



San José-Santa Clara
Regional Wastewater Facility

Capital Improvement Program Monthly Status Report: June 2016

August 4, 2016

This report summarizes the progress and accomplishments of the Capital Improvement Program (CIP) for the San José-Santa Clara Regional Wastewater Facility (RWF) for June 2016.

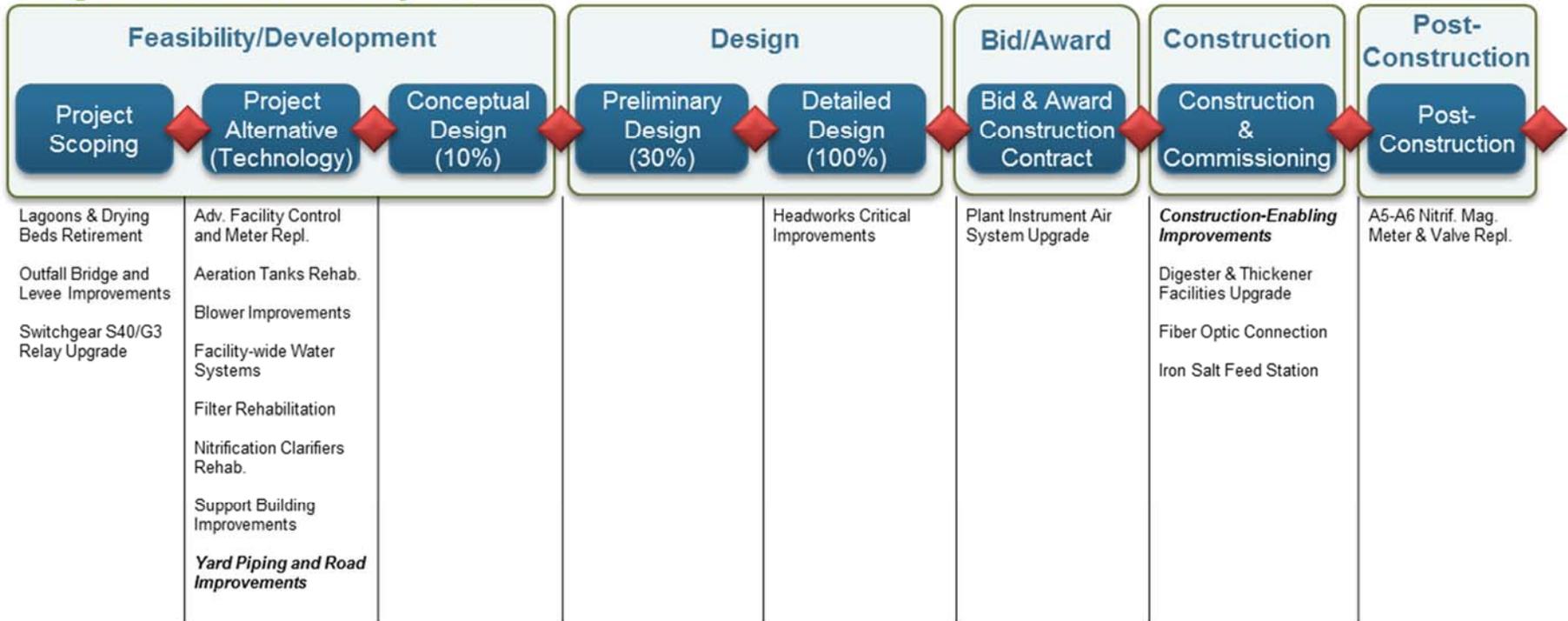
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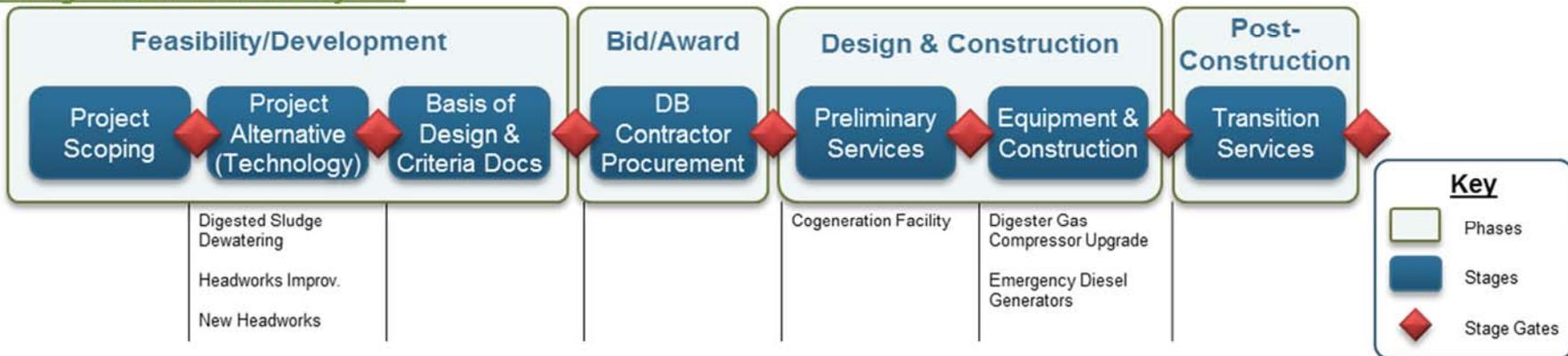


Project Delivery Model

Design-Bid-Build Active Projects



Design-Build Active Projects



*Projects shown in **bold and italics** have advanced this reporting period



Program Summary

June 2016

In June, the CIP progressed on multiple fronts, including advancing two projects through the Project Delivery Model (PDM) stage gate process: the Plant Instrument Air System Upgrade Project (Authorization to Award and Establish Baseline), and the Yard Piping and Road Improvements Project (Approve Project Scope). In additional developments, CIP staff:

- Received Statement of Qualifications (SOQ) for the Support Building Improvements Project;
- Received SOQ for the RWF System Integrator services pre-qualification;
- Received bids for the Plant Instrument Air System Upgrade Project;
- Completed SOQ evaluations and issued final rankings for Owner's Advisor services for the Digested Sludge Dewatering Project; and
- Presented the following recommendations to the Treatment Plant Advisory Committee (TPAC) and San José City Council (Council), all of which were accepted or approved:
 - Approve a master consultant agreement for the Aeration Tanks Rehabilitation and Blower Improvement Projects to Brown and Caldwell;
 - Award a construction contract for the Construction-Enabling Improvements Project to the low bidder, Teichert Construction, for \$3,135,910;
 - Approve two master consultant agreements to provide construction management and inspection services to Kennedy/Jenks and MNS Engineers;
 - Approve two master consultant agreements for value engineering services to Hazen and Sawyer, and Value Management Services; and
 - Consider and adopt the five-year (2017-2021) Capital Improvement Program.

Design continued on the Headworks Critical Improvements Project, which met the preliminary design 60 percent milestone this month, and on the Cogeneration Facility design-build project. Alternatives analysis also continued on the Blower Improvement and Filter Rehabilitation projects, with technical workshops held for each project this month.

Major construction work continued on the Emergency Diesel Generators, Digester Gas Compressor Upgrade, and Iron Salt Feed Station projects this month. Two new construction projects became active at the RWF this month, with the pre-construction meeting held on the Fiber Optic Connection Project, and the Notice-to-Proceed (NTP) issued for the Digester and Thickener Facilities Upgrade Project.

Look Ahead

In July, CIP project teams and the selected design consultants will move forward with alternatives analysis and designs for the Headworks projects and for the Cogeneration Facility, Filter Rehabilitation, Blower Improvements, and Nitrification Clarifiers Rehabilitation projects.

Staff will continue with efforts related to consultant procurements and service orders, including the Nitrification Clarifiers Rehabilitation; Facility Wide Water Systems Improvement; Advanced Facility Control and Meter Replacement; Switchgear S40/G3 Relay Upgrade; Digested Sludge Dewatering Facility; and Support Buildings Improvement projects.

Procurements for a number of programmatic services will continue to advance, including Third-Party Audit, Owner Controlled Insurance Program, System Integrator, and Industrial Hygienist services.

Construction activities will continue on the Emergency Diesel Generators, Digester Gas Compressor Upgrade, Iron Salt Feed Station, and Fiber Optic Connection projects. Construction will commence on the Digester and Thickener Facilities Upgrade and the Construction-Enabling Improvements Project. Staff will hold pre-construction meetings for all of these projects.

Staff will issue a Notice of Intent-to-Award the construction contract for the Plant Instrument Air System Upgrade Project received in June. A recommendation will be made to TPAC and Council in August to proceed with the award of the contract to the lowest bidder.

In addition, all CIP project managers and project engineers will continue formal staff training, with the next training session focused on effective decision making.



Program Highlight – Design and Construction Management Software

The Construction Management (CM) team, led by Public Works, oversees the construction of RWF projects. A key component of successful CM is the ability to manage effective communications between CIP staff, the contractor, and other stakeholders, such as Operations and Maintenance (O&M), the designer, and other City departments. Historically, the CIP team managed communications using standard productivity tools such as Microsoft Office. However, with the imminent five-fold increase in construction activity at the RWF, it was determined that a more specialized tool would be required.

To reach a solution, in 2015 staff worked with the City Finance Department to purchase a vendor-hosted Design & Construction Management Software (DCMS) system to manage and track CIP projects. The procurement effort followed the normal procedure of providing a Request for Proposal (RFP) from qualified vendors. Twelve vendors submitted proposals that were evaluated and rated by a Technical Evaluation Panel (TEP). Four vendors were shortlisted and were subsequently interviewed by the TEP. As part of the process, vendors were asked to demonstrate their systems. Bentley Systems' EADOC program received the highest overall score for functionality, ease of use, and cost; Bentley Systems was subsequently awarded the contract.

CIP staff are now working with Bentley Systems' implementation team to configure the DCMS system for RWF construction management forms and processes. The first major CIP project to use EADOC is the recently-awarded Digester and Thickener Facilities Upgrade Project. Project participants from the CIP, O&M, the contractor, and the design consultant are being trained to submit Requests for Information (RFI), submittals, and letters through EADOC. Training on invoicing, contract change orders, and other CM processes will soon follow.

The benefits of using the EADOC system, which are already becoming apparent, include:

- Real-time collaboration between project team members;
- Automatic time- and date-stamping for every document action;
- Customized document alerts that notify users when documents need a response;
- A web-based platform that provides access to all users around the clock; and
- Linked relationships between a project's documents, communications, and costs, which become an effective archive when the project is completed.

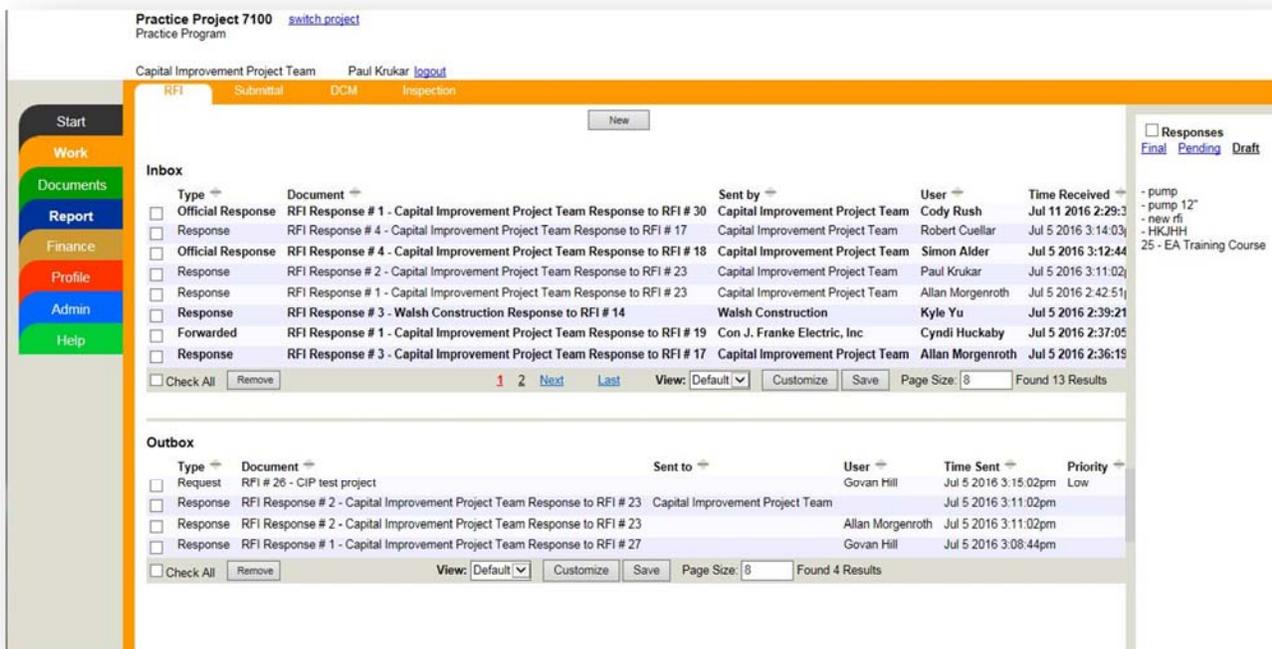


Figure 1 – Typical EADOC interface for a Request for Information document



Program Performance Summary

Eight key performance indicators (KPIs) have been established to measure the overall success of the CIP. Each KPI represents a metric that will be monitored on a regular frequency. Through the life of the CIP, KPIs will be selected and measured that best reflect the current maturity of the program.

Program Key Performance Indicators – Fiscal Year 2015-2016

KPI	Target	Fiscal Year to Date			Fiscal Year End		
		Actual	Status	Trend	Forecast	Status	Trend
Stage Gates	80%	100% (22/22) ¹			100% (22/22)		
Measurement: Percentage of initiated projects and studies that successfully pass each stage gate. Criteria: Red: < 70%; Amber: 70% to 80%; Green: >=80%							
Schedule	85%	25% (1/4)			25% (1/4)		
Measurement: Percentage of CIP projects delivered within 2 months of approved baseline Beneficial Use Milestone. Criteria: Red: < 75%; Amber: 75% to 85%; Green: >=85%							
Budget	90%	83% (5/6) ²			83% (5/6)		
Measurement: Percentage of CIP projects that are completed within the approved baseline budget. Criteria: Red: < 80%; Amber: 80% to 89%; Green: >=90%							
Expenditure	\$146M ³	\$206M			\$206M		
Measurement: CIP Fiscal Year 15/16 committed costs. Committed cost meets or exceeds 70% of planned Budget (70% of \$209.2M = \$146.4M)							
Procurement	80%	100% (17/17)			100% (17/17)		
Measurement: Number of consultant and contractor procurements for initiated projects and program-wide services advertised compared to planned for the fiscal year. Criteria: Red: < 70%; Amber: 70% to 79%; Green: >=80%							
Safety	0	0			0		
Measurement: Number of OSHA reportable incidents associated with CIP construction for the fiscal year. Criteria: Red: > 2; Amber: 1 to 2; Green: zero incidents							
Environmental	0	0			0		
Measurement: Number of permit violations caused by CIP construction for the fiscal year. Criteria: Red: > 2; Amber: 1 to 2; Green: zero incidents							
Staffing⁴	80%	52% (15/29) ⁵			52% (15/29)		
Measurement: Number of planned positions filled for the fiscal year. Criteria: Red: < 70%; Amber: 70% to 79%; Green: >=80%							

Notes

- The number of completed stage gates increased from 20 to 22 for the Stage Gate KPI Fiscal Year to Date (YTD) as the Plant Instrument Air System Upgrade Project successfully completed the Authorization to Award stage gate and the Yard Piping and Road Improvements Project successfully completed the Approve Project Scope stage gate.
- The Digester Gas Storage Replacement Project was completed and was within budget. The A5-A6 Nitrification Magnetic Meter & Valve Replacement Project was also completed, but not within the approved baseline budget.
- Carryover encumbrance of \$157K was liquidated, reducing budget and causing the target to reduce from \$146.6K (\$147 rounded) to \$146.4M (146M rounded).
- The City Staffing level KPI for planned recruitments for positions that are vacant at the start of the fiscal year is measured quarterly; all other KPIs are measured monthly. KPI measurement does not account for staff turnover throughout the fiscal year.
- Six employees were hired in the fourth quarter of fiscal year 2015-2016. This includes a senior engineer, an associate engineer, two engineers, a senior engineering technician, and a senior construction inspector.

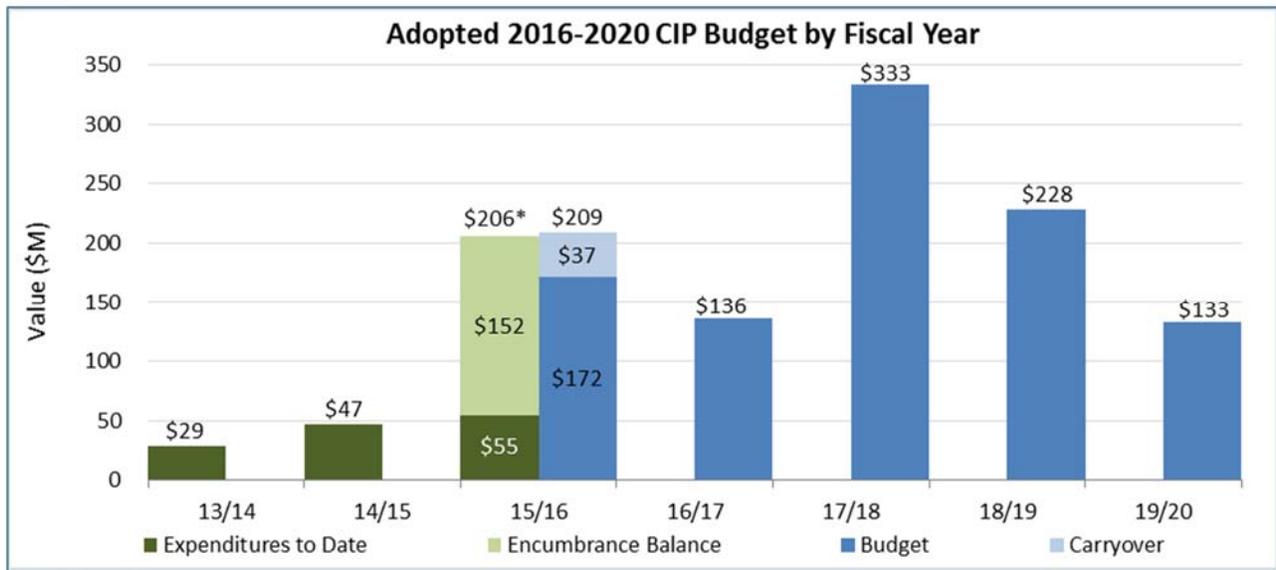


Program Cost Performance Summary

This section summarizes CIP cost performance for all construction projects and non-construction activities for FY15-16 and for the 2016-2020 CIP.

Adopted 2016-2020 CIP Expenditure and Encumbrances

To accommodate the proposed increase in expenditures and encumbrances over the next five years, the City is implementing a long-term financial strategy to fund needed, major capital improvements while minimizing the impact to ratepayers. FY13-14, FY14-15, and FY15-16 expenditures have been adjusted to reflect the CIP portion of the Treatment Plant Capital Fund, Fund 512, excluding South Bay Water and Urgent and Unscheduled Cost (\$2.6M and \$1.5M, respectively).



*The 2015-2016 CIP expenditures are \$54.6M (\$55M rounded) and the encumbrance balance is \$151.6M (\$152M rounded), making the total committed to date for the CIP \$206.2M (\$206M rounded). The above graph total the rounded amounts.

Notes:

Expenditure: Actual cost expended, either by check to a vendor or through the City's financial system, for expenses such as payroll or 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. The encumbrance reserves the funding within the appropriation and project.

Encumbrance Balance: The amount of the remaining encumbrance committed after payments.

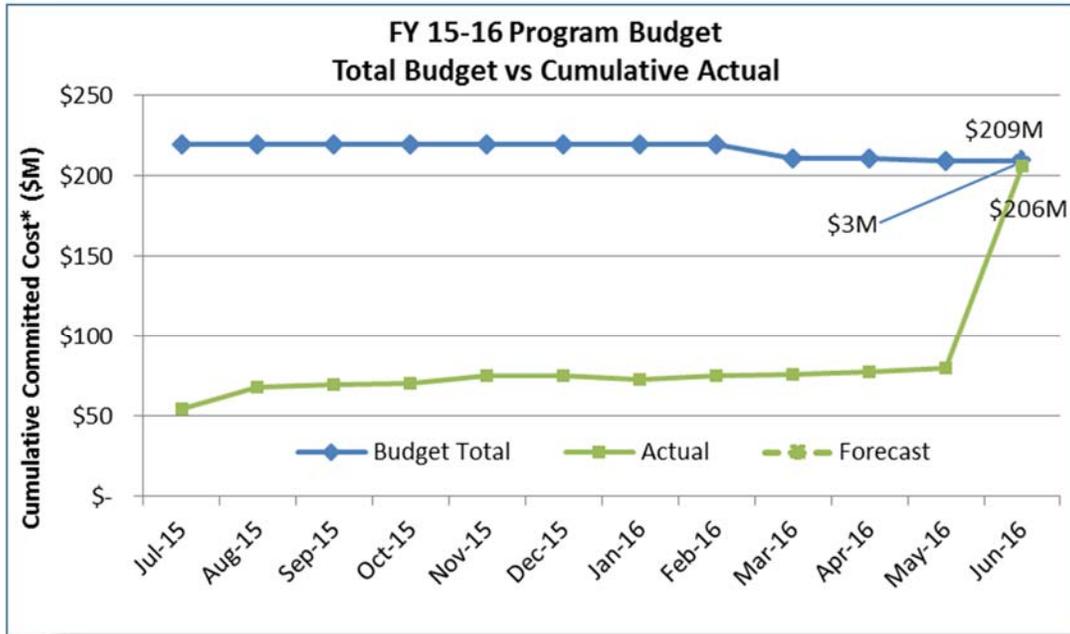
Budget: Adopted FY 2016-2020 Budget, which is new funding plus rebudgeted funds.

Carryover: Encumbrance balances at the end of a fiscal year become carryover funding. Carryover is different from rebudgeted funds, in that it automatically utilizes funding that was previously committed, but not yet paid.



Fiscal Year 2015-2016 Program Budget Performance

This budget comprises the 2015-2016 budget of \$172.0 million plus carryover of \$37.4 million. The budget excludes Reserves, Ending Fund Balance, South Bay Water Recycling, Public Art, and Urgent and Unscheduled Rehabilitation items.



*Committed costs are expenditures and encumbrance balances, including carryover (encumbrance balances from the previous fiscal year).



Project Performance Summary

There are currently seven active projects in the construction or post-construction phases, with a further 17 projects in feasibility/development, design, bid and award, or design and construction (design-build projects) phases (see PDM, page 2). All active projects are listed in the tables below. 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, using CPMS data as a source.

Project Performance – Baselined Projects

Project Name	Phase	Estimated Beneficial Use Date ¹	Cost Performance ²	Schedule Performance ²
1. A5-A6 Nitrification Mag. Meter & Valve Replacement	Post Construction	May 2016 ³		
2. Digester Gas Compressor Upgrade	Construction	Oct 2016		
3. Emergency Diesel Generators	Construction	Dec 2016		
4. Fiber Optic Connection	Construction	Feb 2017 ⁴		
5. Construction Enabling Improvements	Construction	Feb 2017 ⁴		
6. Iron Salt Feed Station	Construction	Sept 2017		
7. Digester and Thickener Facilities Upgrade	Construction	Sept 2019 ⁴		

KEY:

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

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 being 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 11.
- Actual Beneficial Use date.
- Project construction Beneficial Use date will be baselined once the contractor submits their construction schedule.



Project Performance – Pre-Baselined Projects

Project Name	Phase	Estimated Beneficial Use Date ¹
1. Cogeneration Facility	Design & Construction	May 2019
2. Plant Instrument Air System Upgrade	Bid & Award	Jan 2018
3. Headworks Critical Improvements	Design	Sept 2017
4. Blower Improvements	Feasibility/Development	Feb 2019
5. Adv. Facility Control & Meter Replacement	Feasibility/Development	Aug 2020
6. Switchgear S40 Upgrade, M4 Replacement, G3 & G3A Removal	Feasibility/Development	Jan 2021
7. Headworks Improvements	Feasibility/Development	April 2021
8. Outfall Bridge and Levee Improvements	Feasibility/Development	Dec 2021
9. Digested Sludge Dewatering Facility	Feasibility/Development	Dec 2021
10. Facility Wide Water Systems Improvements	Feasibility/Development	May 2022
11. Filter Rehabilitation	Feasibility/Development	May 2022
12. New Headworks	Feasibility/Development	Aug 2022
13. Yard Piping and Road Improvements	Feasibility/Development	Oct 2022
14. Nitrification Clarifiers Rehabilitation	Feasibility/Development	Nov 2022
15. Aeration Tanks Rehabilitation	Feasibility/Development	Nov 2023
16. Support Building Improvements	Feasibility/Development	Jan 2027
17. Lagoons & Drying Beds Retirement	Feasibility/Development	Mar 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 being reviewed as part of project schedule reviews.



Significant Accomplishments

Biosolids Package

Digester and Thickener Facilities Upgrade

- The NTP for construction was issued to Walsh Construction Company II, LLC on June 22. The first chargeable day of work will be July 5. This project will be the first phase of rehabilitation for the RWF biosolids facilities.

Digested Sludge Dewatering Facility

- The City issued the final rankings for the Owner's Advisor Services procurement.

Facilities Package

A5-A6 Nitrification Magnetic Meter & Valve Replacement

- The City accepted the project on June 21.

Cogeneration Facility

- Development of the Basis of Design Report began with several workshops to discuss key project elements.

Construction-Enabling Improvements

- Council awarded the project to Teichert Construction, Inc. on June 21 with a pre-construction meeting scheduled for mid-July.

Fiber Optic Connection

- The project team held the pre-construction meeting. Staff expect to complete the project by the end of February 2017.

Yard Piping and Road Improvements Project

- The project team completed the Project Scoping stage gate, and is proceeding with Feasibility/Development.

Liquids Package

Advanced Facility Control and Meter Replacement

- Staff is negotiating with Black & Veatch for design services.

Aeration Tanks Rehabilitation and Blower Improvements

- Staff began negotiations with the consultant and held the Preliminary Alternative Analysis workshop for the Blower Improvements Project.

Filter Rehabilitation

- The project team held the project kick-off meeting and completed interviews with O&M staff.

Headworks Critical Improvements, Headworks Improvements, and New Headworks

- Staff received 60 percent submittal for the Headworks Critical Improvements project and held an Alternative Analysis Workshop for the Headworks Improvements and New Headworks projects.

Nitrification Clarifiers Rehabilitation

- Staff finalized the scope of work for SO #1 for the Nitrification Clarifier Rehabilitation Project.

Power and Energy

Plant Instrument Air System Upgrade

- The City received and evaluated bids. Staff will move forward with recommending award of a construction contract in August.



Explanation of Project Performance Issues

A5-A6 Nitrification Magnetic Meter and Valve Replacement

In September 2014 during startup, the project team discovered that the actuators that had been specified and installed were incompatible with the available power supply. Engineering staff determined it would cost more to modify the electrical system than to order and install compatible actuators. O&M staff requested that the actuators match the custom actuators used in the other 14 clarifiers. The City pursued various options to resolve the issue and received a proposal from the contractor to install new actuators based on a revised specification. A counterproposal was provided to the contractor in December 2015. Discussions between senior management from both sides have been productive. A negotiated agreement to resolve all outstanding contract issues was concluded in January 2016 and a change order was issued for the contractor to purchase replacement custom actuators, with lead time of between 12 to 14 weeks. Council approved the additional required funding in March. The Contractor remobilized and completed the work, with a Beneficial Use date of May 27. The City issued Final Acceptance on June 21.

Emergency Diesel Generator

The project completion schedule is delayed approximately three months due to the following three factors:

1. Caterpillar, the supplier of the Emergency Diesel Generator system, encountered delays in developing the controls that interface with the existing RWF controls. They have now delivered and installed the controls and switchgear enclosures. Caterpillar and Peterson Control are in the process of completing all outstanding items.
2. Additional time is required for Pacific Gas & Electric (PG&E) to schedule the witness test of the emergency diesel generator equipment installation and commissioning to connect to the RWF grid. After PG&E approves the Emergency Diesel Generator plans and the third-party test report, PG&E will require 60 days to schedule their technical team to witness the commissioning of the emergency diesel generator equipment.
3. A no-cost, time extension change order is being processed to split the commissioning sequence into two periods to ensure RWF backup power during engine modification.



Project Profile – Digester and Thickener Facilities Upgrade Project

The RWF currently has 16 anaerobic digesters that were constructed between 1956 and 1983. These aging digesters are in various states of disrepair and urgently need rehabilitation to maintain viable biosolids processing capacity. Of these 16 digesters, six are currently out of service due to structural damage or other mechanical failures. Typically a minimum of eight and up to 10 digesters are operating at any given time. Currently, the digesters receive primary sludge from the primary sedimentation tanks and thickened waste activated sludge from the dissolved air flotation thickeners (DAFTs). To reduce the number of digesters that will ultimately require rehabilitation, a reconfiguration of the DAFT process area is needed.

This project consists of improvements to the digestion and thickening process, including rehabilitation of four digesters (digesters 5-8) to a thermophilic process known as Temperature-Phased Anaerobic Digestion (TPAD). The TPAD upgrade will improve digested biosolids stabilization and increase gas production. It will also provide flexibility to upgrade the process to produce Class A biosolid products in the future. Additionally, six DAFT units (units 1-6) will be rehabilitated to operate as co-thickening units. All elements associated with the digesters will be upgraded, including covers, mixers, heating systems, electrical, and instrumentation components. Modifications to the existing DAFT system include upgrades to existing piping, tanks, mechanical equipment, and electrical and instrumentation components. The upgraded units will also receive covers and an odor control system. A new primary screen sludge screening facility will remove debris prior to introducing sludge to the DAFT and digestion process.

All existing digester gas piping and associated appurtenances will be upgraded to meet future gas production needs. An external elevated pipe network will collect biogas from the entire digester campus. This component includes removal of digester, natural, and blended gas piping systems from underground tunnels. The completion of this project will be the first step toward declassifying the tunnels and eliminating hazardous environment conditions. Additional work will include miscellaneous site improvements, paving, relocation of utilities, and construction of two electrical rooms, concrete flow distribution boxes, and a sampling station.

Brown and Caldwell began the project design in October 2013 and completed it in December 2015. The lowest responsive bidder on the project was Walsh Construction Company II, LLC for a total bid of \$107.9 million. This project was recommended for approval by the TPAC and approved by Council on May 19 and May 24, respectively. The Construction Notice to Proceed was issued on June 22. Construction completion is anticipated in September 2019. The total project budget is approximately \$147.9 million.

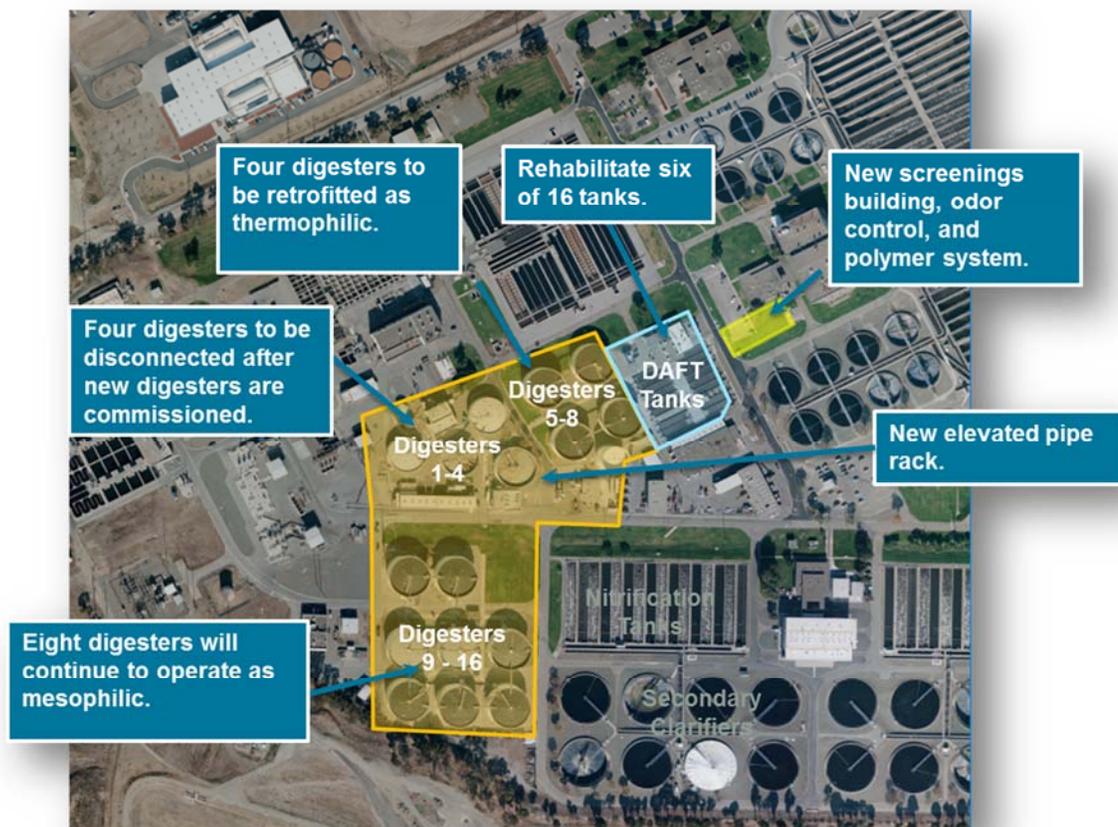


Figure 2: Project layout

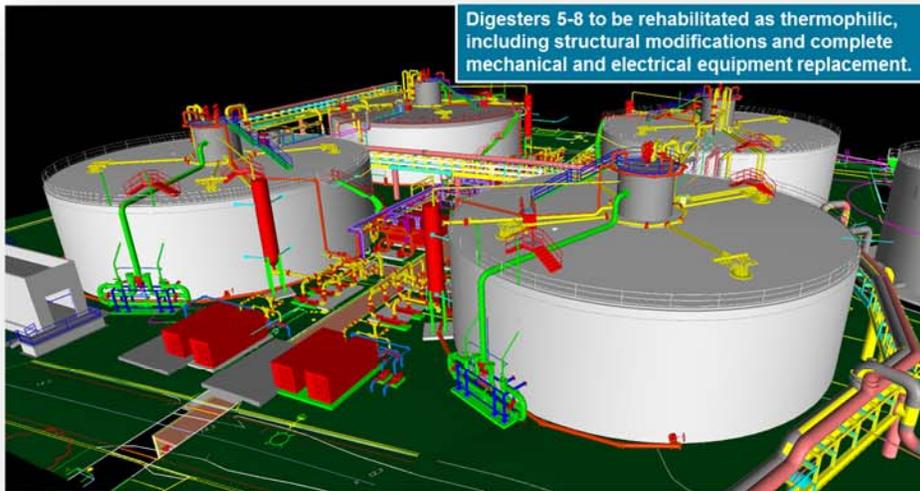


Figure 3: Anaerobic Digester Improvements

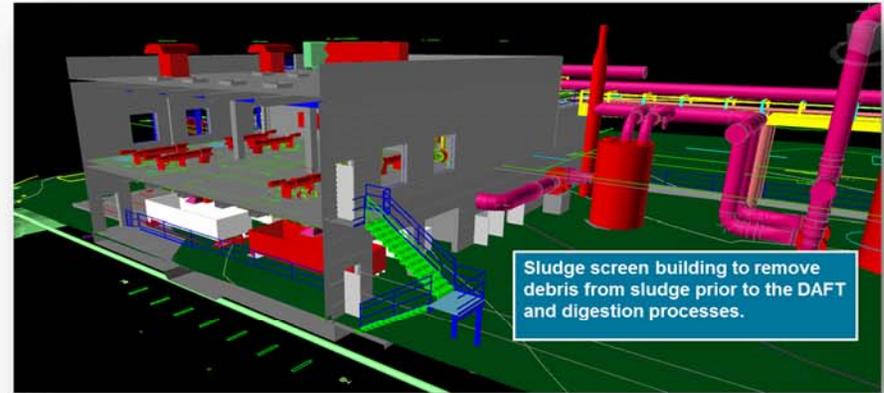


Figure 4: New Sludge Screening Facility

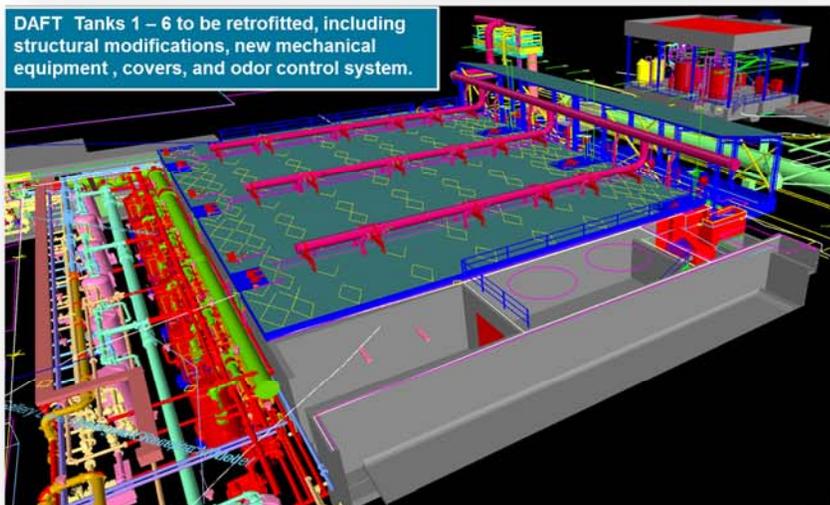


Figure 5: Anaerobic Digester Improvements

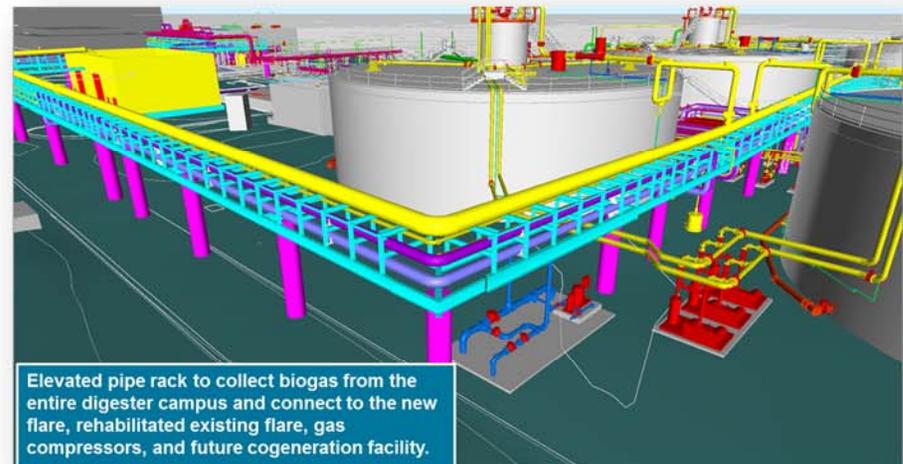


Figure 6: New Elevated Pipe Rack

Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram

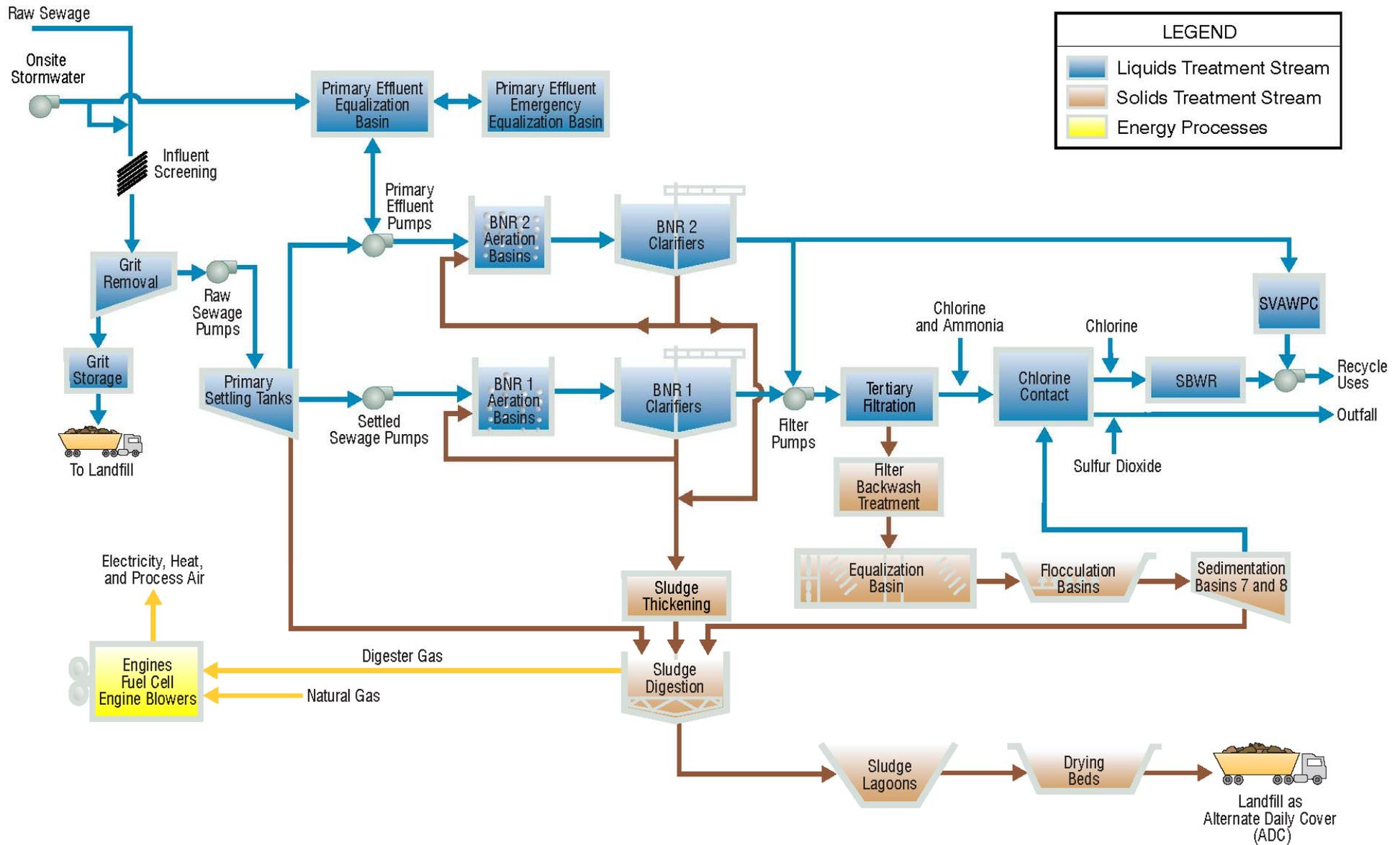
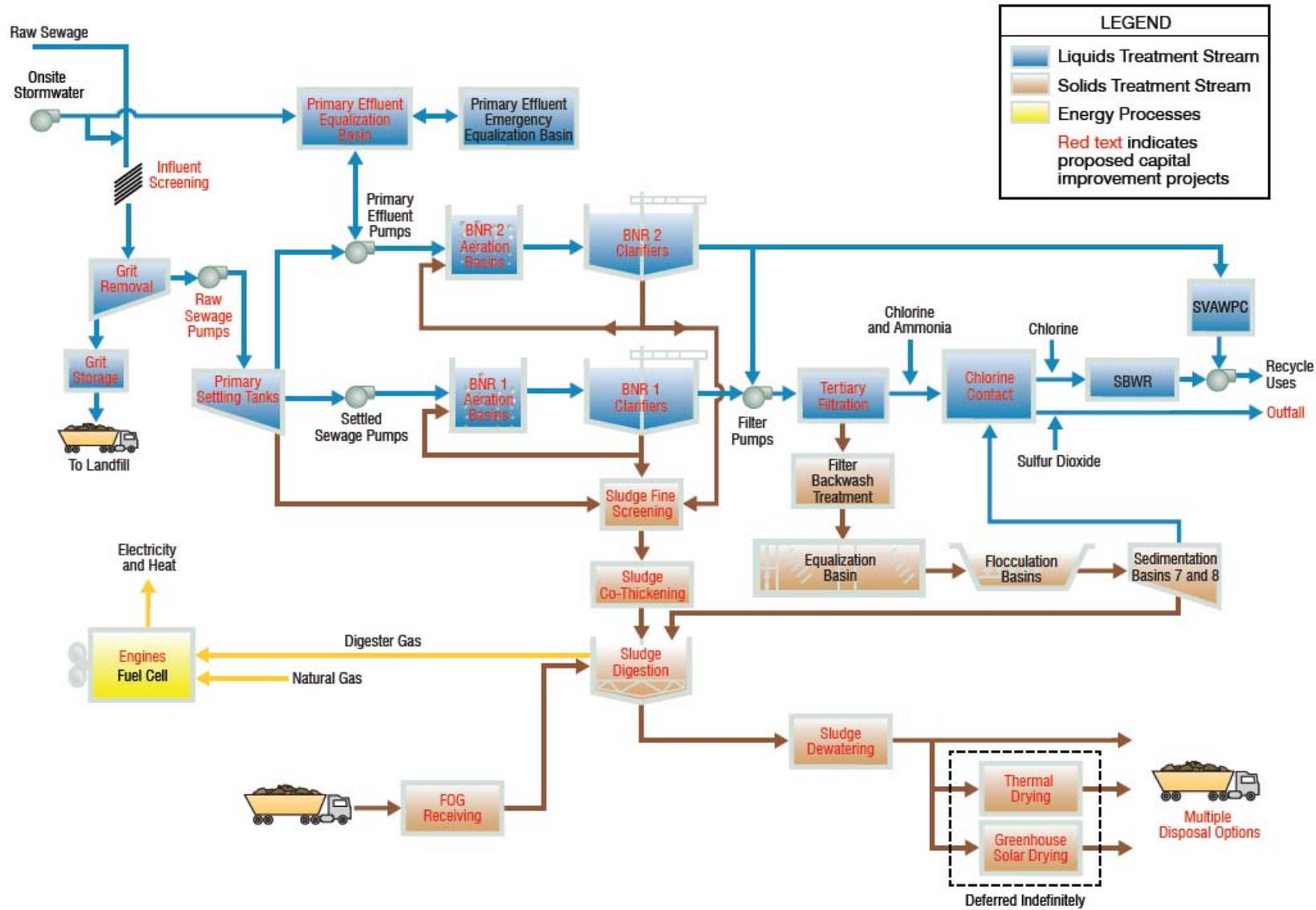


Figure 7 – Current Treatment Process Flow Diagram



Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram



LEGEND	
█	Liquids Treatment Stream
█	Solids Treatment Stream
█	Energy Processes
█	Red text indicates proposed capital improvement projects

Figure 8 – Proposed Treatment Process Flow Diagram



Active Construction Projects – Aerial Plan

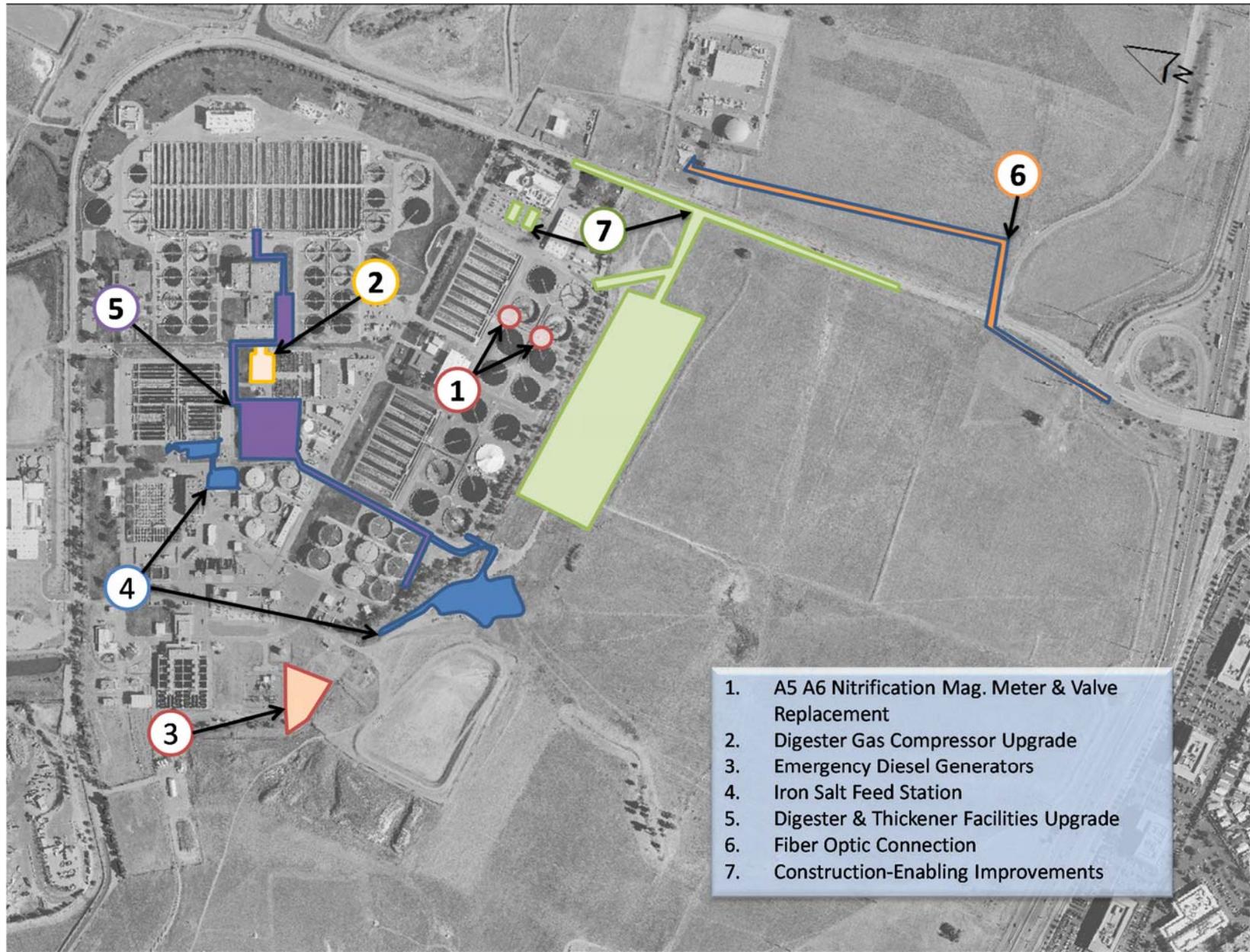


Figure 9 – Active Construction Projects

