File #: 21-0509

REQUEST FOR CITY COUNCIL AND CORONA UTILITY AUTHORITY ACTION

DATE: 06/02/2021

TO: Honorable Mayor and City Council Members
Honorable President and Board Members

FROM: Department of Water and Power

SUBJECT:
Additional purchase of sodium hypochlorite for water and water reclamation treatment.

EXECUTIVE SUMMARY:

The Department of Water and Power uses sodium hypochlorite in water and water reclamation treatment processes. The existing purchase order for sodium hypochlorite will not be sufficient for treatment through June 30, 2021, because of unexpected increased usage. Staff requests a $324,808 change order through June 30, 2021, with Olin Chlor Alkali Products.

RECOMMENDED ACTION:

That the City Council:

a. City Council authorize the Purchasing Manager to issue a change order for $324,808 to the existing purchase order with Olin Chlor Alkali Products for sodium hypochlorite for water and water reclamation treatment for a total purchase order amount of $1,584,808.

b. Corona Utility Authority review, ratify, and to the extent necessary, direct the City Council to take the above actions.

BACKGROUND & HISTORY:

The Department of Water and Power (DWP) operates four water treatment plants and three water reclamation treatment facilities. Sodium hypochlorite 12.5% concentration is used in both water and water reclamation processes to achieve treatment required by the State Water Resources Control Board (SWRCB), Division of Drinking Water, and the Santa Ana Regional Water Quality Control Board (SARWQCB)/United States Environmental Protection Agency (EPA).

Water Reclamation Treatment

Sodium Hypochlorite is required at all times to meet all of the facilities' compliance points throughout DWP's water reclamation treatment process. Sodium hypochlorite is used to meet contact time requirements, achieve system residual, and disinfect pathogens. To meet SWRCB tertiary standards, DWP's treatment plants must meet a contact time of 450 milligrams per liter (mg/L) per 90 minutes. DWP facilities use chemical pumps controlled by the Supervisory Control and Data Acquisition system (SCADA) to dose the required sodium hypochlorite. The SCADA calculation is managed by staff to varying degrees and is established and overseen by the Chief Water Reclamation Operator and Lead Water Reclamation Operator. DWP operates three different water reclamation facilities, each with varying plant capacity and treatment processes. Water Reclamation Facility No. 1 (WRF-1) is the City's largest water reclamation facility. The WRF-1 demand for sodium hypochlorite is higher than other facilities because the staff uses sodium hypochlorite to chemically oxidize ammonia due to aeration basin design characteristics. DWP is modifying the aeration basins to improve aeration at the facility and reduce sodium hypochlorite consumption.

Water Treatment

Sodium hypochlorite is used in water treatment for disinfection and to achieve chlorine contact time. Lester and Sierra Del Oro (SDO) Treatment Plants use sodium hypochlorite for pre- and post-treatment disinfection. The influent source for both treatment plants is Colorado River water which is full-body contact. This requires pre-chlorination before the treatment process for the facility's health and to eliminate bacteria, viruses, parasites, giardia, and cryptosporidium, among others. Sodium hypochlorite is also used in post-treatment disinfection to achieve contact time through a chlorine contact basin (CCB). The chlorine contact time requirements are based on the City's Water Supply Permit issued by the SWRCB (formerly Department of Public Health, Division of Drinking Water). Sodium hypochlorite is used at the Well 11 site to treat groundwater before the water is blended into the distribution system. Sodium hypochlorite is used at the Temescal Desalter facility to achieve required disinfection.

ANALYSIS:

Staff has been monitoring DWP's usage and amount spent on sodium hypochlorite throughout Fiscal Year 2021. Sodium hypochlorite has been utilized at a higher rate this fiscal year than previous years for the reasons outlined below.

Water Reclamation Treatment

Due to inefficiencies in the nitrification process, an increased amount of sodium hypochlorite has been used to address high ammonia residuals in the effluent of WRF-1. The increased ammonia residual is a result of a combination of factors. Due to insufficient trucks available from DWP's contracted hauler to transport biosolids offsite, the biosolids digester inventory has remained stagnant. It has not allowed the movement of solids from the activated sludge system to the digesters. Over time, the microbiology and solids in the system have grown to exceed the current aeration capabilities of WRF-1A and WRF-1B. The WRF-1A aeration panels have reached the end of

their service life and are not functioning efficiently, which the City has a capital project planned that will address this issue. Coarse air is being generated rather than fine air diffusion. This is causing a significant reduction of oxygen transferability in the aeration basin. The system is not receiving the optimal amount of oxygen transfer required to convert ammonia into nitrite, nitrate, and nitrogen gas. Therefore, inefficient aeration and the overload of solids at the basin are causing a decline in nitrification performance. The excess ammonia is spreading throughout the system, entering the filter structure and CCB.

As a response to the excessive ammonia residual, an increase in sodium hypochlorite is needed. It takes seven parts of sodium hypochlorite to neutralize 1 part of ammonia. Ammonia concentrations are usually in the 3-5 mg/L range. Since April of 2021, ammonia concentrations have averaged around 15 mg/L. This has led to more than double the normal operating dose rates to minimize ammonia leaving the plant to receiving waters.

Water Treatment

DWP's water treatment facilities used more than anticipated sodium hypochlorite this fiscal year due to increased imported surface water from the Lester and SDO treatment plants. These two plants have produced 540 million gallons more than the previous year for comparative months. The increase in imported surface water resulted from a greater potable water demand and a decrease in well water production due to well rehabilitations. Water wells are offline and inactive when rehabilitations take place.

Due to the impacts above, staff has identified the need to add an additional $324,808 to the existing purchase order with Olin Chlor Alkali Products for sodium hypochlorite. The current purchase order with Olin Chlor Alkali Products was awarded based on competitive bids conducted in 2015. The Purchasing Division is currently bidding on these chemicals to issue new contracts starting July 1, 2021. Staff requests this change order request through June 30, 2021.

FINANCIAL IMPACT:
The current combined purchase order amount for sodium hypochlorite for the City's Water Reclamation and Water Treatment processes is $1,260,000, and $1,324,732.08 has been expended to date. The total purchase order amount after the proposed $324,808 increase would be $1,584,808. Funding for the recommended action is available in the Fiscal Year 2021 Water and Water Reclamation operating budget.

ENVIRONMENTAL ANALYSIS:
This action is exempt pursuant to Section 15061(b)(3) of the Guidelines for the California Environmental Quality Act (CEQA), which states that a project is exempt from CEQA if the activity is covered by the common sense exemption that CEQA applies only to projects that have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA. This action increases a purchase order for required chemicals for water and water reclamation treatment; there is no possibility that adopting this resolution will have a significant effect on the environment. Therefore, no environmental analysis is required.

PREPARED BY: KRISTIAN ALFELOR, DWP OPERATIONS MANAGER

REVIEWED BY: TOM MOODY, GENERAL MANAGER