



- Board of Directors
Engineering and Operations Committee

1/8/2013 Board Meeting

7-3

Subject

Appropriate \$900,000; and authorize final design of sodium hypochlorite and sulfuric acid facilities at the F. E. Weymouth Water Treatment Plant (Approp. 15392)

Executive Summary

This action authorizes final design of sodium hypochlorite and sulfuric acid storage and feed facilities at the F. E. Weymouth Water Treatment Plant. These chemical systems are needed for integration of the upcoming ozonation system into the Weymouth plant's treatment process. Construction of these chemical systems needs to be completed when the ozonation process commences operation.

Timing and Urgency

In June 2012, Metropolitan's Board awarded a contract to construct 260 million gallons per day (mgd) of ozonation capacity at the Weymouth plant. This action authorizes final design of two associated chemical systems: (1) Sodium hypochlorite, which controls the build-up of filter biomass; and (2) Sulfuric acid, which enhances the coagulation process.

Preliminary design of these chemical systems has been coordinated with the future enhanced bromate control system. At the Weymouth plant, addition of the enhanced bromate control system will eliminate the need for a new caustic soda facility and will reduce the required size of the sulfuric acid storage facility. Final design of the new sodium hypochlorite and sulfuric acid facilities needs to proceed at this time so that these facilities are operational when the ozonation process commences operation in early 2016.

This project has been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria, and is categorized as a Water Quality project. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2012/13.

Details

Background

The Weymouth plant was placed into service in 1941 with an initial capacity of 100 mgd, and was expanded twice to its current capacity of 520 mgd. The plant delivers a blend of waters from the Colorado River Aqueduct and State Water Project to Metropolitan's Central Pool portion of the distribution system, and to a surrounding area served exclusively by the Weymouth plant. The plant is located within the city of La Verne.

The addition of ozone as the primary disinfectant at Metropolitan's treatment plants will substantially lower disinfection by-product (DBP) levels for compliance with the U.S. Environmental Protection Agency's Disinfectants/DBP Rule, and is consistent with board policy to provide ozonation at all five plants. In June 2012, Metropolitan's Board awarded a contract to construct 260 mgd of ozonation capacity at the Weymouth plant. The sodium hypochlorite and sulfuric acid facilities included in this action are integral and planned components of the Oxidation Retrofit Program (ORP).

At the Weymouth plant, chlorine is currently added upstream of the filters to provide disinfection. Once the ozonation system is in operation, chlorine will instead be added downstream of the filters, allowing the filters to become biologically active. Chlorination of the filter backwash water will then be needed to control filter biomass build-up and to prevent excessive pressure drop through the filters. To accomplish this, a new sodium hypochlorite facility located near the washwater storage tanks is needed.

Sulfuric acid is presently used at the Weymouth plant to lower the pH of the incoming untreated water, which enhances coagulation. After the 260-mgd ozonation system is operational, sulfuric acid will continue to be added to enhance coagulation when the levels of organic matter in the source water are high, and when the plant relies upon chlorine as the primary disinfectant at flow rates above 260 mgd. The addition of sulfuric acid at the inlet to the ozone contactors was originally planned for control of bromate, which is a regulated DBP. This strategy would have also required the addition of caustic soda following the ozone contactors in order to minimize corrosion of downstream facilities. Recently, staff identified a more cost-effective strategy to control bromate formation involving the application of chloramines instead of pH adjustment. Final design of this new bromate control system will be the subject of an upcoming board action. As a result of this new strategy, the sulfuric acid facility at the Weymouth plant will require significantly less storage capacity than originally envisioned, and a planned caustic soda facility on the south side of the Weymouth plant will be eliminated.

In September 2011, Metropolitan's Board authorized preliminary design of the sulfuric acid and sodium hypochlorite facilities. Preliminary design has been completed, and staff recommends proceeding with final design at this time.

Weymouth Sodium Hypochlorite and Sulfuric Acid Facilities – Final Design Phase (\$900,000)

The planned sodium hypochlorite storage and feed facility will consist of two storage tanks, a containment area with roof, an unloading facility, chemical feed pumps, instrumentation and controls, and electrical components. The sodium hypochlorite facility will be located on the north side of the Weymouth plant where the original, decommissioned washwater reclamation plant is located. The planned sulfuric acid storage and feed facility will consist of three storage tanks, a containment area with roof, an unloading facility, chemical feed pumps, instrumentation and controls, and electrical components. The acid facility will be located on the southeast portion of the Weymouth site near the acid injection location.

Planned final design phase activities include detailed engineering design, preparation of drawings and specifications, receipt of bids, development of a construction cost estimate, and all other activities in advance of award of a construction contract. All work will be performed by Metropolitan staff.

This action appropriates \$900,000 and authorizes final design phase activities for sodium hypochlorite and sulfuric acid facilities at the Weymouth plant. The requested funds include \$658,000 for final design; \$123,000 for bidding, permitting, and project management, and \$119,000 for remaining budget. The final design cost as a percentage of the estimated construction cost is approximately 12 percent. Engineering Services' goal for design of projects with construction cost greater than \$3 million is 9 to 12 percent. The construction cost for this project is anticipated to range from \$5.5 million to \$6.3 million. Staff will return to the Board at a later date for award of the construction contract.

This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2012/13 capital expenditure plan.

This work is included within capital Appropriation No. 15392, the Weymouth Oxidation Retrofit Program, which was initiated in fiscal year 2001/02. Other projects authorized under Appropriation No. 15392 include the Weymouth Inlet Conduit Relocation, ORP Switchgear Building, Ozone Equipment Procurement, and Main Ozonation Facilities Construction. With the present action, the total funding for Appropriation No. 15392 will increase from \$215,112,000 to \$216,012,000. See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map.

Project Milestone

January 2014 – Completion of final design of the Weymouth sodium hypochlorite and sulfuric acid facilities

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The environmental effects of the Weymouth Sodium Hypochlorite and Sulfuric Acid Facilities Project (Project) were evaluated in the F. E. Weymouth Filtration Plant Ozonation Facilities and Site Improvements Program Final Environmental Impact Report (Final EIR), which was certified by the Board on April 12, 2005. The Board also approved the Findings of Fact (Findings), the Statement of Overriding Considerations (SOC), the Mitigation Monitoring and Reporting Program (MMRP), and the Project itself. The current board action is solely based on appropriate funding for final design and not on any changes to the approved Project. Hence, the previous environmental documentation acted on by the Board in conjunction with the proposed action fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the Board to act on the proposed action.

The CEQA determination is: Determine that the proposed action has been previously addressed in the certified 2005 Final EIR, Findings, SOC, and MMRP, and that no further environmental analysis or documentation is required.

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determination and

- a. Appropriate \$900,000; and
- b. Authorize final design of sodium hypochlorite and sulfuric acid facilities at the Weymouth plant.

Fiscal Impact: \$900,000 in capital funds under Approp. 15392

Business Analysis: Construction of these chemical facilities is needed for the Weymouth ozonation process to comply with the D/DBP Rule. Completion of the Weymouth ORP will remove blend restrictions and enhance the plant's ability to treat water with variable source water quality.

Option #2

Do not proceed with the Weymouth sodium hypochlorite and sulfuric acid facilities at this time.

Fiscal Impact: None

Business Analysis: This option would delay the commencement of ozonation at the Weymouth plant. The Weymouth plant would continue to use chlorine as the primary disinfectant.

Staff Recommendation

Option #1

	12/19/2012
Gordon Johnson Manager/Chief Engineer Engineering Services	<i>Date</i>
	12/20/2012
Jeffrey Kightlinger General Manager	<i>Date</i>

Attachment 1 – Financial Statement

Attachment 2 – Location Map

Ref# es12621245

Financial Statement for Weymouth Oxidation Retrofit Program

A breakdown of Board Action No. 11 for Appropriation No. 15392 for the Weymouth Sodium Hypochlorite and Sulfuric Acid Facilities¹ is as follows:

	Previous Total Appropriated Amount (June 2012)	Current Board Action No. 11 (Jan. 2013)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 1,464,000	\$ -	\$ 1,464,000
Final Design	16,699,000	658,000	17,357,000
Owner Costs (Program mgmt, bidding, & permitting)	8,817,400	121,000	8,938,400
Submittals Review & Record Drwgs	7,072,600	-	7,072,600
Construction Inspection & Support	17,899,724	-	17,899,724
Metropolitan Force Construction	7,754,000	-	7,754,000
Materials & Supplies	9,437,650	-	9,437,650
Incidental Expenses	436,000	2,000	438,000
Professional/Technical Services	17,452,432	-	17,452,432
Contracts	116,822,189	-	116,822,189
Equipment Use	98,000	-	98,000
Remaining Budget	11,159,005 ²	119,000	11,278,005
Total	\$ 215,112,000	\$ 900,000	\$ 216,012,000

Funding Request

Program Name:	Weymouth Oxidation Retrofit Program		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15392	Board Action No.:	11
Requested Amount:	\$ 900,000	Capital Program No.:	15392-W
Total Appropriated Amount:	\$ 216,012,000	Capital Program Page No.:	341
Total Program Estimate:	\$ 335,301,000	Program Goal:	WQ/Compliance

¹ The total amount expended to date on the Weymouth Sodium Hypochlorite and Sulfuric Acid Facilities is approximately \$654,000.

² Includes previous reallocation from Remaining Budget for the following projects: (1) \$819,000 for change orders and construction management for the Weymouth inlet conduit relocation; and (2) \$518,000 for permitting and final design modifications for the Weymouth ORP.

F.E. Weymouth Water Treatment Plant

