



- Board of Directors
Engineering and Operations Committee

6/14/2011 Board Meeting

7-2

Subject

Appropriate \$260,000; and authorize two pipeline cathodic protection projects (Approp. 15441)

Description

This action authorizes two pipeline protection projects within Metropolitan's distribution system: (1) construction of a stray current drain station on the Calabasas Feeder; and (2) preliminary design of stray current drain stations on the Sepulveda Feeder South.

Timing and Urgency

Recent corrosion surveys of the Calabasas Feeder and Sepulveda Feeder South have identified that these prestressed concrete cylinder pipe (PCCP) lines are experiencing induced stray current corrosion damage. While the corrosion damage is not yet extensive, further deterioration of these pipelines may lead to eventual leakage and possible rupture. The planned cathodic protection systems are a proactive and cost-effective measure to mitigate against stray current interference, and will reduce the risk for costly emergency repairs. Given the importance of these pipelines in delivering treated water to Metropolitan's member agencies, staff recommends moving forward with the two projects at this time.

These projects have been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria and are categorized as Infrastructure Rehabilitation and Replacement projects. These two projects are budgeted within Metropolitan's CIP for fiscal year 2010/11.

Background

Buried metallic pipelines are often protected from corrosive soils by the installation of cathodic protection systems. These systems may in turn cause corrosion of other adjacent pipelines through the introduction of stray currents into the surrounding soil. Stray currents may flow onto adjacent pipelines in one area, travel along the pipeline, and then leave the pipe (with resulting corrosion) to re-enter the earth. These induced stray currents are known to cause corrosion on metallic pipes and may cause significant loss of the metal. PCCP sections are fabricated with tightly wound steel reinforcing wire that is covered with cement mortar. Corrosion is the major cause of prestressing wire breakage and potential failure of PCCP sections.

Metropolitan has 163 miles of PCCP lines, which are measured for stray currents every 1 to 2 years. When stray currents are detected, staff typically installs cathodic protection systems to extend the life of the pipelines and alleviate the potential for emergency repairs. Two types of cathodic protection systems are used: galvanic cathodic protection and impressed current cathodic protection. Under galvanic cathodic protection systems, which are also referred to as current drain stations, anodes are electrically connected to the pipeline metal without using a power source. Because the anodes are composed of metals that are more easily oxidized than welded steel pipe and PCCP materials, the anodes corrode first and continue to corrode until they need to be replaced. Impressed current cathodic protection systems use an external power source to apply a protective current to the pipeline. This protective current is then discharged through anodes as in the current drain system.

Impressed current systems cost more to install and maintain than current drain stations because an external power source is used. However, impressed current systems are more effective when stray current levels are high and in areas where stray currents fluctuate. Replacement intervals for both systems typically range from 10 to 20 years. The type of cathodic protection to be used is determined based on the level of stray current interference, soil conditions, installation and maintenance costs, and availability of a power source.

The two projects included in this action will install cathodic protection systems on five miles of PCCP lines. A majority of the work sites are located within public rights-of-way.

Project No. 1 – Calabasas Feeder Cathodic Protection System – Construction (\$122,000)

The Calabasas Feeder delivers treated water from the Jensen plant to Las Virgenes Municipal Water District. The Calabasas Feeder is located in western Los Angeles County and extends 9.3 miles south from West Valley Feeder No. 2. This 54-inch diameter PCCP line was constructed in 1975. Recent testing performed by Metropolitan staff identified the presence of stray current interference along the Calabasas Feeder.

In June 2010, Metropolitan's Board authorized final design of a new stray current drain station for the Calabasas Feeder. The project will install one current drain station to protect approximately 1,100 feet of pipeline between stations 118+96 and 130+00. This work includes the installation of anodes, reference electrodes, test station cabinet, and conduits.

Specifications No. 1694 for the Calabasas Feeder Stray Current Drain Station project was advertised for bids on February 10, 2011. As shown in [Attachment 2](#), nine bids were received and opened on March 29, 2011. The low bid from Unispec Construction, Inc., in the amount of \$62,600, complies with the requirements of the specifications. The eight higher bids ranged from \$79,895 to \$144,738. The engineer's estimate was \$125,000. Staff believes that the difference between the engineer's estimate and the low bid reflects the current highly competitive bidding environment. For this project, Metropolitan did not establish a Small Business Enterprise participation level due to the limited scope of work and short construction duration.

This action appropriates \$122,000 in budgeted funds and authorizes construction of a stray current drain station on the Calabasas Feeder. The contract is planned to be awarded to Unispec Construction, Inc. under the General Manager's Administrative Code authority to award contracts of \$250,000 or less. In addition to the amount of the contract, the requested funds include \$15,600 for Metropolitan force construction, which includes surveying and start-up testing. The total construction cost is \$78,200. The appropriated funds also include \$11,100 for construction inspection; \$10,700 for permits and project management; \$6,500 for submittals review and record drawing preparation by Metropolitan staff; and \$15,500 for remaining budget.

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

Project No. 2 – Sepulveda Feeder South Cathodic Protection System – Preliminary Design Phase (\$138,000)

The Sepulveda Feeder delivers treated water from the Jensen plant to an interconnection with the Second Lower Feeder in Torrance. The Sepulveda Feeder is approximately 42 miles long and was installed in the early 1970s. Most of the feeder (approximately 37 miles) is constructed of PCCP and is located within a dense urban area. The feeder has a relatively high operating pressure (280 psi).

In 1998, Metropolitan installed three stray current drain stations on the Sepulveda Feeder South to mitigate stray current interference detected during routine monitoring. Recent testing performed by Metropolitan staff has identified that most of these drain stations are no longer able to effectively mitigate stray currents because they have reached the end of their service life. In addition, staff has identified the need for 21 new drain stations to mitigate newly detected stray current interference.

Staff recommends proceeding with preliminary design to rehabilitate the three existing stray current drain stations and add 21 new stations along the Sepulveda Feeder South to protect the feeder for approximately five miles between stations 2005+87 and 2270+51.

This action appropriates \$138,000 in budgeted funds and authorizes preliminary design phase activities for the Sepulveda Feeder South stray current drain stations. Planned activities include field measurements and site surveys, preparation of a preliminary design report and environmental documentation, local agency permitting, and development of a construction cost estimate. All preliminary design activities will be performed by Metropolitan staff. Staff will return to the Board at a later date for authorization of final design.

Summary

This action appropriates \$260,000 and authorizes two pipeline protection projects within the distribution system. All work has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds have been included in the fiscal year 2010/11 capital budget. See [Attachment 1](#) for the Financial Statement, [Attachment 2](#) for the Abstract of Bids, and [Attachment 3](#) for the Location Map.

These projects are included within capital Appropriation No. 15441, the Conveyance and Distribution System Rehabilitation Program Phase 2, which was initiated in fiscal year 2006/07. Appropriation No. 15441 also includes projects such as PCCP repairs of the Calabasas Feeder, Lake Skinner Outlet Conduit, Rialto Pipeline, San Diego Pipeline No. 5, and Sepulveda Feeder. With the current action, the total funding for Appropriation No. 15441 will increase from \$30,799,000 to \$31,059,000.

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 2011 – Completion of construction of Calabasas Feeder Cathodic Protection System

January 2012 – Completion of preliminary design of Sepulveda Feeder South Cathodic Protection System

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)

Project No. 1 – Calabasas Feeder Cathodic Protection System – Construction

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, 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 does 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

No. 2 – Sepulveda Feeder Cathodic Protection System – Preliminary 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 project involves the funding of a study and minor modifications to and replacement of existing public facilities with negligible or no expansion of use and no possibility of significantly impacting the physical environment. In addition, the proposed project will consist of basic data collection, and resource evaluation activities which does 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 a Class 1, Class 2, and Class 6 Categorical Exemptions (Sections 15301, 15302, and 15306 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 2, Section 15302; 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 \$260,000;
- b. Authorize construction of current drain stations for the Calabastas Feeder; and
- c. Authorize preliminary design of current drain stations for the Sepulveda Feeder South.

Fiscal Impact: \$260,000 in budgeted funds under Approp. No. 15441

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

Option #2

Do not authorize the cathodic protection projects at this time.

Fiscal Impact: Unknown

Business Analysis: Under this option, staff will continue to monitor levels of stray current and corrosion. This option would forego an opportunity to enhance reliability and extend the service life on two PCCP pipelines, and could lead to higher costs, more extensive repairs, and unplanned shutdowns.

Staff Recommendation

Option #1



Gordon Johnson
Manager/Chief Engineer,
Engineering Services

5/23/2011

Date



Jeffrey Kightlinger
General Manager

5/31/2011

Date

Attachment 1 – Financial Statement

Attachment 2 – Abstract of Bids

Attachment 3 – Location Map

Ref# es12610646

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

A breakdown of Board Action No. 32 for Appropriation No. 15441 for two Stray Current Drain Station projects for the Calabasas Feeder and Sepulveda Feeder* is as follows:

	Previous Total Appropriated Amount (May 2011)	Current Board Action No. 32 (June 2011)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 1,862,000	\$ 108,000	\$ 1,970,000
Final Design	2,331,400	-	2,331,400
Owner Costs (Program mgmt, permitting)	3,695,150	27,200	3,722,350
Submittals Review & Record Drwgs	-	6,500	6,500
Construction Inspection	1,414,000	11,100	1,425,100
Metropolitan Force Construction	6,956,700	15,600	6,972,300
Materials and Supplies	1,438,100	-	1,438,100
Incidental Expenses	770,400	-	770,400
Professional/Technical Services	1,118,500	-	1,118,500
Equipment Use	228,200	-	228,200
Contracts	8,074,130	62,600	8,136,730
Remaining Budget	2,910,420	29,000	2,939,420
Total	\$ 30,799,000	\$ 260,000	\$ 31,059,000

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.:	32
Requested Amount:	\$ 260,000	Capital Program No.:	15441-I
Total Appropriated Amount:	\$ 31,059,000	Capital Program Page No.:	277
Total Program Estimate:	\$ 68,224,000	Program Goal:	I-Infrastructure Reliability

* The total amount expended to date on the stray current drain stations for the Calabasas Feeder is approximately \$50,000.

* This is the initial appropriation on the stray current drain stations for the Sepulveda Feeder.

The Metropolitan Water District of Southern California
Abstract of Bids Received on March 29, 2011 at 2:00 P.M.
Specifications No. 1694
Calabasas Feeder Stray Current Drain Station

The work consists of installing twenty-two 60-pound zinc anodes to protect the Calabasas Feeder.

Engineer's Estimate: \$125,000

Bidder and Location	Total Bid	SBE \$	SBE%	Met SBE*
Unispec Construction, Inc., San Pedro, CA	\$62,600	N/A	N/A	N/A
Unique Performance Construction, Inc., Costa Mesa, CA	\$79,895	-	-	-
AToM, Inc., Hemet, CA	\$81,359	-	-	-
O'Connell Engineering & Construction, Inc., Winchester, CA	\$84,000	-	-	-
STL Landscape, Inc., Los Angeles, CA	\$88,000	-	-	-
JM Communications, Inc., Van Nuys, CA	\$89,550	-	-	-
Farwest Corrosion Control Company, Inc., Gardena, CA	\$94,750	-	-	-
G. Hurtado Construction, Inc., Riverside, CA	\$108,423	-	-	-
American Construction and Supply, Inc., Corte Madera, CA	\$144,738	-	-	-

* Metropolitan did not establish a Small Business Enterprise (SBE) participation level.

Stray Current Drain Station Projects

