STATE WATER RESOURCES CONTROL BOARD
BOARD MEETING SESSION – DIVISION OF FINANCIAL ASSISTANCE
JUNE 16, 2015

ITEM 3

SUBJECT

CONSIDERATION OF A PROPOSED RESOLUTION TO ALLOCATE UP TO $3,000,000 FROM THE CLEANUP AND ABATEMENT ACCOUNT (CAA) TO THE WEST VALLEY WATER DISTRICT (DISTRICT) FOR A FIXED-BED BIOREACTOR WELLHEAD TREATMENT SYSTEM FOR PERCHLORATE IN THE RIALTO GROUNDWATER MANAGEMENT ZONE (PROJECT)

DISCUSSION

The District is requesting $3,000,000 from the CAA for the construction of a fixed-bed bioreactor (FXB) to determine the efficacy of using a two-stage biological treatment to remove perchlorate and nitrate from groundwater to produce water that meets all drinking water standards. The system would run in parallel with an existing fluidized bed bioreactor (FBR) and increase treatment capacity.

A number of drinking water supply wells in the Rialto Groundwater Management Zone operated by the City of Rialto and the District are contaminated by perchlorate and other contaminants. The source of much of the contamination impacting drinking water wells is a site located over the northern portion of the Rialto-Colton Groundwater Basin (which serves approximately 500,000 people in Southern California), once known as the “Rialto Ammunition Storage Point” or “BF Goodrich” and recently renamed the “Rockets, Fireworks and Flares Site.” The former military base consists of two main parts, the former bunker complex and the 160-acre site. At these sites, the United States Army, defense contractors, and fireworks manufacturers utilized perchlorate salts and/or solvents in their manufacturing and materials handling operations, resulting in groundwater contamination. In 2009, the United States Environmental Protection Agency (USEPA) added the site to the National Priorities List (NPL). Numerous Potentially Responsible Parties (PRPs) were identified, and from 2012 to 2014, the U.S. EPA reached agreements with most of these PRPs.

Groundwater cleanup is underway through the USEPA Superfund Process and final remedies are being designed and installed in portions of the Rialto Groundwater Basin. The wells associated with the Project are in the Mid-Basin Operable Unit of the Superfund site. The settling parties are currently in the remedial investigation/feasibility study phase and likely several years from a record of decision that would affect the two impacted wells to be treated by the Project.

Previous funding from the CAA, California Department of Public Health, and Department of Defense, in combination with other grants (totaling approximately $16.8 million), has been utilized for the construction and operation of the combined wellhead treatment system for two of the impacted wells (Rialto No. 6 and WVWD No. 11). The treatment system utilizes a FBR for biological treatment of perchlorate and nitrate of up to 2,000 gallons per minute of water from the two wells. The two wells are not currently used to supply drinking water. Biological treatment systems, such as the FBR, convert perchlorate to chloride and nitrate to nitrogen gas,

thereby eliminating these contaminants from the environment, without producing a concentrated waste stream for disposal.

The FBR wellhead treatment system has been operational since 2013. The system is currently going through the permitting process with the Division of Drinking Water and is not currently active. The FBR system is expected to be permitted by the fall of 2015. During pilot testing, the FBR system treated water with perchlorate influent concentrations as high as 400 µg/L of perchlorate (maximum contaminant level = 6 µg/L) and 20 mg/L of nitrate as nitrate (maximum contaminant level = 45 mg/L) to non-detectable levels. Since the FBR system had not been permitted, treated water was discharged to a flood control basin.

The Department of Defense's Environmental Security Technology Certification Program (ESTCP) recently developed and pilot-tested another biological treatment system - a FXB. The results from the pilot studies of the FXB indicate that the FXB system may be even more efficient than the FBR system for treating perchlorate and nitrate. The District is requesting $3 million in funding from CAA, which will be used with $3.4 million from the Department of Defense's ESTCP to construct and operate a full-scale FXB parallel to the existing FBR system. CAA funds would be used for the permitting, design, construction, and demonstration testing of the FXB reactor. ESTCP's funding of $3.4 million covers the cost of the FXB reactor equipment. The FXB system would use the same input stream as the FBR system.

The FXB system can treat between 1,500-1,800 gallons per minute. The two wells have sufficient capacity to allow both systems to run at capacity. This setup would allow for a side-by-side comparison of the two systems. The information obtained during the operation of the two systems will provide a performance record that could be utilized to evaluate their efficiencies and potentially facilitate the use of these systems in other parts of California with the same drinking water contaminants.

The requested funds from CAA would be used to: 1) amend existing California Environmental Quality Act (CEQA) documentation and obtain required permits, 2) design the FXB system in parallel with the existing FBR system at the District's treatment facility, 3) construct the FXB system, and 4) demonstrate the performance of the FXB system.

The objective of this work is to demonstrate that the FXB system is a cost-effective, sustainable solution for removing perchlorate and nitrate from groundwater to produce drinking water that meets all drinking water standards. Since this would be the first-ever full-scale FXB biological perchlorate and nitrate treatment process applied to drinking water, it would provide a critical step toward wide-scale application of this process and help address multiple groundwater treatment challenges in California and across the United States.

The State Water Resources Control Board (State Water Board) established Program Preferences for CAA funds based on statewide priorities and Strategic Goals outlined in the Strategic Plan Update 2008-2012. The Project meets the following CAA program preferences:

- Preference # 2: Projects that address Disadvantaged Communities Environmental Justice infrastructure needs.

- Preference #5: Cleanup and/or abatement of pollution in high-use groundwater basins. (Strategic Goal 2)

- Preference # 8: Completion of a Study/Plan and/or monitoring addressing significant statewide water quality problems.

Overall, the Project is consistent with the goals outlined in the State Water Board's Strategic Plan Update 2008-2012.

POLICY ISSUE

Should the State Water Board:

1. Approve up to $3,000,000 from the CAA to fund the Project?

2. Make the funds available until September 30, 2018, with any unexpended funds reverting to the CAA as of December 31, 2018, unless the Deputy Director or Assistant Deputy Director of the Division of Financial Assistance authorizes an extension?

FISCAL IMPACT

Prior to the signing of the emergency drought relief package, the uncommitted CAA balance at the end of Fiscal Year 14-15 was projected to be about $14 million. The projected uncommitted CAA balance equals projected revenue plus cash on hand minus expenditures and funding commitments, including funds set aside for approved projects. Funds committed to a project are generally expended over several years, so a commitment to fund a project does not result in the actual cash balance in the CAA being reduced until an expenditure on the project occurs – i.e., the State Water Board pays an approved invoice.

As a result of the recently signed emergency drought relief package, specifically Assembly Bill (AB) 91 (adding Items 3940-002-0679, 3940-101-0679 and 3940-102-0679 to Section 2.00 of the Budget Act of 2014), $19.9 million has been appropriated from the CAA to provide interim emergency drinking water to disadvantaged communities with contaminated water supplies and to address drought-related drinking water emergencies or threatened emergencies.

With $19.9 million allocated for emergency drinking water purposes, the end of Fiscal Year 14-15 projection for the CAA is that there will be $5 million less in the CAA than has been committed to projects. This figure increases to $8 million if the Project is approved.

Since most funds committed to projects are expended over several fiscal years and additional revenue comes into the CAA each year, there should be sufficient cash on hand to pay for actual expenditures for current CAA project commitments, this Project, and emergency drinking water projects. However, if sufficient funds are not available to pay for project commitments, AB 91 includes a provision that allows the State Water Board to borrow sufficient funds for cash purposes from its other special funds. Borrowing such funds requires the approval and order of the Director of Finance.

The West Valley Water District provided information indicating the available DOD funds would be primarily used in Fiscal Year 15-16. Staff will work with the West Valley Water District to ensure the expenditure plan for this project does not impact the State Water Board's ability to fund projects that address drinking water emergencies.

REGIONAL WATER BOARD IMPACT

Yes. Santa Ana Regional Water Quality Control Board has passed Resolution R8-2014-0045 supporting the project.

STAFF RECOMMENDATION

Staff recommends that the State Water Board adopt the proposed Resolution.

State Water Board action on this item will assist the Water Boards in reaching Goal 2 of the Strategic Plan Update: 2008-2012, to improve and protect groundwater quality in high-use basins by 2030. It will also assist the Water Boards in reaching Goal 4 of the Strategic Plan Update: 2008-2012, to comprehensively address water quality protection and restoration, and the relationship between water supply and water quality, and describe the connections between water quality, water quantity, and climate change, throughout California's water planning processes.

D R A F T

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 2015-

ALLOCATE UP TO $3,000,000 FROM THE CLEANUP AND ABATEMENT ACCOUNT (CAA) TO THE WEST VALLEY WATER DISTRICT (DISTRICT) FOR A FIXED-BED BIOREACTOR WELLHEAD TREATMENT SYSTEM FOR PERCHLORATE IN THE RIALTO GROUNDWATER MANAGEMENT ZONE (PROJECT)

WHEREAS:

1. The District is requesting $3,000,000 from the CAA to fund the construction and operation of a fixed-bed bioreactor (FXB) demonstration project to clean up perchlorate wastes from contaminated drinking water from the Rialto Groundwater Management Zone over a three-year period;

2. The Rialto Groundwater Management Zone is beneficially used for municipal and domestic supply, in addition to other uses. A significant water quality problem currently exists in the Rialto Groundwater Management Zone, due to volatile organic compounds and perchlorate pollution. The perchlorate pollution has already impacted a number of municipal supply wells that are within the jurisdiction of the District;

3. The State Water Resources Control Board (State Water Board) designated the Rialto area as an environmental justice community;

4. The United States Environmental Protection Agency is addressing the plume of volatile organic compounds and perchlorate in the geographic area defined as Operable Unit 1 (OU1) in the Rialto Groundwater Management Zone, through an Interim Remedy for regional treatment of the plume under the National Contingency Plan;

5. Funding from the State Water Board, California Department of Public Health, Department of Defense, in combination with other grants, has been utilized for the construction and operation of the combined wellhead treatment system for two of the impacted wells (Rialto No. 6 and WVWD No. 11). The treatment system utilizes a fluidized bed bioreactor (FBR) for biological treatment of perchlorate and nitrate;

6. The Rialto FBR wellhead treatment system has been in operation since 2013 and, when permitted, will help meet local drinking water supply needs with local groundwater sources;

7. Recently, the Department of Defense's Environmental Security Technology Certification Program developed and pilot-tested an FXB system. The results from the pilot studies of the FXB system indicate that the FXB system may be even more efficient than the FBR system for treating perchlorate;

8. Currently there are no full-scale FXB systems in operation for treating drinking water. The Department of Defense has awarded a $3.4 million contract to Carollo Engineers to construct and operate a FXB system parallel to the FBR system. This would be the first full-scale FXB treatment system, and it would provide critical data to compare and evaluate the two systems for perchlorate treatment;

9. The Department of Defense contract would only pay for the FXB and would not cover the cost of permitting, design, construction, installation and source water. The District is requesting a grant of $3.0 million from the CAA to cover the cost of permitting, design, construction, installation and source water for the FXB system;

10. The information obtained during the operation and monitoring of the FBR and FXB will provide a performance record that could be utilized to facilitate the use of similar technologies throughout California and the United States;

11. The District has indicated that the proposed FXB construction project is shovel-ready, and could be in operation parallel to the existing FBR system in 2018; and

12. The requested allocation is consistent with the purposes of Water Code (WC) section 13442. WC section 13442 provides that the State Water Board may approve the payment of moneys from the CAA to a public agency to assist it in cleaning up a waste and abating the effects of a waste on waters of the state.

THEREFORE BE IT RESOLVED THAT:

The State Water Board:

1. Approves up to $3,000,000 from the CAA to fund the Project.

2. Makes the funds available until September 30, 2018, with any unexpended funds reverting to the CAA as of December 31, 2018, unless the Deputy Director or Assistant Deputy Director of the Division of Financial Assistance authorizes an extension.

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Board held on June 16, 2015.

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Jeanine Townsend
Clerk to the Board