



DATE: June 19, 2018

TO: Mayor and City Council

FROM: Director of Utilities & Environmental Services

SUBJECT Water Pollution Control Facility Final Clarifier and Gravity Belt Thickener Sludge Blending Tank Rehabilitation Project: Approval of Addendum No. 1 and Award of Construction Contract, and Appropriation of Funds.

RECOMMENDATION

That Council adopts the attached resolutions approving Addendum No. 1 which provided minor revisions to the Plans and Specifications, awarding the contract to GSE Construction Company, Inc., in the amount of \$2,137,100, and appropriating additional funds in the amount of \$68,100.

SUMMARY

The Water Pollution Control Facility (WPCF) Final Clarifier and Gravity Belt Thickener (GBT) Sludge Blending Tank Rehabilitation Project (Project) consists of the following four project elements:

1. Final Clarifier Structure Repair and Mechanism Recoating
2. GBT Sludge Blending Tank Structure Repair
3. Primary Clarifier Effluent Box Capacity Increase
4. Drying Bed Filtrate Pipeline By-Pass

These improvements enable the WPCF to continue operating efficiently and reliably. Three (3) bids were received. Staff is requesting Council's approval of Addendum No. 1 and award of the construction contract to the lowest bidder GSE Construction Company, Inc., at \$2,137,100.

BACKGROUND

An annual average of 12 million gallons per day (MGD) of wastewater from the City's residential and business communities is conveyed to the City's WPCF that provides treatment prior to discharge to the Bay. The treatment process of the WPCF is comprised of Vacuators, Primary Clarifiers (PC), Trickling Filters/Solids Contact Basins (TF/SC), Final Clarifiers and Hypochlorite Disinfection. Biosolids are thickened by Gravity Belt Thickener (GBT), mixed

with Fats, Oil, and Grease (FOG) and sent to Digesters. The digested sludge is then sent to Drying Beds for reducing the water content before disposal.

The Final Clarifier and GBT Sludge Blending Tank Rehabilitation Project is to address the needed improvements and process enhancements to maintain the treatment system functionality, so the existing treatment systems can continue to perform as intended. The Project includes the following project elements.

1. Final Clarifier Structure Repair and Mechanism Recoating

The Final Clarifiers (FC) are settling tanks built with a mechanical scraper mechanism to allow sludge to settle and be removed while the clean water is discharged to the receiving stream. When the FC were taken out of service for annual inspection in 2016, staff noticed that FC No.1's structure exhibited some concrete cracking and areas of spalling toward the bottom of the concrete wall. The City contracted Concrete Science Inc., (CSI) to perform field inspections and laboratory testing to assess the concrete's condition. It was concluded that the delaminated concrete wall should be repaired to restore the service life of the clarifier. In addition to the structure issue, the mechanical scraper mechanism of the clarifiers which is made of galvanized carbon steel shows evidence of corrosion damage.

2. GBT Sludge Blending Tank Structure Repair

The GBT facility is utilized for sludge volume reduction prior to digestion. The GBT system is continuously fed from the Sludge Blending Tank which blends sludge streams from the Primary Clarifiers and Final Clarifiers. The concrete structure of the Sludge Blending Tank exhibits some deterioration at the bottom of the concrete walls, resulting in water leaks through the joints. The interior coatings have also failed due to the corrosive environment.

3. Primary Clarifier Effluent Box Capacity Increase

The Primary Clarifiers (PC) are preliminary sedimentation tanks, which remove solids contained in the wastewater by gravitational settling. After the preliminary treatment, the effluent from the Primary Clarifiers is sent to the TF for biological secondary treatment via the Primary Effluent Box. The plant operating data shows the capacity of the Primary Effluent Box is not adequate to handle the wet weather peak flow. Staff has identified that the outlet opening of the Effluent Box is the cause of the hydraulic bottleneck. The project includes enlarging the opening and installing a new isolation gate to facilitate future facility maintenance activities.

4. Drying Bed Filtrate Pipeline By-Pass

The Drying Beds facility dewateres the sludge from the Digesters by drainage and evaporation. The water drained from the beds (Filtrate) is currently pumped to the Primary Effluent Flow Equalization (EQ) pond via two six-inch pipes. Suspended solids from the drying bed filtrate and primary effluent settles and accumulates at the bottom of the EQ pond. A routine pond cleaning to remove the settled solids is required to minimize resuspending the settled solids and organic matters. The current operating procedure is to shut down the filtrate flow during the pond cleaning. To avoid shutting

down the filtrate flow and therefore improve treatment efficiency, staff identified that a new filtrate pipeline can be added to allow by-passing the EQ pond and sending the filtrate from the Drying Beds to the Primary Clarifiers.

DISCUSSION

On May 8, 2018, Council approved the plans and specifications for the project and called for bids to be received on June 5, 2018. At the request of bidders, the bid date was postponed by a week to June 12, 2018. The City received three (3) bids for the project, ranging from \$1,977,100 to \$2,572,400. GSE Construction Company, Inc. submitted the low bid in the amount of \$1,977,100, which is approximately 2.9% below the Engineer’s estimate of \$2,037,000. Because much of the project involves retrofits of existing facilities, and repairs of the existing structures/clarifier mechanisms, an additional \$160,000 (or 8% of the contract amount) is included for administrative change orders in the event additional funds are needed for unforeseen conditions and changes during construction. Therefore, the contract limit requested is \$2,137,100 including administrative change orders.

ECONOMIC IMPACT

The modifications and continued upkeep of the existing treatment processes at the WPCF are essential to continue to maintain effective treatment of the wastewater. By rehabilitating or replacing aging components before they fail, the City avoids additional costs for unplanned outages such as emergency contractor fees, and staff overtime. The community will enjoy the benefits of the project, including maintaining effective treatment that provides environmental protection of the San Francisco Bay.

FISCAL IMPACT

The total estimated costs for the Final Clarifier and GBT Sludge Blending Tank Rehabilitation Project are as follows:

Project Tasks	Costs
Design and Engineering Services – Consultant	\$ 156,000
Construction Contract (including administrative change orders)	\$ 2,137,100
Construction Management and Inspection – City Staff (estimate)	<u>\$ 100,000</u>
Total	\$2,393,100

The Capital Improvement Program (CIP) includes a budget of \$2,325,000 for this Project in the sewer improvement fund for FY 2018. The estimate was based on separate projects as follows:

Fund	Project No.	Description	Budget
612	07680	Sluice Gate Repair/Replacement & Actuation	\$ 460,000
612	07703	Final Clarifier No. 1 & 2 Equipment Coatings	\$ 910,000
612	07704	Final Clarifier No. 1 Structure Repairs	\$ 620,000
612	07705	Gravity Belt Thickener Sludge Blending Tank Coatings	\$ 175,000

612	07706	Sludge Pipeline from Equalization Pond to Site Waste Pump Station	\$ 160,000
		Total	<u>\$2,325,000</u>

Because of the critical timeline for beginning this project, and the higher-than-estimated total project cost, staff is requesting an amendment appropriating funds in the amount of \$68,100 from the Sewer Replacement Fund (611) to fully fund the project for FY 2018.

STRATEGIC INITIATIVES

All project work is related to operations and maintenance of the existing WPCF aged facilities; therefore no strategic initiatives are impacted by this project.

SUSTAINABILITY FEATURES

All project work is related to operations and maintenance of the existing WPCF aged facilities; therefore no sustainability features are included in this project.

PUBLIC CONTACT

All project work will be within the WPCF plant boundary; therefore, no public contact is necessary for this project.

SCHEDULE/NEXT STEPS

The following schedule has been developed for this project:

Award of Construction Contract	June 19, 2018
Issue Notice to Proceed	July 6, 2018
Construction Completion	October 15, 2019

Prepared by: Suzan England, Senior Utilities Engineer

Recommended by: Alex Ameri, Director of Utilities & Environmental Services

Approved by:



Kelly McAdoo, City Manager