



- Board of Directors
Engineering and Operations Committee

3/13/2012 Board Meeting

7-6

Subject

Appropriate \$930,000; and authorize (1) final design and procurement for seismic retrofit of the Upper Feeder's Santa Ana River Bridge; and (2) amendment to an agreement with IDS Group (Approp. 15441)

Description

This action authorizes final design and procurement for seismic retrofit of the Santa Ana River Bridge on the Upper Feeder; and amendment to an existing professional services agreement with IDS Group. The Santa Ana River Bridge supports an above-ground segment of the Upper Feeder upstream of the Weymouth plant.

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 have always been designed to meet seismic codes that were in place at the time of their construction, industry practices and code requirements are periodically updated.

Staff conducted a seismic assessment of the Upper Feeder's Santa Ana River Bridge and concluded that the bridge is vulnerable to damage in the event of a significant earthquake. Multiple active faults are located within the vicinity of the bridge that are capable of generating earthquakes ranging from 6.7 to 7.5 in magnitude. Due to the importance of the Upper Feeder in delivering untreated water to the Weymouth plant, staff recommends proceeding with final design at this time to upgrade the Santa Ana River Bridge.

This project has been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria, and is categorized as an Infrastructure Upgrade project. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2011/12.

Background

The Upper Feeder was constructed in 1936 as part of Metropolitan's original water delivery system. The 116-inch-diameter welded-steel pipeline extends approximately 60 miles from Lake Mathews to the Eagle Rock Control Facility in the city of Los Angeles. The feeder conveys untreated water from Lake Mathews to the Weymouth plant, and then delivers treated water to the Central Pool portion of the distribution system.

The Upper Feeder crosses the Santa Ana River with a 1,010-foot-long steel truss bridge. The pipeline is supported within the bridge superstructure, which consists of an 18-foot-wide steel deck with two 22.5-foot-high steel truss sides. The bridge superstructure is supported by 12 concrete piers which vary in height from 20 to 43 feet. The concrete piers sit on top of unreinforced concrete caissons which are embedded into bedrock with depths of 4 to 40 feet. The bridge was structurally retrofitted in the late 1980s with the addition of base isolators between the bridge deck and the concrete piers. The purpose of base isolators is to minimize lateral movement of the bridge superstructure caused by seismic shaking of the piers. A total of 28 base isolators were installed, including four isolators on the middle two piers and two isolators on each of the remaining ten piers.

In late 2007, Metropolitan staff inspected the Santa Ana River Bridge and identified corrosion of the steel truss members and deterioration of the base isolation system. The typical service life of a base isolator is 30 years. In

addition, the wooden walkway used by staff for inspection and maintenance showed signs of dry rot, while an expansion joint on the Upper Feeder was leaking. Minor repairs were performed at the time.

In May 2009, a seismic assessment identified the nearby San Jacinto Fault as being capable of generating a 7.5-magnitude earthquake. A seismic event of this magnitude could cause significant damage to the bridge and affect water deliveries due to the unique challenges of repairing a bridge and pipeline located 50 feet above the Santa Ana River.

In August 2010, Metropolitan's Board authorized preliminary design of structural upgrades for the Santa Ana River Bridge. Preliminary design has been completed, and staff recommends proceeding with final design and procurement of base isolators at this time.

Santa Ana River Bridge Seismic Retrofit – Final Design Phase and Procurement (\$930,000)

The scope of planned upgrades includes replacement of the Santa Ana River Bridge's existing base isolators with new base isolation designed to meet current codes; strengthening of bridge components by adding cover plates, stiffener plates, and weld connections; and addition of steel reinforcement to the existing unreinforced caissons. The latter will be accomplished by drilling vertical holes through the top of each caisson, inserting steel reinforcement bars into each hole, then filling the hole with epoxy. Corroded steel truss members will also be replaced, the leaking expansion joint will be repaired, and the deteriorated wooden walkway will be replaced to improve worker safety. Procurement of the base isolators requires a substantial lead-time due to the customized nature of the installation and the code-required testing. Proceeding with procurement of the 28 base isolators at this time will allow their installation to proceed in fall 2013.

Planned final design phase activities include: detailed structural modeling; preparation of plans and specifications for the construction contract; procurement of the base isolators; development of an engineer's estimate; receipt of bids; and all other activities in advance of award of a construction contract. Final design is recommended to be performed by IDS Group under an existing agreement, as discussed below. Environmental documentation will be prepared by Glenn Lukos Associates, also under an existing agreement, as discussed below. Metropolitan staff will initiate environmental permitting activities, acquire access easements, perform peer review, and perform project management. The California Building Code requires that specialized structural design of this type undergo a rigorous peer review process.

This action appropriates \$930,000 and authorizes final design phase activities for the Santa Ana River Bridge seismic retrofit. Requested funds include \$349,000 for final design; \$240,000 for purchase of base isolators; \$35,000 for functional testing and fabrication inspection of the isolators; \$77,000 for peer review as required by California Building Code; \$90,000 for environmental documentation and permitting; \$46,000 for acquisition of temporary construction easements and entry permits; and \$93,000 for procurement activities, receipt of bids, and project management. The 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 12.8 percent of the total estimated 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 \$2.7 million to \$3 million. Staff will return to the Board at a later date for award of the construction contract.

Specialized Technical Support by IDS Group – Amendment to Agreement

IDS Group performed preliminary design of the Santa Ana River bridge seismic retrofit, and is recommended to perform the final design. This work is highly specialized, and Metropolitan has insufficient technical resources in-house to conduct the design. IDS Group was selected through a competitive process via Request for Qualifications No. 884. Amendment of the existing agreement with IDS Group is consistent with the agreement's scope of work and with the planned approach for project implementation. For this agreement, Metropolitan has established a Small Business Enterprise (SBE) participation level of 18 percent.

This action authorizes an increase of \$150,000 to the existing agreement with IDS Group, for a new not-to-exceed total of \$300,000, to perform final design of the Santa Ana River bridge seismic retrofit.

Specialized Environmental Support by Glenn Lukos Associates – No Action Required

Preparation of environmental documentation is recommended to be performed by Glenn Lukos Associates under an existing board authorized agreement. Glenn Lukos Associates has extensive experience with projects in environmentally sensitive locations such as riparian habitats. No amendment to the existing agreement is required.

Glenn Lukos Associates was selected through a competitive process via Request for Qualifications (RFQ) No. 956. Due to the specialized nature of the work, Metropolitan did not establish an SBE participation level for this agreement. The estimated cost for these services is \$50,000.

Summary

This action appropriates \$930,000, authorizes final design and procurement for seismic upgrades to the Santa Ana River Bridge, and authorizes an amendment to an agreement with IDS Group. This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2011/12 capital expenditure plan. The Santa Ana Bridge Seismic Upgrades is included within capital Appropriation No. 15441, the Conveyance and Distribution System Rehabilitation Program Phase 2, which was initiated in fiscal year 2006/07. Other projects authorized under Appropriation No. 15441 include the Upper Feeder Service Connection Rehabilitation, Sepulveda Canyon Control Facility Water Tanks Seismic Retrofit, and the Lake Skinner Outlet Conduit Repair. With the present action, the total funding for Appropriation No. 15441 will increase from \$37,249,000 to \$38,179,000. See [Attachment 1](#) for the Financial Statement, [Attachment 2](#) for the Location Map, and [Attachment 3](#) for a photograph of the bridge crossing.

This project enhances the reliability of the existing conveyance and distribution system in order to maintain reliable water deliveries in the future.

Project Milestones

March 2013 – Completion of final design

May 2013 – Completion of procurement

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 proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed project involves the funding; final design; and minor alterations and reconstruction or replacement of existing public facilities along with the construction of minor appurtenant structures with no expansion of use and no possibility of significantly impacting the physical environment. In addition, the proposed project involves minor modifications in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees. Accordingly, the proposed action qualifies under Class 1, Class 2, Class 3, and Class 4 Categorical Exemptions (Sections 15301, 15302, 15303, and 15304 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under four Categorical Exemptions (Class 1, Section 15301; Class 2, Section 15302; Class 3, Section 15303; and Class 4, Section 15304 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determination and

- a. Appropriate \$930,000;
- b. Authorize final design and procurement for seismic retrofit of the Upper Feeder’s Santa Ana River Bridge; and
- c. Authorize increase of \$150,000 to the existing agreement with IDS Group, for a new not-to-exceed total of \$300,000.

Fiscal Impact: \$930,000 of budgeted funds under Approp. 15441

Business Analysis: This project will protect Metropolitan’s assets by complying with current seismic requirements; increase service reliability to member agencies; and reduce the risk of costly emergency repairs.

Option #2



Do not proceed with the seismic retrofit at this time.

Fiscal Impact: None

Business Analysis: This option would forego an opportunity to protect Metropolitan’s assets, to increase service reliability to customers, and to reduce the risk of costly emergency repairs.

Staff Recommendation

Option #1

	2/22/2012
Gordon Johnson Manager/Chief Engineer, Engineering Services	Date
	2/29/2012
Jeffrey Nighthlinger General Manager	Date

[Attachment 1 – Financial Statement](#)

[Attachment 2 – Location Map](#)

[Attachment 3 – Photograph](#)

Financial Statement for Conveyance and Distribution System Rehabilitation Program – Phase 2

A breakdown of Board Action No. 40 for Appropriation No. 15441 for seismic retrofit of the Upper Feeder’s Santa Ana River Bridge¹ is as follows:

	Previous Total Appropriated Amount (Feb. 2012)^{2,3}	Current Board Action No. 40 (Mar. 2012)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 2,418,000	\$ -	\$ 2,418,000
Final Design	2,954,293	69,000	3,023,293
Owner Costs (Program mgmt., envir. doc., right-of-way)	4,408,200	127,000	4,535,200
Submittals Review & Peer Review	116,250	77,000	193,250
Construction Inspection & Support	1,838,550	22,000	1,860,550
Metropolitan Force Construction	8,177,510	-	8,177,510
Materials & Supplies	1,494,400	240,000	1,734,400
Incidental Expenses	784,900	53,000	837,900
Professional/Technical Services	1,660,000	-	1,660,000
IDS Group	-	292,000	292,000
Glenn Lukos Associates	-	50,000	50,000
Equipment Use	236,200	-	236,200
Contracts	11,169,562	-	11,169,562
Remaining Budget	1,991,135	-	1,991,135
Total	\$ 37,249,000	\$ 930,000	\$ 38,179,000

Funding Request

Program Name:	Conveyance and Distribution System Rehabilitation Program – Phase 2		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15441	Board Action No.:	40
Requested Amount:	\$ 930,000	Capital Program No.:	15441-I
Total Appropriated Amount:	\$ 38,179,000	Capital Program Page No.:	281
Total Program Estimate:	\$ 106,335,000	Program Goal:	I-Infrastructure Reliability

¹ The total amount expended to date on the Santa Ana River Bridge Seismic Retrofit project is approximately \$220,000.

² Includes previous reallocation from Remaining Budget to (1) \$147,000 for San Gabriel Tower Seismic Upgrades for additional hydraulic analyses and topographical mapping, and (2) \$313,293 for Eagle Rock Tower and Puddingstone Spillway Gates Rehabilitation for advance preparation of an actuator procurement contract to meet a December 2012 shutdown.

³ Includes reallocation of \$42,786 from Contracts to Remaining Budget to reflect projects completed under budget.

Location Map



