



San José-Santa Clara  
Regional Wastewater Facility

# Capital Improvement Program Monthly Status Report: July 2019

September 5, 2019

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 2019.

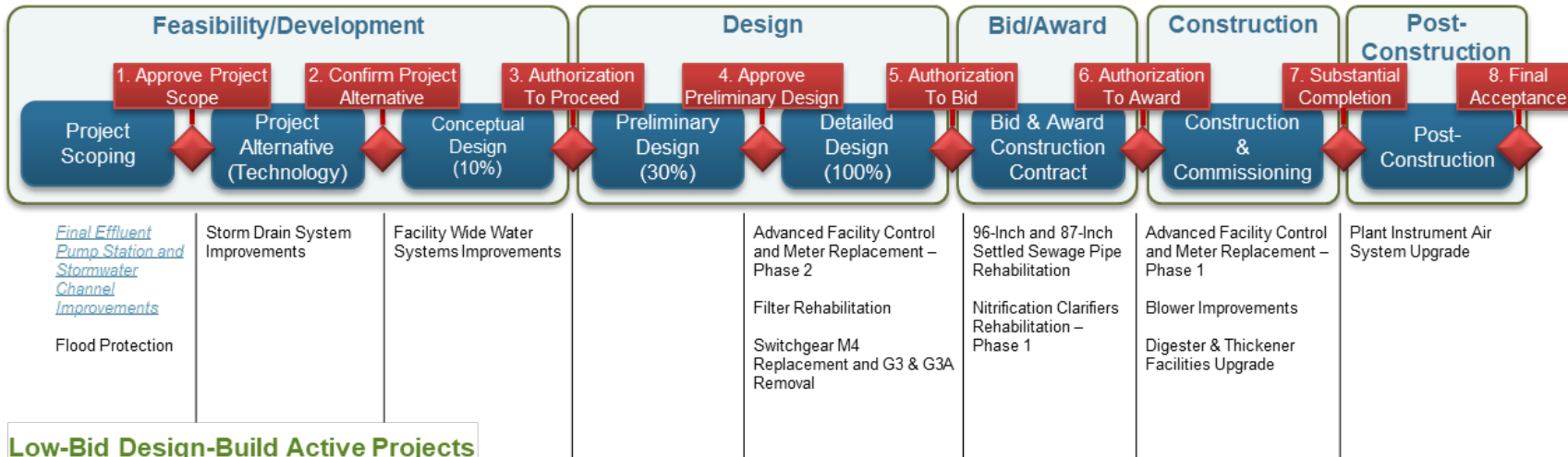
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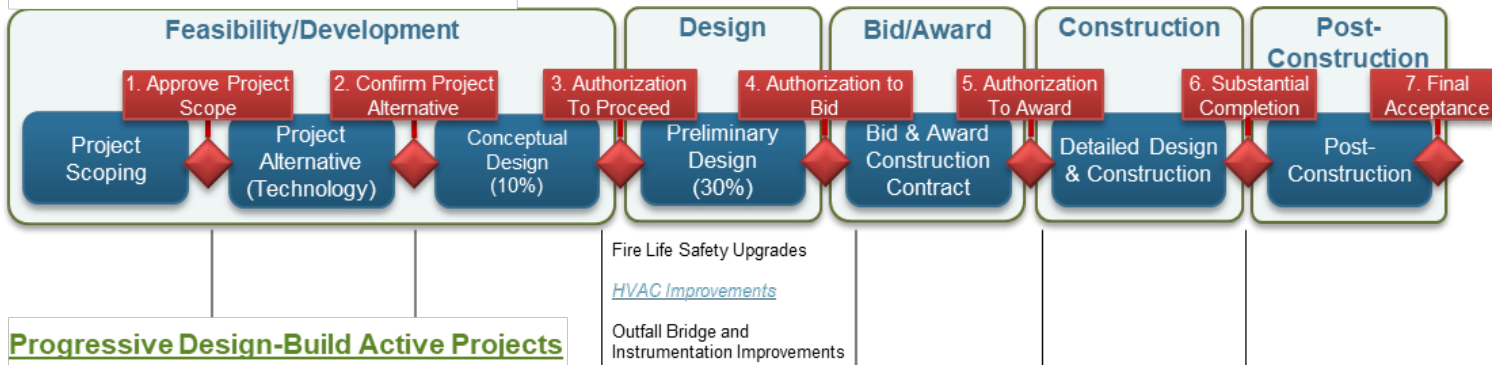


# Project Delivery Models

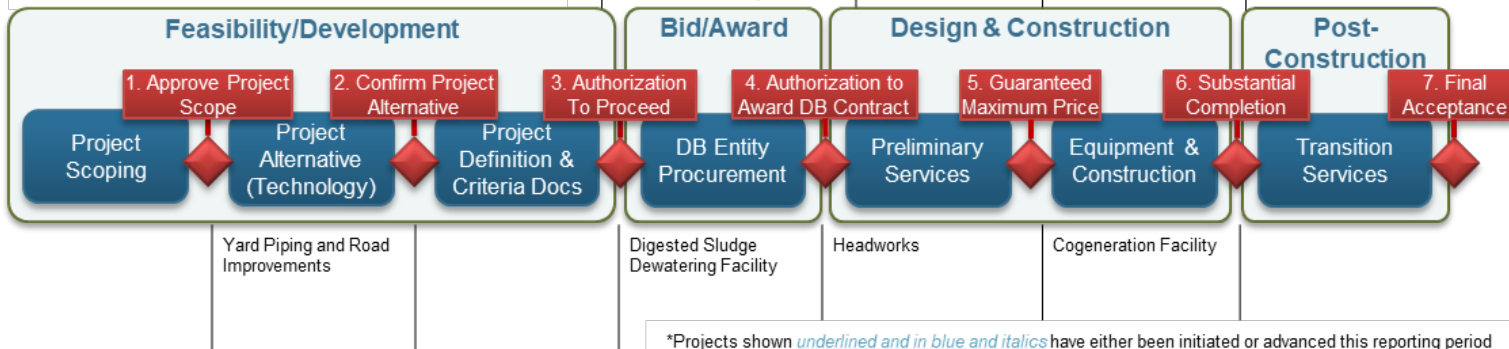
## Design-Bid-Build Active Projects



## Low-Bid Design-Build Active Projects



## Progressive Design-Build Active Projects



**Key**

- Phases
- Stages
- ◆ Stage Gates

\*Projects shown underlined and in blue and italics have either been initiated or advanced this reporting period



## Program Summary

### July 2019

In July, the City issued the Notice of Completion and Acceptance (NOCA) for the Plant Instrument Air System Upgrade Project. The HVAC Improvements Project successfully passed Stage Gate 3: Authorization to Proceed of the Project Delivery Model (PDM). Staff also initiated the Final Effluent Pump Station and Stormwater Channel Improvements Project. The project will construct a new RWF effluent pump station in order to mitigate the effects of the U.S. Army Corps of Engineers' (USACE) shoreline levee project, which is intended to address projected sea level rise, but is also anticipated to disrupt the current gravity flow of the RWF's final effluent through the artesian slough to the Bay. The City is currently engaged in discussions with the USACE and the local project sponsor, the Santa Clara Valley Water District.

The Digester and Thickener Facilities Upgrade Project contractor finished the Digester 7 roof rebar in preparation for concrete placement. Preliminary testing of Dissolved Air Flotation Thickener (DAFT) tank collectors and skimmers was completed in readiness for commissioning activities. The contractor also commissioned the gas piping on the new elevated pipe rack from Digester 16, the first step in decommissioning all gas lines in the tunnels.

The Cogeneration Facility Project design-builder received and installed a new 5,000-volt switchgear and constructed a new 4,160-volt electrical duct bank south of existing Building 40. The design-builder also set in place gas treatment equipment, cooling towers, chillers, urea tanks, and oil storage tanks.

The Blower Improvements Project contractor continued construction of concrete masonry unit (CMU) walls in Building 40 and demolished the electrical equipment and bag filters in the air filter rooms to facilitate conversion to a new electrical room.



Figure 1: Digester 16 elevated gas line.

The Advanced Facility Control and Meter Replacement – Phase 1 Project contractor completed installation and pre-operational testing of new flowmeters in the remote secondary clarifier return-activated sludge meter vaults and the Battery B secondary tunnel.

On the Headworks Project, a value engineering workshop was held to review the 30 percent design and identify potential design improvements that could result in cost savings and/or process improvements. Staff also completed a review of the 30 percent project cost model.

The City received four construction bids for the Nitrification Clarifier Rehabilitation – Phase 1 Project, all below the engineer's estimate. The construction contract is expected to be recommended for award to the Treatment Plant Advisory Committee (TPAC) and City Council in October.

The City advertised the construction contract for the 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation Project. Bids are due in late August. The Advanced Facility Control and Meter Replacement – Phase 2 Project team received statements of qualifications (SOQ) from three contractors as part of the pre-qualification process. The City expects to post a list of qualified contractors in August 2019.

For the Filter Rehabilitation Project, the City advertised pre-qualification documents for construction contractors. SOQs are due in August 2019. The design consultant submitted the 90 percent design and held a workshop to review the design.

The design consultant for the Switchgear M4 Replacement and G3 & G3A Removal Project submitted the 100 percent plans and specifications for City review.

### Look Ahead

The following key activities are forecast for August and September 2019:

- The City will open bids for the 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation Project.
- The City will advertise and open bids for the Switchgear M4 Replacement and G3 & G3A Removal Project.
- For the Filter Rehabilitation Project, the City will receive SOQs and issue a notice of determination of pre-qualified contractors.

- Staff will make the following recommendations to TPAC and Council: (1) amend three general engineering master consultant agreements for various CIP projects to extend their terms; and (2) award the design-build contract for the Digested Sludge Dewatering Facility Project.
- Four projects will seek to advance through stage gates, including:
  - Digested Sludge Dewatering Facility Project – Stage Gate 4: Authorization to Award DB Contract;
  - Switchgear M4 Replacement and G3 & G3A Removal Project – Stage Gate 5: Authorization to Bid;
  - 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation Project – Stage Gate 6: Authorization to Award;
  - Fire Life Safety Upgrades Project - Stage Gate 4: Authorization to Bid.



## Program Highlight – Project Closeout

Project closeout is the formal process of completing all project activities in accordance with City and CIP requirements as defined in the CIP PDM. During the closeout processes, project teams verify that all work has been completed and that all City and CIP processes have been executed. Overall completion of the project is formally recognized through the preparation and submission of final stage gate documentation.

The project manager is responsible for executing closeout processes, which typically include:

- Informing key stakeholders of project completion;
- Confirming receipt of key deliverables from construction contractors and engineering consultants, including as-built drawings and operations and maintenance (O&M) manuals;
- Closing consultant service orders and agreements, and reviewing consultant performance;
- Closing construction contracts and issuing the NOCA.
- Confirming final project costs, closing funding codes, and releasing the remaining budget;
- Confirming that project documents are filed in accordance with CIP document management requirements and stored in compliance with the City’s public records policies;
- Verifying that O&M has the required information, documents, manuals, and spare parts necessary to operate and maintain the completed project; and
- Obtaining feedback on project delivery and performance; documenting lessons learned.

Final Deliverable Description	✓	Document File Name	Primary Folder	DMS
<b>Project Scoping</b>				
Scoping Memorandum or Scoping Workshop Minutes				
Stage Gate 1 Signed Checklist - Approve Project Scope				
<b>Project Alternatives</b>				
Alternative Analysis Report				
Condition Assessment Report				
Hazardous Materials Report				
CPCC Class 5				
Stage Gate 2 Signed Checklist - Confirm Project Alternative				
<b>Conceptual Design</b>				
Conceptual Design Report				
10% Drawings, Specifications				
CPCC Class 4				
Stage Gate 3 Signed Checklist - Authorization to Proceed				
<b>Preliminary Design</b>				
Preliminary Design Report				
30% Drawings, Specifications				
Geotechnical Report				
HADOP				
CPCC Class 3				
Stage Gate 4 Signed Checklist - Approve Preliminary Design				
<b>Detailed Design</b>				
100% Drawings				
100% Specifications				
CEDA				
Air Permit				
Permits - Other				
CPCC Class 2				
Stage Gate 5 Signed Checklist - Authorization to Bid				

Figure 2: Final Deliverables Checklist

Project teams perform closeout processes throughout the project delivery process, not just at the end of the project. At the end of each PDM stage, the team verifies the status of deliverables, agreements and other key documents and ensures that final versions of these documents have been prepared and retained. The CIP uses the term ‘Final Deliverables’ to denote the electronic and physical items that are required to be completed and/or handed over as the project proceeds. A Final Deliverables Checklist (see Figure 1) is required to be completed by the project manager as a record that each of these deliverables has been prepared/received. The checklist is grouped by PDM stage so that it can be completed incrementally as a project proceeds.

The checklist represents the minimum final requirements required by the CIP, but may be modified to reflect the unique deliverables of each project. The project team provides the file name of the document, location of the file folder, and the electronic document management system used. For the CIP, electronic documents are stored on the CIP Portal project site during the design phase and the construction management system during the construction phase.

With these formal project closeout processes, CIP leadership can ensure that all necessary work has been performed, administrative and procurement closures executed, that key stakeholders agree the work is complete, and that the project is providing its intended benefits. In capturing lessons learned, project closeout also leads to process improvements for future projects.



## Program Performance Summary

Eight 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 2019-2020

KPI	Target	Fiscal Year to Date			Fiscal Year End		
		Actual	Status	Trend	Forecast	Status	Trend
<b>Stage Gates</b>	90%	50% 1/2 <sup>1</sup>			95% 19/20		
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%							
<b>Schedule<sup>2</sup></b>	90%	0% 0/0	N/A	N/A	0% 0/0	N/A	N/A
Measurement: Percentage of CIP projects delivered within 2 months of approved baseline Beneficial Use Milestone. <sup>3</sup> Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75%							
<b>Budget</b>	90%	0% 0/1 <sup>4</sup>			0% 0/1		
Measurement: Percentage of CIP projects that are accepted by the City within the approved baseline budget. <sup>3</sup> Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75%							
<b>Expenditure<sup>5</sup></b>	NA	NA			NA		
Measurement: CIP FY19-20 committed costs. Target: Committed cost meets or exceeds 70% of planned budget. The adjusted fiscal year budget is still to be determined and will be reported next month.							
<b>Procurement</b>	80%	100% 1/1 <sup>6</sup>			100% 8/8		
Measurement: Number of consultant and contractor procurements advertised compared to planned for the fiscal year. Target: Green: >= 80%; Amber: 70% to 79%; Red: < 70%							
<b>Safety</b>	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							
<b>Environmental</b>	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							
<b>Vacancy Rate<sup>7</sup></b>	10%	22% 19/86			9% 8/86		
Measurement: Ratio of the number of vacant approved positions to approved positions. Target: Green: <= 10%; Amber: 10% to 20%; Red: > 20%							

#### Notes

1. The HVAC Improvements Project passed Stage Gate 3: Authorization to Proceed and will start preliminary design. The Storm Drain System Improvements Project did not pass Stage Gate 2: Confirm Project Alternatives and will conduct additional analysis before repeating the stage gate.
2. The CIP does not anticipate any projects reaching Beneficial Use this fiscal year.
3. The baseline Beneficial Use date and the baseline budget for each project are established at construction contract award and execution.
4. The City accepted the Plant Instrument Air System Upgrade Project with project costs exceeding 1 percent of the baseline value in July.
5. Expenditure and adjusted fiscal year budget information will be available next month.
6. The City advertised the 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation Project construction contract.
7. The vacancy rate KPI measures CIP-approved positions, including ESD, Public Works, and program management consultant full-time staff.



## Program Budget Performance Summary

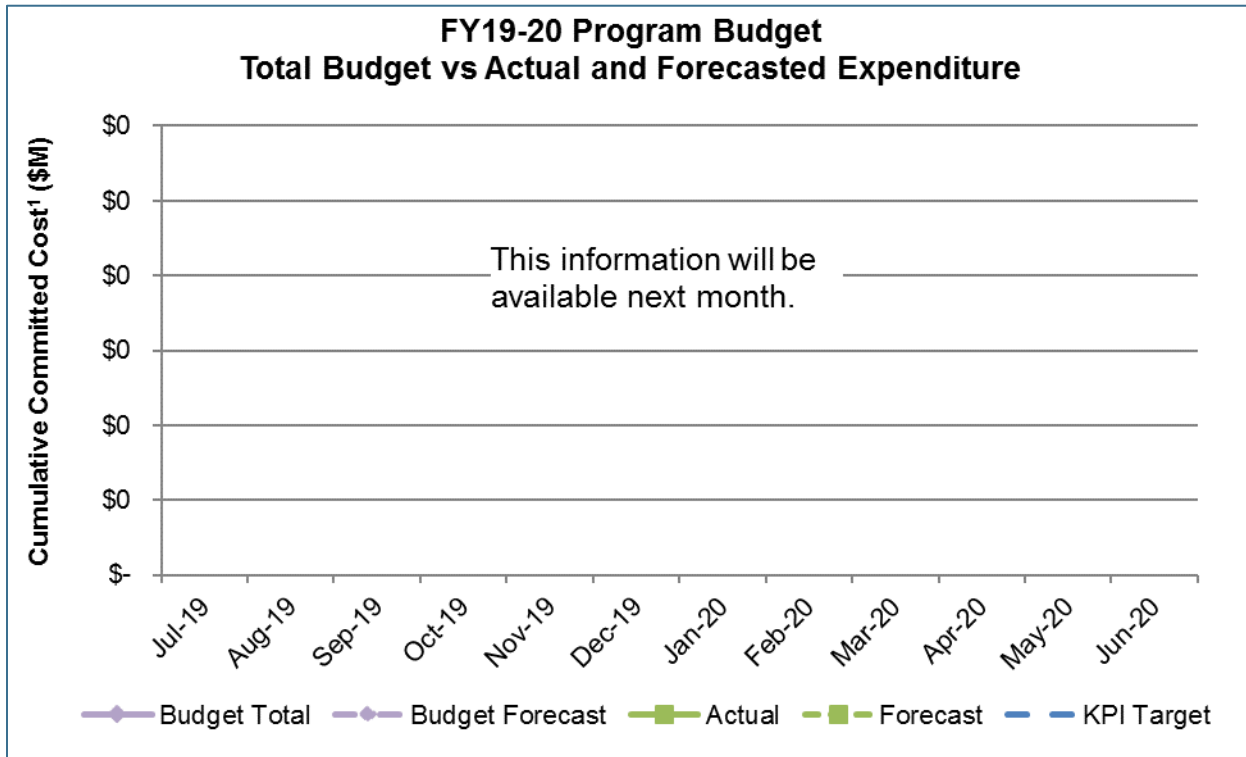
This section summarizes the cumulative monthly budget performance for fiscal year (FY)19-20 based on the Adopted 2020-2024 CIP.

### Adopted 2020-2024 CIP Expenditure and Encumbrances



## Fiscal Year 2019-2020 Program Budget Performance

The committed costs forecast for Fiscal Year 2019-20 are currently being finalized and will be included in next month's report.



### Notes:

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



## Project Performance Summary

There are currently five projects in the construction and post-construction phases and an additional 15 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

Project Name	Phase	Estimated Beneficial Use Date <sup>1</sup>	Cost Performance <sup>2</sup>	Schedule Performance <sup>2</sup>
1. Plant Instrument Air System Upgrade	Post-Construction	Nov 2018 <sup>3</sup>	◆	◆
2. Cogeneration Facility	Design & Construction	Sep 2020	●	●
3. Digester and Thickener Facilities Upgrade	Construction	Nov 2020	◆	◆
4. Advanced Facility Control & Meter Replacement - Phase 1	Construction	June 2021	●	●
5. Blower Improvements	Construction	Sep 2022	●	●

#### Key:

<b>Cost:</b>	● On Budget	◆ >1% Over Budget	<b>Schedule:</b>	● 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 pages 13 and 14.
- Actual Beneficial Use date.



## Project Performance – Pre-Baselined Projects

Project Name	Phase	Estimated Beneficial Use Date <sup>1</sup>
1. 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation	Bid/Award	Nov 2020
2. Nitrification Clarifiers Rehabilitation – Phase 1	Bid/Award	Dec 2022
3. Digested Sludge Dewatering Facility	Bid/Award	Apr 2023
4. Outfall Bridge and Instrumentation Improvements	Design	Dec 2021
5. Switchgear M4 Replacement and G3 & G3A Removal	Design	Feb 2022
6. Advanced Facility Control & Meter Replacement - Phase 2	Design	Dec 2022
7. Fire Life Safety Upgrades	Design	Dec 2022
8. Headworks	Design and Construction	Dec 2022
9. Filter Rehabilitation	Design	Feb 2023
10. HVAC Improvements	Design	Mar 2023
11. Flood Protection	Feasibility/Development	Oct 2023
12. Storm Drain System Improvements	Feasibility/Development	Nov 2023
13. Facility Wide Water Systems Improvements	Feasibility/Development	Aug 2024
14. Final Effluent Pump Station and Stormwater Channel Improvements	Feasibility/Development	Jan 2025
15. Yard Piping and Road Improvements	Feasibility/Development	Nov 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.



# Project Significant Accomplishments

## Biosolids Package

### Digester and Thickener Facilities Upgrade Project

- Contractor Walsh placed concrete for heating exchanger and foam suppression equipment foundations at Digesters 5 and 6. On Digester 7, Walsh finished installing the PVC lining, as well as rebar installation on the roof, in preparation for future concrete placement. In the new sludge screening building, Walsh installed six sludge screen control boxes, fire system piping, and polymer and hydro-pneumatic tanks.
- Walsh completed preliminary testing of the collectors and skimmers inside the DAFT tanks.
- Walsh completed gas system modifications at Digester 16, and O&M staff commissioned new piping and transferred gas produced in that digester from the old tunnel pipe to the new pipe on the elevated rack.

## Facilities Package

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

- The City advertised the construction contract for bids and held a pre-bid meeting. Bids are due in August 2019.

### Fire Life Safety Upgrades

- The project team returned comments to the design consultant Kennedy/Jenks (K/J) on the draft 30 percent design, specifications, and construction cost estimate. K/J will submit the final 30 percent design in August 2019.

### HVAC Improvements Project

- The project team passed Stage Gate 3: Authorization to Proceed and began preliminary design, which is anticipated to be completed in November 2019.

### Storm Drain Improvements Project

- The project team presented at Stage Gate 2: Confirm Project Alternative and was directed to conduct additional flood risk analysis before repeating the stage gate, which is anticipated in December 2019.

## Liquids Package

### Advanced Facility Control and Meter Replacement – Phase 1 Project

- Contractor Overaa Construction completed installation and pre-operational testing of new flowmeters in the remote secondary clarifier return-activated sludge meter vaults and Battery B secondary tunnel. The project team anticipates completing functional testing in October 2019.

### Advanced Facility Control and Meter Replacement – Phase 2 Project

- The City received three pre-qualification submittals from general contractors. The City will complete the pre-qualification evaluation and issue the notice of determination in August.

### Blowers Improvements Project

- Contractor Monterey Mechanical Construction continued wall construction and demolished the electrical equipment and bag filters in the air filter rooms to facilitate conversion to a new electrical room in Building 40.

### Filter Rehabilitation Project

- Design consultant K/J submitted the 90 percent design documents and conducted the 90 percent design workshop.
- The City advertised the pre-qualification documents for construction contractors. SOQs are due in August 2019.

### Final Effluent Pump Station Project

- The City initiated the project. The project team will hold a project kickoff meeting in September 2019.

### Headworks Project

- Design-builder CH2M Hill Engineers, Inc. (CH2M) completed subsurface investigations to identify potential existing utility conflicts within the project area footprint.
- The project team held a value engineering session on the 30 percent design to identify and analyze potential cost-saving and/or system process enhancement measures and reviewed the 30 percent project cost models submitted by CH2M and the City's owner's advisor.



### Nitrification Clarifier Rehabilitation - Phase 1 Project

- The City received four bids, all below the engineer's estimate. Staff will recommend that Council award the construction contract in October.

### **Power and Energy Package**

#### Cogeneration Facility Project

- Design-builder CH2M completed pouring the hot water loop anchor foundations in the aeration tank area, setting the stage for the hot water loop piping to be installed in the project tie-in location.
- CH2M also completed the 4160-volt electrical duct bank south of Building 40 and started work on the section north of Building 40. Additionally, they set the 5,000-volt switchgear into its permanent location. Next, CH2M will begin installing the conductors.
- Finally, CH2M set gas treatment equipment, cooling towers, chillers, urea tanks, and oil storage tanks in place.

#### Plant Instrument Air System Upgrade Project

- The City filed NOCA for the project on July 3, 2019.

#### Switchgear M4 Replacement and G3 & G3A Removal Project

- Design consultant Brown and Caldwell submitted the 100 percent plans and specifications for City review. The project team anticipates advertising the construction contract in August 2019.



## Explanation of Project Performance Issues

### Plant Instrument Air System Upgrade Project

Project construction was delayed by seven months due to four issues: 1) The project team discovered that the planned construction site access route crossed a large, settled sludge pipeline, requiring development and construction of an alternative access route; 2) the contractor was temporarily unable to install a section of the conduit from the sludge control building to the new compressor building due to other work being performed in the area by a different contractor; 3) development of the 28-day commissioning test procedure took longer than anticipated; and 4) during the eight-hour functioning test, the project team discovered oxidized (rusted) carbon steel shavings in an existing condensate tank unrelated to the project construction. The material was removed, and the test was successfully completed. The project achieved Beneficial Use in November 2018. The project team accepted the project in July 2019.

### Digester and Thickener Facilities Upgrade Project

This project encountered numerous unforeseen conditions at the beginning of construction in 2016, described below. In 2017, design modifications were required to address seismic risks, and discovery of hazardous materials required extensive cleanup. Delays for these conditions have amounted to 273 working days. The original construction completion and Beneficial Use date of September 2019 has been delayed and rescheduled to November 2020.

The City has negotiated contract change orders for the unforeseen conditions discovered in 2016, described below:

- Major corrosion of an underground, 78-inch settled sewage pipeline and junction structure required construction of a temporary reroute so that the pipeline could be replaced during the 2018 dry season. In May of 2018, the contractor started full-time operation of this temporary pumping and pipeline system and began replacing the 78-inch settled sewage pipeline. This work was completed in late September 2018.
- A 36-inch biochemical oxygen demand pipe was found to be obstructing the new sludge screening building foundation. The contractor removed this pipe and relocated several gas drain vaults and associated piping prior to foundation construction
- Multiple conflicts between contract work and existing utilities required numerous relocations including water, natural gas, digester gas, landfill gas, storm drains, and sanitary sewer pipelines. The contractor completed necessary relocations and rerouting, especially near the new digester gas pipe rack footings. Many of these modifications also required design changes.
- Bay Area Air Quality Management District (BAAQMD) venting restrictions also delayed digester work. The contractor completed the temporary digester gas connections and the temporary system became operational in February 2018.

The City has negotiated contract change orders for the following issues discovered in 2017 and 2018:

- Digester structural redesign: The design consultant revised the structural drawings to address seismic concerns by enlarging the foundation ring beam at the base of each of the four digesters. The contractor provided a cost proposal associated with this revision and the City issued a final, global change order to cover work activities.
- Distributed control system architectural changes: The design guidelines for the distributed control system were developed after the project plans were completed. Several changes were required for fiber optic cable, electrical wiring, patch panels, converters, communications instrumentation, and emergency power supply. Drawings, color-coding labeling, and process diagrams needed to be revised to reflect these changes.
- Fire Department requirements: Fire permit requirements changed after the design was completed. The Fire Marshal required additional alarms and electrical connections. A new electrical fire suppression system was installed to meet current environmental requirements. At one structure, the Fire Marshall required a full discharge test of the system.
- Structural issues: Designer Brown and Caldwell (B&C) modified the west electrical building foundation design to avoid an unforeseen conflict and protect the structural integrity of an existing underground tunnel; provided a new design to anchor the pressure flow pipes in the DAFT gallery to the ceiling and floor slabs to avoid conflicts with multiple existing pipes; and redesigned structural supports to meet code regulations.
- During construction, Walsh discovered that the DAFT gallery under-slab drains were not functioning properly. The City directed Walsh to replace the drain and pump system.
- Construction delays required the contractor to pay for a warranty extension on six liquid ring gas compressors.

Testing of soils and concrete for PCBs was completed, and the federal Environmental Protection Agency (EPA) issued a final conditional approval. In compliance with the EPA-approved, risk-based management plan, removal and disposal of all contaminated materials in all four affected digesters and all tunnel joints has been completed. All contaminated soils have been removed and disposed of and most of the impacted concrete has been encased or removed. The last portion of the work will be finished in June 2019. The project team anticipates submittal of final work reports to the EPA in August 2019.



In November 2017, Council approved a construction contingency increase of \$15 million. The City issued change orders against the increased contingency for delays associated with the conditions discovered in 2016.

In June 2018, Council approved a second construction contingency increase of \$25 million for additional costs associated with the seismic redesign, hazardous material remediation, and extended construction duration.

To minimize further delays, the contractor is executing several tasks concurrently that originally had been planned in series.



## Project Profile – Digester and Thickener Facilities Upgrade

The anaerobic digestion process produces gas from biosolids, or sludge, which is used to generate power for the RWF. The RWF's 16 anaerobic digesters were constructed between 1956 and 1983. Currently, six of the 16 digesters are out of service because of age, structural damage, mechanical failure, or for cleaning. To maintain a viable biosolids processing capacity, the RWF needs eight to 10 operating digesters.

This project has four major components: (1) rehabilitation and conversion of four existing digesters from mesophilic to thermophilic digesters; (2) improvements to dissolved air flotation thickener (DAFT) tanks; (3) construction of a new primary sludge screening facility; and (4) construction of a new elevated pipe rack. Other project components include ancillary buildings for electrical and other equipment, a new gas flare, flow distribution boxes, and sampling station.



Figure 3: Project Layout

### Digesters

Currently, all 16 digesters use a lower temperature digestion process called mesophilic. One of the recommendations from the Biosolids Transition Strategy, approved by TPAC and Council in late 2014, was to upgrade four digesters to run a higher temperature digestion process known as Temperature-Phased Anaerobic Digestion (TPAD) to improve gas production and reduce sludge volume, ultimately reducing the number of required digesters by half. Other digester improvements include new covers, sludge mixers, heating, electrical, instrumentation, and control systems.



Figure 4: DAFT covers and equipment

### DAFT Tanks

DAFT improvements include new covers with a foul air vacuum system for odor control (See Figure 4), as well as upgrades to existing piping, tanks, mechanical equipment, and electrical and instrumentation components.

### Sludge Screening Facility

A new primary sludge screening facility has been added to the process stream before the DAFT. The new facility combines and screens sludge from the primary settling tanks and the biological nutrient removal tanks prior to entering the DAFT, reducing system clogging and improving anaerobic process efficiency in the digesters.

### Elevated Pipe Rack

A key component of the project scope is the relocation of digester gas lines from the tunnels to an elevated pipe rack system (See Figure 5) to reduce confined space and safety risks.



**Figure 5: Elevated Pipe Rack Installation**

Brown and Caldwell (B&C) performed design work from October 2013 to December 2015. The lowest responsive bidder on the project was Walsh Construction Company II, LLC with a bid of \$107.9 million. Council awarded the contract to Walsh on May 24, 2016. The construction notice to proceed was issued on June 22, 2016. Construction completion is anticipated in November 2020. The total project budget is approximately \$200.8 million.

The project has experienced numerous challenges, including unanticipated conditions, design changes, new regulations, and the discovery of hazardous materials, but the project team continues to work hard to make significant progress every month. Please refer to the Explanation of Project Performance Issues section on Page 13 for a description of challenges encountered during the project delivery.

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# Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram

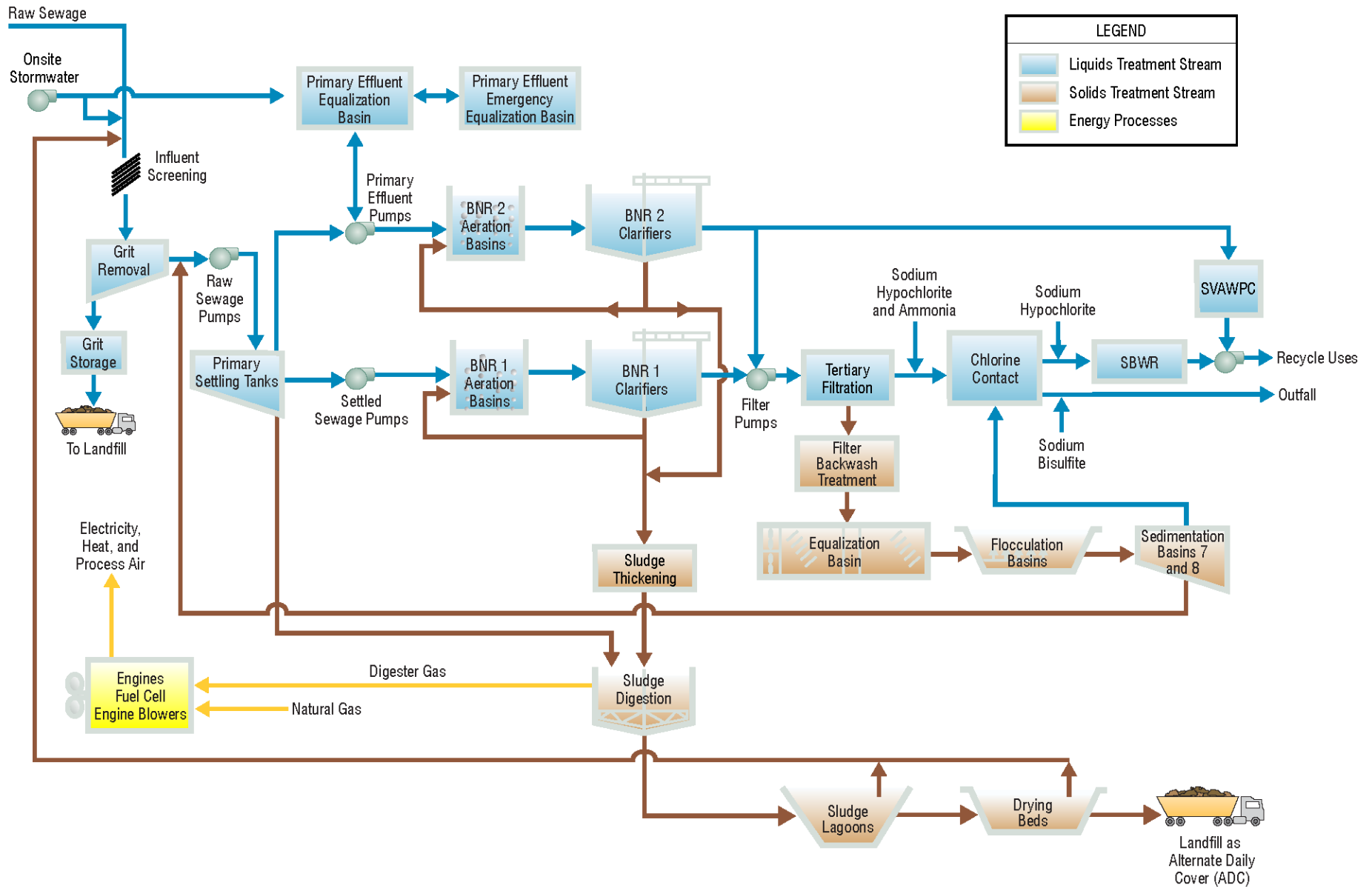


Figure 6 – Current Treatment Process Flow Diagram



# Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram

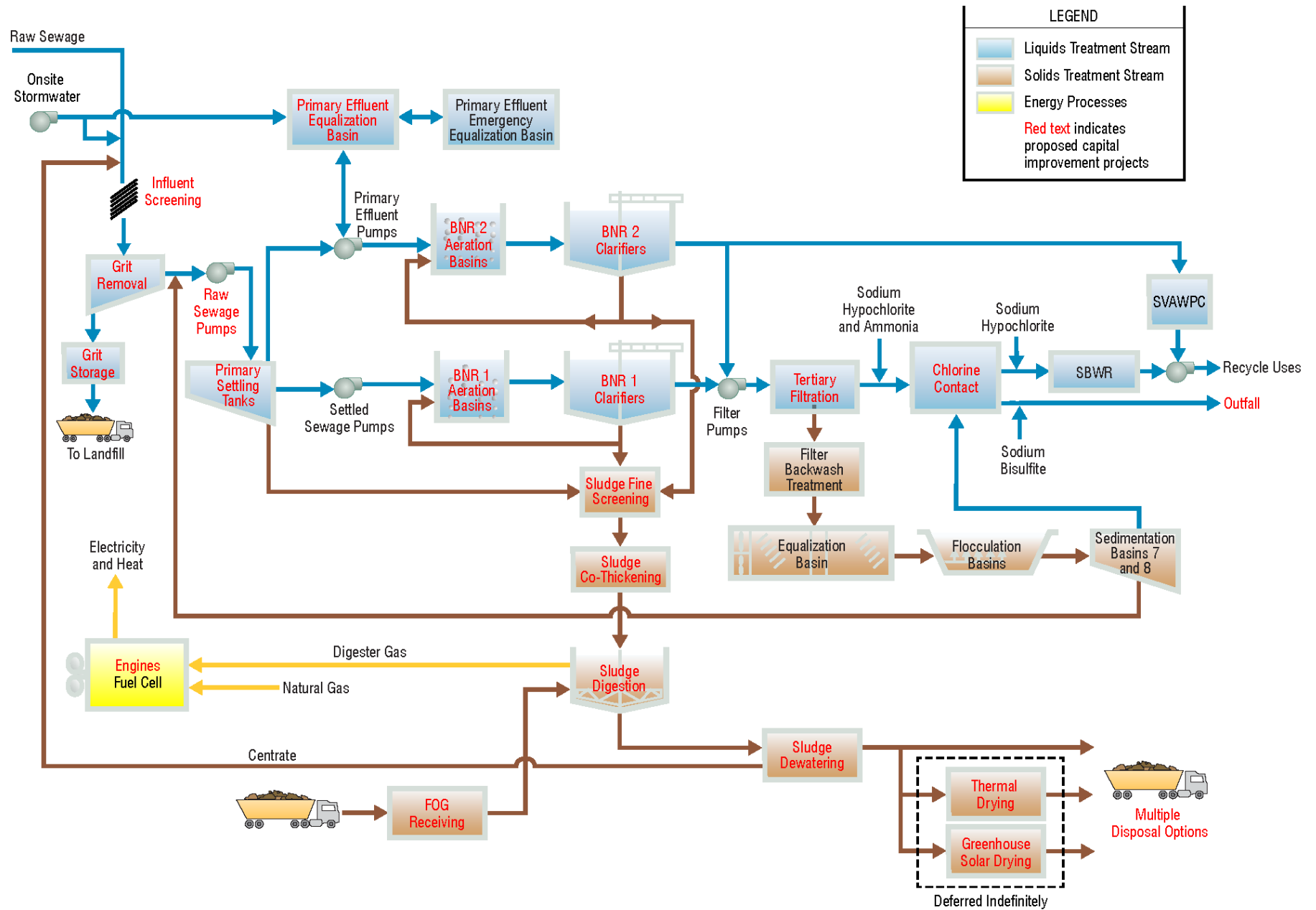


Figure 7 – Proposed Treatment Process Flow Diagram



## Active Construction Projects – Aerial Plan

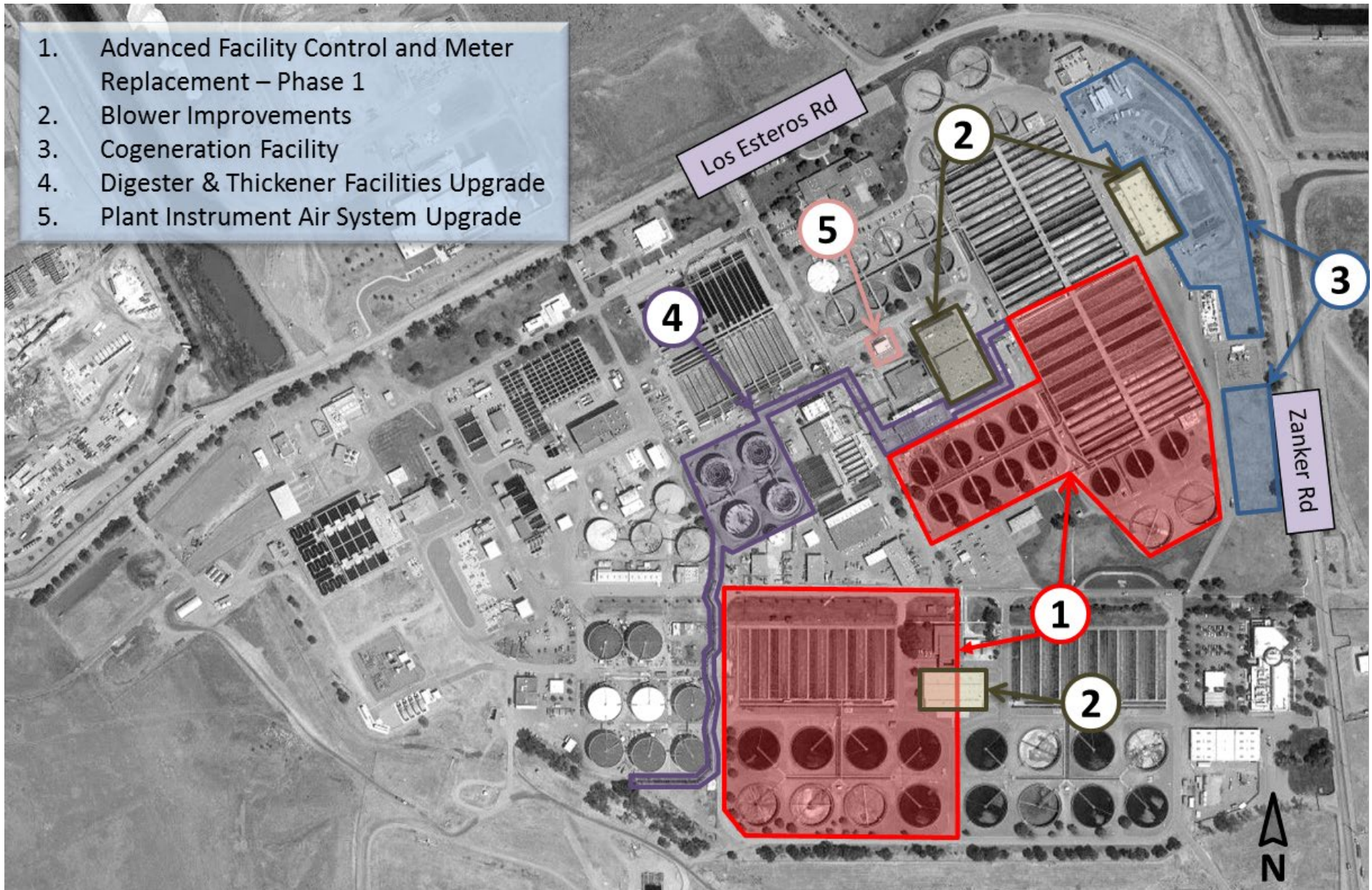


Figure 8: Active Construction Projects