



- Board of Directors
Engineering and Operations Committee

5/13/2014 Board Meeting

7-4

Subject

Appropriate \$1.95 million; and authorize: (1) final design to replace filter valves at the F. E. Weymouth Water Treatment Plant; and (2) amendment to agreement with Carollo Engineers, Inc. (Approp. 15369)

Executive Summary

This action authorizes final design to replace the filter valves and actuators at the F. E. Weymouth Water Treatment Plant, and authorizes an amendment to an existing professional services agreement to conduct the design.

Timing and Urgency

The filter valves at the Weymouth plant are 40 to 50 years old and need to be replaced. Despite receiving regular maintenance, the valves have gradually deteriorated through continuous use. This project will enhance reliability of the filtration process at the Weymouth plant.

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

Details

Background

The Weymouth plant was placed into service in 1941 with an initial capacity of 100 million gallons per day (mgd), and has been expanded twice to its current treatment capacity of 520 mgd. The plant delivers a blend of waters from the Colorado River Aqueduct and State Water Project to Metropolitan's Central Pool portion of the distribution system, and to an exclusive service area. The Weymouth plant is located in the city of La Verne.

The Weymouth plant has 48 filters distributed in two filter buildings. The 24 filters of Filter Building No. 1 were constructed in two phases in 1941 and 1949. The 24 filters of Filter Building No. 2 were added in 1962.

In a typical filtration cycle, filters are operated by opening and closing a series of valves which allow water to flow in and out of the filter beds during filtration and backwashing. These valves are designed to close tightly to prevent mixing of filtered and unfiltered water, and to prevent leakage into the washwater reclamation system. Recent inspections conducted by Metropolitan staff indicate that the Weymouth filter valves have deteriorated due to corrosion of the valve bodies and worn rubber seats, resulting from 40 to 50 years of continuous operation. Most of the valves no longer provide a water-tight seal, do not operate effectively, and need to be replaced.

The existing filter valves in Filter Building No. 1 have features and dimensions that do not conform to modern industry standards. During the 1960s, Metropolitan shifted to standardized valves and began specifying valves that conform to American Water Works Association (AWWA) standards. AWWA Standard No. C504-10 establishes the design requirements for valves typically used in filter applications, including specific valve body dimensions. The existing Filter Building No. 2 valves were designed to meet AWWA standards.

In March 2012, Metropolitan's Board authorized preliminary design to replace the filter valves at the Weymouth plant. Since direct replacement units for filter Building No.1 are no longer manufactured, the planned scope includes replacing filter valves at both of the filter buildings with AWWA-type rubber-lined butterfly valves, along with their actuators. Due to the dimensional differences between the existing valves and actuators at Filter Building No. 1, modifications will be required to the piping, electrical conduits, and structural supports at those filters. In Filter Building No. 2, no piping modifications are anticipated. The planned scope of the project also includes replacing the drain gates at Filter Building No. 1, and relocating any conflicting utilities.

During preliminary design, staff conducted field investigations using three-dimensional survey technology to detail the dimensions of the existing valves and adjacent piping. Staff also prepared conceptual layout drawings and developed a preliminary construction cost estimate. Preliminary design has now been completed, and staff recommends proceeding with final design to replace the valves.

Weymouth Filter Valve Replacement – Final Design Phase (\$1,950,000)

Each filter in Filter Building No. 1 contains one 48-inch drain gate and four filter valves, and each filter in Filter Building No. 2 contains five filter valves. These valves and gates operate in conjunction with 14 isolation valves within the backwash system to control and cleanse the filters. The valves range in diameter from 16 to 48 inches. A total of 230 valves and 24 drain gates need to be replaced.

Final design will be conducted in two efforts in order to expedite procurement of the equipment, which is anticipated to take 12 to 15 months. Metropolitan staff will develop procurement specifications and receive bids for the new valves and actuators, and will conduct value engineering of the installation work. Final design for installation of the valves and actuators will be performed by Carollo Engineers, Inc., as described below.

This action appropriates \$1.95 million and authorizes final design phase activities to replace the filter valves and actuators at the Weymouth plant. The requested funds include \$153,000 for hazardous material testing, field investigations, and shutdown planning; \$1,357,000 for preparation of procurement specifications and construction documents for the valve/actuator installation; \$310,000 for value engineering, prequalification and receipt of multiple bids, and for project management; and \$130,000 for remaining budget.

The anticipated cost of final design is approximately 9 percent of the estimated construction cost. Engineering Services' goal for design of projects with construction cost greater than \$3 million is 9 to 12 percent. The construction cost for this project, including the purchase cost of the valves and actuators, is anticipated to range from \$18 million to \$20 million.

Staff will return to the Board for award of the procurement and construction contracts.

Amendment to Agreement for Engineering Services (Carollo Engineers, Inc.)

Staff recommends that Carollo Engineers perform final design to replace the filter valves and actuators at the Weymouth plant. Carollo Engineers was selected through a competitive process via Request for Qualifications No. 927, and previously performed preliminary design. Amendment of the existing Carollo agreement is consistent with the agreement's scope of work and with the planned approach for project implementation. The planned scope of work includes detailed design, preparation of drawings and specifications, development of a construction cost estimate, and provision of technical assistance during bidding. The estimated cost for these services is \$877,000. This amount was negotiated following completion of the preliminary design.

This action authorizes an increase of \$877,000 to the existing agreement with Carollo Engineers, for a new not-to-exceed total of \$1.12 million, for final design to replace filter valves and actuators at the Weymouth plant. For this agreement, Metropolitan has established a Small Business Enterprise participation level of 20 percent. Carollo Engineers has agreed to meet this level of participation.

Summary

This action appropriates \$1.95 million, authorizes final design to replace filter valves at the Weymouth plant, and authorizes an amendment to the existing agreement with Carollo Engineers.

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 and [Attachment 2](#) for the Location Map.

This project is included within capital Appropriation No. 15369, the Weymouth Improvements Appropriation, which was initiated in fiscal year 2001/02. With the present action, the total funding for Appropriation No. 15369 will increase from \$169,929,000 to \$171,879,000. The total estimated cost to complete this project, including the amount authorized to date, current funds requested, and future construction costs, is anticipated to range from \$24 million to \$26 million.

Project Milestone

July 2015 – Completion of final design to replace filter valves and actuators at the Weymouth plant

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 environmental effects of funding, design, procurement of materials, construction and operation of the Weymouth Filter Valve Replacement Project (Project) were evaluated in the F. E. Weymouth Filtration Plant Ozonation Facilities and Site Improvements Program Final Environmental Impact Report (Final EIR), which was certified by the Board on April 12, 2005. The Board also approved the Findings of Fact (Findings), the Statement of Overriding Considerations (SOC), the Mitigation Monitoring and Reporting Program (MMRP), and the project itself. The current action is solely based on appropriation and authorization of funding and final design of the approved Project and not on any changes to the approved Project. Hence, the previous environmental documentation acted on by the Board in conjunction with the proposed action fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the Board to act on the proposed action.

The CEQA determination is: Determine that the proposed action has been previously addressed in the certified 2005 Final EIR, Findings, SOC, and MMRP 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 addressed in the certified EIR and that no further environmental analysis or documentation is required, and

- a. Appropriate \$1.95 million;
- b. Authorize final design to replace filter valves at the Weymouth plant; and
- c. Authorize increase of \$877,000 to the existing agreement with Carollo Engineers, Inc., for a new not-to-exceed total of \$1.12 million.

Fiscal Impact: \$1.95 million in capital funds under Approp. 15369

Business Analysis: This option will enhance reliability and performance of the filtration process at the Weymouth plant.

Option #2

Do not proceed with the Weymouth Filter Valve Replacement project at this time.

Fiscal Impact: None

Business Analysis: This option would forgo an opportunity to improve plant reliability and filter operating efficiency. Staff would replace the existing valves as they fail. Overall costs would increase, as staff would replace valves individually rather than through a planned program. There would be an increased risk of reduced plant capacity if filters are taken out of service as a result of valve failure.

Staff Recommendation

Option #1



Gordon Johnson
Manager/Chief Engineer,
Engineering Services
4/21/2014
Date



Jeffrey Kightlinger
General Manager
4/25/2014
Date

Attachment 1 – Financial Statement

Attachment 2 – Location Map

Financial Statement for Weymouth Improvements Appropriation

A breakdown of Board Action No. 41 for Appropriation No. 15369 for the Weymouth Filter Valve Replacement project¹ is as follows:

| | Previous Total Appropriated Amount (Nov. 2013) | Current Board Action No. 41 (May 2014) | New Total Appropriated Amount |
|-------------------------------------|---|---|--|
| Labor | | | |
| Studies & Investigations | \$ 2,801,477 | \$ - | \$ 2,801,477 |
| Final Design | 10,020,141 | 628,000 | 10,648,141 |
| Owner Costs (Program mgmt, bidding) | 8,237,275 | 260,000 | 8,497,275 |
| Submittals Review & Record Drwgs | 3,147,723 | - | 3,147,723 |
| Construction Inspection & Support | 14,031,690 | - | 14,031,690 |
| Metropolitan Force Construction | 7,973,780 | - | 7,973,780 |
| Materials & Supplies | 2,729,046 | - | 2,729,046 |
| Incidental Expenses | 718,748 | 5,000 | 723,748 |
| Professional/Technical Services | 12,821,100 | - | 12,821,100 |
| Carollo Engineers, Inc. | - | 877,000 | 877,000 |
| Value Engineering firm | - | 50,000 | 50,000 |
| Equipment Use | - | - | - |
| Contracts | 104,269,610 | - | 104,269,610 |
| Remaining Budget | 3,178,410 ² | 130,000 | 3,308,410 |
| Total | \$ 169,929,000 | \$ 1,950,000 | \$ 171,879,000 |

Funding Request

| | | | |
|-----------------------------------|---|--------------------------------------|---------------|
| Appropriation Name: | Weymouth Improvements Appropriation | | |
| Source of Funds: | Revenue Bonds, Replacement and Refurbishment or General Funds | | |
| Appropriation No.: | 15369 | Board Action No.: | 41 |
| Requested Amount: | \$ 1,950,000 | Budget Page No.: | 338 |
| Total Appropriated Amount: | \$ 171,879,000 | Total Appropriation Estimate: | \$296,443,000 |

¹The total amount expended to date on the Weymouth Filter Valve Replacement project is approximately \$912,000. The total estimated cost to complete this project, including the amount authorized to date, current funds requested, and future construction costs, is anticipated to range from \$24 million to \$26 million.

² Reflects previous reallocation of \$96,000 from Remaining Budget for the Weymouth Washwater Tanks Seismic Upgrades project to include the design of a new roof framing system for the west tank.

Distribution System

