THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

BOARD ACTION

- Board of Directors
  Engineering and Operations Committee

11/18/2014 Board Meeting

7-1

Subject

Appropriate $1.58 million; and authorize design and procurement to replace valves on the Palos Verdes Feeder and Middle Feeder (Approps. 15441 and 15480)

Executive Summary

This action authorizes two distribution system rehabilitation projects: (1) design and procurement to replace valves in the Collis Avenue Valve Structure in the city of Los Angeles; and (2) design and procurement to replace valves in a blow-off structure on the Middle Feeder in the city of Compton.

Timing and Urgency

The 52-year-old Collis Valve is a spherical valve that controls flow in the Palos Verdes Feeder and maintains upstream water levels at the Eagle Rock Control Tower. This 42-inch valve was designed for isolation/shutoff duty only. As a result of its long-term use as a control valve, it has deteriorated and no longer functions properly. This valve needs to be replaced with a new control valve designed for the specific operating conditions.

After 60 years in operation, two 12-inch blow-off valves on the Middle Feeder have deteriorated and need to be replaced. The blowoff structure enables the feeder to be dewatered quickly in the event of an emergency, and provides an access point for routine maintenance and inspection. At the present time, the primary blow-off valve does not open and close reliably and the secondary valve is frozen in the open position.

Staff recommends moving forward with these valve replacement projects to avoid unscheduled shutdowns of the two feeders. Both projects have been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria, and are categorized as Infrastructure Reliability projects. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2014/15.

Details

Background

The Palos Verdes Feeder is a 54-inch-diameter welded steel pipeline that was constructed in 1941. This feeder is one of Metropolitan's primary supply lines serving the Central Pool portion of the distribution system. The Palos Verdes Feeder extends 31 miles south from the Eagle Rock Control Tower to Palos Verdes Reservoir. It delivers treated water to eight member agencies.

The Collis Valve is located within the Collis Avenue Valve Structure on the Palos Verdes Feeder, in the community of El Sereno. This facility was constructed in 1962. The 42-inch spherical valve is located inside a buried vault, 25 feet below grade within Collis Avenue. Spherical valves are similar to ball valves, but are designed for isolation duty instead of throttling and control. In addition to the spherical valve, there are two 12-inch bypass lines with butterfly and plug valves.

Normal operation of the Palos Verdes Feeder has evolved over time. The Collis Valve Structure was originally used to isolate the feeder for shutdowns, but has been used for several decades to control flow in the Palos Verdes Feeder and control the upstream hydraulic grade elevation in the Upper Feeder. The Collis Valve has become

increasingly difficult to open and close, and often freezes in position. Failure of the Collis Valve could result in cascading flows, causing air entrainment and reduced flowrates within the Palos Verdes Feeder. Staff performed a detailed inspection of the valve structure and determined that the Collis Valve, the adjacent bypass valves, and the interconnecting piping has deteriorated significantly and cannot be repaired in place. The Palos Verdes Feeder is presently planned to be shut down in late 2015. Given the opportunity to rehabilitate the valve structure during a scheduled shutdown, Metropolitan's Board authorized preliminary design of the improvements in April 2012. Preliminary design is now complete, and staff recommends proceeding with final design and procurement of new valves for the Collis Avenue Valve Structure at this time.

The Middle Feeder is a 72-inch-diameter pipeline with a length of approximately 36 miles. The first reach from Garvey Reservoir to the Victoria Street Lateral was placed into service in 1953, while the second reach from the F. E. Weymouth Water Treatment Plant to Garvey Reservoir commenced service in 1958. The Middle Feeder delivers treated water from the Weymouth plant to five member agencies.

A blowoff structure on the Middle Feeder within the city of Compton contains two 12-inch lubricated plug valves that are used to control the dewatering flowrates when the feeder is shut down. Staff performed a detailed inspection of the structure and determined that these valves have deteriorated beyond repair following 60 years of operation. The primary valve no longer operates reliably and the secondary valve is presently frozen in the open position. Failure of the primary valve could result in an unplanned discharge of water into the Los Angeles River or an extended shutdown to dewater the pipeline using submersible pumps.

Staff recommends proceeding with design and procurement to replace the blow-off valves. Installation of the valves will take place during a shutdown of the Middle Feeder scheduled for late 2015.

Project No. 1 - Collis Valve Replacement – Design and Procurement ($1,230,000)

This project will replace the existing 42-inch spherical valve with a new 42-inch multi-orifice valve that will provide more effective flow control. The two bypass lines will be modified to control a low range of flowrates by installing a 12-inch diameter plunger valve on each line. The combination of the multi-orifice valve on the main line and the smaller valves on the bypass lines will allow control of a wide range of flows, which will enable more effective operation of the feeder. Due to the vault's location within a public street, shoring and traffic control must be addressed. The 42-inch multi-orifice valve, the 12-inch plunger valves, and the 12-inch isolation valves will be procured in advance of construction due to the long lead time for manufacturing.

Planned design phase activities include advanced procurement of piping materials and seven valves; preparation of plans and specifications for the construction contract; receipt of bids; local agency permitting; shutdown planning with member agencies; valve factory inspection and submittals review; and development of a construction estimate. All final design phase activities will be performed by Metropolitan staff.

This action appropriates $1.23 million and authorizes design and procurement to replace the Collis Valve on the Palos Verdes Feeder. Requested funds include $264,000 for final design; $725,000 for procurement of the valves and piping materials; $94,000 for permitting, bidding, and project management; and $147,000 for remaining budget. Four procurement contracts for the piping and three types of valves are planned to be awarded under the General Manager's Administrative Code Authority to award contracts of $250,000 or less. For this project, the final design cost as a percentage of the estimated construction cost is approximately 13.2 percent. 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 million to $2.3 million. Staff will return to the Board for award of the construction contract.

Project No. 2 – Middle Feeder Blow-off Valve Replacement – Design and Procurement ($350,000)

The planned work includes replacing the existing 12-inch diameter lubricated plug valves with new valves. The roof of the existing underground vault will need to be removed in order to install the valves, and will be replaced with a new top slab with a removable vault lid to enable access for future work. Due to the vault's location within a public street, shoring and traffic control must be addressed. The two 12-inch lubricated plug valves will be procured prior to construction due to the long lead time for manufacturing.

Planned final design phase activities include field surveys; preparation of plans and specifications for the construction contract; receipt of bids; local agency permitting; shutdown planning with member agencies; valve inspection and submittal review; and development of a construction cost estimate. All design phase activities will be performed by Metropolitan staff.

This action appropriates $350,000 and authorizes design and procurement to replace blowoff valves on the Middle Feeder. Requested funds include $120,000 for design; $66,000 for permitting, receipt of bids, and project management; $126,000 for procurement of valves; and $38,000 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. For this project, the final design cost as a percentage of the estimated construction cost is approximately 14 percent. 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 $850,000 to $1.05 million. Staff will return to the Board for award of a construction contract.

Summary

This action appropriates $1.58 million and authorizes two rehabilitation projects to replace valves on the Palos Verdes and Middle Feeders. These projects have been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2014/15 capital expenditure plan. See **Attachment 1** for the Financial Statements and **Attachment 2** for the Location Map.

The total estimated cost to complete the Collis Valve Replacement project, including the amount authorized to date, current funds requested, and future construction cost, is anticipated to range from $2.8 million to $3.1 million.

The Collis Valve Replacement project is included within capital Appropriation No. 15441, the Conveyance and Distribution System Rehabilitation Appropriation - FY 2006/07 Through FY 2011/12, which was initiated in fiscal year 2006/07. With the present action, the total funding for Appropriation No. 15441 will increase from $60,439,000 to $61,669,000.

The total estimated cost to complete the Middle Feeder Blowoff Valve Replacement project, including the current funds requested and future construction cost, is anticipated to range from $1.2 million to $1.4 million.

Middle Feeder Blow-off Valve Replacement project is included within capital Appropriation No. 15480, the Conveyance and Distribution System Rehabilitation Appropriation - FY 2012/13 Through FY 2017/18, which was initiated in fiscal year 2012/13. With the present action, the total funding for Appropriation No. 15480 will increase from $19,610,000 to $19,960,000.

Project Milestones

May 2015 – Delivery of Middle Feeder valves

June 2015 – Completion of design for the Collis Valve and Middle Feeder Valve Replacement projects

July 2015 – Delivery of Collis valves

November 2015 – Completion of installation of Collis valves

December 2015 – Completion of installation of Middle Feeder valves

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriation

Metropolitan Water District Administrative Code Section 8121: 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, 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

Board Options

Option #1

Adopt the CEQA determination that the proposed action is categorically exempt, and

a. Appropriate $1.58 million; and
b. Authorize design and procurement to replace valves on the Palos Verdes and Middle Feeders.

Fiscal Impact: $1.23 million in capital funds under Approp. No. 15441 and $350,000 in capital funds under Approp. No. 15480

Business Analysis: This option will enhance delivery reliability to member agencies, protect Metropolitan's assets, and reduce the risk of costly emergency repairs.

Option #2

Do not authorize the two valve replacement projects at this time.

Fiscal Impact: None

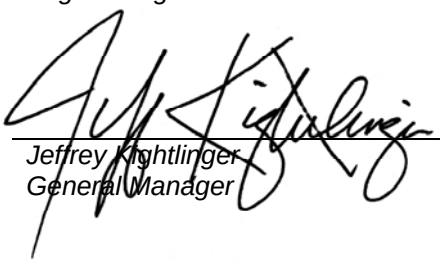
Business Analysis: This option would forgo an opportunity to enhance delivery to Metropolitan's member agencies, and could lead to higher costs, more extensive repairs, and unplanned shutdowns.

Staff Recommendation

Option #1

10/28/2014

Gordon Johnson *Date*
Manager/Chief Engineer,
Engineering Services



11/5/2014

Jeffrey Kightlinger *Date*
General Manager

Attachment 1 – Financial Statements
Attachment 2 – Location Map

Ref# es12633549

Financial Statement for Conveyance and Distribution System Rehabilitation Appropriation – FY 2006/07 Through FY 2011/12

A breakdown of Board Action No. 66 for Appropriation No. 15441 for replacement of a sectionalizing valve on the Palos Verdes Feeder[1] is as follows:

	Previous Total Appropriated Amount (Sep. 2014)	Current Board Action No. 66 (Nov. 2014)	New Total Appropriated Amount
Labor			
Studies & Investigations	$ 4,305,000	$ -	$ 4,305,000
Final Design	4,747,293	264,000	5,011,293
Owner Costs (Program mgmt., permitting, bidding)	6,401,123[3]	94,000	6,495,123
Submittals Review & Record Drawings	655,670	-	655,670
Construction Inspection & Support	3,402,550	32,000	3,434,550
Metropolitan Force Construction	10,757,710	-	10,757,710
Materials & Supplies	2,375,400	-	2,375,400
Valves, fabrication	-	693,000	693,000
Incidental Expenses	945,900	-	945,900
Professional/Technical Services	2,801,000[3]	-	2,801,000
Right-of-Way	550,000	-	550,000
Equipment Use	330,200	-	330,200
Contracts	20,711,254[3]	-	20,711,254
Remaining Budget	2,455,900[2]	147,000	2,602,900
Total	**$ 60,439,000**	**$ 1,230,000**	**$ 61,669,000**

Funding Request

Appropriation Name:	Conveyance and Distribution System Rehabilitation Appropriation – FY 2006/07 Through FY 2011/12		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15441	**Board Action No.:**	66
Requested Amount:	**$** 1,230,000	**Budget Page No.:**	272
Total Appropriated Amount:	**$** 61,669,000	**Total Appropriation Estimate:**	**$** 121,000,000

[1] The total amount expended to date on the Collis Valve Replacement project is approximately $184,597. The total estimated cost to complete this project, including the amount authorized to date, current funds requested, and future construction cost, is anticipated to range from $2.8 million to $3.1 million.

[2] Includes reallocation of $85,000 to Upper Feeder Cathodic Protection for contraction changes due to unanticipated site conditions.

[3] Includes adjustments to include funds appropriated under Board Action No. 64, which were not reflected on Action No. 65.

Financial Statement for Conveyance and Distribution System Rehabilitation Appropriation – FY 2012/13 Through FY 2017/18

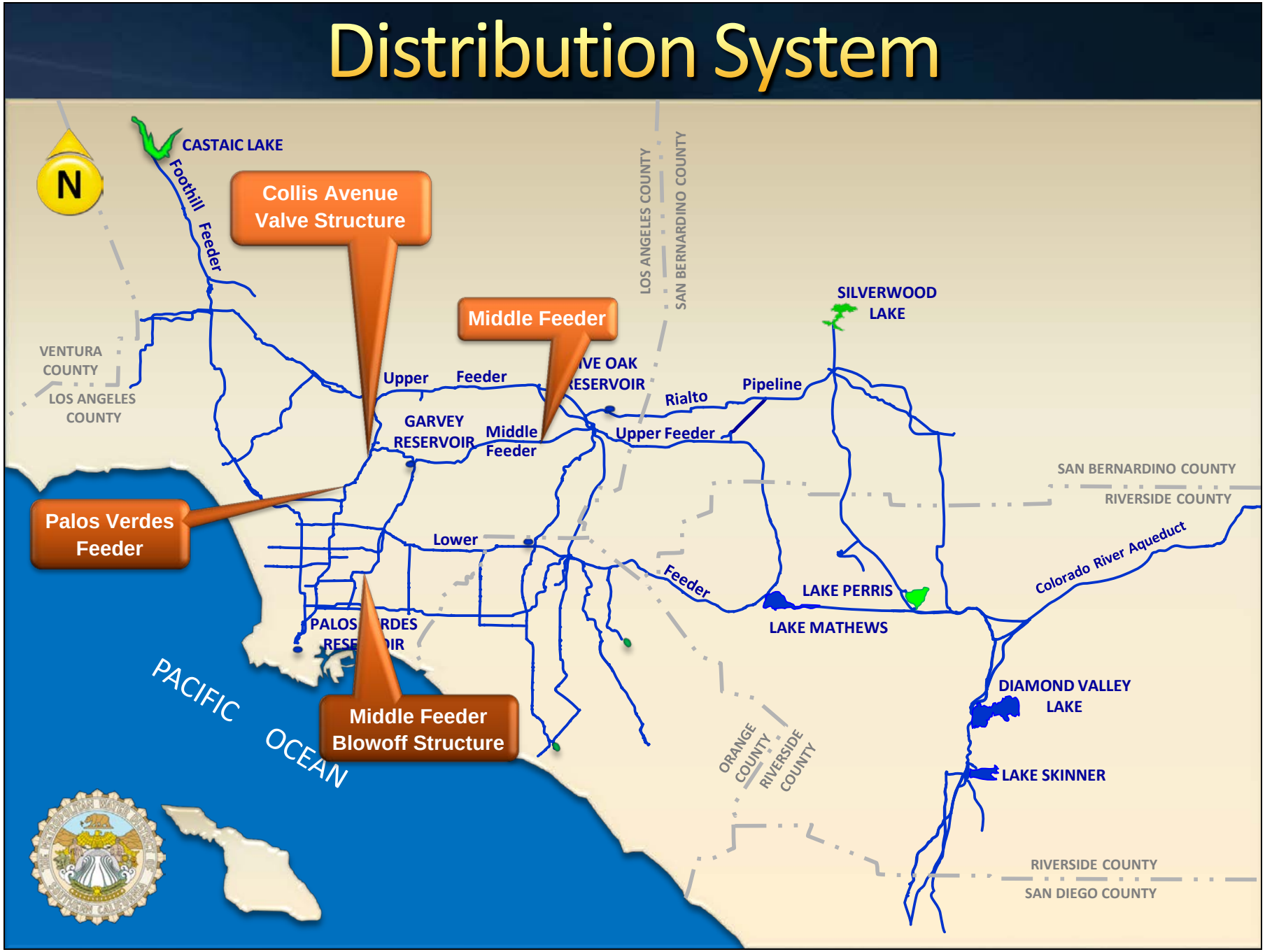
A breakdown of Board Action No. 9 for Appropriation No. 15480 for replacement of two blowoff valves on the Middle Feeder[1] is as follows:

	Previous Total Appropriated Amount (Sep. 2014)	Current Board Action No. 9 (Nov. 2014)	New Total Appropriated Amount
Labor			
Studies & Investigations	$ 712,000	$ -	$ 712,000
Final Design	982,000	120,000	1,102,000
Owner Costs (Program mgmt., permitting, bidding)	1,005,779	66,000	1,071,779
Submittals Review & Record Drawings	406,000	-	406,000
Construction Inspection & Support	1,477,000	26,000	1,503,000
Metropolitan Force Construction	1,399,000	-	1,399,000
Materials & Supplies	155,000	-	155,000
Valves	-	100,000	100,000
Incidental Expenses	37,000	-	37,000
Professional/Technical Services	1,249,000	-	1,249,000
Right-of-Way	11,000	-	11,000
Equipment Use	-	-	-
Contracts	10,082,555	-	10,082,555
Remaining Budget	2,093,666	38,000	2,131,666
Total	**$ 19,610,000**	**$ 350,000**	**$ 19,960,000**

Funding Request

Appropriation Name:	Conveyance and Distribution System Rehabilitation Appropriation – FY 2012/13 Through FY 2017/18		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15480	**Board Action No.:**	9
Requested Amount:	**$** 350,000	**Budget Page No.:**	274
Total Appropriated Amount:	**$** 19,960,000	**Total Appropriation Estimate:**	$ 255,000,000

[1] This is the initial appropriation for the Middle Feeder Blowoff Valve Replacement project. The total estimated cost to complete this project, including the current funds requested and future construction cost, is anticipated to range from $1.2 million to $1.4 million.


Distribution System
N
CASTAIC LAKE
Foothill Feeder
Collis Avenue Valve Structure
Middle Feeder
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
SILVERWOOD LAKE
VENTURA COUNTY
LOS ANGELES COUNTY
Upper Feeder
GARVEY RESERVOIR
Middle Feeder
Rialto Pipeline
Upper Feeder
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
Palos Verdes Feeder
Lower Feeder
Colorado River Aqueduct
LAKE PERRIS
LAKE MATHEWS
PACIFIC OCEAN
Middle Feeder Blowoff Structure
DIAMOND VALLEY LAKE
ORANGE COUNTY
RIVERSIDE COUNTY
LAKE SKINNER
RIVERSIDE COUNTY
SAN DIEGO COUNTY