



San José-Santa Clara
Regional Wastewater Facility

CIP

CAPITAL IMPROVEMENT PROGRAM

Quarterly Status Report:
July – September 2023

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 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 2023.

LEGEND



On Target



Alert



At Risk





Celebrating 10 Years of CIP

By Kerrie Romanow, ESD Director

Please join me in congratulating the amazing work and partnership of the RWF CIP Division. The division staff lead the largest public works

program in the City's history. The division is made up of an integrated team of more than 90 ESD, Public Works and consultant staff. Together they are modernizing and refurbishing the RWF, protecting public health and the environment.

Over the past ten years, the CIP has accomplished amazing feats even through a pandemic. The team has committed about \$800 million for improvements and completed 21 projects including the Digester & Thickener Facilities Upgrade (improving biogas production, employee safety, and odor mitigation), the new Cogeneration Facility (making the RWF more energy self-sufficient), the new Emergency Diesel Generators (ensuring backup power to run the RWF during blackouts) and the new Headworks 3 (to replace the aging Headworks 1). Currently, there are 21 active projects – 11 in construction and post-construction, and 10 in feasibility/development and design phases. The Program is using a combination of methods to deliver CIP projects, including traditional Design-Bid-Build and alternative delivery such as Progressive Design-Build.

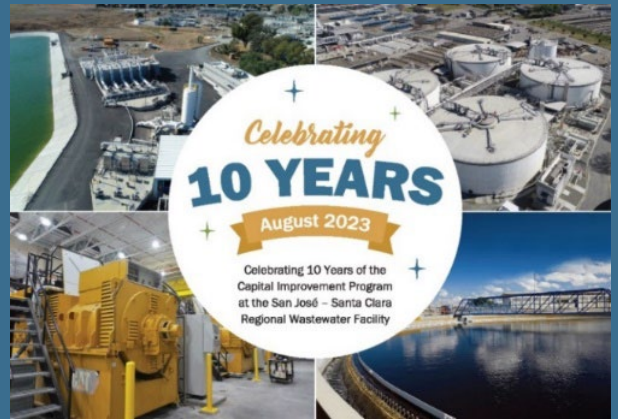
Our collaborative efforts and innovative solutions have been recognized by our peers. In recent years, we have received

the following awards:

- 2021 DBIA (Design-Build Institute of America) National Award of Merit Water/Wastewater
- 2021 CASA (California Association of Sanitation Agencies) Resiliency and Innovation Excellence Award
- 2022 CASA Organizational Excellence Award

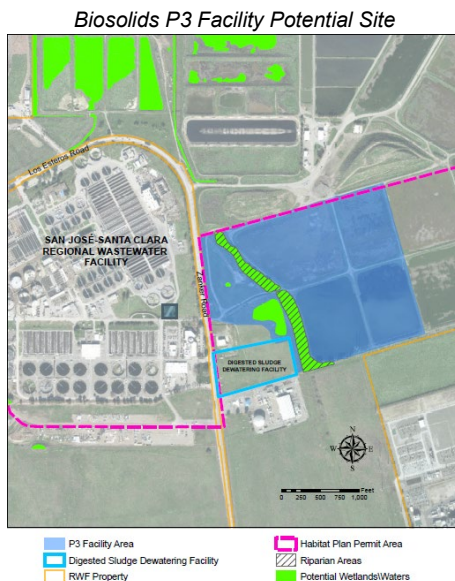
I am proud of these awards and am most proud of the Organizational Excellence Award because it encapsulates how we commit to planning and partnership. It recognized the CIP performance in several key areas, including leadership and management practices, governance, budgeting, and reporting. It also acknowledged the coordination and alignment between the CIP team and O&M staff.

Kudos to our dedicated staff who work tirelessly to continue to serve our community. I'm excited to see what the next ten years of capital improvement excellence brings!



RWF's Vision: Next-Gen Biosolids Strategy

In June 2021, City Council approved the RWF's Dewatered Biosolids Management Strategy. This strategy encompasses short-term off-site beneficial use service agreements, a long-term on-site public-private partnership (P3) facility to process dewatered biosolids and encouraging the permitting of surrounding lands to accept biosolids.



By December 2022, agreements were awarded to Denali Water Solutions, LLC, Synagro West, LLC and Lystek International Limited for the off-site beneficial use of the RWF's mechanically dewatered biosolids. Since then, CIP staff have been evaluating the viability of a P3 facility. This facility "will further process the biosolids produced from the RWF's Digested Sludge Dewatering Facility to a Class A biosolids-based product that can be sold," said Nora Cibrian, program manager. "The end-product has no pathogens and will expand the potential use of RWF biosolids."

Earlier this year, with the help of consultant Arup US, Inc., staff defined project objectives, technical requirements, and risks related to the P3 facility. After gauging market interest through a Request for Information (RFI), Arup completed a financial analysis. Market feedback showed strong interest in the P3 facility, with most respondents meeting the City's technical and risk parameters. The financial analysis indicates that the service fees for the P3 facility will align with the future per-ton costs of the off-site beneficial use agreements.

Now, staff have initiated preliminary environmental assessment for the proposed P3 facility location to identify challenges and determine environmental requirements. Staff are also seeking a consultant to assist with partnership procurement and negotiations. An update on the environmental assessment is anticipated early next year.



How the CIP Delivers Projects

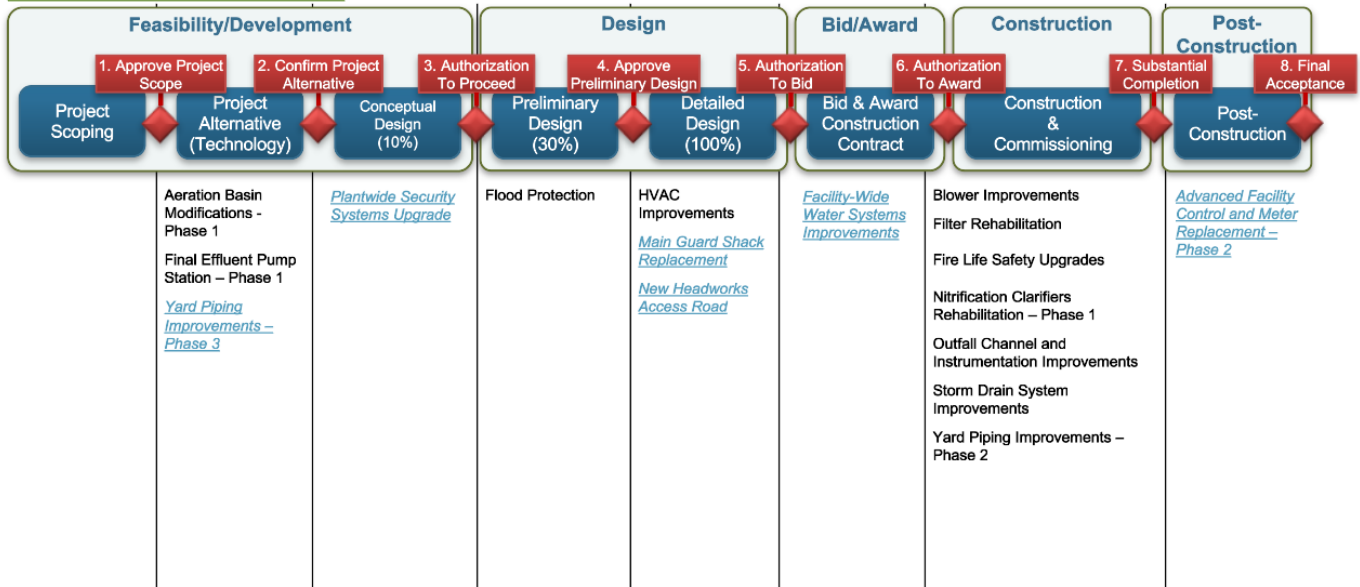
The CIP uses two project delivery methods:

- **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.
- **Progressive 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.

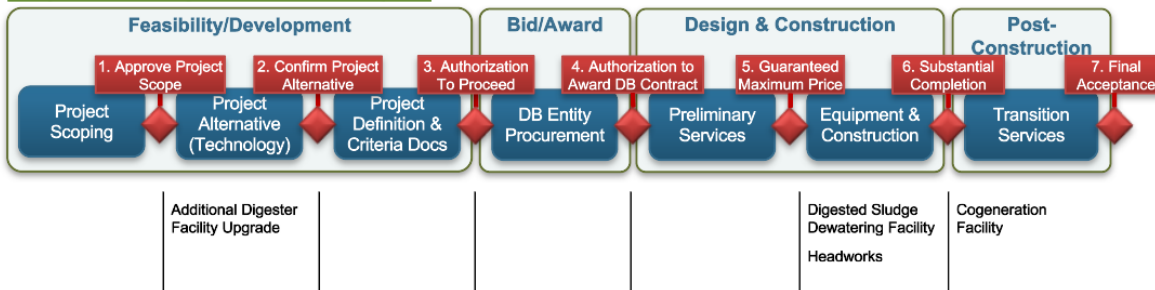
All CIP projects, regardless of project delivery method, follow a consistent process of consecutive delivery stages, each culminating in a stage gate, as presented in the project delivery models below. Stage gates are go/no-go points at which the project team must demonstrate that the project has met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



Progressive 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. CIP accomplishments for this quarter are outlined in two sections: Projects in Design and Projects in Construction. The CIP's projects in the construction and post-construction phases have cost and schedule baselines that are monitored using the City's Capital Project Management System. Project performance information can be found in the link below:

[Project Performance Information](#)

COVID-19 update: From July through September, CIP projects continued progressing despite COVID-19 pandemic impacts. Projects in construction continued with all contractors and construction management staff following the latest guidance from the Santa Clara County Health Officer and Public Health Director. During this period, CIP staff continued to work both in the office and remotely. Environmental Services Department and Public Works staff continue to work with the City Attorney's office to address pandemic-related impacts to construction schedules and costs to ensure a consistent approach to resolving COVID-19-related claims across the City.

Projects in Design

- **Additional Digester Facility Upgrade**

In July, staff received four Statements of Qualifications (SOQs) in response to the Request for Qualifications advertised for owner's advisor services. The SOQs were evaluated, and a Final Ranking Notice was released in September. The Council's award of the consultant agreement to the top-ranked firm is expected January 2024.

- **Facility-wide Water Systems Improvements**

In August, staff received bids from all four pre-qualified contractors. The Council's decision to award the construction contract to the lowest responsive bidder is anticipated in January 2024.

- **Main Guard Shack Replacement**

In September, consultant Jacobs completed the 50% design and started developing the Detailed Design, which is expected to be complete in January 2024.

- **New Headworks Access Road**

In August, consultant Brown and Caldwell completed the 50% design and started developing the Detailed Design, which is expected to be complete in November.

- **Yard Piping Improvements – Phase 3**

During this period, consultant Black & Veatch performed condition assessments of several large-diameter pipes. The project scope was finalized, and the project team started to evaluate alternative rehabilitation methods.



Projects in Construction

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



1

Advanced Facility Control and Meter Replacement - Phase 2: Reliably controlling processes



Secondary Battery A

This second part of a two-phase project will replace aging and outdated RWF control equipment such as flow meters, valves, actuators and sensors. Original manufacturers no longer provide support for the existing equipment.

Project Budget: \$15.1 million

Achieved Beneficial Use: June 2023

Update:

- During this time, closeout activities continued in all work areas. Final Acceptance is anticipated in November.

2

Blower Improvements: Oxygenating wastewater with greater energy efficiency



TBB Thrust Bearing Replacement – Thrust pad on right

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: \$50.9 million

Expected Beneficial Use: November 2023

Update:

- In July, contractor Monterey Mechanical removed wall forms in the Secondary Blower Building (SBB).
- In August, the contractor finished installing grating in the SBB.
- In September, the contractor finished the concrete gutter and asphalt pour on A St. and 5th St. They also continued to calibrate instruments installed in SBB, Building 40, and Tertiary Blower Building.

3

Digested Sludge Dewatering Facility: Drying biosolids more efficiently and effectively



Sludge Storage Tank 2 forms and completed wall on Tank 1 to the right

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: \$174 million

Expected Beneficial Use: October 2025

Update:

- In July and August, design-builder Walsh completed concrete walls for one sludge storage tank, interior concrete walls at the main dewatering building, and in-slab conduit at the truck load-out facility. Installation and pressure-testing of piping in the west side of G St. also started.
- In September, Walsh started concrete wall placement for the second sludge storage tank; continued to install and test piping in the west side of G St.; and continued to install decks and slab on grade at the main dewatering facility and the truckload out facility.

4

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



Assembly of S-6 Switchgear

The filtration process is one of the final steps in wastewater treatment. The RWF’s tertiary filtration unit 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 instrumentational elements of the system.

Project Budget: \$59.6 million

Expected Beneficial Use: July 2024

Update:

- In July, contractor Walsh continued mechanical and electrical work in filter gallery A, and abatement of lead paint in filter gallery B pipes.
- In August, Walsh finished functional and operational testing of the A-side filters. A-side filters were returned to service and mechanical and electrical work commenced in the B-side filters.
- In September, Walsh continued work on the B-side filters.

5

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



Paint shop lead mitigation

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: \$7.1 million

Expected Beneficial Use: March 2024

Update:

- During this period, contractor Blocka Construction continued to coordinate with the San José Fire Department to obtain permit approvals for work fire alarm work in seven additional buildings.
- The contractor also continued fire alarm installation work in the Sludge Control, Power and Operations and Administration buildings.

6

Headworks: Offering better performance and reliability with new wastewater pre-treatment system



'Big Worm' – RSDS 84" to 102" North Loop

Headworks pre-treatment of raw wastewater enhances and protects downstream treatment processes. This project will replace Headworks 1, the oldest RWF facility, with a new Headworks 3, and will also modify Headworks 2. The new system will be more reliable and will be able to

treat projected wet-weather wastewater flows.

Project Budget: \$152 million

Expected Beneficial Use: November 2023

Update:

- In August, design builder CH2M installed concrete plugs at the inlets of the decommissioned Headworks 1. Installation of the north primary 84" line was also completed, and flow was introduced to the new pipe.
- In September, CH2M continued installation of a 24" storm drain, dewatering of the 102" pipe, and installation of new sump pumps in the P&E building. Operational testing of Recycle Pump Station #1 was also completed.
- During this period, CH2M also continued to address minor work and punch list items in all work areas.

7

Nitrification Clarifiers Rehabilitation – Phase 1: Improving secondary treatment infrastructure and efficiency



Grout removal within Clarifier B7

Central to the RWF's biological nutrient removal process, clarifiers separate sludge from effluent. The 16 existing clarifiers were constructed in the 1970s and 1980s and are near the end of their useful lives. This project will make cost-effective improvements

to enhance the clarifiers' efficiency and minimize unscheduled maintenance on them for the next 30 years.

Project Budget: \$51.1 million

Expected Beneficial Use: January 2024

Update:

- In July, contractor Overaa worked on drain plug replacement in all clarifiers.
- In August, Overaa completed the wire pull and termination and energization of the new motor control center for Battery B Clarifiers.
- In September, grouting of Clarifier B7 continued and operational testing of Clarifiers B3 and B5 began.

8

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



New ABB electrical panels under the canopy near the daylight station

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; construct a large vault structure to install new flow meter technology, making the meters accessible to staff; and improve the integrity of the weir structure.

Project Budget: \$10 million

Expected Beneficial Use: February 2024

Update:

- During this period, contractor Anvil Builders installed electrical and interconnecting conduits in the sulfur dioxide building, daylight station, and filter influent building. Anvil also installed overhead light poles, flowmeters, plumbing, valves and drains at various work areas.



9

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



Tunnel canopy improvements

The RWF experiences localized flooding caused by runoff during heavy rainfall events. The existing storm drain system needs to be improved to protect the operational area from floods. 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: \$13.9 million

Expected Beneficial Use: December 2023

Update:

- In July, contractor Ranger Pipelines power washed, sandblasted, and painted the wet wells at five pump stations.
- In August, Ranger completed the concrete curb, ramps and steel canopy installation at tunnel entrances.
- In September, new electrical equipment was installed at the Zanker, Los Esteros, Legacy Lagoon, and Store pump stations. Energization of the Outfall Pump Station was completed, and the pump station was returned to service.

10

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



Workers applying an epoxy coating

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: \$20.6 million

Expected Beneficial Use: January 2025

Update:

- In July, contractor Michels completed flow isolation, pipe cleaning, and pre-rehabilitation CCTV on the 84" primary effluent (PE) pipe.
- In August, Michels completed Partial Depth Concrete Crown Repair of the 84" PE and 84" secondary effluent (SE) pipes.
- In September, Michels completed functional and operational testing of both 84" PE and 84" SE pipes, and both pipes were returned to service.



Tertiary Blower Building

What's Ahead?

In October – December 2023:

- Amend the agreement for Special Inspection Services.
- Achieve beneficial use on Blower Improvements, Headworks, and Storm Drain System Improvements projects.

Fiscal Year 2023-2024 Program Performance Summary

KPI	Target	Fiscal Year to Date			Fiscal Year End		
		Actual	Status	Trend	Forecast	Status	Trend
Stage Gates	90%	100% 7/7			100% 23/23 ¹		
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%	N/A 0/0			71% 5/7 ²		
Measurement: Percentage of CIP projects delivered within 2 months of approved baseline Beneficial Use Milestone. ³ Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75%							
Budget	90%	0% 0/1 ⁴			56% 5/9 ⁵		
Measurement: Percentage of CIP projects that are accepted by the City within the approved baseline budget. ³ Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75							
Expenditures	\$237M	\$182M			\$282M		
Measurement: CIP FY23-24 committed costs. Target: Committed costs meet or exceed 70% of planned budget. 70% of \$339M = \$237M. Therefore Fiscal Year End Green: >=\$237M; Red: < \$237M							
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 Rate⁶	10%	18% 15/83			18% 15/83		
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 2023-2024 Information](#)

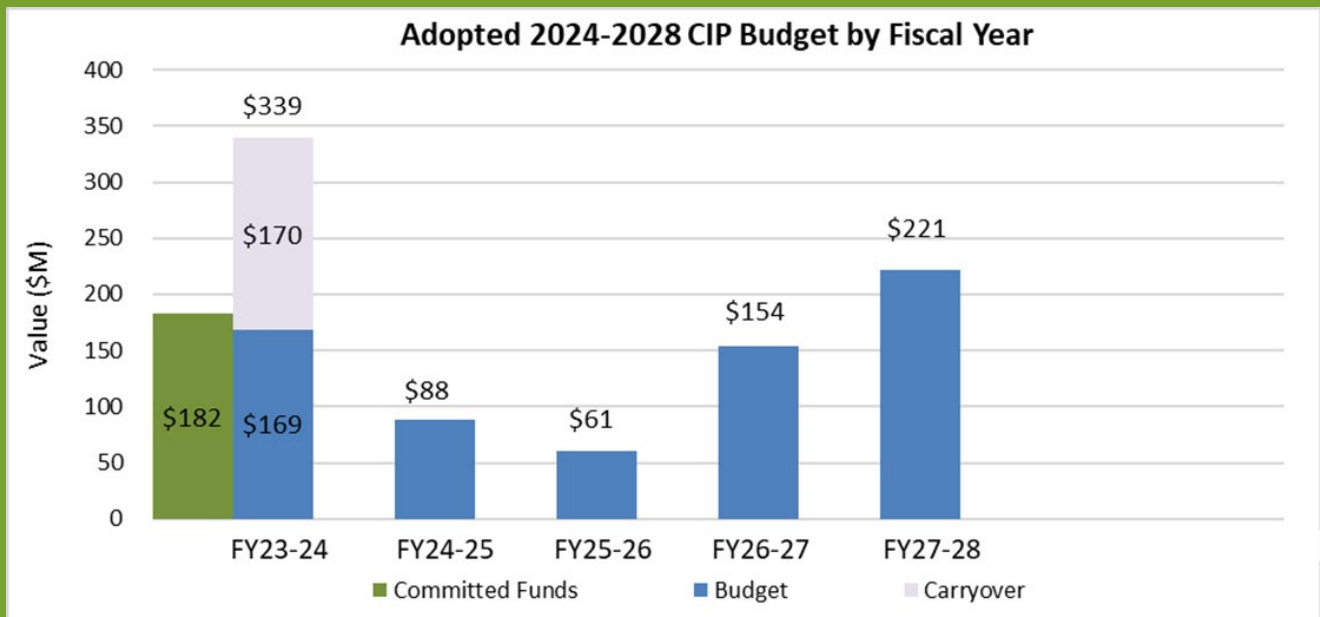




Program Budget Performance

This section summarizes the cumulative monthly budget performance for FY 2023-24 based on the Adopted 2024-2028 CIP Budget.

Adopted 2024-2028 CIP Expenditures and Encumbrances



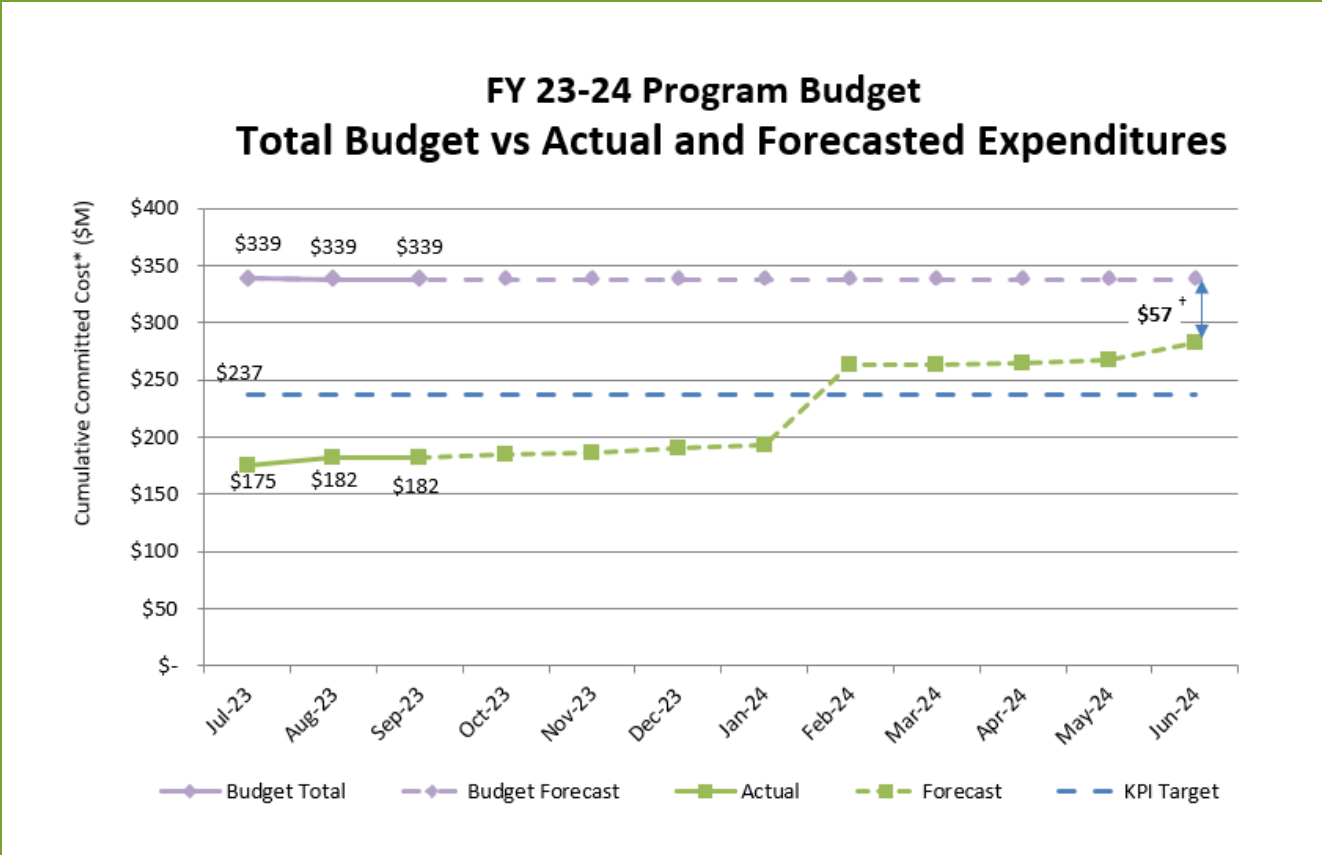
[Budget Performance Information](#)



Fiscal Year 2023-2024 Program Budget Performance

The FY 2023-24 CIP budget is composed of approximately \$169 million in new and re-budgeted funds, plus encumbered carryover of \$170 million, for a total of \$339 million.

FY 2023-24 Program Budget



[CIP Program Budget Information](#)



Celebrating 10 Years of CIP



The completion of the first phase of the CIP saw several innovative construction projects rebuilding and modernizing the RWF. [This video](#) highlights the Digester & Thickener Facilities Upgrade, Cogeneration Facility, and Headworks 3 project milestones.

Want to learn more?

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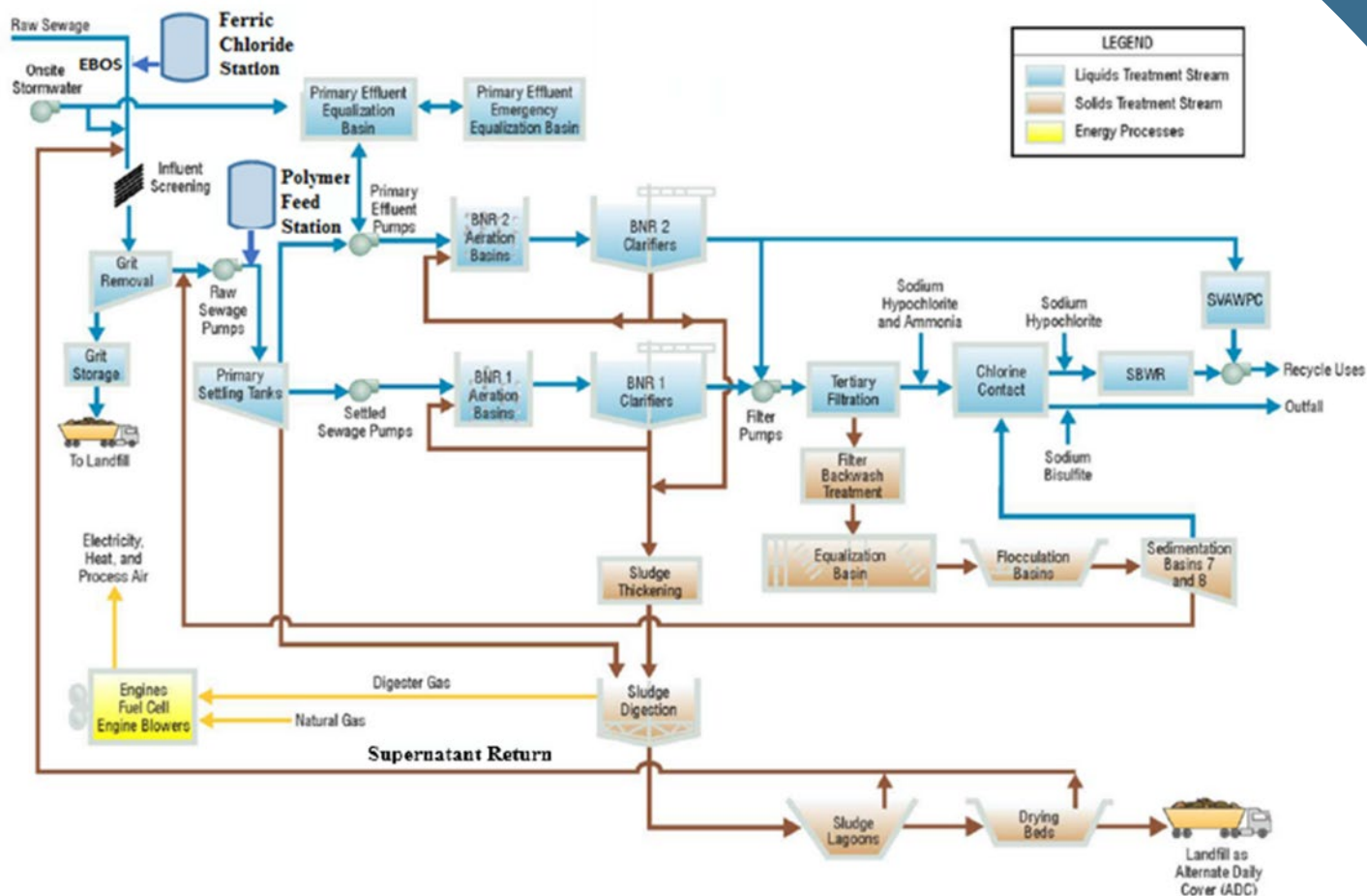


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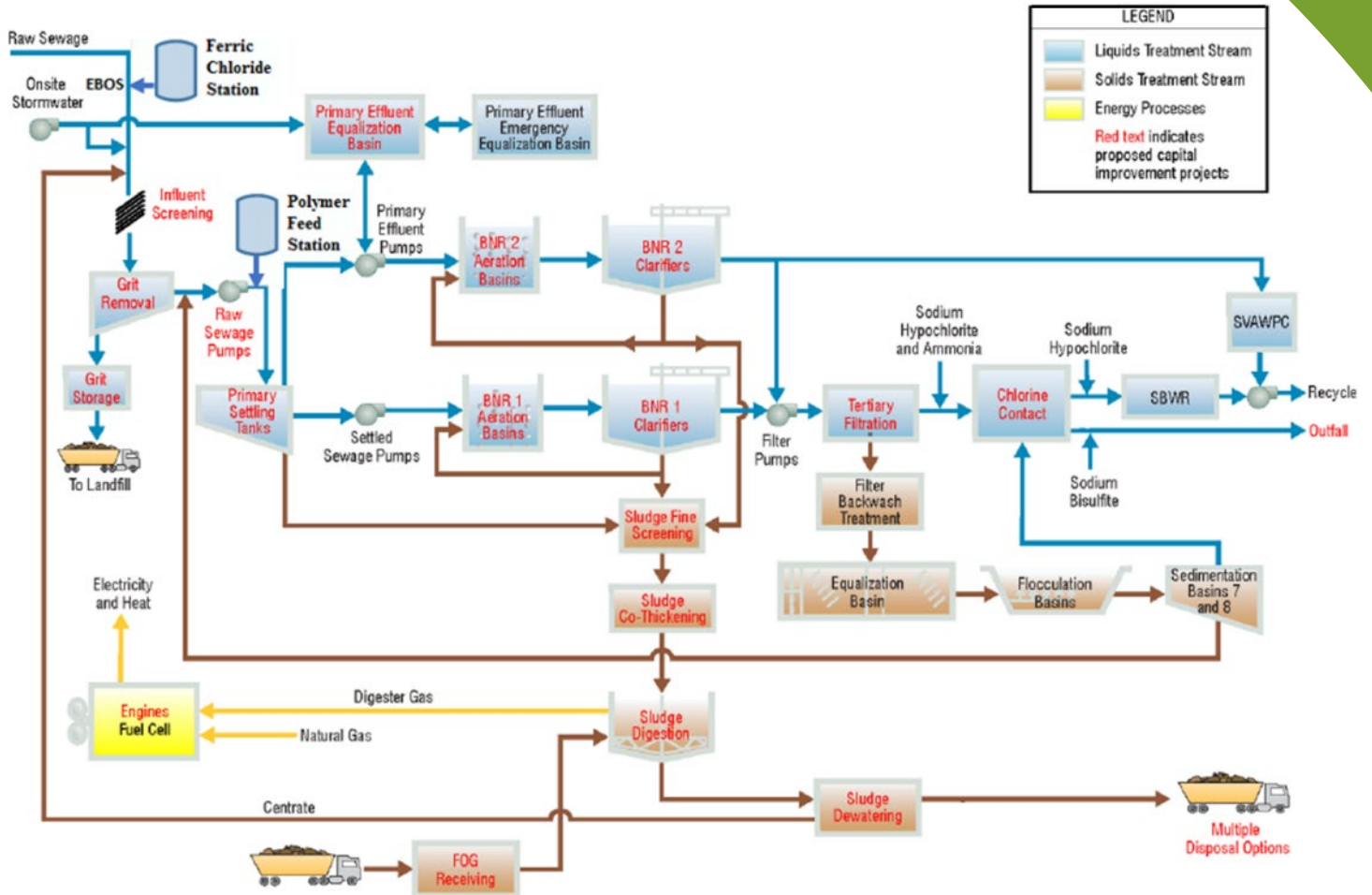
Regional Wastewater Facility Treatment

Current Treatment Process Flow Diagram



Regional Wastewater Facility Treatment

Proposed Treatment Process Flow Diagram



Glossary

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.

