

RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES

DATE: OCTOBER 28, 2019

ITEM NO: 11

SUBJECT: GAGE 46-1 WATER TREATMENT PLANT MODIFICATION PROJECT AND DEVELOPMENT OF LONG TERM WATER TREATMENT APPROACHES – WORK ORDER NO. 2008392 IN THE TOTAL AMOUNT \$850,000

ISSUES:

Approve Work Order No. 2008392 in the total amount of \$850,000 for design, construction, and construction contingency costs for the Gage 46-1 Water Treatment Plant Modification Project; and authorize staff to use the Consultant's Panel to seek a professional services agreement to investigate and develop long-term water treatment and operational approaches to reduce concentrations of chemical substances known as perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) for a not to exceed amount of \$150,000.

RECOMMENDATIONS:

That the Board of Public Utilities:

1. Approve Work Order No. 2008392 in the total amount of \$850,000 for design, construction, and construction contingency costs for the Gage 46-1 Water Treatment Plant Modification Project; and
2. Authorize staff to utilize the Consultant's Panel to seek a professional services agreement to investigate and develop a long-term water treatment and operational approach to reduce concentrations of chemical substances known as perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) for a not to exceed amount of \$150,000.

BACKGROUND:

Riverside Public Utilities (RPU) currently gets 100% of its water supply from local groundwater basins which are fed by precipitation from the San Bernardino Mountains and local foothills. As runoff percolates into the groundwater basin it gets filtered through the underlying gravels, sands and silts, acquiring beneficial minerals. Percolating water, however, can pick up contaminants as well. Natural trace contaminants include radionuclides, arsenic, and hexavalent chromium. Anthropogenic contaminants include industrial solvents such as perchloroethylene (PCE) and trichloroethylene (TCE); agriculturally related chemicals such as 1,2,3-trichloropropane (1,2,3-TCP), dibromochloropropane (DBCP), and nitrates; and emerging contaminants, which are a class of chemicals that have not been commonly monitored in the environment but have the potential to cause adverse human and/or ecological health effects and include perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS).

RPU is required to regularly sample its water to monitor the levels of these trace natural and anthropogenic contaminants to ensure that they do not exceed U.S. Environmental Protection Agency and California State Water Resources Control Board Division of Drinking Water (DDW)'s regulatory limits. To ensure

that contaminants do not exceed these regulatory limits, RPU directly treats some of its wells and blends all water sources at a central location before it enters the distribution system. Some of the treatment methods used by RPU include ion exchange (IX) which operates in a similar manner to a home water softener whereby one or more undesirable compounds are removed from the water by exchange with another non-objectionable substance; granular activated carbon (GAC) which is similar to a Brita™ water filter in which activated carbon is used to adsorb undesirable chemicals from the water; and blending in which high-quality water is mixed with lower quality water in calculated ratios to meet or exceed regulatory standards before delivery to customers.

On August 12, 2019, the Water Committee received and filed an update on the California Environmental Protection Agency's (EPA) action on chemical substances known as perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). These are man-made chemical substances for water and lipid resistance. Exposure to these chemicals occurs in the manufacturing and use of consumer products designed to be waterproof, stain-resistant, and/or nonstick. In addition, these chemicals are used in firefighting foam and in various industrial processes. Also named, "forever chemicals" due to their resistance to high temperatures and being broken down, these chemicals persist in the environment and can bioaccumulate in living organisms.

Earlier this year, the State signed a law requiring DDW regulators to order public water systems to expand monitoring and notification for per- and polyfluoroalkyl substances (PFAS) which include PFOS and PFOA; this law takes effect January 1, 2020. The reduced notification levels under this new law are 6.5 nanograms per liter (ng/l) or parts per trillion (ppt) for PFOS and 5.1 ng/L or ppt for PFOA.

Regulators are concerned with exposure of PFOS and PFOA through drinking water due to its tendency to accumulate in soil and groundwater. Groundwater contamination may be associated with a specific facility where these chemicals were manufactured or in areas where these chemicals were used as part of other products.

DISCUSSION:

RPU continues to test its wells and thus far, preliminary data shows detections of these compounds in 13 of 29 wells tested. The concentration of these chemicals, however, is below the California EPA's established notification and response levels at the City's point of compliance during high water demand periods (i.e. summer and spring). Although the concentrations of these chemicals are currently below notification levels, preliminary analysis of the current data projects an elevated potential for the blended concentrations of PFOS and PFOA to exceed the notification levels during the upcoming winter months. These anticipated exceedances are due to the lower water demands during the winter months and the lack of blending capacity from additional wells. If no corrective action is taken immediately, the concentrations of these chemicals could exceed notification levels and RPU would have to issue public notifications informing customers of the exceedance as part of the annual Consumer Confidence Reporting.

One approach currently being developed to avoid exceeding the public notification levels of these chemicals is to treat the flows produced from the Gage 56-1 well. This well has some of the highest concentrations of PFOS and PFOA and reducing these concentrations maintains the use of this important water source. Treatment of the Gage Well 56-1 flows would involve treatment through either Granular Activated Carbon (GAC) or Ion Exchange Resin (IX) vessels.

Currently there are two empty vessels at the nearby Gage 46-1 water treatment plant which are owned and operated by the Potentially Responsible Party (PRP) for treatment of perchlorate from the Gage 46-1 well. RPU has been in discussions with the PRP and they have agreed to allow RPU to utilize the two empty vessels for use in treating Gage 56-1 well flows for PFOS/PFOA. Supporting equipment, including a booster pump, pre-filter, valves and mechanical fittings, will need to be procured and installed to accommodate connecting the Gage 56-1 well for treatment. The design and specification of these appurtenant items are in progress and it is anticipated that these modifications could be completed as early

as spring 2020.

The treatment of the Gage 56-1 well will serve as a short-term interim solution to address low-demand winter flows until a long-term treatment option can be implemented over the next year. The estimated capital cost for the proposed modifications to the Gage 46-1 water treatment plant is \$700,000 as shown in the table below. The estimated professional services cost for the development of a long term-term treatment and operational approach is \$150,000.

The capital project expenditure breakdown is estimated as follows:

Capital Project Expenses Breakdown		
Work Type	Performed By:	Amount (\$)
Planning and Design	RPU Staff	\$55,000
Gage 56-1 Well Piping Modifications	RPU Water Field Forces	\$345,000
IX Resin	Resin Vendor	\$200,000
Construction Contingency		\$100,000
Professional Services		
Development of Long-Term Treatment and Operational Approach	Consultant from Consultants Panel	\$150,000
Work Order Total:		\$850,000
Reimbursements		None
Anticipated Start Date:		November 2019
Anticipated Duration:	2 months for Construction; 6 months for Treatment Approach	

The anticipated annual operation and maintenance costs associated with the proposed modifications to the Gage 46-1 water treatment plant are estimated as follows:

Annual Operating and Maintenance Expenses Breakdown		
Work Type	Performed By:	Amount (\$)
Sampling and Monitoring (Nov-April)	RPU Staff	\$8,000
Operations and Maintenance Costs	RPU Water Operations	\$35,000
IX Resin (Assume 3-year cycle)	Resin Vendor	\$67,000
Electrical Costs (Nov-April)	n/a	\$100,000
Estimated Annual Operational Costs:		\$210,000

The anticipated removal of PFOS and PFOA from the water system as a result of the proposed modifications to the Gage 46-1 water treatment plant are estimated at 1.3 and 0.8 ng/L respectively. This will provide Operations with a buffer of about 2.5 ng/L for both PFOS and PFOA from the notification levels.

Another option to address the anticipated increase in PFOS/PFOA is to rest the wells which show higher concentrations of these chemicals during the winter season reducing the overall blended concentration. The loss of production from these wells put offline would be made up by purchasing water from Western Municipal Water District through the City's interconnection at the Henry J. Mills Treatment Plant. Due to the significant cost that this option would incur for imported water purchases as well as an on-going monthly charge for utilizing this use of this intertie, which RPU would need to pay for the next five years, Staff does not recommend this option. The anticipated annual operations cost associated with purchasing imported water could range from \$1,600,000 to \$3,000,000.

The anticipated reduction of PFOS and PFOA in the water system as a result of purchasing imported are estimated at 1.2 ng/L for PFOS and 0.8 ng/L for PFOA. This would provide RPU with a buffer of about 2.5 ng/L for both PFOS and PFOA from the notification levels.

FISCAL IMPACT:

The estimated capital fiscal impact is \$850,000 for the construction of the modifications to treat Gage 56-1 Well flows for the winter 2019 season and to investigate and develop long-term water treatment and operational approaches to reduce concentrations of PFOS and PFOA. Sufficient funds are available in Public Utilities Water Facilities Rehabilitation Account No. 6230000-470803.

Sufficient funds are available in the Public Utilities Water-Production and Operations budget for estimated on-going annual Operating and Maintenance costs of \$210,000 (6200000-4210000 Professional Services, 6200000-422200 Electric, and 6200000-422924 Production Costs Accounts).

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Attachment: Presentation