



San José-Santa Clara
Regional Wastewater Facility

Capital Improvement Program Monthly Status Report for October 2014

December 4, 2014

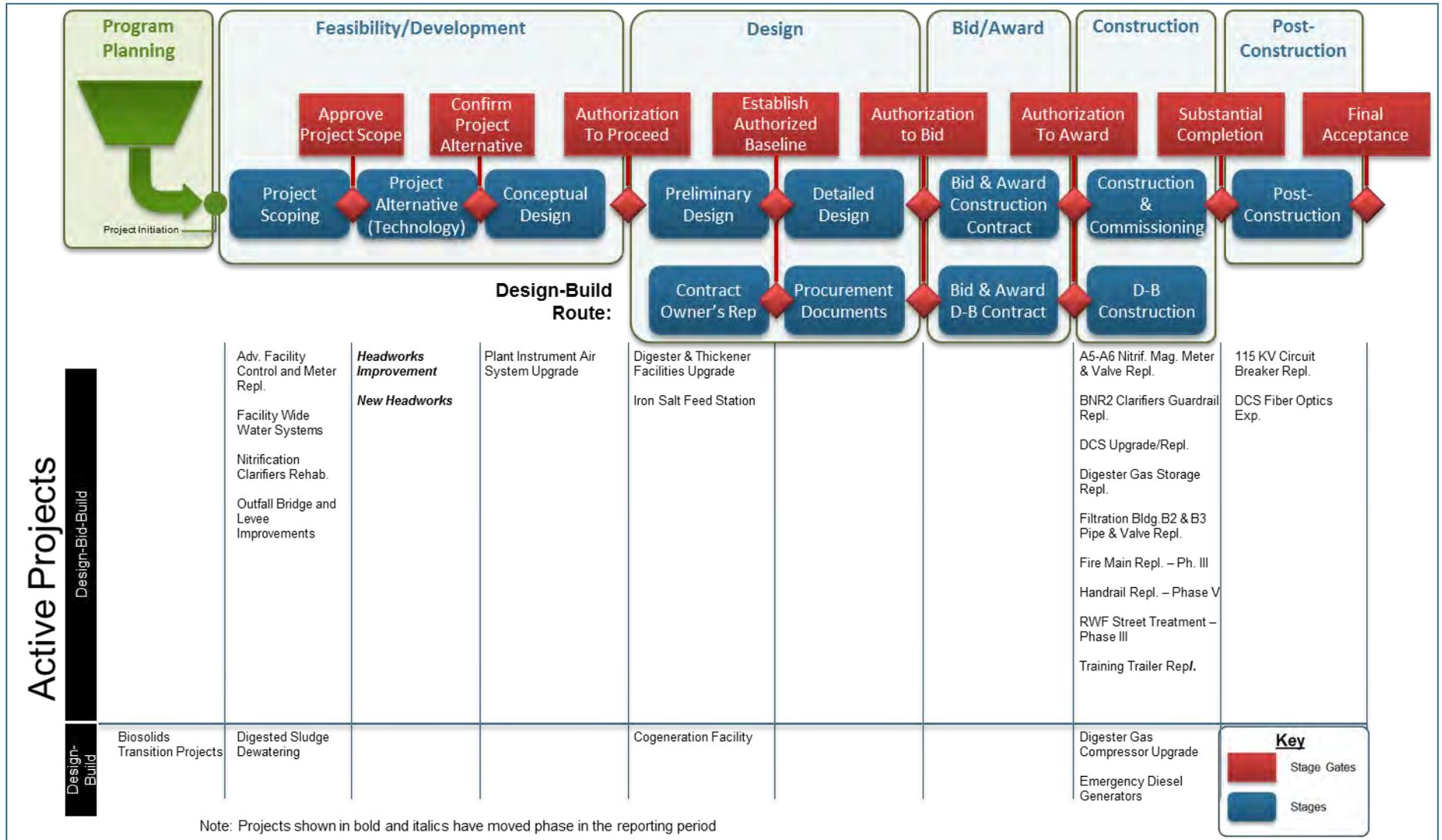
This report provides a summary of the progress and accomplishments of the Capital Improvement Program (CIP) for the San José-Santa Clara Regional Wastewater Facility (Wastewater Facility or RWF) for the period of October 2014.

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Project Delivery Model



Program Summary

October 2014

In the month of October, the program team made progress on a number of fronts. We continued to move studies and projects through stage gates of the Project Delivery Model (PDM) process (see figure, inside of front cover). We saw particular progress on our design guidelines library, biosolids transition strategy, and project interfaces work. Intense construction activity also continued within the RWF (see last page of this report). We continued to develop a procurement strategy for hiring various design consultants, with a focus on developing template scopes of work for both design-bid-build and design-build efforts. We continued drafting an Operations Plan for the Wastewater Facility, and began work on a Start-up and Commissioning Plan for large facilities. We completed pilot testing of two construction-phase software tools.

We finished our project-specific workshops to analyze our project schedules in a more in-depth fashion, which in turn will help us update our anticipated financial expenditures over the next 10 years. Finally, we continued driving implementation of our program tools and processes on all existing projects and brought several new staff on-board.

On October 30th, we held a special session with TAC to review the status of the Biosolids Transition Strategy.

Look Ahead

In November, we will move forward with the design consultant procurement for the Headworks Improvements and New Headworks projects and will release RFQs for the Cogeneration Facility design-build project. A number of projects and studies will also continue to progress through the PDM and Stage Gate process. We are scheduled to present an interim update on the biosolids transition strategy to the Transportation & Environment Committee (T&E) on November 3rd and recommendations on the biosolids transition strategy TPAC on November 20th. In November, staff will begin drafting the Proposed FY 15-16 Capital Budget and FY 16-20 CIP.

Program Highlight – Decision Log

Over the course of the program, thousands of important decisions will be made. While many decisions are simple and can be captured via written documents, there are key decisions that need to be captured, made visible, and reviewed before a final decision is made. Key decisions can include those having an impact on cost or schedule, those representing a significant change in direction for a project, or those requiring acceptance by Operations & Maintenance staff. A core practice of good program management is to establish a method of logging these key decisions. In doing so, we create transparency of decision-making, and encourage input and collaboration while a decision is being made. Once a decision is made, the decision log can serve to help that decision “stick” should questions be raised in the future. For the program, we have created a Decision Log tool, housed on our web-based CIP Portal. CIP team members are trained in the use of the Decision Log.

Decision Log ID	<input type="text"/>
Project Name	(None) ▾
Issue *	<input type="text"/>
Stage Identified	▾ Choose PDM stage issue was first identified
Cost Impact	<input type="text"/> Enter estimated cost
NPV	<input type="text"/>
Schedule Impact	<input type="text"/> Enter calendar days
Decision Ratification Level	▾ Refer to Table 1
Discussion	<input type="text"/> <small>Use this field to document key discussion points</small>

Figure 1—Decision Log entry form on the CIP Portal



Program Performance Summary

Seven KPIs have been established to measure the overall success of the CIP. Each KPI represents a metric which will be monitored on a regular frequency. Through the life of the CIP, KPIs will be selected and measured which best reflect the current maturity of the program. The target for the seventh KPI "Staffing Level" KPI will be established as part of the analysis of future staffing needs.

Program Key Performance Indicators – Fiscal Year 2014-2015

KPI Description	Target	Actual	Status	Trend	Measurement
Schedule	85%	100% (1/1)			Percentage of CIP projects delivered within 2 months of approved baseline Beneficial Use Milestone. Target: 85% of projects delivered within 2 months of approved baseline schedule or better.
Budget	90%	0% (0/1)			Percentage of CIP projects that are completed within the approved baseline budget. Target: 90% of projects total expenditures do not exceed 101% of the baseline budget.
Expenditure^{1/2}	≥\$95.8M	\$97.5M			Total CIP actual + forecast committed cost for the fiscal year compared to CIP fiscal year budget. Target: Forecast committed cost meets or exceeds 60% of budget for Fiscal Year 14/15 (60% of \$159.7M= \$95.8M)
Procurement	100%	100% (7/7)			Number of actual + forecast consultant and contractor procurements compared to planned for the fiscal year. Target: Forecast /actual procurements for fiscal year meet or exceed planned.
Safety	0	0			Number of OSHA reportable incidents associated with CIP construction for the fiscal year. Target: zero incidents.
Environment/Permits	0	0			Number of permit violations caused by CIP construction for the fiscal year. Target: zero violations.
Staffing Level³	TBD	TBD	TBD	TBD	Percentage of authorized staffing level Target: to be determined

KEY:

Cost:  Meets or exceeds KPI target  Does not meet KPI target

Notes

1. FY14-15 budget excludes reserves, ending fund balance, South Bay Water Recycling, Public Art and Urgent and Unscheduled Rehabilitation items
2. The Expenditure KPI Target Forecast percentage has been adjusted to reflect the decision to report against the total program budget including contingency (previously the total budget did not include contingency allowance).
3. Staffing level KPI measured quarterly; all other KPIs measured monthly.

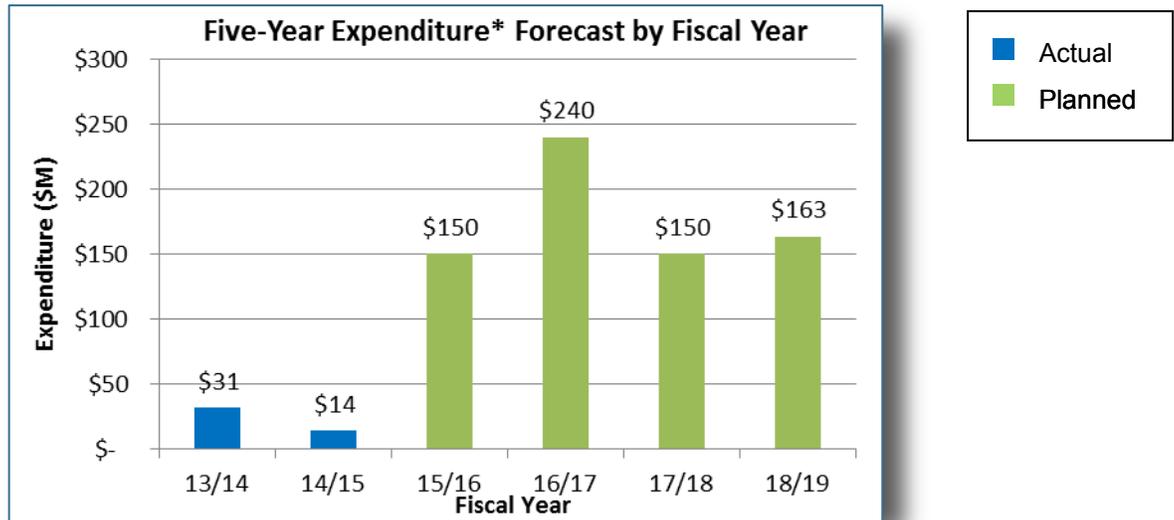


Program Cost Performance

This section provides a summary of CIP cost performance for all construction projects and non-construction activities for FY14-15 and the Five-Year CIP.

Adopted 2015-2019 CIP Expenditure and Encumbrances

To accommodate the proposed increase in expenditures and encumbrances over the next five years, the City is developing a long-term financial strategy to fund the needed, major capital improvements while minimizing the impact to ratepayers.



*Expenditure defined as: Actual cost expended associated with services and construction of physical asset which may include encumbered amounts from previous years



*Encumbrance defined as: Financial commitments, such as purchase orders or contracts, which are chargeable to an appropriation and for which a portion of the appropriation is reserved

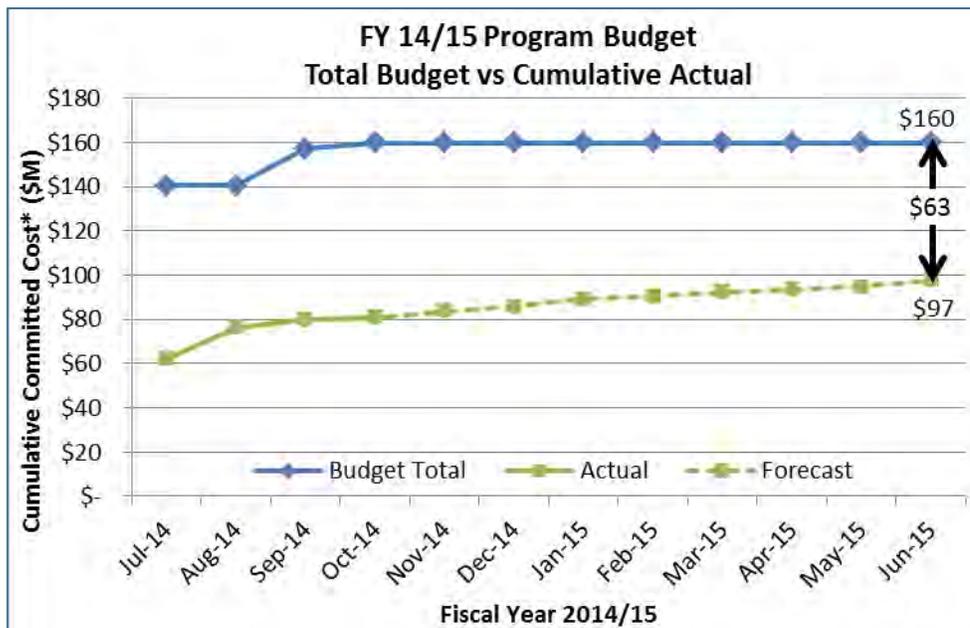


Fiscal Year 2014-2015 Program Budget Performance

The fiscal year program budget is \$160 million. The budget amount of \$160 million represents the 2014-2015 budget of \$107 million plus carryover of \$53 million. The budget amount excludes reserves, ending fund balance, South Bay Water Recycling, Public Art and Urgent and Unscheduled Rehabilitation items. The budget now includes contingency allowance, which had been excluded from the amount shown in the August report.

The projected year-end variance of approximately \$63 million is primarily due to the following activities that are now expected to occur in FY15-16:

- Award of the Cogeneration Facility design-build contract
- Award of construction contracts for the Iron Salt Feed Station, Plant Instrument Air System Upgrade, and Switchgear S40/G3 Relay Upgrade projects
- Award of design contracts for critical rehabilitation work in the Headworks Improvements and Nitrification Clarifier Rehabilitation projects



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



Project Performance

There are currently 13 active projects in the construction or post-construction phase with a further 11 projects in feasibility/development, design or bid and award phases (see PDM graphic at the front of this report). All active projects are listed in the tables below. Projects in the construction phase have cost and schedule baselines established and are monitored using the City's Capital Project Management System (CPMS). These projects have green/red icons included in the table below to indicate whether they are on budget and schedule using the CPMS data as a source.

Project Performance – Baselined Projects

Project Name	Phase	Estimated Beneficial Use Date ¹	Cost Performance ²	Schedule Performance ²
Distributed Control System (DCS) Fiber Optics Network Expansion	Post-Construction	May 2014		
115KV Circuit Breaker Replacement	Post-Construction	Jul 2014		
RWF Street Rehabilitation - Phase III	Construction	Nov 2014		
A5-A6 Nitrification Mag. Meter & Valve Replacement	Construction	Mar 2015		
Filtration Building B2 & B3 Pipe & Valve Replacement	Construction	Mar 2015		
Handrail Replacement - Phase V	Construction	Mar 2015		
BNR-2 Clarifier Guardrail Replacement	Construction	Apr 2015		
Fire Main Replacement - Phase III	Construction	Apr 2015		
Training Trailer Replacement	Construction	May 2015		
Digester Gas Storage Replacement	Construction	Jun 2015		
DCS Upgrade/Replacement	Construction	Jun 2016		
Digester Gas Compressor Upgrade	Construction	Jul 2016		
Emergency Diesel Generators	Construction	Aug 2016		

KEY:

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

Notes

- Beneficial Use is defined as when the work is sufficiently complete, in accordance with the contract documents, so that the City can occupy or use the work. 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 9.
- Beneficial use dates pending Contractor's Schedule.



Project Performance – Pre-Baselined Projects

Project Name	Phase	Estimated Beneficial Use Date ¹
Iron Salt Feed Station	Design	Aug 2016
Digester & Thickener Facilities Upgrade	Design	Jun 2018
Cogeneration Facility	Design	Jul 2018
Adv. Facility Control & Meter Repl. Ph. 1	Feasibility/Development	Feb 2016
Plant Instrument Air System Upgrade	Feasibility/Development	Feb 2018
Headworks Improvements	Feasibility/Development	Aug 2019
Digested Sludge Dewatering Facility	Feasibility/Development	Aug 2019
Outfall Bridge and Levee Improvements	Feasibility/Development	Apr 2020
Facility-wide Water Systems Improvements	Feasibility/Development	Jan 2021
Nitrification Clarifiers Rehabilitation	Feasibility/Development	Oct 2021
New Headworks	Feasibility/Development	Oct 2021

Notes

1. Beneficial Use is defined as when the work is sufficiently complete, in accordance with the contract documents, so that the City can occupy or use the work. Beneficial use dates are being reviewed as part of project schedule reviews.



Significant Accomplishments

Headworks Improvements and New Headworks

The projects successfully passed the Approve Project Scope Stage Gate on October 9th. Due to the interdependencies of the two Headworks projects, staff will be procuring a single consultant to provide engineering services for both projects. The Request for Qualifications (RFQ) is being developed and is scheduled to advertise in January 2015.

Iron Salt Feed Station

The consultant, CH2M HILL, presented the Preliminary Design Report (30% design), including an updated schedule and cost estimate, for City review. Preliminary design is anticipated to be completed in December.

Biosolids Transition Strategy

The CIP leadership team presented preliminary report conclusions and recommendations to TAC. The final draft report and supporting technical memorandum were submitted for City review and comments, and will be presented to TAC and TPAC in November and Council in December.

Digester and Thickener Facilities Upgrade

Brown and Caldwell submitted the draft Preliminary Design Report and supporting documents for City review. The project team will be conducting design review workshops in November.

Digester Gas Compressor Upgrade

The City has reviewed and approved the structural foundation design and calculation for the new gas compressor building. In preparation for the foundation construction, the design-builder, Anderson Pacific Engineering Construction, has provided material and installation procedures for City review and approval. Construction is anticipated to begin in December.

Emergency Diesel Generators

On October 27th, the project team held a full-day partnering workshop between the design-build team, suppliers, CIP staff, and Operations and Maintenance staff. This effort set the foundation for effective communication and issue resolution to successfully deliver the project.

Cogeneration Facility

On October 4th, the City Council approved the use of the progressive design-build delivery method for the project, in accordance with recently enacted State legislation authorizing its use on certain wastewater facilities. The design-build RFQ is being finalized for issuance in mid-November.

Programmatic Studies

MWH completed two studies this month: Design Criteria and Sizing Basis and Asset Management Approach and Strategy. The former updated flow and loading projections, developed a liquids stream hydraulic model, and established minimum process design and redundancy criteria that will be used as the basis of design for all capital projects. The latter identified RWF asset management business needs and goals, and recommended initiatives to help staff develop a comprehensive asset management program.

CIP staff executed the service order and issued the Notice to Proceed to Carollo Engineers to begin work on the Aeration Demands and Biosolids Production Assessment study.

CIP staff finalized the scope of the Architectural Guidelines study and the City's architectural team began developing draft design concepts, guidelines and specifications that will inform the architectural design elements of buildings, landscaping and other improvements at the Wastewater Facility. CIP staff also started scoping two supplemental studies that will be performed by consultants and incorporated into the guidelines. The two new studies will evaluate construction traffic impacts and flood protection at the Wastewater Facility. The budget for these three related studies is approximately \$1,040,000.

Explanation of Project Performance Issues

A5-A6 Nitrification Mag. Meter & Valve Replacement

In September 2014, during startup, the project discovered that the actuators that had been specified and installed were incompatible with the available power supply. Engineering staff determined it would be more costly to modify the system than to order and install compatible actuators. In addition, O&M staff requested that the actuators match those used in the other clarifiers. The contractor has submitted a proposal for the requested equipment. Because the cost will exceed the project's contingency, staff will need funding approval from Council, which is anticipated in January/February 2015. Beneficial use is expected by the end of March 2015.



Project Profile

Nitrification Clarifiers Rehabilitation

The RWF has 16 nitrification clarifiers that were constructed in the 1970's. These clarifiers, together with the aeration basins, are at the core of the RWF treatment process, and need to be operational for decades to come. Performance of the clarifiers directly impacts the performance of the filters, and ultimately the quality of the final effluent.

The clarifiers employ the natural force of gravity to separate solids from the incoming liquid wastewater. Clarifier influent is comprised of effluent from the aeration basins, also called "mixed liquor" (ML). ML enters each of the 16 clarifiers and is distributed throughout the influent launders located along each clarifier's perimeter. Flow is then directed downwards into the tank, and the heavier solids "settle" to the bottom; this sludge is suctioned off the clarifier floor, and discharged through pipes located underneath each clarifier. The liquid effluent that rises to the top of each clarifier overflows into an effluent launder, and ultimately flows to a common channel, heading towards filtration.

Many of the mechanical, structural, and electrical elements associated with the clarifiers are nearing the end of their useful lives. In October 2011, AECOM completed a condition assessment that inventoried and assessed the condition of the clarifier elements, and provided an opinion of the need for repair or replacement of those elements. The condition assessment results, together with input from RWF staff, are helping to inform and generate the overall scope of work for this project. At this time, it is anticipated that all of the mechanical components (clarifier mechanism, piping, valves, flow elements) will require replacement. The two motor control centers (MCCs) dedicated to the clarifiers also need to be replaced. Other minor scope items include concrete repair and miscellaneous site work.

The objective of this project is to implement cost-effective improvements to the nitrification clarifiers to enhance their process efficiency and minimize unscheduled maintenance activities for the next 30 years. Staff anticipates design to begin in fall 2015. Project budget: \$32.4 million.



Figure 2— Picture of Clarifier interior and mechanism



Figure 3 – Aerial View of Nitrification Clarifiers

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Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram

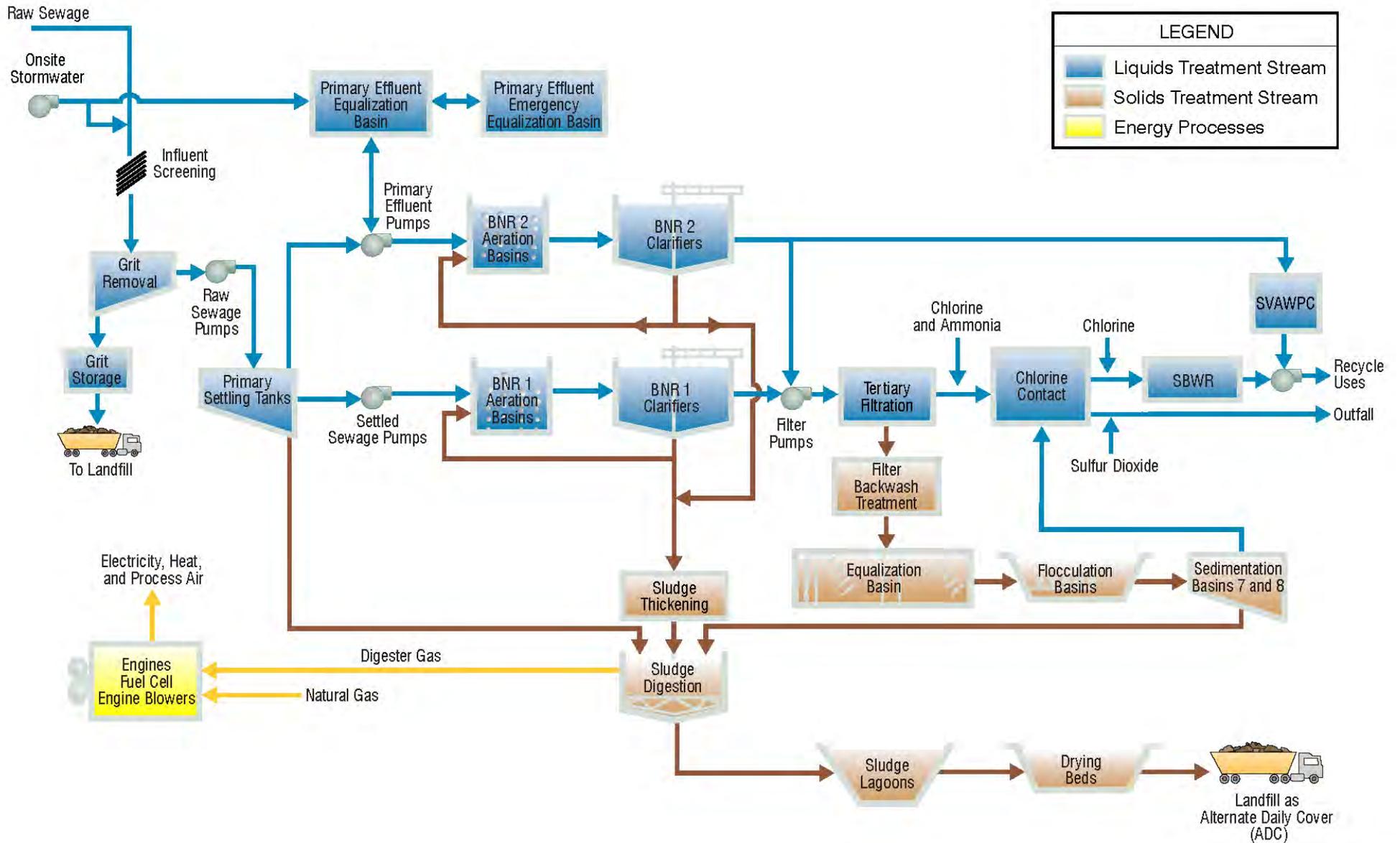


Figure 4—Current Treatment Process Flow Diagram



Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram

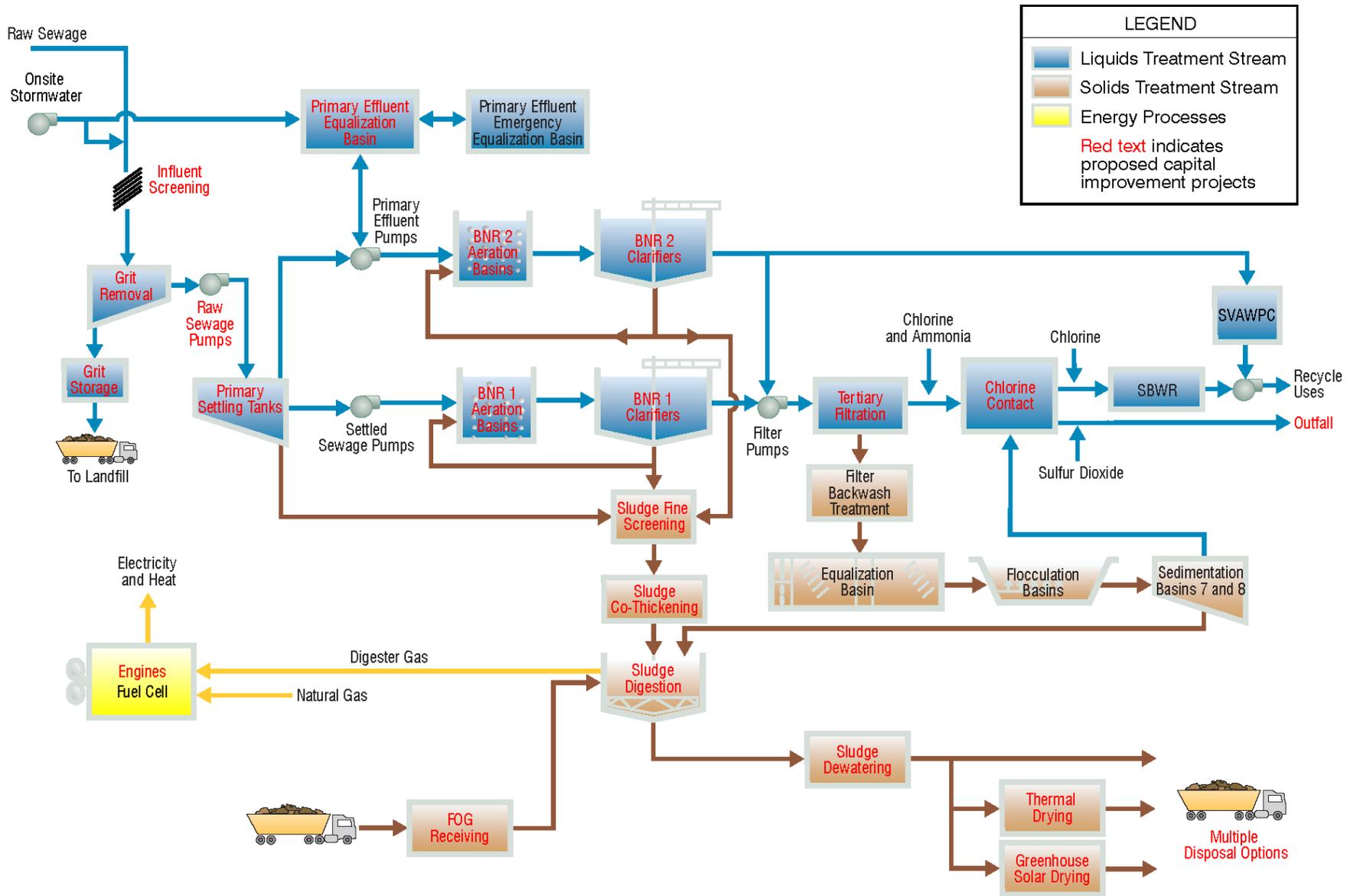


Figure 5—Proposed Treatment Process Flow Diagram



Active Construction Projects – Aerial Plan

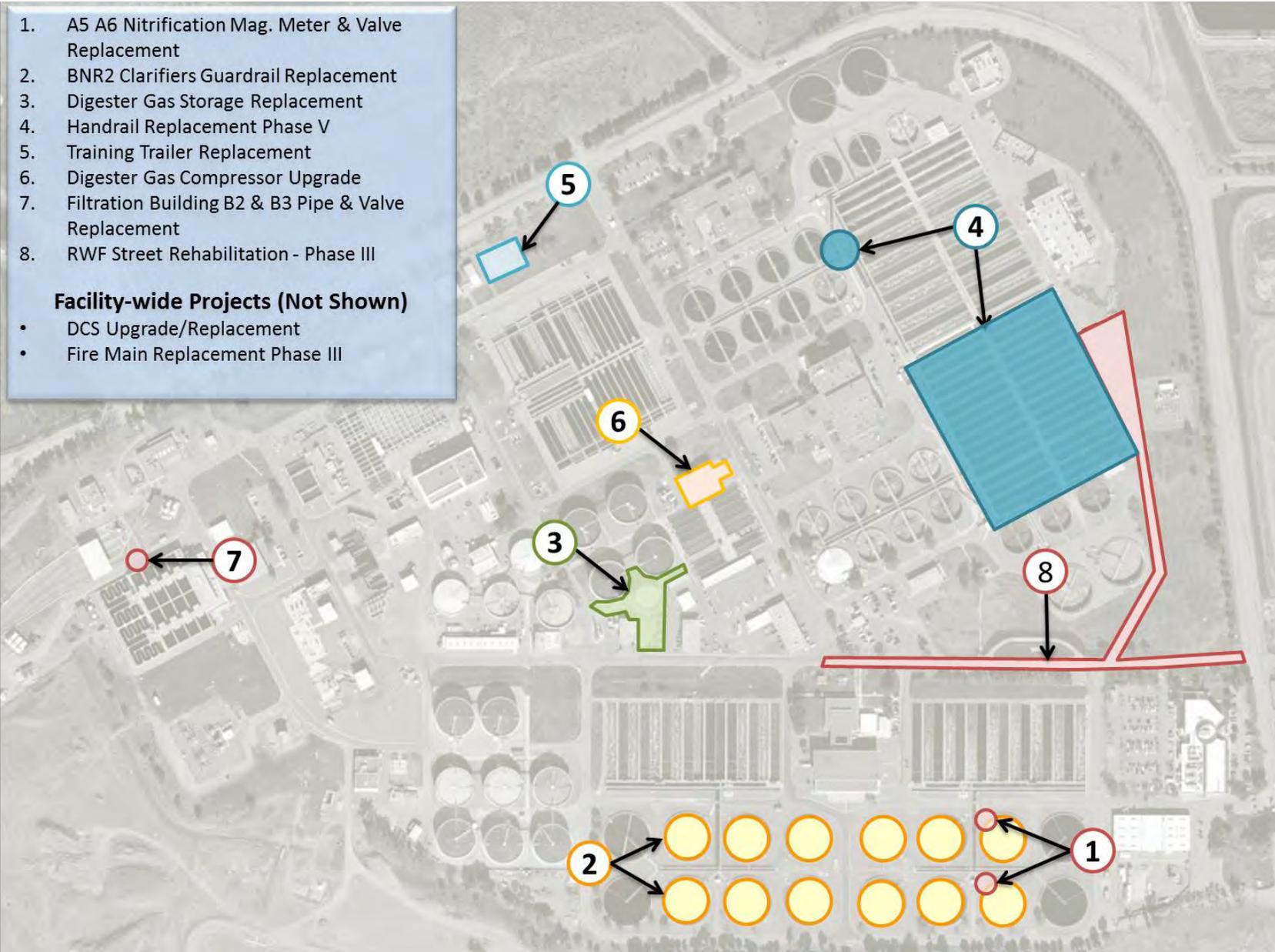


Figure 6—Active Construction Projects