Legislation Text

File #: 2021-086, **Version:** 1

Contract No. 2002190

Rehabilitation of Ferric Chloride Feed System and Sludge Lines

CIP#211008/BCE Score 74.2

Agenda of: March 24, 2021

Item No.: **2021-086**

Amount: $9,839,000.00

TO: The Honorable
Board of Directors
Great Lakes Water Authority

FROM: Sue F. McCormick
Chief Executive Officer
Great Lakes Water Authority

DATE: February 26, 2021

RE: **Contract No. 2002190**
Rehabilitation of Ferric Chloride Feed System and Sludge Lines
Vendor: Weiss Construction Group, LLC

MOTION

Upon recommendation of Navid Mehram, Chief Operating Officer - Wastewater Operating Services, the Board of Directors (Board) of the Great Lakes Water Authority (GLWA), authorizes the Chief Executive Officer (CEO) to **enter into Contract No. 2002190, "Rehabilitation of Ferric Chloride Feed System and Sludge Lines" with Weiss Construction Co. LLC, at a cost not to exceed $9,839,000.00 for a duration of 24-months;** and authorizes the CEO to take such other action as may be necessary to accomplish the intent of this vote.

BACKGROUND

The Water Resource Recovery Facility (WRRF) at the Great Lakes Water Authority (GLWA) is required to remove phosphorus (P) to meet effluent limits required in the plant's National Pollutant Discharge Elimination System (NPDES) permit. The primary method for removing P at the WRRF is by adding iron salts (ferric chloride) to the wastewater stream at each of the pump stations (PS-1 and PS-2) and then precipitating it out in the primary clarifiers. Pump stations PS-1 and PS-2 have independent ferric chloride storage and feed facilities to accommodate the different flows and wastewater chemical and biological characteristics experienced at each of the Pump Stations.

PS-2 ferric chloride system improvements are currently under construction. The new PS-1 ferric storage and feed equipment will be installed in the same location as the PS-2 ferric chloride storage and feed system and will be used to convey ferric to both the Oakwood and DRI/Jefferson Interceptors. The co-location of the PS-1 and PS-2 tanks will allow for optimization of the storage volume by taking advantage of excess or redundant capacity in the PS-2 tanks and utilize existing infrastructure on site thereby reducing capital cost and long-term facility O&M costs.

The WRRF solids handling process includes two sets of gravity thickeners (GT) that serve to thicken primary and secondary sludge prior to dewatering and incineration or drying at the Biosolids Dryer Facility, prior to hauling off-site. Complex A GTs receive settled sludge from the primary clarifiers. Complex B GTs receive waste activated sludge from the secondary clarifiers.

The thickened waste activated sludge (TWAS) is conveyed through the 16-inch pipeline (SCB-30), where it is blended in-line with thickened primary sludge prior to storage in the Sludge Storage Tanks (SST) 1-6. The SCB-30 force main is approximately 1,700-feet long and carries up to 2,400 gallons per minute of TWAS flow. This pipeline was constructed in the early 1970's and has no redundancy, bypass connections, or cleanouts and operates on a constant basis.

JUSTIFICATION

The Ferric Chloride Systems at PS-1, which include chemical storage tanks, secondary containment, valves, and piping have exceeded their useful life and are in need of rehabilitation. Three of the four existing PS-1 storage tanks are out of service due to tank condition resulting in leaky storage tanks. Alternatives for PS-1 ferric system were evaluated, and the selected option as designed, was found to be the most cost-effective approach. Additionally, these storge tanks were constructed above PS-1 grit tanks limiting tank access to perform inspection and maintenance. The Complex B sludge lines are clogged due to vivianite (buildup of crystalized material) and need cleaning/rehabilitation/replacement. The buildup of vivianite restricts the flow within the piping network beyond the pumping capacity, limiting our operational demand for conveyance. The scope also includes the configuration of existing process piping to receive temporary bypass of the (SCB-30) line, to facilitate cleaning and repairs while maintaining operations. The project will improve the reliability of the ferric chloride feed system at PS-1 and provide for an efficient and unrestricted operation of the sludge conveyance between Complex A and Complex B.

FINANCIAL PLAN IMPACT

Summary: Sufficient funds are provided in the financial plan for this project.

Funding Source: Sewer Construction Fund

Cost Center: Wastewater

Expense Type: Construction (5421-892211.000-616900-211008)

Estimated Cost by Year and Related Estimating Variance: See table below.

Fiscal Year	
FY 2021 Plan	$2,829,000.00
FY 2022 Plan	4,916,000.00
FY 2023 Plan	889,000.00
Financial Plan Estimate	8,634,000.00
Proposed Contract Award	9,839,000.00
Negative Estimate Variance	($1,205,000.00)

This negative estimating variance to be funded from Sewer Construction Reserve Funds.

SAVINGS, COST OPTIMIZATION, AND REVENUE ENHANCEMENT IMPACT

This contract for WRRF Rehabilitation of Ferric Chloride Feed System in PS-1 and Complex B Sludge Lines incorporated a right sizing strategy that provided the following construction cost savings:

1. Consolidating PS1 and PS2 Feed and Storage Systems results in an estimated $460,000 savings
2. Incorporating bypass and cleaning provisions on the existing TWAS pipeline compared to constructing a new parallel pipeline results in an estimated $1,400,000 savings

Additionally, due to the lower amount of equipment installed; we anticipate a cost avoidance of an additional $1,700,000 over the 20-year anticipated useful life.

COMMITTEE REVIEW

This item was presented to the Operations and Resources Committee at its meeting on March 10, 2021. The Operations and Resources Committee unanimously recommended that the GLWA Board

adopt the resolution as presented.

SHARED SERVICES IMPACT

This item does not impact the shared services agreement between GLWA and DWSD.