



- Board of Directors
Engineering and Operations Committee

12/11/2012 Board Meeting

8-2

Subject

Appropriate \$5.5 million; and award \$3,606,445 contract to W. M. Lyles Co. for seismic upgrades to the finished water reservoir and east washwater tank at the Robert B. Diemer Water Treatment Plant (Approp. 15380)

Executive Summary

This action awards a construction contract for structural upgrades to the finished water reservoir and east washwater tank at the Robert B. Diemer Water Treatment Plant. These improvements will reduce the risk of delivery interruptions to member agencies within the Diemer service area due to a major seismic event.

Timing and Urgency

Metropolitan has an ongoing program to evaluate the seismic stability of its facilities in order to maintain water delivery reliability. Although Metropolitan facilities have always been designed to meet up-to-date building codes that were in place at the time of their construction, industry practices are periodically updated, particularly following a major earthquake.

A seismic assessment of the Diemer plant's finished water reservoir and east washwater tank identified that these structures need to be strengthened to meet updated building codes. To reduce the risk of water delivery interruptions following a major earthquake, staff recommends proceeding with construction of the upgrades at this time.

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

Details

Background

The Diemer plant was placed into service in 1963 with an initial capacity of 200 million gallons per day (mgd). In 1969, the plant was expanded to its present treatment capacity of 520 mgd. It delivers a blend of waters from the Colorado River and State Water Project to Orange County and to Metropolitan's Central Pool portion of the distribution system.

The Diemer plant is located on the top of a hill in the city of Yorba Linda. The plant was originally constructed by excavating 55 to 70 feet of native material from the site's ridge and filling the adjacent ravines to produce a large level pad. While the fill areas were constructed in accordance with grading practices of that time, the fill was not benched into competent rock as current seismic practices would require. Further, the Whittier Fault is located approximately one-third mile north of the Diemer plant. This fault is capable of generating a 6.8 magnitude earthquake. To minimize the risk of damage to the plant during a major earthquake, staff initiated a seismic assessment program in 2004 to identify and upgrade structures and major conduits which are potentially at risk. Of the 32 structures and major conduits located at the Diemer plant, 25 facilities were found to be structurally adequate or have been previously upgraded, while seven facilities are being addressed as follows. Currently, seismic assessments of the filter outlet conduit and the northwest slope beneath Washwater

Reclamation Plant No. 2 are underway. In October 2012, the Board authorized final design of structural upgrades to the Diemer Administration Building and the Filter Buildings. Seismic upgrade of a section of the Second Lower Feeder will be the subject of a future action. This action moves forward with the two remaining upgrade projects, which will address the finished water reservoir and east washwater tank.

Diemer Finished Water Reservoir Seismic Upgrades – Construction (\$1,650,000)

The Diemer plant has a single finished water reservoir designed to provide 75.6 acre-feet of treated water storage. The reservoir is constructed of reinforced concrete and is classified as a dam by the California Division of Safety of Dams (DSOD). In the 1990s, the reservoir's overflow weir was modified to reduce storage capacity due to seismic stability concerns. Portions of the reservoir's south wall straddle two soil-filled ravines and are supported by cast-in-place caissons which extend below the concrete floor slab, through the fill material, and into bedrock. Recent assessments of the fill material have determined that it could slide down-slope during strong earthquake shaking, causing the two deepest caissons to fail. While the structural integrity of the reservoir itself would not be compromised, some sections of the reservoir's concrete floor could experience minor to moderate cracking. Although there would not be an uncontrolled release of water, the reservoir would require an extended shutdown for inspection and repair.

To mitigate this risk and stabilize the slope to prevent caisson failure during a seismic event, staff recommends construction of a retaining wall to the south of the reservoir, along with strengthening of the floor slab to mitigate potential cracking and to prevent leakage.

In December 2008, Metropolitan's Board authorized final design of seismic upgrades to the finished water reservoir. Final design has been completed, and the upgrades are ready to proceed at this time. Staff has consolidated the construction of these upgrades with similar work for the plant's east washwater tank, as described below.

Diemer East Washwater Tank Seismic Upgrades – Construction (\$3,850,000)

The Diemer plant relies on two washwater tanks to store water for filter backwashing. Each tank is 60 feet in diameter, 80 feet in height, and holds 1.5 million gallons of filtered water. The two tanks are constructed of steel and are located at both sides of the plant. The east washwater tank sits on a 5-foot-thick pile cap which is supported by 97 thirty-inch-diameter caissons. During strong shaking from an earthquake, some of the caissons could rotate down-slope, while some caissons could shear. This differential lateral movement could cause the pile cap foundation and tank sitting on top of it to rupture. Consequently, the Diemer plant's ability to backwash filters would be impacted, resulting in reduced treatment capacity.

Staff recommends installing shear walls to restrain the caissons from lateral movement. Anchor bolts will be added to further secure the tank to the pile cap foundation. To accommodate the shear wall construction, a truck scale and its scale house will be removed.

In December 2008, Metropolitan's Board authorized final design of seismic upgrades to the east washwater tank. Final design has been completed, and the upgrades are ready to proceed at this time. This work will be performed with the reservoir upgrades under a single construction contract.

Diemer Finished Water Reservoir and East Washwater Tank Seismic Upgrades – Award of Construction Contract

Specifications No. 1663 for the Diemer Finished Water Reservoir and East Washwater Tank Seismic Upgrade projects was advertised for bids on September 28, 2012. As shown in [Attachment 2](#), 11 bids were received and opened on November 5, 2012. The apparent low bidder requested to be relieved from its bid in accordance with the California Public Contract Code due to an inadvertent error made during bid preparation. Upon review of the request, Metropolitan released that firm from its bid.

The second low bid from W. M. Lyles Co., in the amount of \$3,606,445, complies with the requirements of the specifications. The ten higher bids ranged from \$3,745,733 to \$5,238,910, while the engineer's estimate was \$4 million. Staff believes the difference between the engineer's estimate and the group of low bids reflects the current highly competitive bidding environment. For this contract, Metropolitan has established a Small Business Enterprise (SBE) participation level of at least 25 percent of the total bid amount.

This action appropriates \$5.5 million and awards a \$3,606,445 contract to W. M. Lyles Co. for seismic upgrades to the finished water reservoir and east washwater tank at the Diemer plant. In addition to the amount of the contract, the appropriated funds include \$260,900 for Metropolitan force construction, which includes replacement of the cathodic protection system on the washwater tank, modification of a weir plate in the filter outlet conduit, substructure relocations, shutdown activities, and final disinfection. The appropriated funds also include \$457,500 for construction inspection; \$288,400 for review of submittals and preparation of record drawings; \$101,400 for permitting activities, as discussed below; \$172,300 for hazardous waste monitoring and project management; and \$613,055 for remaining budget. Hazardous waste monitoring is required during demolition of the truck scale building and for lead paint removal from the washwater tank. Permitting activities include preparation of reports and emergency preparedness mapping for submission to DSOD and the California Emergency Management Agency (Cal EMA), as required by the reservoir's operating permit.

Metropolitan staff will perform inspection of the construction contract. For this project, the anticipated cost of inspection and support is approximately 11.8 percent of the total construction cost. Engineering Services' goal for inspection of projects with construction cost greater than \$3 million is 9 to 12 percent. The total construction cost of this project is approximately \$3.87 million.

Professional Services Agreements – No Actions Required

URS Corporation conducted geotechnical investigations and performed structural engineering design of the seismic upgrades to the finished water reservoir and the east washwater tank. Staff recommends that URS, as the engineer-of-record, provide specialized technical support during construction under a new professional services agreement. URS was selected through a competitive process via Request for Qualification (RFQ) No. 1012. The planned scope of work includes review of submittals, responding to the contractor's requests for information, and site visits during shear wall installation and reservoir floor strengthening. This work will be performed under a new agreement planned to be awarded by the General Manager under his Administrative Code authority, in an amount not to exceed \$130,000. Due to the specialized nature of the work, no Small Business Enterprise (SBE) participation level has been established for this agreement.

Development of the reservoir's emergency preparedness mapping is recommended to be performed by West Consultants, Inc., under an existing board-authorized agreement. This map will be submitted to Cal EMA in accordance with the reservoir's operating permit. West Consultants, Inc. was selected through a competitive process via RFQ No. 971. For this agreement, Metropolitan has established an SBE participation level of 18 percent. The estimated cost for these services is \$60,000.

These projects have been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2012/13 capital expenditure plan. See [Attachment 1](#) for the Financial Statement, [Attachment 2](#) for the Abstract of Bids, and [Attachment 3](#) for the Location Map.

The Diemer Finished Water Reservoir and East Washwater Tank Seismic Upgrade projects are included within capital Appropriation No. 15380, the Diemer Improvements Program, which was initiated in fiscal year 2001/02. Other projects authorized under Appropriation No. 15380 include the Plant Electrical Upgrades, the North Access Road, and the South Slope Stabilization. With the present action, the total funding for Appropriation No. 15380 will increase from \$102,166,600 to \$107,666,600.

Project Milestone

September 2013 – Completion of construction of the finished water reservoir and east washwater tank seismic upgrades

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The environmental effects from the funding, design, procurement of equipment, construction and operation of the Diemer Improvements Program (Program) were evaluated in the Robert B. Diemer Treatment Plant Improvements Project Environmental Impact Report (EIR), Supplemental EIR, and Subsequent EIR, certified by the Board on February 13, 2001, August 20, 2002, and April 11, 2006, respectively. During these three board meetings, the Board also approved the Findings of Fact (Findings), the Statement of Overriding Considerations (SOC), and the Mitigation Monitoring and Reporting Program (MMRP) for the Diemer Improvements Project EIR, Supplemental EIR, and Subsequent EIR. The current board action is to award a construction contract for the Finished Water Reservoir and East Washwater Tank Seismic Upgrades, and does not propose any significant changes to the approved project itself. These projects were evaluated in the Program EIR, and Addendum No. 3 to the Subsequent EIR, respectively. Therefore, 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 additional CEQA review or documentation is required.

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determination and

- a. Appropriate \$5.5 million; and
- b. Award \$3,606,445 contract to W. M. Lyles, Co. for seismic upgrades to the Diemer finished water reservoir and east washwater tank.

Fiscal Impact: \$5.5 million of capital funds under Approp. 15380

Business Analysis: This option would enhance operational reliability of the Diemer plant in the event of a major earthquake.

Option #2

Do not award the contract and readvertise in an attempt to receive more favorable bids.

Fiscal Impact: Unknown

Business Analysis: This option may or may not result in a lower bid, and would delay upgrades which would enhance the operational reliability of the Diemer plant.

Staff Recommendation

Option #1

	11/16/2012
Gordon Johnson Manager/Chief Engineer Engineering Services	Date
	11/27/2012
Jeffrey Kightlinger General Manager	Date

[Attachment 1 – Financial Statement](#)

[Attachment 2 – Abstract of Bids](#)

[Attachment 3 – Location Map](#)

Financial Statement for Diemer Improvements Program

A breakdown of Board Action No. 22 for Appropriation No. 15380 for the Diemer Finished Water Reservoir and East Washwater Tank Seismic Upgrade projects¹ is as follows:

	Previous Total Appropriated Amount (Aug. 2012)	Current Board Action No. 22 (Dec. 2012)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 1,930,200	\$ -	\$ 1,930,200
Final Design	5,137,900	-	5,137,900
Owner Costs (Program mgmt., haz. materials mgmt., permitting)	7,308,459	212,700	7,521,159
Submittals Review & Record Drawings	27,804	158,400	186,204
Construction Inspection & Support	5,820,668	457,500	6,278,168
Metropolitan Force Construction	1,950,700	260,900	2,211,600
Materials & Supplies	831,916	-	831,916
Incidental Expenses	342,167	1,000	343,167
Professional/Technical Services	10,603,375	-	10,603,375
URS Corp.	-	130,000	130,000
West Consultants, Inc.	-	60,000	60,000
Equipment Use	96,608	-	96,608
Contracts	67,614,108	3,606,445	71,220,553
Remaining Budget	502,695 ²	613,055	1,115,750
Total	\$ 102,166,600	\$ 5,500,000	\$ 107,666,600

Funding Request

Program Name:	Diemer Improvements Program		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15380	Board Action No.:	22
Requested Amount:	\$ 5,500,000	Capital Program No.:	15380-I
Total Appropriated Amount:	\$ 107,666,600	Capital Program Page No.:	51
Total Program Estimate:	\$ 285,285,000	Program Goal:	I-Infrastructure Reliability

¹ The total amount expended to date on the Diemer Finished Water Reservoir and East Washwater Tank Seismic Upgrades projects is approximately \$2,621,000.

² Includes previous reallocation from Remaining Budget to the following projects: (1) \$618,000 for the Diemer Electrical Improvements Stage 2 project for increased final design efforts to address varying site conditions and additional ductbanks and emergency generators; (2) \$45,000 for the Diemer Finished Water Reservoir and East Washwater Tank Seismic Upgrades projects to include final design for tank refurbishment; (3) \$392,000 for the Diemer Basin Rehabilitation project to investigate hazardous material mitigation issues, update equipment recommendations, and perform value engineering and constructability review workshop; and (4) \$417,433 for the Diemer North Access Road project for the required road re-design and construction to accommodate differing topography and geology conditions.

The Metropolitan Water District of Southern California

Abstract of Bids Received on November 5, 2012 at 2:00 P.M.

Specifications No. 1663

**Robert B. Diemer Water Treatment Plant
Finished Water Reservoir and East Washwater Tank Seismic Upgrades**

The project consists of installing reinforced concrete piles; strengthening sections of the Finished Water Reservoir floor slab; adding anchor bolts and excavating trenches; installing shear walls at the East Washwater Tank; modifying the tank's roof vent structure, and sandblasting and painting the interior and exterior of the East Washwater Tank. The work also includes demolition of an existing truck scale and building, utility relocations, minor paving, and tree removal.

Engineer's Estimate: \$4,000,000

Bidder and Location	Total	SBE \$	SBE %	Met SBE²
Unispec Construction, Inc., San Pedro, CA ¹	\$ 2,737,000	N/A	N/A	N/A
W. M. Lyles Co., Fresno, CA	\$ 3,606,445	\$ 1,223,065	33.9%	Yes
J. F. Shea Construction, Inc., Walnut, CA	\$ 3,745,733	N/A	N/A	N/A
Zussner Company, Inc., Los Angeles, CA	\$ 3,818,393	N/A	N/A	N/A
ODC Engineering & Technology, Agoura, CA	\$ 3,950,000	N/A	N/A	N/A
C. W. Roen Construction Co., Danvilles, CA	\$ 4,138,000	N/A	N/A	N/A
Minako America Corporation dba Minco Construction, Gardena, CA	\$ 4,377,700	N/A	N/A	N/A
G2K Construction, Inc., Encino, CA	\$ 4,440,000	N/A	N/A	N/A
Abhe & Svoboda, Inc., Prior Lake, MN	\$ 4,673,473	N/A	N/A	N/A
Environmental Construction, Inc., Woodland Hills, CA	\$ 4,930,000	N/A	N/A	N/A
G. B. Cooke, Inc., Azusa, CA	\$ 5,238,910	N/A	N/A	N/A

¹ Unispec Construction, Inc. requested to be relieved from its bid in accordance with the California Public Contract Code due to an inadvertent error made during the preparation of its bid. Upon review of the request and documentation submitted, Metropolitan released Unispec Construction, Inc. from its bid.

²SBE (Small Business Enterprise) participation set at 25 percent

Robert B. Diemer Water Treatment Plant

