



San José-Santa Clara
Regional Wastewater Facility

Capital Improvement Program Monthly Status Report: August 2020

October 1, 2020

This report summarizes the progress and accomplishments of the Capital Improvement Program (CIP) for the San José-Santa Clara Regional Wastewater Facility (RWF) for August 2020.

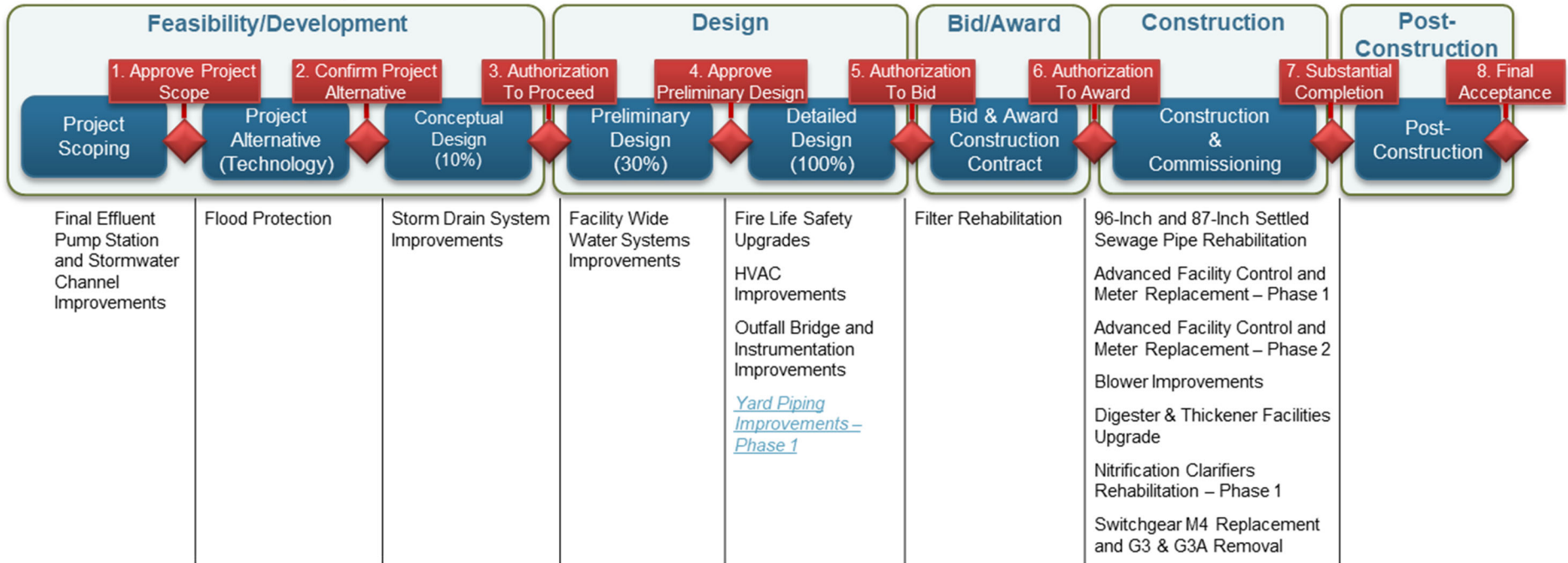
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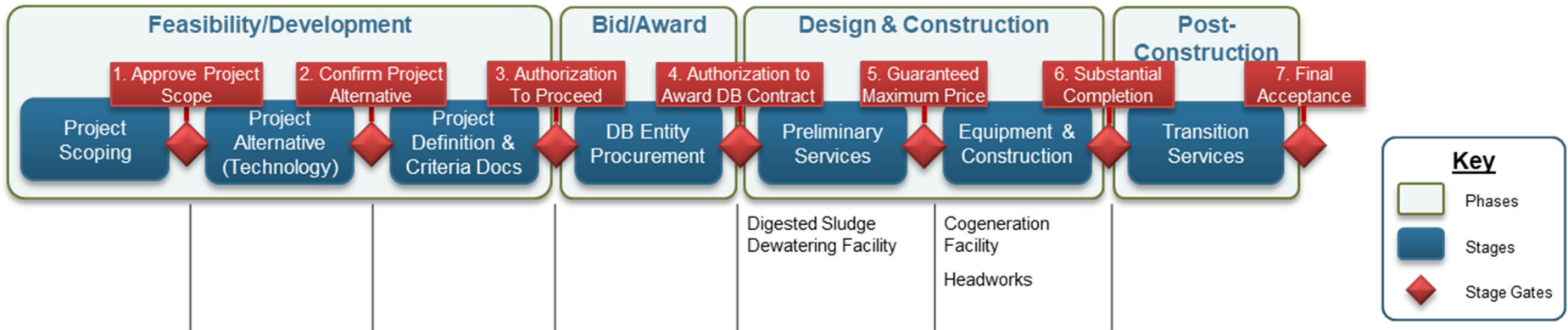


Project Delivery Models

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.



Program Summary

August 2020

In August, CIP projects continued to progress despite COVID-19 pandemic impacts. Projects in construction continued with all contractors and construction management (CM) staff following the latest guidance from the Santa Clara County Public Health Officer. The City continued to screen all City, consultant, and contractor staff at each RWF entrance, followed by screening questions at individual work sites. All other CIP staff continued to work remotely. RWF COVID-19 guidance to consultants, construction management, and contractor staff was revised to reflect updated reporting requirements.

One project successfully passed a stage gate of the Project Delivery Model (PDM). The Yard Piping Improvements – Phase 1 Project was approved to proceed with detailed design.

The Digester and Thickener Facilities Upgrade Project contractor completed functional testing of the new flares and prepared to begin functional testing of the dissolved air flotation thickener (DAFT) tanks.

In a major milestone, the Cogeneration Facility Project design-builder successfully ran synchronization tests to the electrical grid at full load on natural gas for two of the four engines.

The Blower Improvements Project contractor ran pre-operational testing on the first of three blowers in Building 40. The contractor will begin functional testing on the blower in September.

The Advanced Facility Control and Meter Replacement – Phase 1 Project contractor completed installation of the posts for mounting meters and probes at the Nitrification Battery B tanks, as well as pipe lining repair work for two tanks.

The Headworks Project design-builder poured the first concrete slab segments for the influent screening structure and grit basins, and installed shoring for the deep raw sewage pump station excavation (see Figure 1). The design-builder also began production of the final 100 percent design documents.

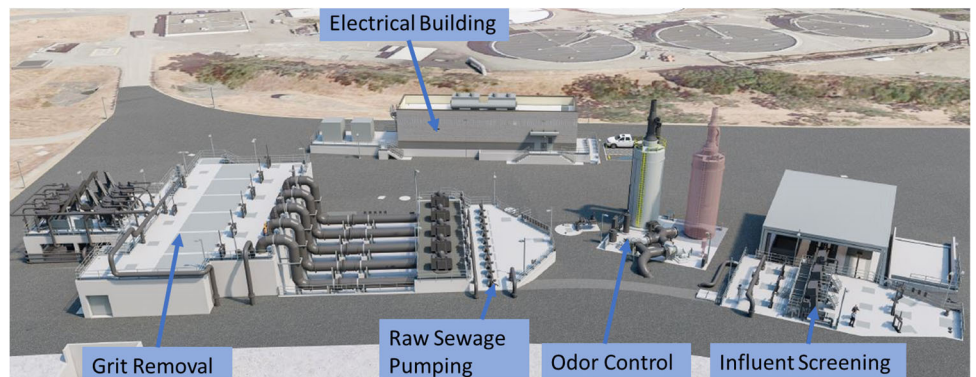


Figure 1: Computer Rendering of Headworks Site Layout

The Nitrification Clarifier Rehabilitation – Phase 1 Project contractor completed the demolition work in Nitrification Battery B, continued trenching and installation of the electrical duct bank, and began drain valve replacement work in the return-activated sludge gallery.

The City received eight bids for the Facility Wide Water Systems Exploratory Trenching contract. The notice of intent to award was issued and no protests were received.

Look Ahead

The following key activities are forecast for September and October 2020:

- The first phase of the DAFT functional testing will commence with the introduction of waste-activated sludge.
- Staff will recommend the following to the Treatment Plant Advisory Committee (TPAC) and San José City Council (Council):
 - Award of four construction management master agreements;
 - Award of the Facility Wide Water Systems Exploratory Trenching contract; and
 - Award of the Filter Rehabilitation Project construction contract.
- Staff will initiate a condition assessment of the RWF's pump stations and primary treatment system, including the East and West Primary tanks and pipes, to help inform potential future capital projects.
- Two projects will seek to advance through the following stage gates:
 - Storm Drain System Improvements Project – Stage Gate 3: Authorization to Proceed
 - Yard Piping Improvements – Phase 1 Project – Stage Gate 5: Authorization to Bid.

Program Highlight – Filter Rehabilitation Project

The filtration process is one of the final treatment steps and is responsible for producing effluent, or treated wastewater, in compliance with the RWF's discharge permit, as well as recycled water in compliance with Title 22 requirements. The RWF's tertiary filtration unit process consists of 16 granular media filters and associated equipment (see Figure 1). Built in the 1970s and 1980s, the filters and equipment are nearing the end of their useful lives. They require significant rehabilitation to ensure continued regulatory compliance and operational reliability.

The project will rehabilitate the filtration process' structural, mechanical, electrical, and instrumentation/control elements. Key scope items include:

- Replacement of valves and actuators serving the granular media filters;
- Replacement of the granular filter media;
- Replacement of the existing surface wash system with a new air scour system;
- Repair of concrete walkways and decks around the granular media filters; and
- Rehabilitation of three electrical switchgears, including related motor control consoles.

In December 2015, the City selected Kennedy Jenks Consultants, Inc. (K/J) to provide engineering services for the project.

K/J completed a condition assessment of the entire tertiary filtration unit process and submitted a report with findings in January 2017. The final design was completed in January 2020.

Concurrent with the design, the City conducted a contractor prequalification process. In October 2019, the City prequalified three general contractors.

The City advertised the project in March 2020 and received bids from all three pre-qualified general contractors in June. Staff will recommend to award the construction contract to the lowest bidder, Walsh Construction Company II LLC, to TPAC and Council in October 2020. Construction is scheduled to begin in November 2020, with Substantial Completion anticipated by June 2024.

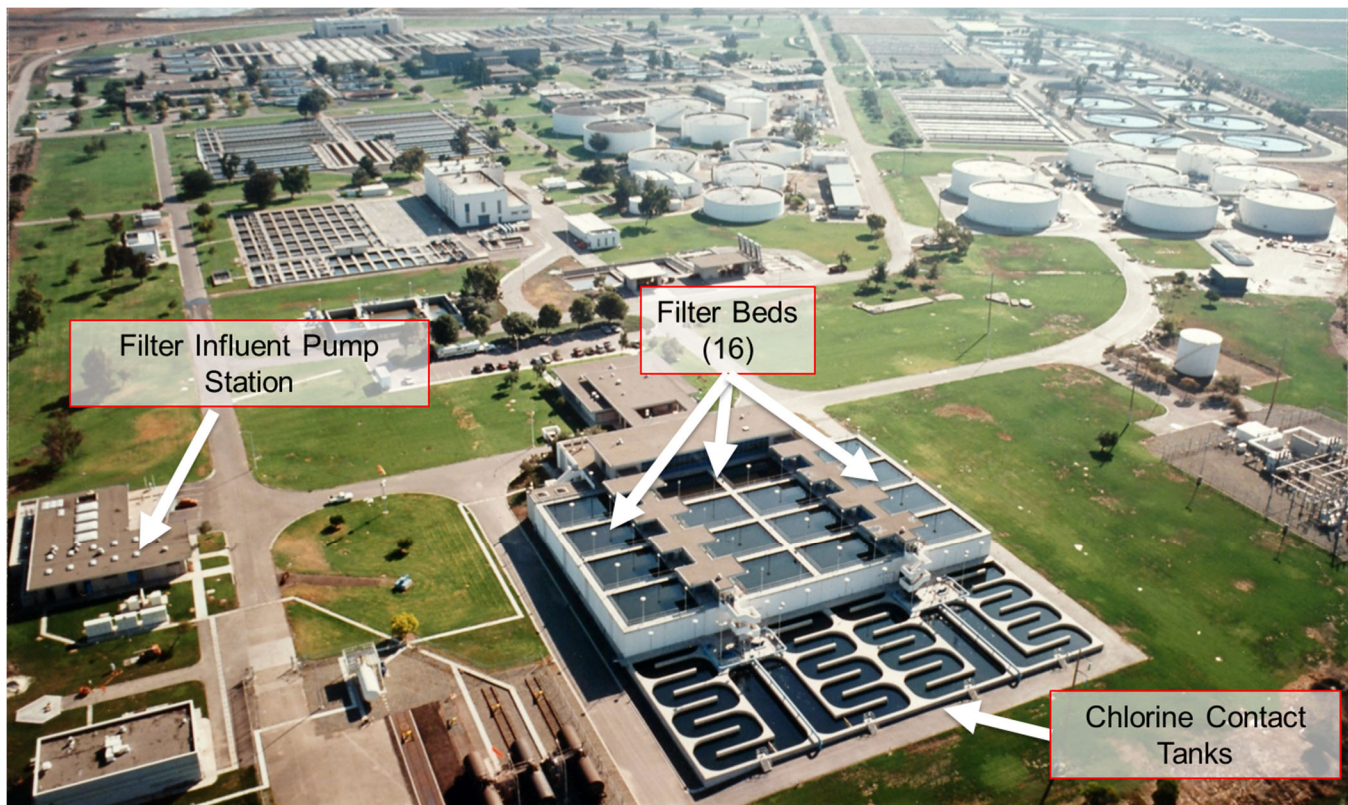


Figure 2: Tertiary Filtration Unit Process



Figure 3: Existing filter galleries which will have 77 valves replaced



Figure 4: Existing surface wash system which is to be replaced with new air scour system

Program Performance Summary

Seven key performance indicators (KPIs) have been established to measure overall CIP success. Each KPI represents a metric that will be monitored on a regular basis. Through the life of the CIP, KPIs that best reflect the current program will be selected and measured. KPIs are reset each fiscal year.

Program Key Performance Indicators – Fiscal Year 2020-2021

KPI	Target	Fiscal Year to Date			Fiscal Year End		
		Actual	Status	Trend	Forecast	Status	Trend
Stage Gates	90%	100% 3/3 ¹			100% 12/12		
Measurement: Percentage of initiated projects and studies that successfully pass each stage gate on their first attempt. Target: Green: >= 90%; Amber: 75% to 90%; Red: < 75%							
Schedule	90%	N/A 0/0			100% 3/3		
Measurement: Percentage of CIP projects delivered within 2 months of approved baseline Beneficial Use Milestone. ² Target: Green: >= 90%; Amber: 75% to 90%; Red: < 75%							
Budget	90%	N/A 0/0			67% 2/3 ³		
Measurement: Percentage of CIP projects that are accepted by the City within the approved baseline budget. ² Target: Green: >= 90%; Amber: 75% to 90%; Red: < 75%							
Expenditure	\$389M	\$274M			\$493M		
Measurement: CIP FY20-21 committed costs. Target: Committed costs meets or exceeds 70% of planned budget. 70% of \$556M = \$389M. Therefore Fiscal Year End Green: >=\$389M; Red: < \$389M							
Safety	0	0			0		
Measurement: Number of OSHA reportable incidents associated with CIP delivery for the fiscal year. Criteria: Green: zero incidents; Amber: 1 to 2; Red: > 2							
Environmental	0	0			0		
Measurement: Number of permit violations caused by CIP delivery for the fiscal year. Target: Green: zero incidents; Amber: 1 to 2; Red: > 2							
Vacancy Rate⁴	10%	14% 12/88			9% 8/88		
Measurement: Ratio of the number of vacant approved positions to approved positions. Target: Green: <= 10%; Amber: 10% to 20%; Red: > 20%							

Notes

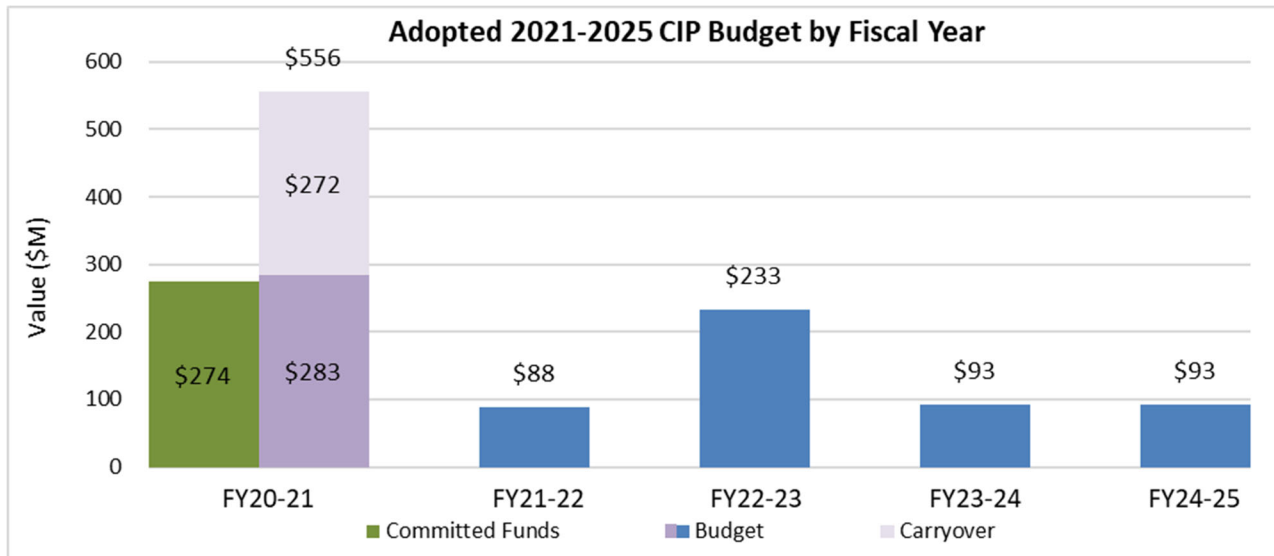
1. The Yard Piping Improvements – Phase 1 Project passed Stage Gate 4: Approve Preliminary Design.
2. The baseline Beneficial Use date and the baseline budget for each project are established at construction contract award and execution.
3. The City anticipates accepting three projects this fiscal year: The Cogeneration Facility, 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation, and Advanced Facility Control & Meter Replacement – Phase 1 projects. The Advanced Facility Control and Meter Replacement – Phase 1 Project is anticipated to exceed the project baseline budget.
4. The vacancy rate KPI measures CIP-approved positions, including ESD, Public Works, and program management consultant full-time staff.



Program Budget Performance Summary

This section summarizes the cumulative monthly budget performance for fiscal year (FY) 20-21 based on the Adopted 2021-2025 CIP.

Adopted 2021-2025 CIP Expenditure and Encumbrances



Notes:

Committed Funds: Total of expenditures and encumbrances.

Expenditure: Actual cost expended, either by check to a vendor or through the City's financial system, for expenses such as payroll or for non-personal expenses that do not require a contract.

Encumbrance: Financial commitments such as purchase orders or contracts that are committed to a vendor, consultant, or contractor. An encumbrance reserves the funding within the appropriation and project.

The FY20-21 budget is \$301.8 million, which consists of \$195.6 million in new funds and \$106.2 million in rebudgets. For purposes of this monthly report, the adopted FY20-21 budget is adjusted from \$301.8 million to \$283.4 million due to the exclusion of certain appropriations that are not measured as part of the expenditure KPI. Excluded appropriations include City Hall Debt Service Fund; Clean Water Financing Authority Debt Service Payment Fund; Debt Service Repayment for Plant Capital Improvement Projects (San José only debt service); Equipment Replacement Reserve; Ending Fund Balance; and Urgent and Unscheduled Treatment Plant Rehabilitation. Similar adjustments have been made to the budgets for FY21-22 through FY24-25.

Carryover: Encumbrance balances at the end of the previous fiscal year are automatically carried forward to the current fiscal year as carryover funding to pay invoices for approved construction contracts and consultant agreements. FY20-21 carryover is \$272.3 million.

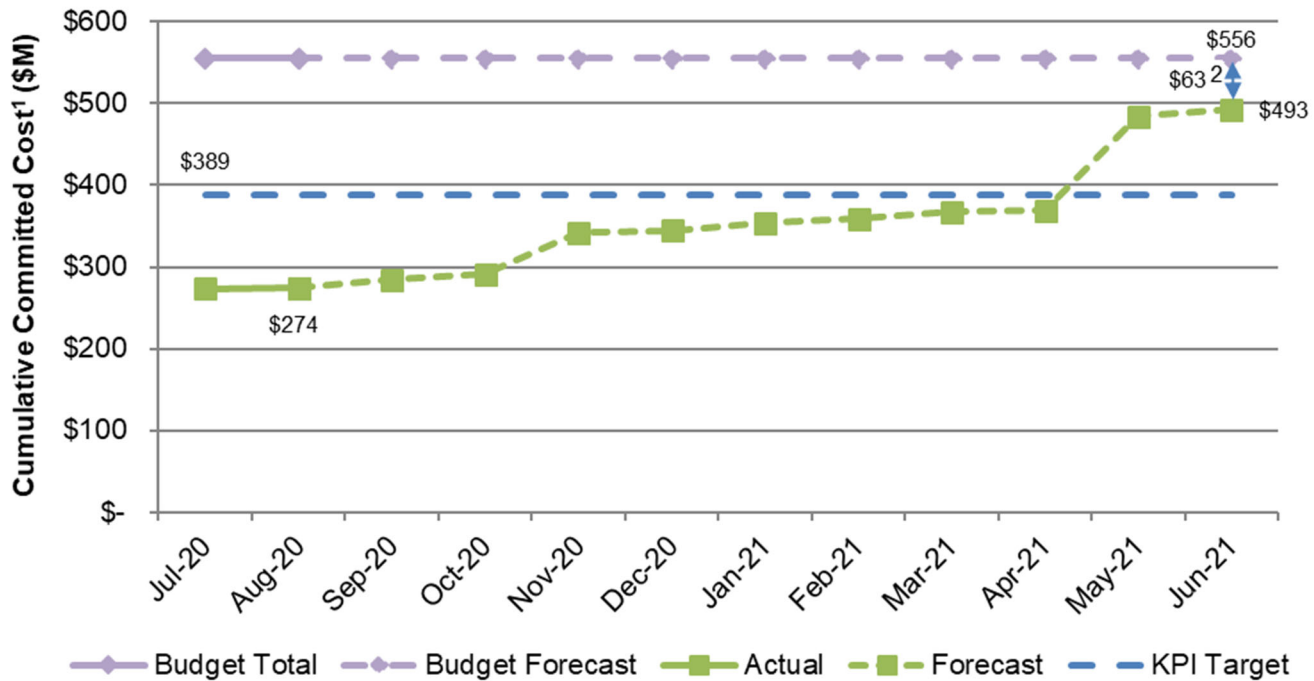
Budget of \$283.4 million and carryover of \$272.2 million totals \$555.5 million for FY20-21.



Fiscal Year 2020-2021 Program Budget Performance

The FY20-21 CIP budget is comprised of approximately \$283.4 million in new and rebudgeted funds, plus encumbered carryover of \$272.2 million, for a total of \$555.5 million. This excludes City Hall Debt Service Fund; Clean Water Financing Authority Debt Service Payment Fund; Debt Service Repayment for Plant Capital Improvement Projects (San José only debt service); Equipment Replacement Reserve; Ending Fund Balance; and Urgent and Unscheduled Treatment Plant Rehabilitation items. Overall, the forecast fiscal year-end committed funds exceed the fiscal year-end target by \$104 million.

**FY20-21 Program Budget
Total Budget vs Actual and Forecasted Expenditure**



Notes:

1. Committed costs are expenditures and encumbrance balances, including carryover (encumbrance balances from the previous fiscal year).
2. The variance between budget and commitments can be primarily attributed to the following factors:
 - a. Three construction contracts are no longer anticipated to be awarded in FY20-21, based on updated schedules:
 - i. Fire Life Safety Upgrades
 - ii. HVAC Improvements
 - iii. Outfall Bridge and Instrumentation Improvements
 - b. The Filter Rehabilitation Project construction contract lowest responsive bid was under budget.
 - c. Several other minor encumbrances for consultant services are either lower than budgeted or are not anticipated to be awarded in FY20-21.
 - d. Several authorized positions remain vacant, resulting in lower personal services expenses than budgeted.
 - e. Certain emergency and urgent appropriation funds are at this time not expected to be committed.



Project Performance Summary

There are currently nine projects in construction phases and an additional nine projects in feasibility/development; design; bid and award; or design and construction phases (see PDM, page 2). Projects in the construction phase have established cost and schedule baselines and are monitored using the City's Capital Project Management System (CPMS). Green/red icons are included in the table below to indicate whether these projects are on budget and schedule.

Project Performance – Baselined Projects (construction and post-construction)

Project Name	Phase	Estimated Beneficial Use Date ¹	Cost Performance ²	Schedule Performance ²
1. Cogeneration Facility	Design & Construction	Nov 2020	●	●
2. 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation	Construction	Jan 2021	●	●
3. Advanced Facility Control & Meter Replacement - Phase 1	Construction	June 2021	◆	●
4. Digester and Thickener Facilities Upgrade	Construction	Sep 2021	◆	◆
5. Blower Improvements	Construction	Sep 2022	●	●
6. Advanced Facility Control & Meter Replacement - Phase 2	Construction	Jan 2023	●	●
7. Nitrification Clarifiers Rehabilitation – Phase 1	Construction	Jan 2023	●	●
8. Switchgear M4 Replacement and G3 & G3A Removal	Construction	Jan 2023	●	●
9. Headworks	Design & Construction	Jun 2023	●	●

Key:

Cost:	● On Budget	◆ >1% Over Budget	Schedule:	● On Schedule	◆ >2 months delay
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Notes

- Beneficial Use is defined as work that is sufficiently complete, in accordance with contract documents, that it can be used or occupied by the City. Beneficial Use dates are reviewed as part of project schedule reviews.
- An explanation of cost and schedule variances on specific projects identified in this table is provided on page 12.



Project Performance – Pre-Baselined² Projects (not yet in construction)

Project Name	Phase	Estimated Beneficial Use Date ¹
1. Filter Rehabilitation	Bid & Award	Jan 2024
2. Digested Sludge Dewatering Facility	Design and Construction	Feb 2024
3. Yard Piping Improvements – Phase 1	Design	Oct 2021
4. Outfall Bridge and Instrumentation Improvements	Design	Nov 2022
5. Fire Life Safety Upgrades	Design	Jan 2023
6. HVAC Improvements	Design	May 2024
7. Storm Drain System Improvements	Feasibility/Development	Sep 2023
8. Facility Wide Water Systems Improvements	Feasibility/Development	May 2025
9. Final Effluent Pump Station and Stormwater Channel Improvements	Feasibility/Development	Feb 2027

Notes

- Beneficial Use is defined as work that is sufficiently complete, in accordance with contract documents, that it can be used or occupied by the City. Beneficial Use dates are reviewed as part of project schedule reviews.
- Pre-baselined projects are CIP projects not yet in construction, whose schedule and budget information is not yet baselined.



Project Significant Accomplishments

Biosolids Package

Digester and Thickener Facilities Upgrade Project

- Contractor Walsh completed pre-operational tests for the DAFT tanks and began preparatory work for functional testing.
- Walsh completed functional testing for the new flares.
- The City completed final inspections of the electrical system at the new load center and Sludge Screening Building.

Facilities Package

96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation Project

- Contractor Michels Pipeline completed the cured-in-place pipe installation for the 96-inch settled sewage pipe.

Facility Wide Water Systems Improvements Project

- The City received eight bids for the exploratory trenching construction contract. Council award is anticipated in October.

Yard Piping Improvements – Phase I Project

- Consultant Black & Veatch completed the condition assessment for the 84-inch nitrification influent (NI) pipe and the two 102-inch NI pipes. The entire 84-inch NI concrete pipe (3,500 feet) was found in good condition. The 102-inch NI concrete pipe was found to have severe crown corrosion conditions for approximately eight feet on the A-side and 20 feet on the B-side.

Liquids Package

Advanced Facility Control and Meter Replacement – Phase 1 Project

- Contractor Overaa installed the posts for mounting meters and probes at the Nitrification Battery B tanks.
- Overaa completed the pipe lining repair work for two Nitrification Battery B tanks, and began the pipe lining repair work for the next two tanks, which is scheduled to be completed in September.

Advanced Facility Control and Meter Replacement – Phase 2 Project

- The City completed the flow meter submittal review and returned comments to contractor Kiewit.

Blowers Improvements Project

- Contractor Monterey Mechanical ran pre-operational testing on Blower No. 2 in Building 40. The contractor will begin performing functional testing of the blower in September.

Final Effluent Pump Station

- Consultant Brown and Caldwell completed the final effluent discharge alternative study and submitted the final technical memorandum to the City.

Headworks Project

- The City completed review of the 90 percent design package. Design-builder CH2M resolved final outstanding design issues and began production of the 100 percent design documents.
- CH2M began pouring concrete slabs for the influent screening structure and grit basins, and installed shoring for the deep raw sewage pump station excavation.

Nitrification Clarifier Rehabilitation – Phase 1 Project

- Contractor Overaa completed the demolition work in Nitrification Battery B including the influent valve boxes, launder walls and exterior walls in various clarifiers, water lines, and a slide gate in the mixed liquor channel.
- Overaa continued trenching and installation of the electrical duct bank for the nitrification clarifier scum valves. Overaa also began drain valve replacement work in the return-activated sludge gallery.

Power and Energy Package

Cogeneration Facility Project

- Design-builder CH2M completed synchronization testing on Engines 1 and 4, as well as demonstration tests at full load on natural gas.



Explanation of Project Performance Issues

Digester and Thickener Facilities Upgrade Project

This project encountered numerous unforeseen conditions at the beginning of construction in 2016, including corroded underground pipe and other obstructions for new building foundations. A temporary reroute system was installed to enable replacement of a 78-inch settled sewage pipeline and junction structure during the 2018 dry season.

In 2017, design modifications were required to address seismic risks, control system changes, additional underground obstructions, pipe anchorage, and new fire department requirements. Discovery of hazardous materials required the City to submit an extensive cleanup proposal to the federal Environmental Protection Agency (EPA) for approval. Once mitigation was completed in 2019, the City submitted another report to the EPA that detailed how it met each EPA cleanup permit requirement.

In late 2019 and early 2020, further design modifications were required to remove underground interferences to make room for new pipe and conduit duct banks. As a result, twice as much paving had to be removed and excavation done than originally planned. COVID-related power plant shutdowns reduced availability of fly ash, which increased paving material costs. After an anchor in the tunnel ceiling failed, structural engineers determined that new pipes should be supported from the tunnel floors instead of being hung from the ceiling. The contractor had to redesign supports and procure different support materials than originally planned. These changes, along with additional pipe supports required in the elevated pipe rack and the digester area, also increased costs. In addition, more concrete was used for equipment pads than originally planned, which required redesign of site drainage.

To pay for the additional work to address unforeseen conditions, Council approved a construction contingency increase of \$15 million in November 2017 and another contingency increase of \$25 million in June 2018. Staff anticipates recommending a third contingency increase to Council in early 2021.

Delays for these conditions have amounted to 273 working days. The original construction completion and Beneficial Use date of September 2019 was delayed to November 2020. Currently, the City is evaluating Walsh's request for additional delays due to numerous design-related change orders. If granted, these schedule delays may postpone project completion to September 2021.

Advanced Facility Control and Meter Replacement – Phase 1 Project

In late 2018, the CIP identified the need for additional construction management (CM) team resources to adequately manage the construction, testing, and startup challenges the project was experiencing, as well as unforeseen conditions (see drain plate issue below). The project team subsequently added staff and increased budget hours for both the CM and project management teams to better support the project's construction and post-construction phases.

Additional staff time and consultant engineering services were required in late 2019 to resolve unforeseen corroded drain plates and other obstructions for the new flowmeter equipment. A design modification was required to address the worn pipe flange connected to the drain plate. The project and construction teams were required to perform additional work to resolve the unforeseen conditions; this additional work has resulted in additional project delivery costs due to increased CM costs. Completion of this work has now been pushed to July 2020, with an additional cost of \$530,000. However, it has not changed the overall construction completion date of June 2021.



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Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram

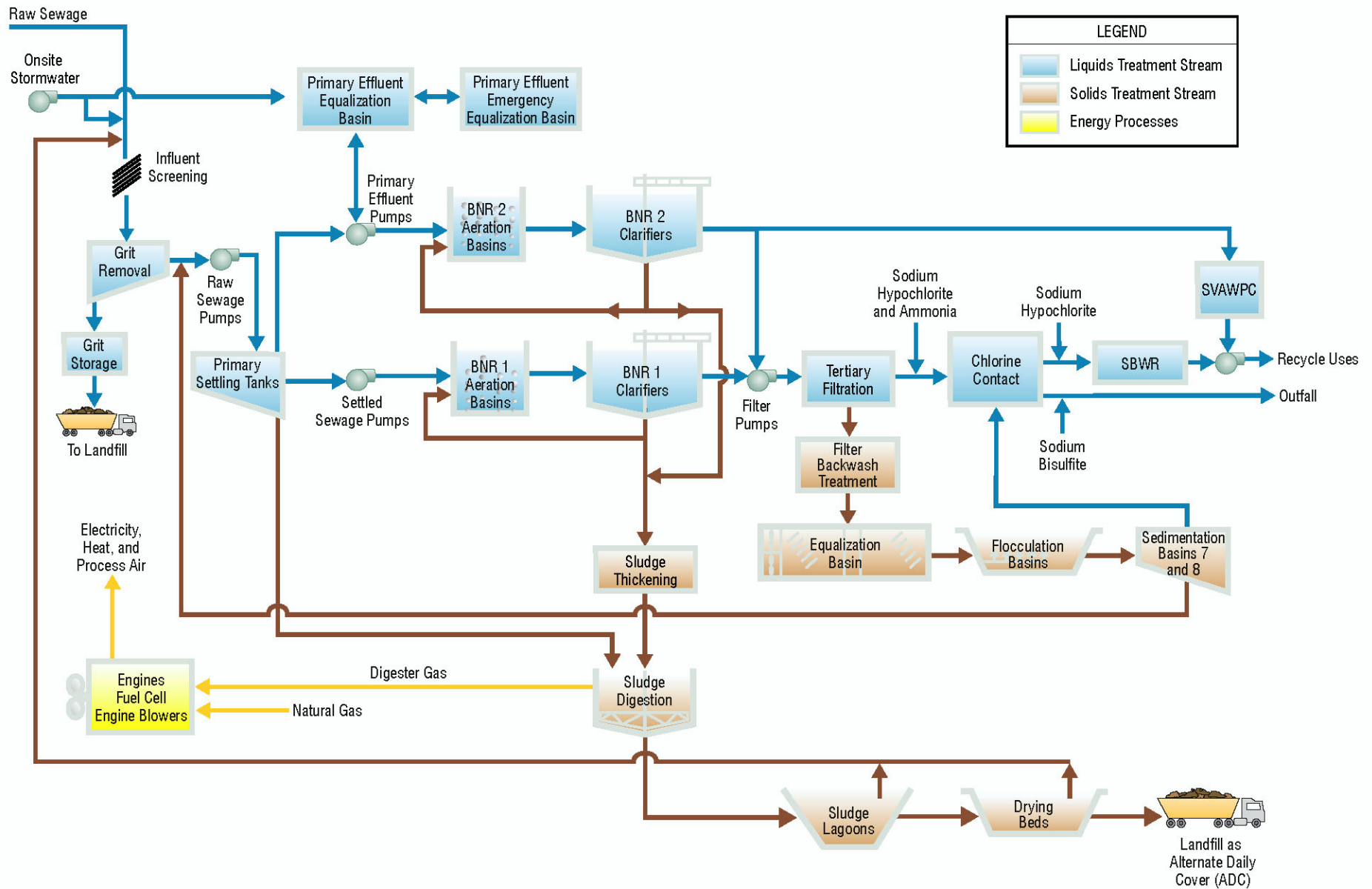


Figure 5 – Current Treatment Process Flow Diagram



Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram

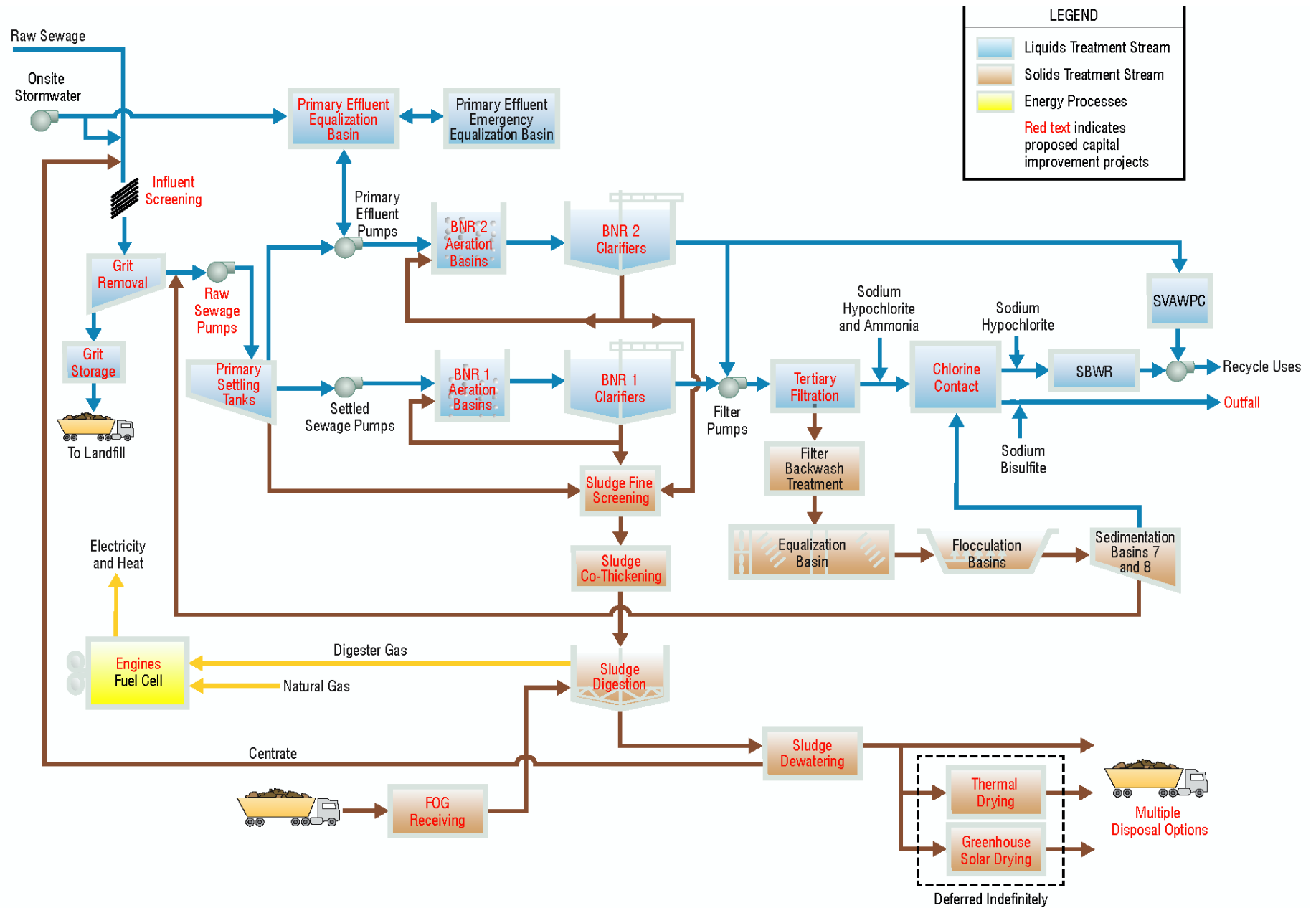


Figure 6 – Proposed Treatment Process Flow Diagram



Active Construction Projects – Aerial Plan

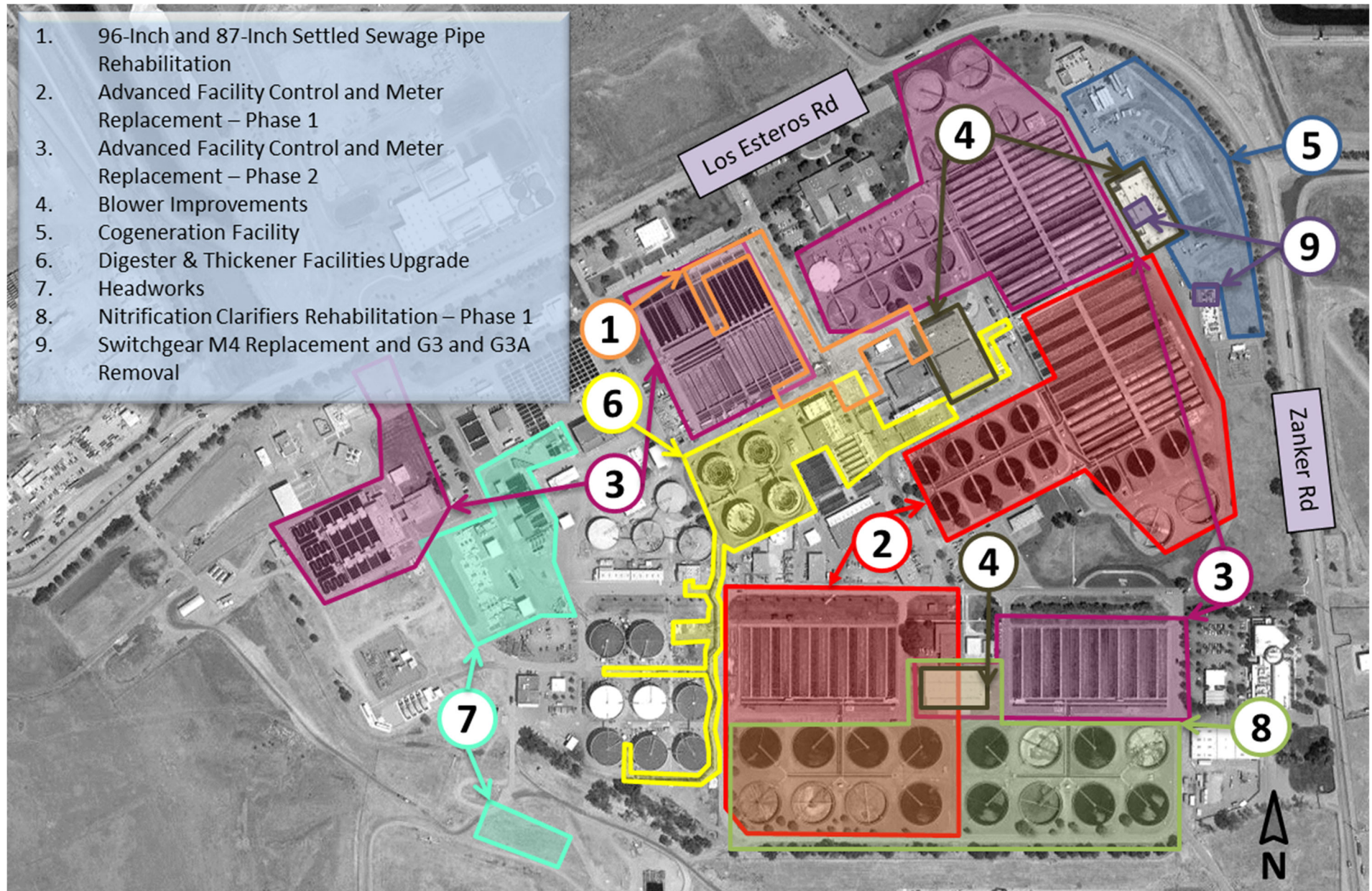


Figure 7 – Active Construction Projects

