



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

7/9/2013 Board Meeting

---

**8-4**

**Subject**

---

Appropriate \$2.7 million; award \$1,877,777 contract to L. H. Woods & Sons, Inc. for rehabilitation of the San Jacinto East Adit on the Colorado River Aqueduct; and authorize amendment to agreement with Jacobs Associates (Approp. 15373)

**Executive Summary**

---

This action awards a construction contract to rehabilitate the San Jacinto East Adit on the Colorado River Aqueduct (CRA), and authorizes an amendment to an existing agreement with Jacobs Associates for technical support during construction. The adit provides the primary access into the San Jacinto Tunnel for inspection, maintenance, and repair activities.

**Timing and Urgency**

The San Jacinto Tunnel's East Adit, which was constructed over 70 years ago, has developed longitudinal and transverse cracks in its concrete lining. A recent investigation has concluded that shifting soils above the adit caused the cracks, and that the cracking will increase over time. The investigation also concluded that the adit is vulnerable to seismic damage from nearby faults during a major earthquake. Since this adit serves as the primary access point into the San Jacinto Tunnel for inspection, maintenance, and repair activities, staff recommends proceeding with construction to strengthen the adit at this time.

This project has been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria and is categorized as an Infrastructure Rehabilitation project. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2013/14.

**Details**

---

**Background**

The CRA is a 242-mile-long conveyance system that transports water from the Colorado River to Lake Mathews. It consists of five pumping plants; 124 miles of tunnels, siphons, and reservoirs; 63 miles of canals; and 55 miles of conduits. The San Jacinto Tunnel is 13 miles long and extends below the San Jacinto Mountains between Cabazon and Gilman Springs in San Bernardino County. The San Jacinto Tunnel was constructed between 1933 and 1938, and was placed into service in 1941. The East Adit was positioned near the tunnel's midpoint to serve as an access point for construction of the eastern portion of the tunnel.

The San Jacinto East Adit is 300 feet long, horseshoe-shaped, and has overall dimensions of 16 feet high by 16 feet wide. The adit was constructed by excavating through soft soil for the initial 200 feet, and by using drill-and-blast methods into hard rock through the final 100 feet. The excavation is supported by timber sets and is lined with unreinforced concrete. The adit provides the only location where maintenance equipment can enter the San Jacinto Tunnel, and serves as the primary entrance for tunnel inspections.

In 2002, Metropolitan staff discovered cracks along a 100-foot reach of the San Jacinto East Adit, beginning at its entrance portal. These cracks include longitudinal, transverse and oblique cracking in the crown, walls and invert. Based on the progression of cracking observed since the initial discovery, and the nature of the soft soils in the

first 100 feet of the adit alignment, it is likely that the cracks developed slowly over time due to shifting soils. The adit has been monitored closely since the cracking was initially discovered. In 2007, a detailed field survey of the tunnel confirmed that the cracks are progressing. As a result, tunnel access through the adit has been restricted since that time. A recent investigation has concluded that shifting soils above the adit caused the cracks, and that the cracking will increase over time.

A structural analysis completed in June 2010 concluded that the cracks have weakened the adit, increasing its vulnerability to seismic events. Multiple active faults are located nearby, including the San Andreas Fault and the San Jacinto Fault, which are located three and ten miles from the adit, respectively. The southern San Andreas Fault is capable of generating a magnitude 8.0 seismic event. A seismic-induced failure of the adit could obstruct flows through the San Jacinto Tunnel, and could lead to an extended shutdown of the CRA to make repairs.

The planned work consists of installing steel support frames, known as sets, within the adit to resist ground and seismic loading. The steel sets will be encased with concrete for additional strength and corrosion protection. In addition, the voids surrounding the existing concrete liner and geologic formation will be filled with grout to stabilize the ground above the adit.

In March 2012, Metropolitan's Board authorized final design for rehabilitation of the San Jacinto East Adit. Final design has been completed, and construction is recommended to move forward at this time. The work is planned to be completed during a CRA shutdown scheduled for February 2014.

#### **San Jacinto East Adit Rehabilitation – Construction (\$2.7 million)**

Specifications No. 1740 for the San Jacinto East Adit Rehabilitation was advertised for bids on April 29, 2013. As shown in [Attachment 2](#), four bids were received on May 30, 2013. The low bid from L. H. Woods & Sons, Inc., in the amount of \$1,877,777, complies with the requirements of the specifications. The three higher bids ranged from approximately \$1.9 million to \$3.2 million. The engineer's estimate was \$1.5 million. The difference between the group of low bids and the engineer's estimate was investigated by the design consultant and can be attributed to higher bid costs for contact grouting of the voids surrounding the concrete liner, and for additional safety precautions including an enhanced safety barrier for work within the adit prior to the shutdown. For this contract, Metropolitan has established a Small Business Enterprise (SBE) participation level of at least 20 percent of the total bid amount. L. H. Woods & Sons, Inc. is an SBE firm and will thus achieve 100 percent participation.

This action appropriates \$2.7 million and awards a \$1,877,777 contract to L. H. Woods & Sons, Inc. for rehabilitation of the San Jacinto East Adit. In addition to the amount of the contract, the requested funds include \$127,000 for support by Metropolitan forces to dewater the tunnel, establish clearances, and return the system to service. The total cost of construction is \$2,004,777. The requested funds also include \$285,000 for construction inspection; \$110,000 for submittals review and record drawing preparation by the design consultant, Jacobs Associates, and by Metropolitan staff; \$90,000 for environmental monitoring and project management; and \$210,223 for remaining budget.

Metropolitan staff will perform inspection of the construction. For this project, the anticipated cost of inspection is approximately 14.2 percent of the total construction cost. Engineering Services' goal for inspection of projects with construction cost less than \$3 million is 9 to 15 percent.

The total estimated cost to complete this project, including the amount expended to date and the current funds requested, is \$3,181,000.

#### **Amendment to Agreement for Specialized Technical Support – Jacobs Associates**

Jacobs Associates performed final design of the San Jacinto East Adit repairs and is recommended to provide technical support during construction. As the Engineer of Record, Jacobs Associates will review submittals from the contractor, respond to requests for information, and provide technical support as required. This action authorizes an amendment to the existing agreement with Jacobs Associates to provide this support. The estimated cost of these services is \$80,000.

Jacobs Associates was also selected to perform preliminary design of repairs to the Iron Mountain Tunnel, which has exhibited similar cracks to those identified in the San Jacinto East Adit. Preliminary design of the Iron Mountain Tunnel repairs, based on the originally identified options for repair, has been completed. However, as a result of repair innovations identified for the San Jacinto East Adit, staff recommends that additional options be evaluated for repair of the Iron Mountain Tunnel. This work will be performed through the planned amendment to the existing Jacobs Associates agreement. No funds are required in this action for the additional efforts for Iron Mountain Tunnel, as sufficient funds were previously appropriated. The estimated cost for these services is \$130,000.

This action authorizes an increase of \$210,000 to the existing agreement with Jacobs Associates, for a new not-to-exceed total of \$575,000. Jacobs Associates was selected through a competitive process via Request for Qualifications No. 931. Amendment of the existing Jacobs Associates agreement is consistent with the agreement's scope of work, and with the planned approach for execution of the San Jacinto East Adit and Iron Mountain Tunnel repair projects. For this agreement, Metropolitan has established a Small Business Enterprise participation level of 18 percent.

### **Summary**

This action appropriates \$2.7 million; awards a \$1,877,777 contract to L. H. Woods & Sons, Inc. for rehabilitation of the San Jacinto East Adit; and authorizes an amendment to the existing professional services agreement with Jacobs Associates. This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2013/14 capital expenditure plan. See [Attachment 1](#) for the Financial Statement, [Attachment 2](#) for the Abstract of Bids, and [Attachment 3](#) for the Location Map.

This project is included within the CRA Conveyance Reliability Program (Appropriation No. 15373), which was initiated in fiscal year 2001/02. With the present action, the total funding for Appropriation No. 15373 will increase from \$83,008,000 to \$85,708,000.

### ***Project Milestone***

May 2014 – Completion of construction for rehabilitation of the San Jacinto East Adit

### **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 project was previously determined to be categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The project was found to be exempt by the Board under Class 1, Class 2, Class 3, and Class 4 (Sections 15301, 15302, 15303, and 15304 of the State CEQA Guidelines) on March 13, 2012. Since that time, the statute of limitations for challenges to the project has passed. With the current board action, there are no substantial changes proposed since the original project was first approved in 2012. Hence, the previous environmental documentation in conjunction with the project fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the Board to act with regards to the proposed action.

The CEQA determination is: Determine that the proposed action has been previously addressed in the 2012 categorical exemptions (Classes 1, 2, 3, and 4; Sections 15301, 15302, 15303, and 15304 of the State CEQA Guidelines) and that no further environmental analysis or documentation is required.

CEQA determination for Option #2:

None required

## Board Options

---

### Option #1

Adopt the CEQA determination that the proposed action has been previously determined to be categorically exempt and

- a. Appropriate \$2.7 million;
- b. Award \$1,877,777 contract to L. H. Woods & Sons, Inc. for rehabilitation of the San Jacinto East Adit; and
- c. Authorize increase of \$210,000 to the existing agreement with Jacobs Associates, for a new not-to-exceed total of \$575,000.

**Fiscal Impact:** \$2.7 million in capital funds under Approp. 15373

**Business Analysis:** This action will restore access for inspection, maintenance, and repair activities on the San Jacinto Tunnel; protect Metropolitan's assets; enhance reliability of water deliveries through the CRA; and reduce the risk of costly emergency repairs.

### Option #2

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

**Fiscal Impact:** None

**Business Analysis:** This option may or may not result in lower bids, and would forego an opportunity to enhance reliability of the CRA.

## Staff Recommendation

---

### Option #1

	6/18/2013
Gordon Johnson Manager/Chief Engineer Engineering Services	Date
	6/25/2013
Jeffrey Kichtlinger General Manager	Date

[Attachment 1 – Financial Statement](#)

[Attachment 2 – Abstract of Bids](#)

[Attachment 3 – Location Map](#)

### Financial Statement for CRA Conveyance Reliability Program

A breakdown of Board Action No. 18 for Appropriation No. 15373 for the San Jacinto East Adit Rehabilitation<sup>1</sup> is as follows:

	<b>Previous Total Appropriated Amount (Mar. 2012)</b>	<b>Current Board Action No. 18 (July 2013)</b>	<b>New Total Appropriated Amount</b>
Labor			
Studies & Investigations	\$ 3,293,300	\$ -	\$ 3,293,300
Final Design	4,305,687	-	4,305,687
Owner Costs (Program mgmt, envir. monitoring)	5,093,600	90,000	5,183,600
Submittal Reviews & Record Dwgs.	231,000	30,000	261,000
Construction Inspection & Support	5,954,220 <sup>2</sup>	285,000	6,239,220
Metropolitan Force Construction	7,984,620	127,000	8,111,620
Materials & Supplies	1,710,300	-	1,710,300
Incidental Expenses	392,800	-	392,800
Professional/Technical Services	3,923,000	-	3,923,000
Jacobs Associates	215,000	80,000	295,000
Right of Way	10,000	-	10,000
Equipment Use	211,450	-	211,450
Contracts	46,632,413	1,877,777	48,510,190
Remaining Budget	3,050,610 <sup>2</sup>	210,223	3,260,833
<b>Total</b>	<b>\$ 83,008,000</b>	<b>\$ 2,700,000</b>	<b>\$ 85,708,000</b>

#### Funding Request

<b>Program Name:</b>	CRA Conveyance Reliability Program		
<b>Source of Funds:</b>	Revenue Bonds, Replacement and Refurbishment or General Funds		
<b>Appropriation No.:</b>	15373	<b>Board Action No.:</b>	18
<b>Requested Amount:</b>	\$ 2,700,000	<b>Budget Page No.:</b>	285
<b>Total Appropriated Amount:</b>	\$ 85,708,000	<b>Total Program Estimate:</b>	\$120,459,000

<sup>1</sup> The total amount expended to date on the San Jacinto Tunnel East Adit Rehabilitation project is approximately \$480,000. The total estimated cost to complete this project, including the amount expended to date and the current funds requested, is \$3,181,000.

<sup>2</sup> Includes previous reallocation of \$60,000 from Remaining Budget to the San Jacinto Diversion Structure & Service Connection DW-CV-4 for preparation of record drawings and construction management.

**The Metropolitan Water District of Southern California**

**Abstract of Bids Received on May 30, 2013 at 2:00 P.M.**

**Specifications No. 1740**

**San Jacinto Tunnel East Adit Rehabilitation**

The project consists of installation of steel structural support frames, application of shotcrete coating, and contact grouting.

**Engineer's Estimate: \$1,500,000**

<b>Bidder and Location</b>	<b>Total</b>	<b>SBE \$</b>	<b>SBE %</b>	<b>Met SBE<sup>1</sup></b>
<b>L. H. Woods &amp; Sons, Inc., Vista, CA</b>	<b>\$ 1,877,777</b>	<b>\$ 1,877,777</b>	<b>100%</b>	<b>Yes</b>
Gantry Constructors, Inc., Clarkdale, AZ	\$1,906,393	-	-	-
J.F. Shea Construction, Inc., Walnut, CA	\$1,945,577	-	-	-
Mladen Buntich Construction Co., Inc., Upland, CA	\$3,179,250	-	-	-

<sup>1</sup> SBE (Small Business Enterprise) participation level set at 20 percent

### Location Map

