



● **Board of Directors**  
***Engineering and Operations Committee***

9/14/2010 Board Meeting

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**7-3**

**Subject**

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Appropriate \$345,000; and authorize final design of a chemical trench system at the Weymouth plant (Approp. 15440)

**Description**

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This action authorizes final design for installation of a chemical piping trench at the F. E. Weymouth Water Treatment Plant. The concrete trench will replace existing secondary containment piping that is cracked and leaking.

**Timing and Urgency**

A new chemical trench system is needed to detect and contain potential leakage of chemicals that are injected into the Weymouth plant's filter outlet channel to provide final disinfection and pH control. Staff recommends proceeding with final design of the Weymouth Filter Outlet Chemical Trench System at this time to comply with safety and environmental regulations, and to reduce the risk that a chemical leak may go undetected.

This project has been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria and is categorized as an Infrastructure Reliability project. This project is included within Metropolitan's CIP for fiscal year 2010/11.

**Background**

The Weymouth plant was placed into service in 1941 with an initial capacity of 100 million gallons per day (mgd), and was expanded twice to its current capacity of 520 mgd. The plant delivers a blend of waters from the Colorado River and State Water Project to Metropolitan's Central Pool portion of the distribution system.

Several chemicals (chlorine, ammonia and sodium hydroxide) are injected into the plant's filter outlet channel to provide final disinfection and pH control. Two 2-inch-diameter sodium hydroxide steel pipes and two 1-inch-diameter ammonia steel pipes currently extend 850 feet from the chemical tank farm to the outlet channel injection points. Each pipe is encased in a 4-inch-diameter PVC containment pipe with leak detection sensors that issue alarms when moisture is sensed. Approximately 350 feet of the pipelines are buried, while the remaining 500 feet are supported above-grade adjacent to the treatment basins and Moreno Avenue.

Over time, the existing PVC containment piping in the underground sections of the filter outlet chemical containment system has developed cracks. When rainwater infiltrates the containment system, the leak detection sensors issue false alarms. Maintenance personnel must then drain the pipe and test the liquid captured in the containment system to determine whether the liquid is rainwater or a chemical leak. Since the PVC containment piping is encased in concrete, the cracked portions cannot be inspected or repaired easily.

Similar cracks have occurred in the aboveground PVC containment piping as a result of ultraviolet exposure. The loss of ductility of the PVC containment pipe, and the difference in thermal expansion properties of the PVC and the steel pipes, has caused frequent failures in the PVC piping, requiring replacement of aboveground pipe sections. Replacing the existing system with the new concrete trench will reduce false alarms, reduce response time, and lower operating and maintenance costs.

**Filter Outlet Chemical Trench System – Final Design Phase (\$345,000)**

An intact chemical containment system is needed to comply with safety and environmental regulations. In March 2009, Metropolitan's Board authorized preliminary design of the Weymouth Filter Outlet Chemical Trench System to minimize maintenance, extend the service life, and afford better protection by detecting and containing any future leaks properly.

Preliminary design is now complete. Based on a field survey of the existing underground utilities, staff recommends installing new chemical feed pipes, routed within a new underground concrete trench of variable cross section. The trench will serve as secondary containment for the chemical feed pipes inside, and will have adequate leak detection and proper accessibility for maintenance of piping and leak sensors. Twelve chemical feed pipes ranging in diameter from 1 inch to 4 inches will be routed within the 850-foot-long trench. Staff recommends proceeding with final design at this time.

This action appropriates \$345,000 and authorizes final design phase activities for the Weymouth Filter Outlet Chemical Trench System. These activities will include extensive potholing to determine the depth of underground utilities; design of relocation of substructures; design of temporary chemical feed systems to ensure that all plant processes remain in operation during construction; hazardous material sampling; preparation of drawings and specifications; development of a construction cost estimate; receipt of competitive bids; and all other activities in advance of award of a construction contract. All final design activities will be performed by Metropolitan staff. Requested funds include \$220,000 for final design; \$65,000 for receipt of bids, permitting, and project management; and \$60,000 for remaining budget. The anticipated cost of final design is approximately 14.6 percent of the estimated total construction cost. Engineering Services' goal for design of projects with construction cost less than \$3 million is 9 to 15 percent. The construction cost for this project is anticipated to range from \$1.5 million to \$1.7 million.

This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds have been included in the fiscal year 2010/11 capital budget. See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map.

This project is consistent with Metropolitan's goals for sustainability by enhancing the reliability of the Weymouth plant, in order to maintain reliable water deliveries in the future.

***Project Milestone***

May 2011 – Completion of final design of Weymouth Filter Outlet Chemical Trench System

**Policy**

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Metropolitan Water District Administrative Code Section 5108: Appropriations

**California Environmental Quality Act (CEQA)**

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CEQA determination for Option #1:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action involves the funding, design, and minor alterations, reconstruction or replacement of existing public facilities along with the construction of minor appurtenant structures with negligible or no expansion of use and no possibility of significantly impacting the physical environment. Accordingly, the proposed action qualifies under Class 1, Class 2, and Class 3 Categorical Exemptions (Sections 15301, 15302, and 15303 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under three Categorical Exemptions (Class 1, Section 15301; Class 2, Section 15302; and Class 3, Section 15303 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

**Board Options**

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**Option #1**

Adopt the CEQA determination and

- a. Appropriate \$345,000; and
- b. Authorize final design of the Weymouth Filter Outlet Chemical Trench System.

**Fiscal Impact:** \$345,000 of budgeted funds under Approp. 15440

**Business Analysis:** This option will enhance reliability, enable the Weymouth plant to comply with safety and environmental regulations, and lower maintenance costs.

**Option #2**

Do not authorize final design of the Weymouth Filter Outlet Chemical Trench System at this time.

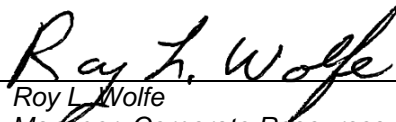

**Fiscal Impact:** None

**Business Analysis:** This option would forego an opportunity to correct deficiencies with the existing secondary containment PVC pipes, and to reduce maintenance costs and the risk of a chemical leak. As the PVC continues to crack and leak, false alarms will increase. Failure of the containment system would increase the risk that a chemical leak may go undetected and result in noncompliance with safety and environmental regulations.

**Staff Recommendation**

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Option #1

	8/30/2010
Roy L. Wolfe Manager, Corporate Resources	Date
	8/30/2010
Jeffrey Kightlinger General Manager	Date

[Attachment 1 – Financial Statement](#)

[Attachment 2 – Location Map](#)

## Financial Statement for Weymouth Improvements Program – Phase II

A breakdown of Board Action No. 9 for Appropriation No. 15440 for the Weymouth Filter Outlet Chemical Trench project\* is as follows:

	<b>Previous Total Appropriated Amount (Mar. 2010)</b>	<b>Current Board Action No. 9 (Sept. 2010)</b>	<b>New Total Appropriated Amount</b>
Labor			
Studies & Investigations	\$ 735,500	\$ -	\$ 735,500
Owner Costs (Program mgmt, permitting, bidding process)	761,000	62,000	823,000
Final Design	160,000	220,000	380,000
Construction Inspection & Support	260,300	-	260,300
Metropolitan Force Construction	287,700	-	287,700
Materials and Supplies	375,000	-	375,000
Incidental Expenses	40,800	3,000	43,800
Professional/Technical Services	889,000	-	889,000
Equipment Use	2,500	-	2,500
Contracts	1,588,122	-	1,588,122
Remaining Budget	581,078	60,000	641,078
<b>Total</b>	<b>\$ 5,681,000</b>	<b>\$ 345,000</b>	<b>\$ 6,026,000</b>

### Funding Request

<b>Program Name:</b>	Weymouth Improvements Program - Phase II		
<b>Source of Funds:</b>	Revenue Bonds, Replacement and Refurbishment or General Funds		
<b>Appropriation No.:</b>	15440	<b>Board Action No.:</b>	9
<b>Requested Amount:</b>	\$ 345,000	<b>Capital Program No.:</b>	15440-I
<b>Total Appropriated Amount:</b>	\$ 6,026,000	<b>Capital Program Page No.:</b>	324
<b>Total Program Estimate:</b>	\$ 37,100,000	<b>Program Goal:</b>	I-Infrastructure & Reliability

\*The total amount expended to date on the Weymouth Filter Outlet Chemical Trench project is approximately \$140,000.

# F.E. Weymouth Water Treatment Plant

