DATE: September 28, 2021

TO: Mayor and City Council

FROM: Director of Public Works

SUBJECT Adopt a Resolution Authorizing the City Manager to Amend the Professional Services Agreement with Carollo Engineers, Inc., to Increase the Contract Amount by $61,849 for a Not-to-Exceed Amount of $1,132,877 to Provide Additional Construction Support Services for the Water Pollution Control Facility Headworks Bar Screens Project

RECOMMENDATION

That Council adopts a resolution (Attachment II) authorizing the City Manager to amend the professional services agreement (PSA) with Carollo Engineers, Inc., to increase the contract amount by $61,849 for a not-to-exceed amount of $1,132,877 to provide additional construction support services for the Water Pollution Control Facility Headworks Bar Screens Project.

SUMMARY

The Water Pollution Control Facility (WPCF) collects and treats wastewater from the City's residents and businesses. The WPCF headworks facility is the first treatment process in the plant and is responsible for removing large debris that can harm downstream pumps and other equipment. Currently, the headworks relies on grinders to protect downstream equipment. This project includes installing new bar screens to replace the grinders. Bar screens are much more effective at removing increasingly popular disposable wipes and are typically employed throughout the industry in headworks designs. This project also includes: screenings conveyance; screenings washer compactor to consolidate the screenings for disposal; ventilation system improvements; lighting improvements; a new ferric chloride storage and feed facility; and odor control facilities. Construction of the Headworks Bar Screens Project is well underway with project completion scheduled for January 2022.

On April 9, 2019, the City entered into a PSA with Carollo Engineers, Inc. (Carollo) to provide engineering, design, and construction support services for the Headworks Bar Screens Project. Staff is requesting to amend the contract not-to-exceed amount of $1,071,028 by $61,849 to include additional items in the scope of services and to address unforeseen construction conditions, for a new not-to-exceed amount of $1,132,877.

BACKGROUND

The WPCF treats an annual average flow of twelve million gallons per day (MGD) prior to discharging into the deep waters of the San Francisco Bay. All flows coming to the WPCF passes through the Headworks facility where it is conveyed through influent channels that contain grinders designed to break down large debris prior to pumping. The Headworks was constructed in 1996 and is essential to plant operations. In 2016, a project was completed that rehabilitated interior concrete surfaces that had deteriorated from corrosion.

In 2018, Council authorized a professional services agreement with Black and Veatch to perform the WPCF Phase II Facilities Plan that serves as a comprehensive planning document to identify WPCF infrastructure needs for the next twenty-five years. A headworks evaluation was performed as part of the planning effort. The evaluation recommended replacing the existing grinders with new bar screens to address operational issues at the WPCF.

The project includes the following components:

Bar Screens: The recommendation from the WPCF Phase II Facilities Plan is to replace the plant's existing grinders with new bar screens and related equipment (screenings conveyance, and screenings washer/compactor). The grinders are designed to protect influent pumps from large debris; however, they do little to prevent rags and other stringy material from passing through to downstream processes. This problem has been further exacerbated by the proliferation of "disposable" wipes that are flushed down toilets and end up at the WPCF. These wipes cause significant problems because they do not break down in the collection system like toilet paper, creating solids that build up in tanks and piping systems. The impact of disposable wipes to the wastewater industry is well documented and is reflected in the significant mechanical hardships and maintenance time at the WPCF in downstream processes. In addition, rags and disposable wipes end up in the plant's digesters reducing the space available for organic matter which produces beneficial bio-gas, as well as causing the units to be taken out of service more frequently for cleaning. Bar screens are more efficient at removing rags and wipes from the flow stream, and are employed at most water pollution control facilities.

Screenings Conveyance and Screenings Washer Compactor: The design includes a conveyor and a screenings washer compactor located on the upper level of the Headworks. The bar screens capture rags and other debris from the influent flow stream and lift the debris with rake arms to the upper level where the screenings are then discharged onto a conveyor. The conveyor sends the screenings to a washer compactor where the solids are compressed, washed of organics, and discharged to a bin for hauling and disposal. The screenings are washed to reduce the organic component of the material that causes odor prior to disposal.

Motorized Inlet and Outlet Gates for Bar Screen Channels: The Headworks has three influent channels: two that will be equipped with bar screens and one with a manual bar rack that will be employed during extreme wet weather events or in the event of a bar screen being out of service for maintenance. Water level is monitored in the influent channels which control the number of screens in service. In the event of high level, the manual bar rack channel is placed

into service to prevent wastewater from inundating the lower level of the Headworks. Currently, the gates are manually operated and due to their size, opening and closing the gates requires significant effort and time. Electrically operated gates will greatly simplify the operations of the facility by allowing channels to be placed into service automatically based on water level in the channels.

Ferric Chloride Facility: The WPCF has a ferric chloride storage and feed facility located just south of the existing Headworks Building which is old and in need of upgrading. The chemical is used in the Headworks to reduce the concentration of hydrogen sulfide gas which is toxic to personnel and causes odors. An added benefit of hydrogen sulfide control is the reduction in sulfides in the digester gas resulting in longer media life in the iron sponge treatment vessels that treat the gas prior to use in the cogeneration engine. The design includes replacing the facility with a fully code compliant facility for storage of hazardous chemicals.

Ventilation System and Odor Control Improvements: The 2016 Headworks Rehabilitation Project upgraded the ventilation system in the lower level of the Headworks to draw foul air from the channels and to supply air directly to the lower level where most of the odors are generated. With the addition of bar screens and screenings handling/washing equipment, improvements are required to improve the air flow in the upper and lower levels, and increase exhaust air from the influent box to reduce odors inside the Headworks. In addition, the existing biofilter, which was installed in the original project in 1996 to reduce odors, has wood chip media that has degraded and is no longer functioning effectively. This type of odor control technology has a limited lifespan, typically ten to fifteen years. The project includes a new biofilter to replace the existing biofilter.

Bypass Pumping: The project will include extensive modifications to the influent channels to install new motorized gates and bar screens and requires that the flow be bypassed around the headworks. Bypassing flows requires installation of temporary pumping facilities to intercept the influent flows and direct it to downstream treatment processes.

In April 2019, Council authorized a PSA with Carollo to perform final design and engineering support services during construction for the Headworks Bar Screens Project. On April 28, 2020, Council approved the plans and specifications for the WPCF Headworks Bar Screens Project and bids were received on June 2, 2020. On June 23, 2020, Council approved Addendum No. 1 and Addendum No. 2 and awarded a contract to GSE Construction Company, Inc. for the Headworks Bar Screens Project.

DISCUSSION

Construction of the Headworks Bar Screens Project is well underway. The project completion date was originally scheduled for December 2021; however, due to supply chain issues and material shortages, the actual completion may extend by a few months into the first quarter of 2022. Additional engineering services are required to support the project in the startup and testing, and commissioning phases of the project. Engineering services funds originally budgeted for this phase have been expended for a variety of reasons, including material shortages for coatings and fiberglass reinforced ducting that required additional review time

to evaluate alternative materials, structural damage to an existing beam that required review of shoring and repair methods, and multiple submittal reviews over and above what was anticipated in the original scope. Due to the complexity of the project, additional start up and testing services may be needed to assist the City with commissioning the facility. Therefore, staff is requesting amending the PSA with Carollo by $61,849 for a new not-to-exceed amount of $1,132,877 for engineering support services.

ECONOMIC IMPACT

Replacing the grinders with bar screens is part of an effort to modernize and upgrade existing WPCF facilities. The project will reduce operations and maintenance costs associated with repairing grinders and cleaning digesters. The community will benefit from the project, through effective wastewater treatment that provides environmental efficient service to the community and protection of the San Francisco Bay. In addition, the construction project will create some local economic activities, including the hiring of local Hayward residents as required in the Community Workforce Agreement.

FISCAL IMPACT

The project included an allowance of $717,000 in administrative change orders or about 10% of the construction contract amount. As of the beginning of September 2021, only $93,641, or 13%, of the administrative change order budget has been expended. Staff do not anticipate using the entire administrative change order balance and therefore in light of potential savings in the construction contract, do not anticipate needing to appropriate additional funds to cover the additional support services. Therefore, there will be no impact to the Capital Improvement Program budget.

STRATEGIC ROADMAP

This agenda item supports the Strategic Roadmap of Improve Infrastructure.

SUSTAINABILITY FEATURES

This project will help the City maintain its ability to treat wastewater efficiently and adequately before discharging into San Francisco Bay.

PUBLIC CONTACT

All project work will be within the WPCF plant boundary and should have no impact on area businesses or the public at large; therefore, no public contact is necessary for this project.

NEXT STEPS

Following Council approval, the City Manager will execute a contract amendment to increase the contract amount with Carollo, by $61,849 for a not-to-exceed contract amount of $1,132,877 for additional engineering support services.

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Recommended by: Alex Ameri, Director of Public Works

Approved by:

Kelly McAdoo, City Manager