



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

5/11/2010 Board Meeting

7-2

Subject

Appropriate \$560,000; and authorize two rehabilitation projects at the Weymouth and Jensen plants (Approps. 15369 and 15442)

Description

This action authorizes two treatment plants' rehabilitation projects: (1) Preliminary design of the Washwater Tanks Seismic Upgrades at the Weymouth plant; and (2) Final design of the Washwater Tanks Seismic Upgrades at the Jensen plant. These tanks supply water for backwashing each plant's filters.

Timing and Urgency

Metropolitan has an ongoing program to evaluate the seismic stability of its structures in order to maintain reliable operation and to meet current seismic design practices and code requirements. Although Metropolitan facilities are designed to meet up-to-date seismic practices and code requirements that are in place at the time of their construction, industry practices and code requirements are periodically updated, particularly following a major earthquake. Initial seismic investigations of the washwater tanks at the Weymouth and Jensen plants identified that they are seismically vulnerable, according to current seismic codes, and require upgrades to enable continued operation in the event of a significant earthquake. The Sierra Madre Fault is located less than 1.5 miles from the Weymouth plant and has the capability of generating a 7.0 magnitude earthquake. The Santa Susana Fault is located within one mile of the Jensen plant and is capable of generating a 6.7 magnitude earthquake. Because of the importance of the Weymouth and Jensen plants in delivering treated water to Metropolitan's Central Pool, staff recommends that both rehabilitation projects move forward at this time.

These projects have been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria. Both projects are categorized as Infrastructure Reliability projects and are budgeted within Metropolitan's CIP for fiscal year 2009/10.

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 Jensen plant was placed into service in 1972 with an initial capacity of 350 mgd, and was expanded in the early 1990s to its current capacity of 750 mgd.

The Weymouth plant delivers a blend of waters from the Colorado River Aqueduct (CRA) and State Water Project (SWP) to Metropolitan's Central Pool portion of the distribution system. The Jensen plant exclusively treats water from the West Branch of the SWP and delivers it to Metropolitan's Central Pool and to exclusive service areas on the west side of the distribution system.

Each plant utilizes two aboveground welded steel tanks to store washwater for use in backwashing plant filters, which is an essential step in the filtration process to clean the filter media. Backwashing cleanses the filters after being on-line for 20 to 80 hours in active filtration service. A small portion of each plant's filtered water is pumped into and stored in the plant's washwater tanks, from which it is released by gravity to backwash dirty filters on demand.

Project No. 1 - Weymouth Washwater Tanks Seismic Upgrades – Preliminary Design Phase (\$190,000)

The Weymouth washwater tanks are located on the northwest and northeast sides of the plant with storage capacities of 1 million and 1.3 million gallons, respectively. The western tank measures 48 feet in diameter by 71 feet high and was constructed in the late 1930s. The eastern tank measures 60 feet in diameter by 63 feet high and was constructed in the early 1960s. Both tanks were designed and constructed in accordance with applicable building codes of their time.

In November 2005, Metropolitan's Board authorized detailed seismic analyses of the two washwater tanks at the Weymouth plant. This work was staged and coordinated with other projects planned on the Weymouth site. Metropolitan staff conducted a seismic analysis for each tank in accordance with current seismic codes, based on updated site-specific geotechnical information, and in accordance with the American Water Works Association (AWWA) Standard for Welded Carbon Steel Tanks. The results of the analyses indicated that both tanks require structural upgrades to improve their capability to withstand a seismic event under current seismic codes. The work may consist of a combination of: installing supplemental anchorage systems; extending the existing footings; and installing flexible couplings on each 3-foot diameter outlet pipe. Staff recommends proceeding with preliminary design to evaluate the proposed retrofit concepts and their costs.

This action appropriates \$190,000 and authorizes preliminary design phase activities for the Weymouth Washwater Tanks Seismic Upgrades. Preliminary design activities include: evaluating alternatives to optimize the recommended conceptual retrofit; developing seismic retrofit sketches and design criteria; preparing environmental documentation; preparing a preliminary design report; and developing a preliminary cost estimate. All work will be performed by Metropolitan staff. Requested funds include \$45,000 to conduct boring tests and prepare geotechnical recommendations; \$85,000 for structural modeling and analyses; \$43,000 for program management and technical reviews; and \$17,000 for remaining budget.

Project No. 2 - Jensen Washwater Tanks Seismic Upgrades – Final Design Phase (\$370,000)

Each of the Jensen plant washwater tanks is a 100-foot diameter by 32-foot tall steel tank with a storage capacity of 1.5 million gallons. The south tank was erected in the late 1960s as a part of the original plant construction. It was damaged during the 1971 San Fernando Earthquake and was repaired thereafter. The north tank was constructed in 1991 when the plant was expanded to meet the increased demand for washwater. Both tanks were designed and constructed in accordance with applicable building codes of their time.

Following construction of the north tank, the building code's seismic provisions were substantially revised to implement design recommendations resulting from the 1994 Northridge Earthquake. Based on the current, more stringent seismic provisions of the building code, and on updated site-specific geotechnical investigations, staff conducted a screening assessment of the two tanks which identified that both are in need of seismic upgrades. In October 2007, Metropolitan's Board authorized preliminary design of seismic upgrades for the two washwater tanks. The results of the analyses indicated that during a seismic event, rupture could occur at the bottom plate of the tanks, with an uncontrolled release of water. Preliminary design is now complete and staff recommends proceeding with final design of structural upgrades to improve the tanks' capability to withstand a seismic event. Recommended upgrades include: installing a new anchorage system; adding a ring footing and micro-piles around each tank; and adding a flexible coupling on the 42-inch diameter interconnection pipe to prevent shell rupture at the pipe's inlet to each tank.

This action appropriates \$370,000 and authorizes final design phase activities for the Jensen Washwater Tanks Seismic Upgrades. Final design activities include: engineering design and preparation of drawings and specifications; receipt of competitive bids; development of a construction cost estimate; 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 \$246,000 for final design; \$76,000 for receipt of bids and project management; and \$48,000 for remaining budget. The anticipated cost of final design is approximately 12 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 \$2 million to \$2.5 million.

These projects have been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds have been included in the fiscal year 2009/10 capital budget. See [Attachment 1](#) for the Financial Statements and [Attachment 2](#) for the Location Map.

These projects are consistent with Metropolitan's goals for sustainability by enhancing the reliability of existing treatment facilities, in order to maintain reliable water deliveries in the future.

Project Milestones

December 2010 – Completion of preliminary design of Weymouth Washwater Tanks Seismic Upgrades

February 2011 – Completion of final design of Jensen Washwater Tanks Seismic Upgrades

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

California Environmental Quality Act (CEQA)

Project No. 1 - Weymouth Washwater Tanks Seismic Upgrades – Preliminary Design Phase

CEQA determination for Option #1:

The environmental effects from the Weymouth Washwater Tanks Seismic Upgrades 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, the Mitigation Monitoring and Reporting Program (MMRP), and the projects themselves. The current board action is solely based on appropriating funding and authorizing preliminary design for the Weymouth Washwater Tanks Seismic Upgrades Project, and not on any changes to the approved program itself. Hence, the previous environmental documentation acted on by the Board in conjunction with the proposed actions fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the Board to act on the proposed actions.

The CEQA determination is: Determine that the proposed actions have 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

Project No. 2 - Jensen Washwater Tanks Seismic Upgrades – Final Design Phase

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 and minor alterations of existing private or public facilities, along with minor modifications in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees. These activities would result in negligible or no expansion of use and no possibility of significantly impacting the physical environment. Accordingly, the proposed action qualifies under both Class 1 and Class 4 Categorical Exemptions (Sections 15301 and 15304 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under two Categorical Exemptions (Class 1, Section 15301 and Class 4, Section 15304 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determinations and

- a. Appropriate \$560,000;
- b. Authorize preliminary design of the Weymouth Washwater Tanks Seismic Upgrades; and
- c. Authorize final design of the Jensen Washwater Tanks Seismic Upgrades.

Fiscal Impact:

\$190,000 of budgeted funds in Approp. 15369

\$370,000 of budgeted funds in Approp. 15442

Business Analysis: This option will enhance reliability and continued operation of the Weymouth and Jensen plants in the event of a significant earthquake.

Option #2

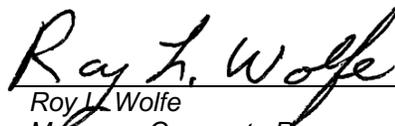
Do not proceed with the two rehabilitation projects at this time.

Fiscal Impact: None

Business Analysis: This option would forego an opportunity to improve reliability at the Weymouth and Jensen plants and comply with current seismic codes. Delay in seismic upgrades to the washwater tanks would limit flexibility of the Weymouth and Jensen plants following a seismic event.

Staff Recommendation

Option #1


 Roy L. Wolfe
 Manager, Corporate Resources

4/22/2010
Date


 Jeffrey Lightlinger
 General Manager

4/23/2010
Date

[Attachment 1 – Financial Statements](#)

[Attachment 2 – Location Map](#)

Ref# cr12604686

Financial Statement for Weymouth Improvements Program

A breakdown of Board Action No. 33 for the Weymouth Washwater Tanks Seismic Upgrades project* is as follows:

	Previous Total Appropriated Amount (Mar. 2010)	Current Board Action No. 33 (May 2010)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 1,896,477	\$ 103,000	\$ 1,999,477
Final Design	7,265,641	-	7,265,641
Owner Costs (Project mgmt, envir. doc.)	6,855,524 **	43,000	6,898,524
Submittals Review, O&M Manuals & As-builts	2,670,723	-	2,670,723
Construction Inspection & Support	11,470,704	-	11,470,704
Metropolitan Force Construction	6,200,680	-	6,200,680
Materials and Supplies	2,525,848	-	2,525,848
Incidental Expenses	353,400	2,000	355,400
Professional/Technical Services	12,376,032	25,000	12,401,032
Contracts	97,372,055	-	97,372,055
Remaining Budget	8,270,916 **	17,000	8,287,916
Total	\$ 157,258,000	\$ 190,000	\$ 157,448,000

Funding Request

Program Name:	Weymouth Improvements Program		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment, or General Funds		
Appropriation No.:	15369	Board Action No.:	33
Requested Amount:	\$ 190,000	Capital Program No.:	15369-I
Total Appropriated Amount:	\$ 157,448,000	Capital Program Page No.:	323
Total Program Estimate:	\$ 272,390,000	Program Goal:	I-Infrastructure & Reliability

* The total amount expended to date on the Weymouth Washwater Tanks Seismic Upgrades is approximately \$105,000.

** Includes previous reallocation of \$126,716 from Owner Costs to Remaining Budget, resulting from completion under budget of the Surface Wash Headers, Solid Handling Equipment Refurbishment, Buildings 22 & 30 Roof Replacement, and Fire/Domestic System Upgrade projects.

Financial Statement for Jensen Improvements Program - Phase II

A breakdown of Board Action No. 5 for the Jensen Washwater Tanks Seismic Upgrades project* is as follows:

	Previous Total Appropriated Amount (Mar. 2009)	Current Board Action No. 5 (May 2010)	New Total Appropriated Amount
Labor			
Studies and Investigations	\$ 353,495	\$ -	\$ 353,495
Final Design	638,000	246,000	884,000
Owner Costs (Program mgmt, bidding process)	362,000	73,000	435,000
Construction Inspection and Support	44,000	-	44,000
Metropolitan Force Construction	647,000	-	647,000
Materials and Supplies	455,000	-	455,000
Incidental Expenses	30,000	3,000	33,000
Professional/Technical Services	314,840	-	314,840
Equipment Use	19,000	-	19,000
Contracts	-	-	-
Remaining Budget	162,665	48,000	210,665
Total	\$ 3,026,000	\$ 370,000	\$ 3,396,000

Funding Request

Program Name:	Jensen Improvements Program - Phase II		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15442	Board Action No.:	5
Requested Amount:	\$ 370,000	Capital Program No.:	15442-I
Total Appropriated Amount:	\$ 3,396,000	Capital Program Page No.:	302
Total Program Estimate:	\$ 34,970,000	Program Goal:	I – Infrastructure Reliability

* The total amount expended to date on the Jensen Washwater Tanks Seismic Upgrades is approximately \$298,000.

Location Map

