



San José-Santa Clara
Regional Wastewater Facility

Capital Improvement Program Monthly Status Report: July 2016

September 1, 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 July 2016.

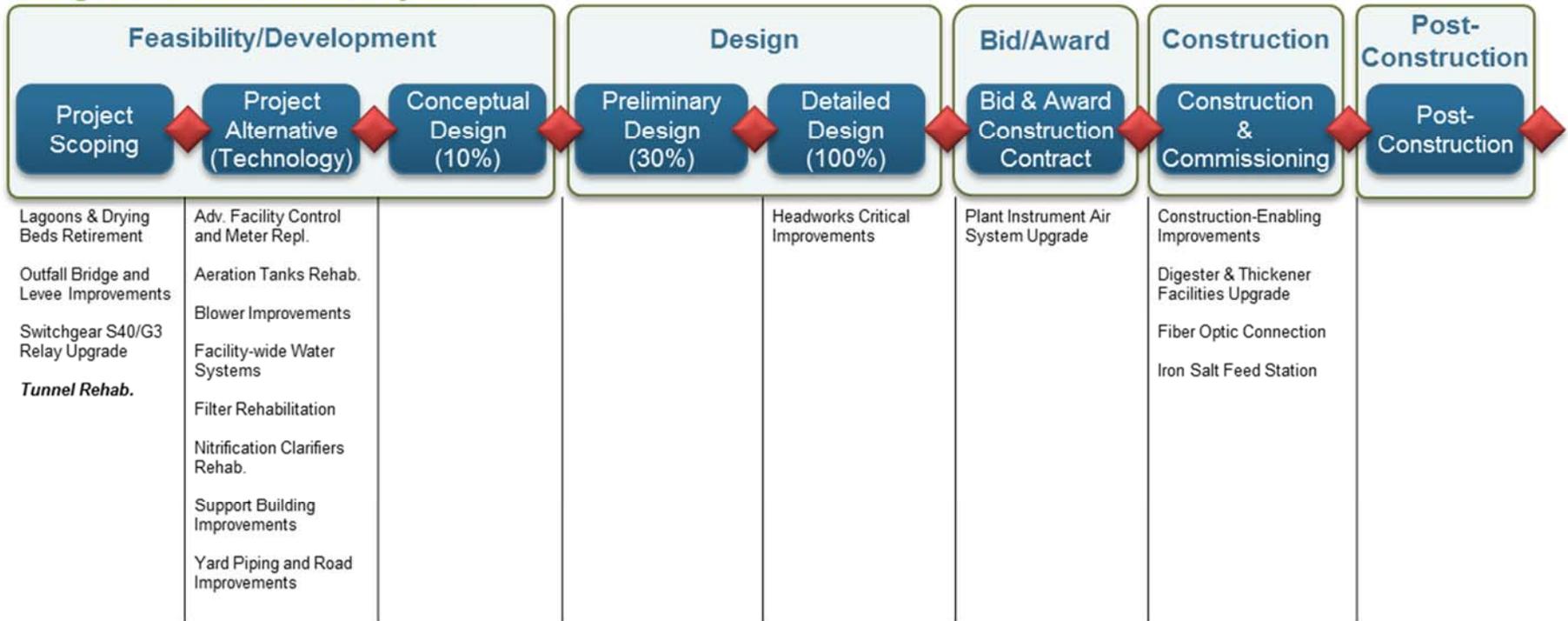
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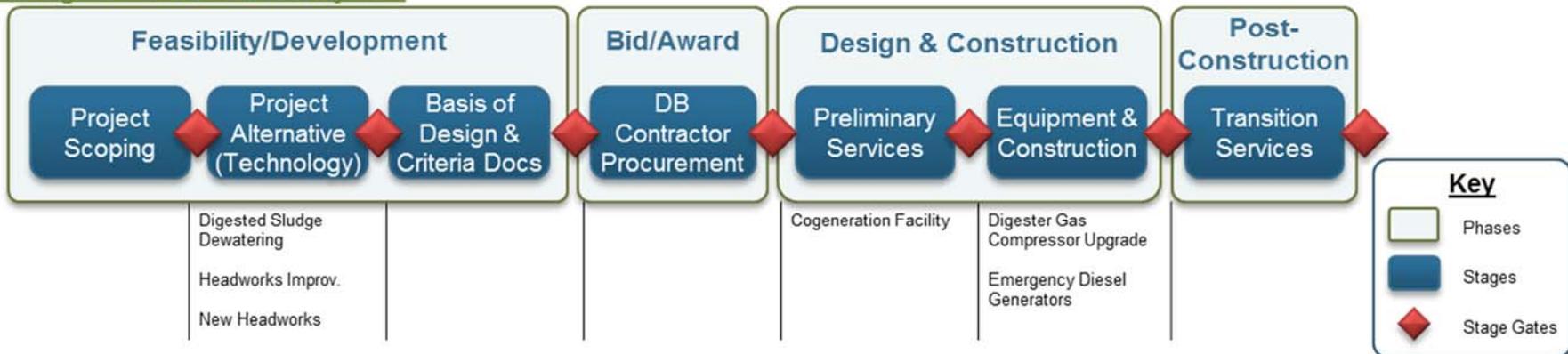


Project Delivery Model

Design-Bid-Build Active Projects



Design-Build Active Projects



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



Program Summary

July 2016

In July, the CIP progressed on multiple fronts, including the initiation of the Tunnel Rehabilitation Project. The RWF has an extensive tunnel system that houses piping, equipment, valves, pumps, and controls. Many of the tunnels date back to the 1960s and need structural repair, improved ventilation, and removal of obsolete pipelines to remain operational. This project will provide such improvements for approximately 130,000 square feet of tunnel footprint area.

In additional developments, CIP staff:

- Completed Statement of Qualifications (SOQ) evaluations for the Support Building Improvements Project; and
- Issued a Notice of Determination for the RWF System Integrator services pre-qualification.

Design continued on the Headworks Critical Improvements Project, which will reach the 90 percent design milestone next month; and on the Cogeneration Facility Project (design-build), which will start engine selection procurement next month. Alternatives analysis also continued on the Blower Improvement, Filter Rehabilitation, Headworks Improvements, and New Headworks projects, with technical workshops held for each project this month.

Construction work continued on the Digester Gas Compressor Upgrades, Emergency Diesel Generators, Fiber Optic Connection, and Iron Salt Feed Station projects. The Construction-Enabling Improvements and the Digester and Thickener Facilities Upgrade projects commenced construction activities this month with pre-construction meetings.

Look Ahead

In August, CIP project teams and the selected design consultants will move forward with design, condition assessment, and alternatives analysis work for the Blower Improvements, Cogeneration Facility, Filter Rehabilitation, Headworks Improvements, and New Headworks projects. The Nitrification Clarifiers Rehabilitation project will also commence with kick-off meetings and condition assessment activities scheduled.

Staff will continue with efforts related to consultant procurements and service orders, including for the Advanced Facility Control and Meter Replacement, Aeration Tanks Rehabilitation, Digested Sludge Dewatering Facility, Facility Wide Water Systems Improvements, Support Building Improvements, and Switchgear S40 Upgrade, M4 Replacement, G3 & G3A Removal projects.

Procurements for a number of programmatic services will continue to advance, including Audit Services, Industrial Hygienist services, and Owner Controlled Insurance Program (OCIP).

Construction activities will continue on the Construction-Enabling Improvements, Digester and Thickener Facilities Upgrade, Digester Gas Compressor Upgrade, Emergency Diesel Generators, Fiber Optic Connection, and Iron Salt Feed Station projects. In August, a groundbreaking ceremony will be held for the Digester and Thickener Facilities Upgrade project — the largest of the 10-year CIP projects to begin construction so far.

Staff will make recommendations to the Treatment Plant Advisory Committee (TPAC) and City Council (Council) in August to proceed with the award of the construction contract for the Plant Instrument Air System Upgrade Project.

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



Program Highlight – Stage Gates

Stage gates are systematic reviews at key milestones in the life cycle of a project. A typical project progresses through as many as eight stage gates, such as “Approve Project Scope”, “Authorization to Bid”, and “Substantial Completion,” as shown on the Project Delivery Model (PDM) chart on page 2. At stage gate reviews, the project manager summarizes a project’s progress and makes a case to a five-member stage gate review panel for the project to proceed. The panel, comprised of senior leadership, reviews the information presented, discusses any points of concern, and then ultimately determines whether to pass the project on to the next stage. This process enables decisions to be made in a transparent and intentional manner.

The stage gate process ensures that CIP projects are developed in alignment with key objectives of scope, schedule, cost, and risk (see Figure 1). The objectives confirm that:

- The project has been robustly defined and executed to date;
- The project scope remains in alignment with CIP goals and objectives;
- Impacts of key project decisions are understood;
- Key variables and criteria have been examined and are understood;
- Project risks have been identified, allocated, and mitigated as appropriate;
- Project interfaces have been identified, with appropriate planning and coordination between project teams;
- Project expenses are within budget, or additional expenses are warranted; and
- Stakeholder coordination has been adequately planned or completed with operations and maintenance (O&M) staff, other City departments, permitting agencies, etc.

For a successful stage gate review, the project manager must concisely and effectively communicate the most important details of a project’s development so that program leadership can quickly grasp the project’s core issues. To facilitate this process, the program controls team has developed a set of templates and presentation materials for each stage gate. The stage gate manager supports the development of these materials in three preparatory meetings in which the project team hones important messages, highlights key issues that require leadership approval, and refines the presentation.

Accomplishments in Fiscal Year 2015-16

Twenty-two stage gates were approved in FY 2015-16. Many of these stage gates reflect significant CIP milestones over the last year, including completion of the first round of engineering studies that provide the basis of design for all projects; four Authorizations to Award for the Construction-Enabling Improvements, Digester and Thickener Facilities Upgrade, Iron Salt Feed Station, and the Plant Instrument Air System Upgrade projects; the first Authorization to Award a design-build contract for the Cogeneration Facility Project; and authorization of the first Substantial Completion of a project for the Digester Gas Storage Replacement Project. The processes developed and lessons learned as these projects passed key PDM milestones should expedite the delivery of the next round of projects in design.

Need & Scope <i>Verify project scope still addresses original business need.</i>	Yes
Operations and Maintenance <i>Reviewed & Approved design, committed to support construction integration.</i>	Yes*
Space and Accessibility Constraints <i>Sufficient space validated for construction activities. Design reviewed for accessibility.</i>	Yes
Schedule <i>Detailed schedule prepared and meets key milestone baseline dates.</i>	Yes*
Cost Estimate <i>AACE Class 1 estimate prepared and validated.</i>	Yes*
Delivery Strategy <i>Bid documents align with Final Delivery Strategy.</i>	Yes*
Design <i>Design completed to 90-100% level and approved.</i>	Yes
Regulatory & Environmental <i>Permits obtained. CEQA complete. Mitigation measures in design & pre-construction.</i>	Yes*
Stakeholders <i>Key Stakeholders participated in Detailed Design Stage.</i>	Yes
Resources <i>Resources validated and secured for Bid & Award phase.</i>	Yes*
Project Interfaces <i>Key project boundaries identified in design. Project schedule reflects interface timings.</i>	Yes

Figure 1: Sample list of key deliverables from a stage gate presentation. Green indicates complete; orange indicates need for leadership feedback.



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 program.

Program Key Performance Indicators – Fiscal Year 2016-2017

KPI	Target	Fiscal Year to Date			Fiscal Year End		
		Actual	Status	Trend	Forecast	Status	Trend
Stage Gates ¹	80%	NA 0/0			100% 23/23		
Measurement: Percentage of initiated projects and studies that successfully pass each stage gate. Criteria: Red: < 70%; Amber: 70% to 80%; Green: >=80%							
Schedule ²	90%	NA 0/0			75% 3/4 ³		
Measurement: Percentage of CIP projects delivered within 2 months of approved baseline Beneficial Use Milestone. Criteria: Red: < 75%; Amber: 75% to 89%; Green: >=90%							
Budget ⁴	90%	NA 0/0			75% 3/4 ⁵		
Measurement: Percentage of CIP projects that are accepted by the City within the approved baseline budget. Criteria: Red: < 75%; Amber: 75% to 89%; Green: >=90%							
Expenditure ⁶	\$193M	NA			\$194M		
Measurement: CIP Fiscal Year 16/17 committed costs. Committed cost meets or exceeds 70% of planned Budget (70% of \$276M = \$193M) Criteria: Red: < \$152M; Amber: \$152M to \$193M; Green: >=\$193M							
Procurement ⁷	80%	NA 0/0			100% 5/5		
Measurement: Number of consultant and contractor procurements 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 delivery 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 delivery for the fiscal year. Criteria: Red: > 2; Amber: 1 to 2; Green: zero incidents							
Staffing ⁸	NA	NA	NA	NA	NA	NA	NA
Measurement: Number of planned positions filled for the fiscal year. Criteria: Red: < 70%; Amber: 70% to 79%; Green: >=80%							

Notes

- There were no stage gates held in July.
- No projects reached Beneficial Use in July.
- The Emergency Diesel Generators Project is expected to reach Beneficial Use this fiscal year, but is not expected to be within two months of the baseline schedule.
- No projects were accepted in July.
- The Digester Gas Compressor Upgrade Project will be accepted this year, but is currently over budget by 1.2 percent.
- Due to the reversal of 2015-2016 accruals, actual expenses in July are negative. These negative expenses will be offset when the 2015-2016 invoices are paid.
- There were no procurements planned for the month of July.
- 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.

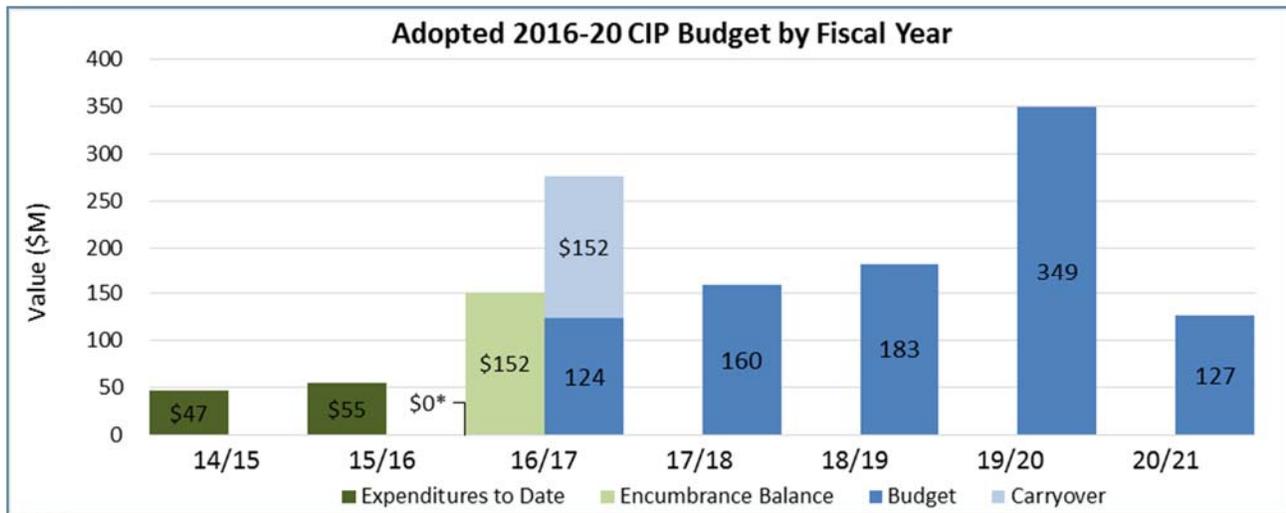


Program Cost Performance Summary

This section summarizes CIP cost performance for all construction projects and non-construction activities for FY 2016-17 and for the 2017-2021 CIP.

Adopted 2017-2021 CIP Expenditure and Encumbrances

FY 2014-15 and FY 2015-16 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).



*Due to the reversal of 2015-2016 accruals, actual expenses in July are negative. These negative expenses will be offset when the 2015-2016 invoices are paid.

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.

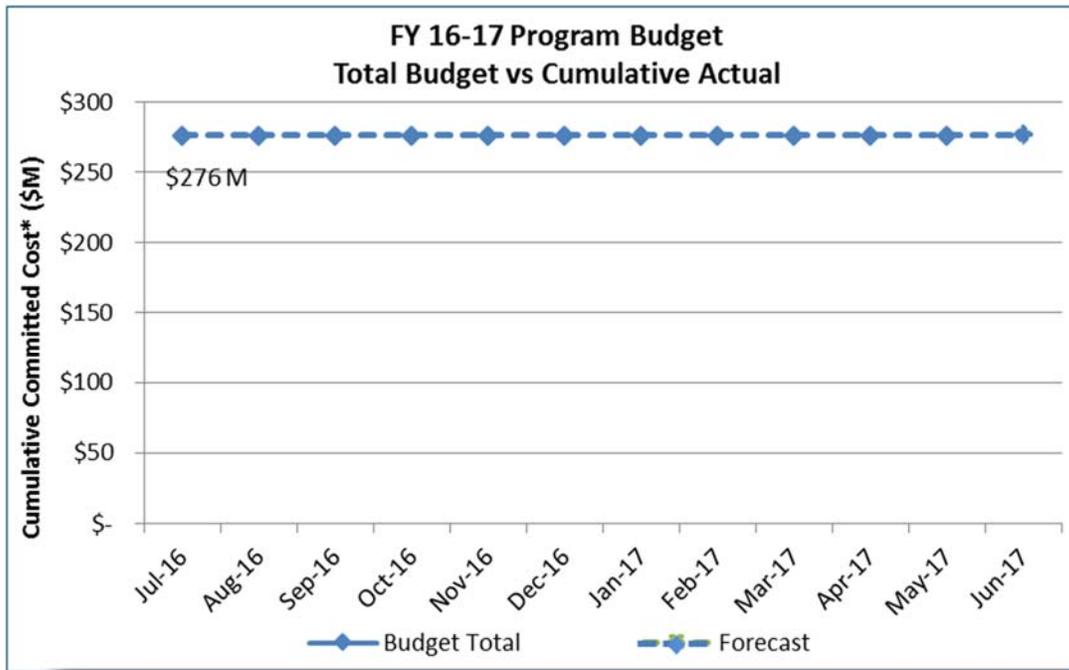
Carryover: Encumbrance balances at the end of a fiscal year become carryover funding. Carryover is different from rebudgeted funds, in that it automatically utilizes funding that was previously committed, but not yet paid.



Fiscal Year 2016-2017 Program Budget Performance

This budget comprises the 2016-2017 budget of \$124 million plus carryover of \$152 million. The budget excludes Reserves, Ending Fund Balance, South Bay Water Recycling, Public Art, and Urgent and Unscheduled Rehabilitation items.

The committed costs forecast for Fiscal Year 2016-17 are currently being finalized and will be included in next month's report.



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



Project Performance Summary

There are currently six active projects in the construction or post-construction phases, with a further 18 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. Digester Gas Compressor Upgrade	Construction	Oct 2016		
2. Emergency Diesel Generators	Construction	Mar 2017		
3. Fiber Optic Connection	Construction	Feb 2017		
4. Construction-Enabling Improvements	Construction	Mar 2017		
5. Iron Salt Feed Station	Construction	Sept 2017		
6. Digester and Thickener Facilities Upgrade	Construction	April 2020		

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 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.



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	Dec 2020
6. Switchgear S40 Upgrade, M4 Replacement, G3 & G3A Removal	Feasibility/Development	Mar 2021
7. Headworks Improvements	Feasibility/Development	April 2021
8. Digested Sludge Dewatering Facility	Feasibility/Development	Dec 2021
9. Outfall Bridge and Levee Improvements	Feasibility/Development	Jan 2022
10. Filter Rehabilitation	Feasibility/Development	May 2022
11. Facility Wide Water Systems Improvements	Feasibility/Development	July 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. Tunnel Rehabilitation	Feasibility/Development	Nov 2025
17. Support Building Improvements	Feasibility/Development	Jan 2027
18. Lagoons & Drying Beds Retirement	Feasibility/Development	Mar 2027

Notes

1. 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.



Significant Accomplishments

Biosolids Package

Digester and Thickener Facilities Upgrade

- The Notice to Proceed for construction was issued on July 5. The contractor has mobilized and is setting up a field office. The contractor began submitting items for review and approval.

Facilities Package

Cogeneration Facility

- The project team held five project workshops on topics such as commissioning; instrumentation and controls; engine procurement; building layout; electrical design site layout; and security.

Construction-Enabling Improvements

- Staff issued the Notice to Proceed on July 28. The contractor is expected to begin construction in August.

Fiber Optic Connection

- The project team is reviewing contractor submittals, with construction expected to begin in August.

Support Building Improvements

- The Technical Evaluation Panel completed SOQ evaluations. Interviews are scheduled for August.

Tunnel Rehabilitation Project

- Staff initiated the project on July 15 and scoping activities commenced.

Liquids Package

Advanced Facility Control and Meter Replacement

- The project team is negotiating scope of work and fees with Black & Veatch Corporation. A Notice to Proceed is anticipated in October.

Blower Improvements

- The project team completed the Alternatives Analysis Report and began conceptual design. The project team is negotiating scope of work and fees with Brown and Caldwell for preliminary and detailed design along with bid and award support.

Filter Rehabilitation

- Staff held two workshops, one to discuss operational processes, and the other to develop an approach to complete the condition assessment and determine locations for monitoring equipment. The condition assessment is expected to be completed in October.

Headworks Critical Improvements

- The project team is reviewing the 60 percent design submittal and anticipates the 90 percent submittal in August.

Headworks Improvements and New Headworks

- The consultant set flow monitoring equipment in five locations to collect data to calibrate the influent system hydraulic model. This model will be used to select an alternative for the new headworks.

Iron Salt Feed Station

- The project team received and began reviewing submittals of the major equipment. The contractor began site excavation work and completed subgrade preparation at the ferric chloride site.

Nitrification Clarifiers Rehabilitation

- The project team finalized the scope of work and fees with the HDR Engineering, Inc. The Notice to Proceed is anticipated in August.



Explanation of Project Performance Issues

Emergency Diesel Generator

The project completion schedule has been delayed approximately nine months due to the following three factors:

- Caterpillar, the supplier of the emergency diesel generator system, encountered delays in developing the controls and network switches that interface with existing RWF controls. Caterpillar and Peterson Control are in the process of completing all outstanding items. A problem was found with the new network switches during the factory acceptance test. The City and the design-build team are working on a solution to the problem.
- 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. The City is in the process of completing a batteries load test. The third-party testing report will be submitted to PG&E for review and approval. After PG&E approves the emergency diesel generator plans and the third-party test report, they will require 60 days to schedule a PG&E technical team to witness the emergency diesel generator equipment commissioning.
- A no-cost time extension change order has been processed and fully executed to split the commissioning sequence into two periods and ensure RWF backup power during engine modification work.

Digester Gas Compressor Upgrade

This project is over budget by 1.2 percent. The two issues below have increased project delivery costs, pushing the total project cost slightly over budget:

- Construction inspection requirements were more involved than anticipated, and
- Necessary changes in the contract have extended the project by four months.



Project Profile – Digested Sludge Dewatering Facility Project

Biosolids (sludge) resulting from the RWF wastewater treatment process are first digested in anaerobic digesters, resulting in approximately 85 dry tons of digested sludge per day. The biosolids are then transferred to open-air lagoons, where they are stabilized for approximately three and half years before being moved to drying beds for an additional six months. The final result are Class A biosolids, which are transported to the adjacent Newby Island landfill for use as an alternative daily cover (ADC) material. The 2012 Plant Master Plan for the RWF recommended transitioning from the existing open-air lagoon and drying-bed dewatering process to a new mechanical dewatering facility. In 2014, a biosolids management strategy was further developed to address biosolids transition implementation. Council approved recommendations from this strategy, including a new Digested Sludge Dewatering Facility Project, in December 2014 and June 2015.

The project will construct a new mechanical dewatering facility and associated support facilities to replace the existing lagoons and drying beds. These support facilities may include a transfer sludge pump station, digested sludge storage facilities, sludge cake conveyance facilities, and truck load-out facilities. Other potential improvements could include conversion of two existing anaerobic digesters to digested sludge storage tanks; and rehabilitation of the digested sludge export pump station. The project team has identified a site for the new dewatering facility on the east side of Zanker Road. The total project budget is approximately \$97 million.

The project will offer the following benefits:

- Reduces the footprint of the biosolids process to allow for future alternative land use;
- Provides flexibility and diversification to respond to future treated biosolids disposal regulations;
- Provides better monitoring and control of the dewatering process through specialized equipment and instrumentation;
- Significantly reduces the time required to dewater biosolids; and
- Reduces potential odors by enclosing the dewatering process and implementing additional odor control options.

Because mechanical dewatering is a new process for the RWF, the design-build delivery approach has been chosen for the project. This approach will allow for dedicated interaction with O&M staff during design and construction, and could result in the following potential benefits: it is anticipated to reduce the City's risk; potentially lower the volume and cost of contract change orders; decrease construction delays; increase the likelihood of having high-quality specialized equipment installed; and provide more efficient solutions to complex construction sequencing issues.

The design-build delivery method involves two procurements: one for an owner's advisor consultant, and one for a design-build firm. Owner's advisor services include development of project alternatives and a required Basis of Design report; assistance during the procurement process for the design-build firm; technical support during design development; CEQA review process completion support and, potentially, assistance with the State Revolving Fund application process; independent reviews of cost estimates; and support during negotiations for a guaranteed maximum price for the project. The owner's advisor will also provide as-needed construction management services and, potentially, warranty support and performance troubleshooting after substantial completion. The design-build firm will provide the detailed design for the project, and will construct the project's physical elements. The project team is developing procurement documents to obtain owner's advisor services, with the contract award anticipated in October. The team expects to have a Basis of Design report completed by fall 2018, allowing procurement of the design-build firm and detailed design to proceed. Project construction is scheduled to begin in fall 2019 with substantial completion expected by winter 2021.



Figure 2: Typical Concept for a Mechanical Dewatering Facility

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Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram

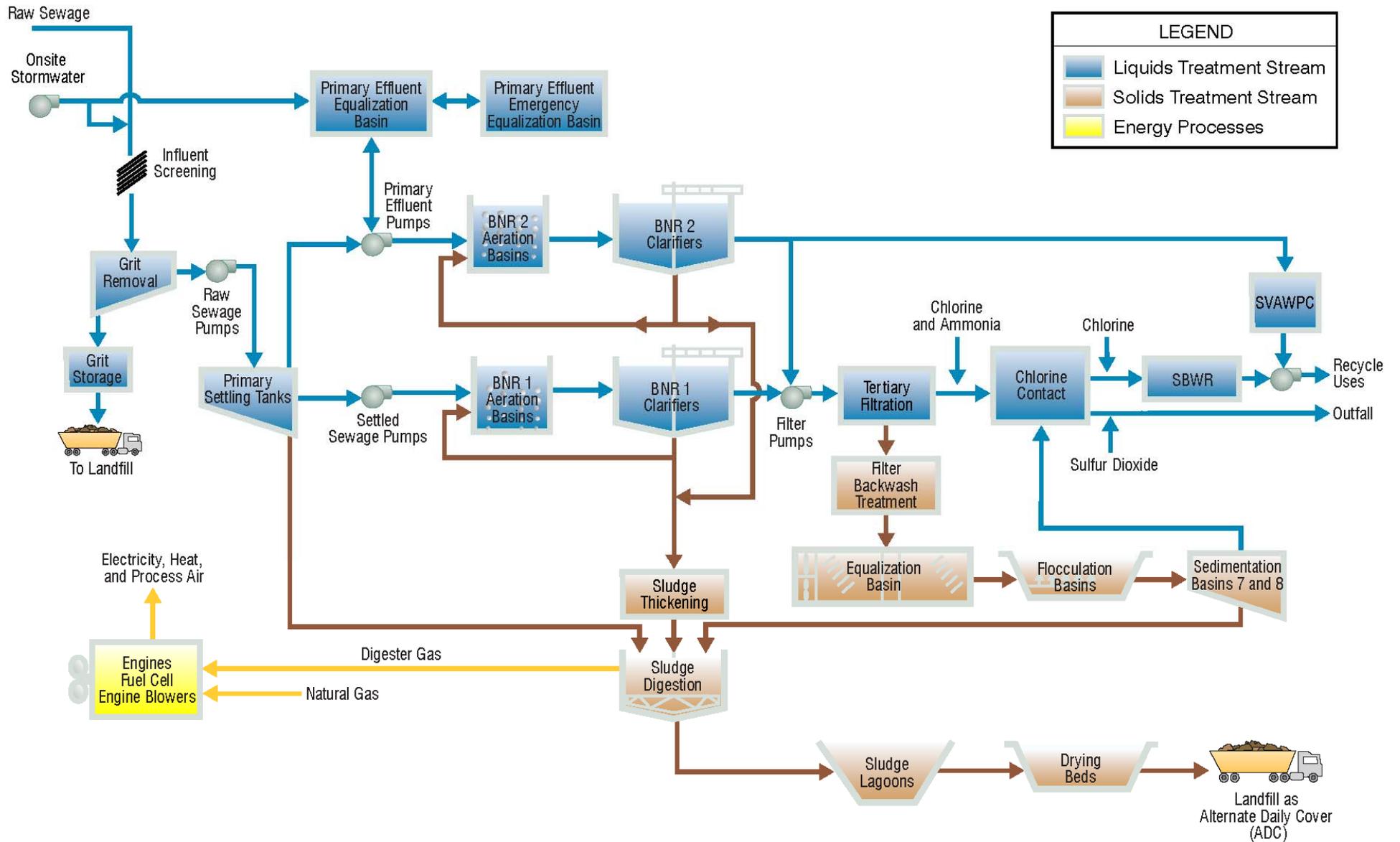
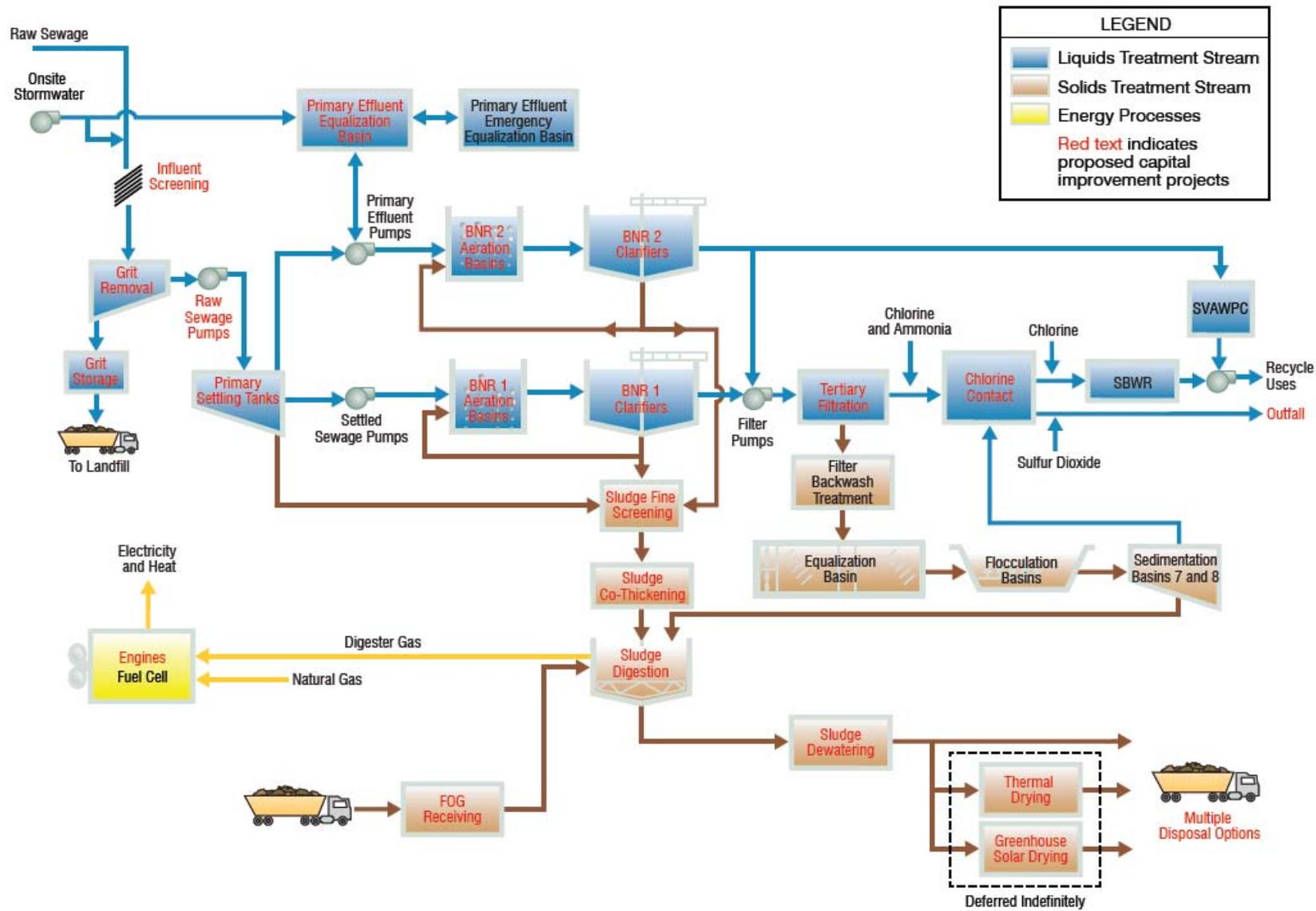


Figure 3 – Current Treatment Process Flow Diagram



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 4 – Proposed Treatment Process Flow Diagram



Active Construction Projects – Aerial Plan

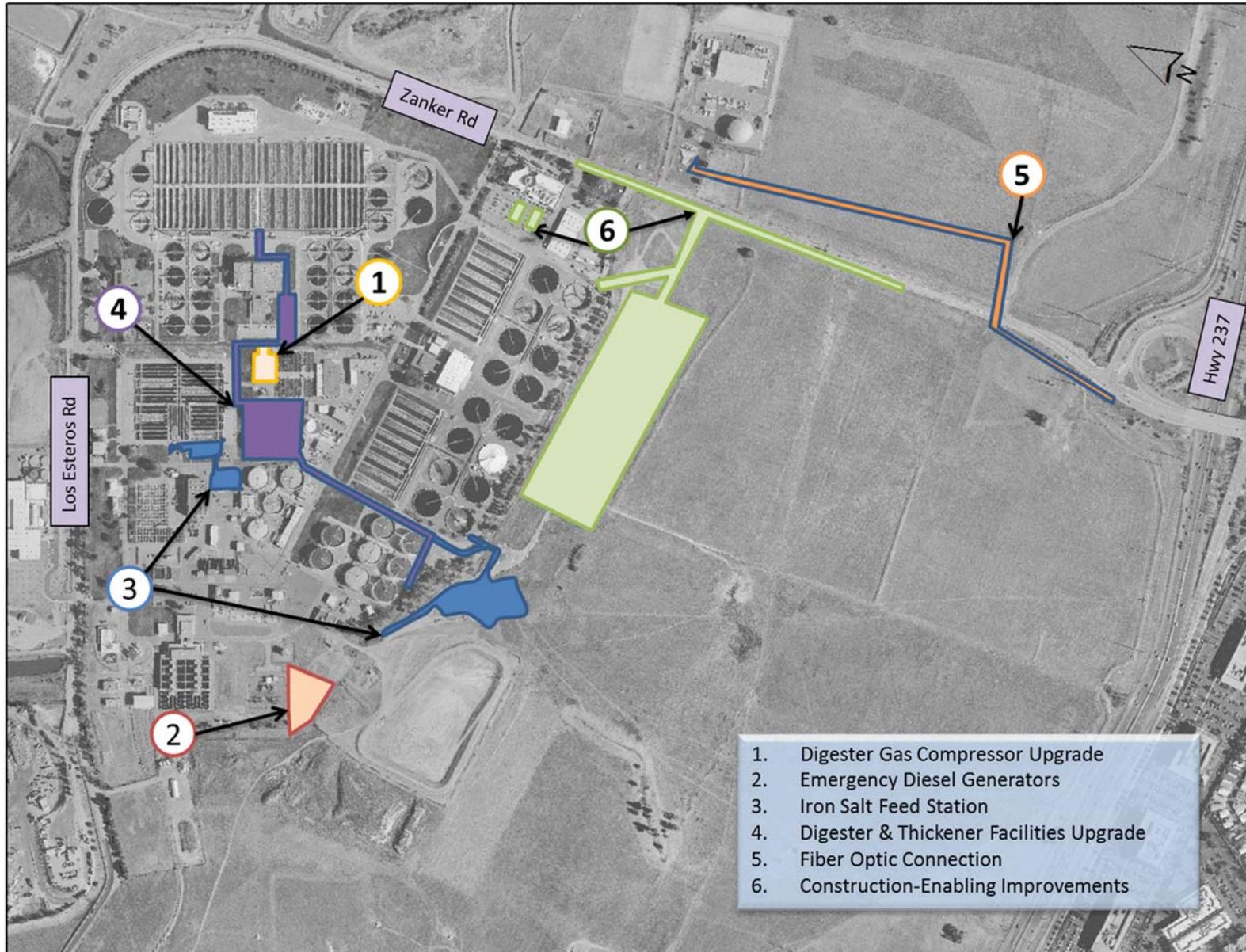


Figure 5 – Active Construction Projects