



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

4/13/2010 Board Meeting

7-2

Subject

Appropriate \$890,000; and authorize two rehabilitation projects within Metropolitan's distribution system (Approp. 15441)

Description

This action authorizes two rehabilitation projects within Metropolitan's distribution system: (1) final design and valve procurement for rehabilitation of three service connections on the Upper Feeder; and (2) a seismic study to evaluate two water storage tanks at the Sepulveda Canyon Control Facility.

Timing and Urgency

Rehabilitation of three Upper Feeder service connections is needed to repair corrosion damage to piping and equipment. The service connections were constructed from 1941 through 1960 and have deteriorated gradually over time. Failure of components within a service connection could lead to an outage and possible damage to aboveground surroundings.

The seismic study will evaluate structural vulnerabilities of the two large aboveground potable water storage tanks at Sepulveda Canyon Control Facility. Staff conducted a screening assessment which identified that the two tanks are vulnerable to forces associated with a moderate earthquake. A seismic-induced failure of the tanks could lead to an unplanned outage and could interrupt water deliveries to member agencies.

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

Project No. 1 – Upper Feeder Service Connection Rehabilitation – Final Design Phase (\$700,000)

The Upper Feeder was constructed in 1936 as part of Metropolitan's original distribution system. The feeder is approximately 60 miles long with a diameter ranging from 84 to 144 inches. It delivers treated water from the Weymouth plant to the Eagle Rock Control Facility in the city of Los Angeles. The Upper Feeder's treated water system is comprised of a series of deep tunnels through the San Gabriel Mountains that have few isolation points due to the depth of the pipeline. The San Gabriel Tower, which is located near Morris Dam, is the westernmost isolation point for the treated water section. A pipeline failure along the western portion of the feeder would require that flows be shut off for an 18-mile section. Such an outage would affect eight active service connections downstream of the San Gabriel Tower, serving the Three Valleys Municipal Water District, Foothill Municipal Water District, and the cities of Pasadena and San Marino.

In April 2009, a comprehensive field inspection identified three Upper Feeder service connections that require rehabilitation. These three connections deliver treated water to the Foothill Municipal Water District (FM-01), the city of Pasadena (P-01), and the city of San Marino (SMR-01). Gradual corrosion over the course of 55+ years of operation has led to deterioration of service connection equipment such as the valves that isolate flows from the Upper Feeder. Advanced stages of corrosion have limited the operating range or rendered the isolation valves inoperable, reduced the wall thickness of appurtenant piping, and damaged protective coatings.

Leakage of a service connection isolation valve would require shutdown of the 18-mile western section of the Upper Feeder in order to perform repairs.

In November 2009, Metropolitan's Board authorized preliminary design for the rehabilitation of Upper Feeder service connections FM-01, PM-1 and SMR-01, which has now been completed. Staff recommends proceeding with final design for the rehabilitation of these service connections. Rehabilitation work will include replacement of gate valves with butterfly valves, replacement of severely corroded piping, and recoating of all exposed cast iron piping within the service connection turnout structure. Procurement of valves requires substantial lead time for fabrication and delivery. Proceeding with valve procurement at this time will allow the installation to occur during a planned February 2011 shutdown.

Final design phase activities include development of detailed engineering design; preparation of specifications and award of contract for the valve procurement; preparation of drawings and specifications for the construction contract; permitting with local agencies; development of a construction cost estimate; and all other activities in advance of award of a construction contract. All final design and procurement activities will be performed by Metropolitan staff.

This action appropriates \$700,000 in budgeted funds and authorizes final design phase activities for rehabilitation of the three service connections. Requested funds include \$180,000 for final design; \$224,000 for valve procurement and delivery; \$135,200 for Metropolitan force fabrication of piping; \$18,000 for hazardous material testing; \$79,400 for project management and bidding; and \$63,400 for remaining budget. The valve procurement contract is planned to be awarded under the General Manager's Administrative Code authority to award contracts of \$250,000 or less. The cost of final design is approximately 14 percent of the estimated construction cost. Engineering Services' goal for design of projects with construction cost less than \$3 million is 9 to 15 percent of the total construction cost. The construction cost for this project is anticipated to range from \$1.2 million to \$1.3 million. Staff will return to the Board at a later date for award of the construction contract.

Project No. 2 – Seismic Study of the Sepulveda Canyon Control Facility Water Storage Tanks – Study Phase (\$190,000)

The Sepulveda Canyon Control Facility is located in the Sepulveda Pass, immediately west of the San Diego Freeway (I-405) and Sepulveda Boulevard. This facility uses two large potable water tanks to equalize flows to downstream users along the Sepulveda Feeder. Both tanks are cylindrical, welded-steel structures erected in 1970. The tanks are 44.6 feet high with diameters of 230 feet and 145 feet. The two tanks are located in a highly visible area along Sepulveda Boulevard and in the vicinity of the J. Paul Getty Museum.

Multiple active faults are located within the vicinity of the Sepulveda Canyon Control Facility. In May 2005, a screening assessment identified the Santa Monica, Newport-Inglewood, Hollywood and San Andreas faults as potential seismic sources that could generate a major earthquake resulting in significant ground motions at the facility. Among them, the Santa Monica fault passes one mile from the site, and is capable of generating a 6.8 magnitude earthquake. A seismic-induced failure of both water tanks could result in shutdown of the Sepulveda Feeder for up to 3 months due to the unique challenges of repairing the tank or constructing a bypass pipeline. Due to hydraulic considerations, flows currently pass through the tanks for delivery downstream; there are no existing bypass pipelines. Construction of a bypass pipeline, without an in-line tank, is possible but would result in operational difficulties such as air accumulation in the pipeline and increased risk of surges.

Staff recommends proceeding with a seismic study of the Sepulveda Canyon Control Facility water tanks to identify structural improvements and suitable strengthening concepts. Planned activities include modeling and specialized technical analyses, code investigations, environmental assessment, development of a conceptual-level cost estimate, and preparation of a final report.

This action appropriates \$190,000 in budgeted funds and authorizes a seismic study of the Sepulveda Canyon Control Facility water tanks. Requested funds include \$108,800 for the study; \$44,800 for environmental assessment, permitting and project management; \$11,000 for modeling software; and \$25,400 for remaining budget. All activities will be performed by Metropolitan staff.

Summary

This action appropriates \$890,000 and authorizes final design and valve procurement for rehabilitation of three member agency service connections on the Upper Feeder; and a study of seismic improvements needed for two water storage tanks at Sepulveda Canyon Control Facility. See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map.

These projects are consistent with Metropolitan's goals for sustainability by enhancing reliability of the existing conveyance and distribution system in order to maintain reliable water deliveries in the future.

Project Milestones

November 2010 – Completion of final design of the Upper Feeder Service Connections Rehabilitation project

December 2010 – Completion of seismic study of the Sepulveda Canyon Control Facility water tanks

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

California Environmental Quality Act (CEQA)

CEQA determinations for Option #1:

Project No. 1 – Upper Feeder Service Connection Rehabilitation – Final Design Phase

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed project involves the funding, design, and minor alterations of existing private or public facilities, along with the construction of minor appurtenant structures, 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 expansion of use and no possibility of significantly impacting the physical environment. Accordingly, the proposed action qualifies under Class 1, Class 3, and Class 4 Categorical Exemptions (Sections 15301, 15303, and 15304 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 3, Section 15303; and Class 4, Section 15304 of the State CEQA Guidelines).

Project No. 2 – Seismic Study of Sepulveda Canyon Control Facility Water Storage Tanks – Study Phase

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action involves the funding of a study and minor modifications to existing public facilities with negligible or no expansion of use and no possibility of significantly impacting the physical environment. In addition, the proposed action consists of basic data collection and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource. This may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded. Accordingly, the proposed action qualifies for both Class 1 and Class 6 Categorical Exemptions (Sections 15301 and 15306 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 6, Section 15306 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determinations and

- a. Appropriate \$890,000;
- b. Authorize final design to rehabilitate three service connections on the Upper Feeder; and
- c. Authorize a seismic study of the Sepulveda Canyon Control Facility water storage tanks.

Fiscal Impact: \$890,000 in budgeted funds under Approp. 15441

Business Analysis: These projects will protect Metropolitan’s assets, enhance reliability of deliveries to member agencies, and reduce the risk of costly emergency repairs.

Option #2

Adopt the CEQA determination and

- a. Appropriate \$700,000;
- b. Authorize final design to rehabilitate three service connections on the Upper Feeder; and
- c. Do not authorize a seismic study of the Sepulveda Canyon Control Facility water storage tanks.

Fiscal Impact: \$700,000 in budgeted funds under Approp. 15441

Business Analysis: Rehabilitation of the three Upper Feeder service connections will protect Metropolitan’s assets, enhance reliability of deliveries to member agencies, and reduce the risk of costly emergency repairs. This option would defer the seismic study for 1-2 years so that upgrade work could be incorporated into other Sepulveda Control Facility Upgrades. However, this would leave the Sepulveda Control Facility water storage tanks exposed to a higher risk of prolonged outage in the event of a major earthquake.

Staff Recommendation

Option #1


 _____ 3/26/2010
 Roy L. Wolfe Date
 Manager, Corporate Resources


 _____ 3/26/2010
 Jeffrey Lightlinger Date
 General Manager

[Attachment 1 – Financial Statement](#)

[Attachment 2 – Location Map](#)

Ref# cr12604085

Financial Statement for Conveyance and Distribution System Rehabilitation Program – Phase II

A breakdown of Board Action No. 20 for Appropriation No. 15441 for the Upper Feeder Service Connections Rehabilitation project and the Sepulveda Canyon Control Facility Seismic Study* is as follows:

	Previous Total Appropriated Amount (Dec. 2009)	Current Board Action No. 20 (April 2010)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 1,156,800	\$ 108,800	\$ 1,265,600
Preliminary Design	141,600	-	141,600
Final Design	1,655,150	180,000	1,835,150
Owner Costs (Program mgmt, permitting, envir. doc.)	2,434,450	124,200	2,558,650
Construction Inspection & Support	598,100	-	598,100
Metropolitan Force Construction	4,059,000	135,200	4,194,200
Materials and Supplies	647,600	230,000	877,600
Incidental Expenses	525,900	18,000	543,900
Professional/Technical Services	862,500	5,000	867,500
Equipment Use	151,200	-	151,200
Contracts	3,942,647	-	3,942,647
Remaining Budget	1,877,053	88,800	1,965,853
Total	\$ 18,052,000	\$ 890,000	\$ 18,942,000

Funding Request

Program Name:	Conveyance and Distribution System Rehabilitation Program - Phase II		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15441	Board Action No.:	20
Requested Amount:	\$ 890,000	Capital Program No.:	15441
Total Appropriated Amount:	\$ 18,942,000	Capital Program Page No.:	277
Total Program Estimate:	\$ 53,850,000	Program Goal:	Infrastructure Reliability

* The total amount expended to date on the Upper Feeder Service Connections Rehabilitation project is approximately \$225,600. This action is the initial appropriation for the Sepulveda Canyon Control Facility Seismic Study.

Rehabilitation Projects

