and finalized the project definition report. Carollo also prepared documents for the design-builder RFQ that is expected to advertise in February 2025.

- **Building 40 VFD Room HVAC Upgrades**

During this period, staff selected the preferred design alternative and the consultant, Brown & Caldwell, progressed the conceptual design.

- **Camera and Card Reader Upgrades**

In December, consultant Jacobs submitted the draft preliminary design report for City review.

- **Yard Piping Improvements - Phase 3**

During this period, consultant Black & Veatch finalized the 100% detailed design packet. The construction contract was advertised for bid in December and bids are scheduled to be opened in February 2025.



# 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



Process Air Blowers 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 to address punch list and warranty items, and compile remaining final deliverables. Final acceptance is expected in February 2025.

2

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



Dewatering Building south staircase and enclosure under construction

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

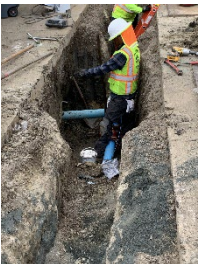
**Expected Beneficial Use:** October 2025

### Update:

- During this period, design-builder Walsh completed siding, roofing, interior drywall, and installed polymer, foul air, compressor, centrate, and fire water piping and support systems for the main dewatering building.
- In the truck loadout facility, Walsh installed portions of siding on the north and west sides, completed electrical conduits for power, control, and lighting, and welded seismic supports for the cake bins.
- Walsh also installed electrical duct banks and mechanical piping in the sludge storage and pump station area.

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

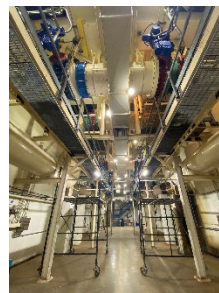
**Expected Beneficial Use:** June 2027

### Update:

- In November and December, contractor Ranger Pipelines installed water lines, pipes and valves across various areas. The contractor also started installing electrical duct banks and conduits at the cogeneration building.
- Throughout this period, staff continued to review and approve submittals and design change memorandum as needed.

4

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



Filter Gallery B coatings

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:** May 2025

### Update:

- In October, contractor Walsh, installed four new S800 panels in the filter building.
- In November, Walsh finished installing cooling fans and louvers in the new Switchgear S12 enclosure, and repaired coatings on decks around the filters.
- In December, Blower #1 was fully commissioned and returned to service.
- Throughout this period, Walsh continued to progress electrical load migrations from existing to new components.



5

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



Upgrading fire system within Admin Building

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

**Achieved Beneficial Use:** October 2024

**Update:**

- In October, the last two of 13 buildings passed Fire Department inspections and the project achieved Beneficial Use.
- In November and December, Blocka continued working on punch list items and preparing final deliverables. Final acceptance is expected in March 2025.

6

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



Newly paved roadway

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

**Achieved Beneficial Use:** November 2024

**Update:**

- In October, contractor O.C. Jones & Sons graded and compacted the new roadway, installed storm drainpipes and drainage inlets, completed fine grading, form, rehab, concrete pour and paving for the new sidewalk, excavated an earthen swale and hydroseeded existing soil pile for erosion control.
- In November, O.C. Jones finished fine grading and paving of the new roadway, and installed water pollution controls. Project achieved Beneficial Use.
- In December, O.C. Jones installed traffic signs, striped the new crosswalk and completed various punch list items.

7

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



New Weir, bridge lights, and rip rap

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 continued to address punch list and warranty items, and compile remaining final deliverables. Final acceptance is expected in March 2025.

8

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



Initial site prep excavation work

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:** April 2026

**Update:**

- In October, contractor W.E. Lyons Construction Co. installed temporary fencing around the site, removed trees, cleared the site, and performed rough grading and compaction.
- In November, W.E. Lyons performed potholing to locate utilities, installed temporary irrigation lines and removed chlorine lines.
- In December, they began installing a water line on A Street, and a new sanitary sewer manhole on Los Esteros Road.

9

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



Confined space work

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 November, contractor Ranger Pipelines completed all punchlist work. Ranger continued to assemble remaining final deliverables and closeout documents. Final acceptance is expected in February 2025.

10

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



Aerial view of 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

**Achieved Beneficial Use:** November 2024

**Update:**

- In October, contractor Michels Trenchless removed temporary reroutes, backfilled road-crossing trenches, installed curb and gutters and paved asphalt around the 48” Santa Clara Force Main. Michels completed walkway concrete placement and installed access box for chemical line near the Effluent Junction Structure, and installed grout around manhole riser near the 96” raw sewer pipe.
- In November, Michels installed physical asset tags in the raw sewer pipe. Project achieved Beneficial Use.
- In December, contractor continued to finalize minor punch list work and compile final deliverables. Project Final Acceptance is expected by March 2025.



Lifting valve into place as part of Filter Rehabilitation project

## What’s Ahead?

In January – March 2025:

- Advertise the Design-Build Request for Qualifications for Additional Digester Facility Upgrade project.
- File the Notice of Completion and Acceptance for six projects – Blower Improvements, Fire Life Safety Upgrades, New Headworks Access Road, Outfall Channel and Instrumentation Improvements, Storm Drain System Improvements and Yard Piping Improvements - Phase 2.

## Fiscal Year 2024-2025 Program Performance Summary

KPI	Target	Fiscal Year to Date			Fiscal Year End		
		Actual	Status	Trend	Forecast	Status	Trend
<b>Stage Gates</b>	90%	100% 9/9 <sup>1</sup>			100% 24/24		
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%							
<b>Schedule</b>	90%	100% 5/5 <sup>2</sup>			100% 6/6 <sup>3</sup>		
Measurement: Percentage of CIP projects delivered within 2 months of approved baseline Beneficial Use Milestone. <sup>4</sup> Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75%							
<b>Budget</b>	90%	50% 1/2 <sup>5</sup>			67% 6/9 <sup>6</sup>		
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							
<b>Expenditures</b>	\$192M	\$189M			\$220M <sup>7</sup>		
Measurement: CIP FY24-25 committed costs. Target: Committed costs meet or exceed 70% of planned budget. 70% of \$274M = \$192M. Therefore Fiscal Year End Green: >=\$192M; Red: < \$192M							
<b>Safety</b>	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							
<b>Environmental</b>	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							
<b>Vacancy Rate<sup>8</sup></b>	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

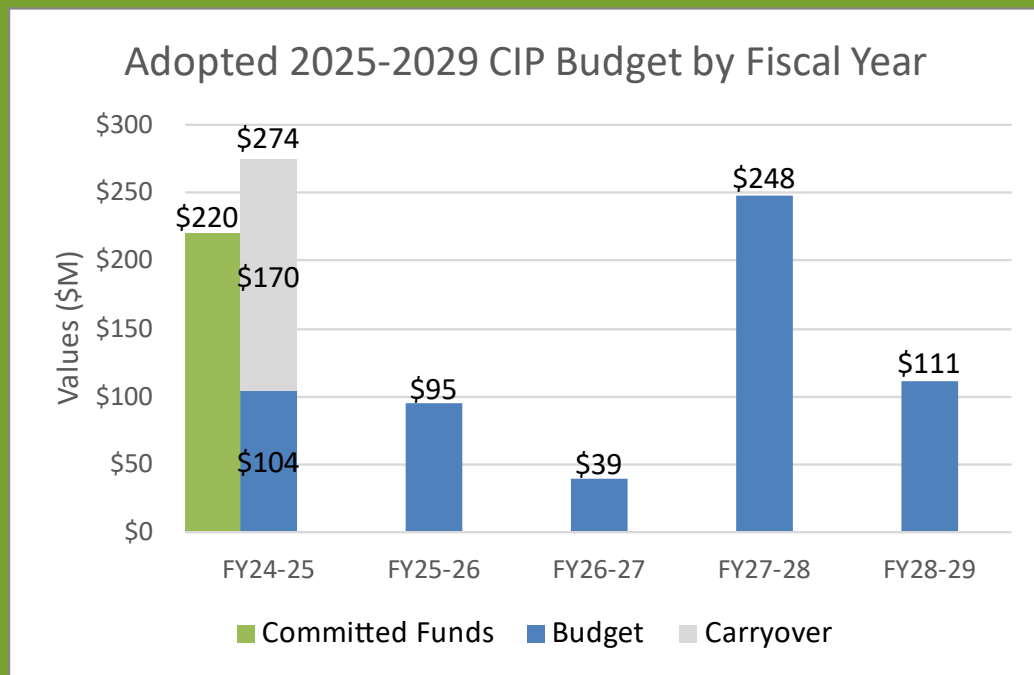




## Program Budget Performance

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

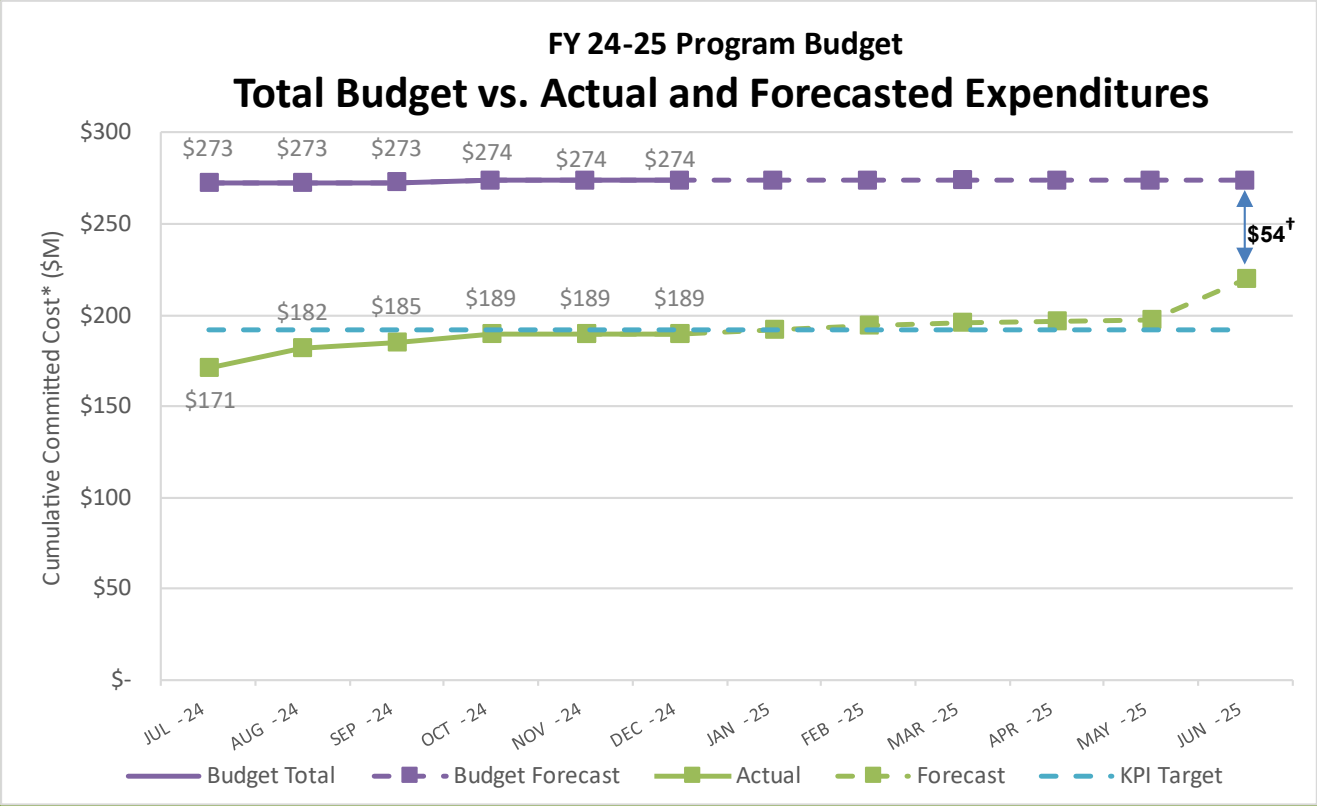


[Budget Performance Information](#)

# 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](#)



# Capital Improvement Program Progress



The RWF's Capital Improvement Program, featured in [this video](#), is upgrading, renovating and modernizing the Facility.

**Want to learn more?**



[@sienvironment](#)



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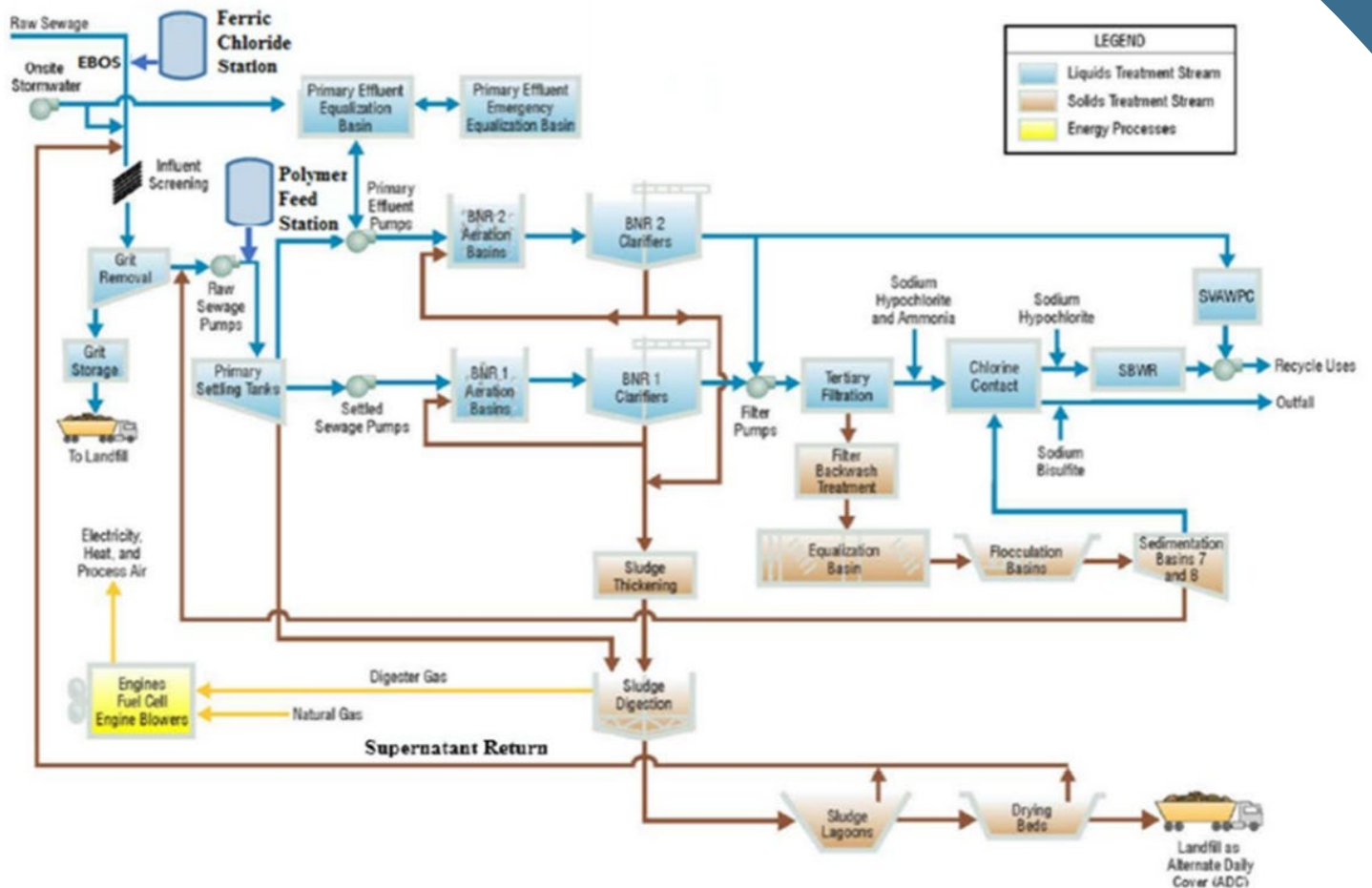


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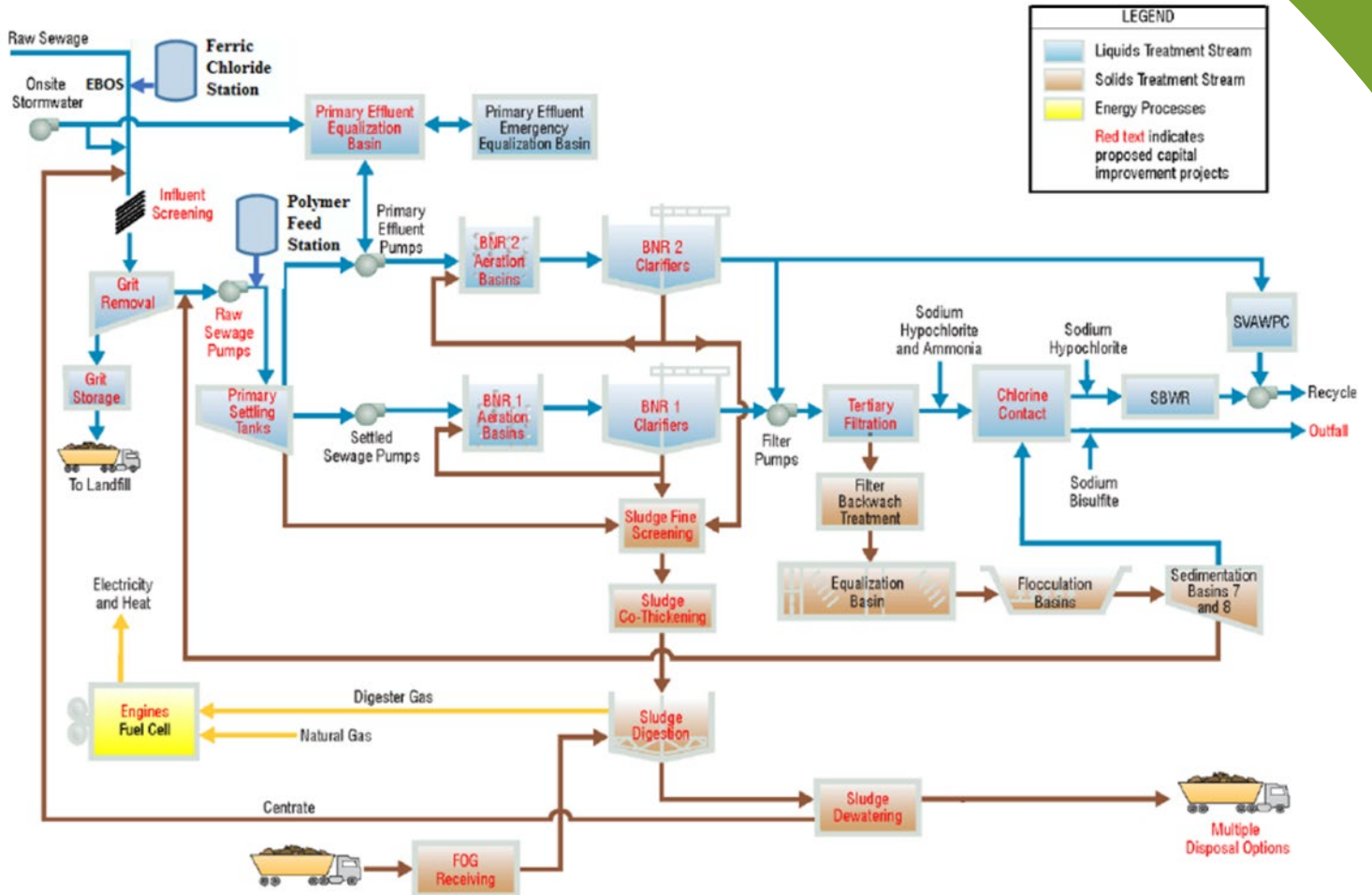
# Regional Wastewater Facility Treatment

## Current Treatment Process Flow Diagram



# Regional Wastewater Facility Treatment

## Proposed Treatment Process Flow Diagram



# Glossary

<b>Beneficial Use</b>	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.
<b>Biogas</b>	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.
<b>Biosolids</b>	Treated sewage sludge.
<b>Bufferlands</b>	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.
<b>Commissioning</b>	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.
<b>DAFT</b>	Dissolved air flotation thickener tanks. Dissolved air flotation, or DAF, is a treatment process that clarifies wastewater by removing suspended matter.
<b>DCS</b>	Distributed control system. A computerized system that allows treatment plant staff to remotely monitor and control treatment processes.
<b>EIR</b>	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.
<b>Effluent</b>	Treated wastewater that is discharged from a treatment plant.
<b>Influent</b>	Raw or untreated wastewater that flows into a treatment plant.
<b>FOG</b>	The Fats, Oils and Grease program administered by the City of San José's Environmental Services Department.
<b>Headworks</b>	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.
<b>NPDES permit</b>	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.
<b>Polymer</b>	Primarily used to help manage the process of drying and consolidating sludge.
<b>Preliminary treatment</b>	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.
<b>Primary treatment</b>	The initial treatment for incoming wastewater, in which gravity settles solid material and rotating bars skim floating fats, oil and grease from influent.
<b>Secondary treatment</b>	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.
<b>Stormwater</b>	Water from rain that does not seep into the ground but instead flows into storm drains as runoff.
<b>Tertiary treatment</b>	The final stage in advanced wastewater treatment, in which wastewater flows through filter beds, then through chlorinated tanks to become 99% clean.
<b>Wastewater</b>	Water that enters the sanitary sewer system for treatment at a pollution control plant.
<b>Wastewater Cake</b>	Sludge that is compressed after dewatering.
<b>WAS</b>	Waste-activated sludge, or the excess quantity of bacteria and microbes removed from the secondary wastewater treatment process.

