

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

April 13, 2004 Board Meeting

8-2

Subject

Appropriate \$1.04 million; and award a construction contract for \$683,735 to Tri-Technic, Inc. for the Weymouth Plant-Convert Filter Building No. 2 Washwater Pumps to Variable Frequency Drive Project as part of the Weymouth Improvements Program (Approp. 15369)

Description

Weymouth Plant-Convert Filter Building No. 2 Washwater Pumps to Variable Frequency Drive (\$1.04 million)

The washwater pumps in Weymouth Filter Building No. 2 were originally placed into service in 1960. There are two types of service for these pumps. The washwater supply pumps send filtered water to the washwater tanks for storage, and the washwater return pumps transfer used filter backwash water from a sump to the washwater reclamation plant. The pumps' motors operate at 2.4 kilovolts (kV) with an on/off start. Washwater reclamation plants (WWRPs) operate best with slowly changing flowrates. Currently, the washwater pumps in Filter Building No. 2 are cycled on and off resulting in sudden spikes of higher flow that affect WWRP treatment capability and may reduce water quality of the WWRP effluent. The use of variable frequency drives (VFDs) will regulate flows and improve WWRP capacity and performance. Furthermore, the pump motors operate at an electrical voltage (2.4 kV) that is virtually obsolete. Since VFDs and spare parts are not readily available in this voltage, staff recommends replacement of the old 2.4 kV motors with new 480-volt motors. Conversion of the pumps' motor drives to variable frequency drives, and replacement of the 2.4 kV motors with 480-volt motors, will improve water treatment effectiveness and increase the reliability of plant operations.

In March 2003, Metropolitan's Board authorized final design of these facilities. The current action awards a \$683,735 construction contract to Tri-Technic, Inc. to perform the work as described in Specifications No. 1491, and authorizes construction management support for this project. The engineer's estimate was \$725,000. Tri-Technic, Inc. is a Small Business Enterprise firm.

This project has been evaluated and recommended by Metropolitan's Capital Investment Plan Evaluation Team and funds have been included in the fiscal year 2003/04 capital budget under the Weymouth Improvements Program (Approp. 15369).

See [Attachment 1](#) for the detailed report, [Attachment 2](#) for the financial statement, [Attachment 3](#) for the abstract of bids, and [Attachment 4](#) for the location map.

Policy

Metropolitan Water District Administrative Code § 5108: Capital Project Appropriation

Metropolitan Water District Administrative Code § 8113: Construction Contract Award

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed project was previously determined to be categorically exempt under the provisions of CEQA and State CEQA Guidelines. Specifically, the activities associated with this project were found by the Board to be exempt pursuant to Sections 15301 and 15302 of the State CEQA Guidelines on March 11, 2003, and a Notice of

Exemption (NOE) was filed on the project at that time. Subsequently, staff concluded that a new electrical substation would be necessary to power the washwater return and supply pumps in Filter Building No. 2, along with a proposed new solids handling facility. Metropolitan as the Lead Agency prepared a Mitigated Negative Declaration (MND) for the Weymouth Solids Handling Facilities Project, which included an environmental analysis of the electrical substation, both for Filter Building No. 2 and the solids handling project. The MND was distributed for a 30-day public review period that began on May 28, 2003, and ended on June 26, 2003. The Board later adopted the MND and the Mitigation Monitoring and Reporting Program (MMRP) on August 19, 2003. With the current board actions, there are no substantial changes proposed to the project since the NOE was filed and the MND was adopted. Hence, the previous environmental documentation prepared for this project fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the Board to act with regard to the proposed actions.

The CEQA determination is: Determine that the proposed actions have been previously addressed in the 2003 NOE (Classes 1 and 2, Sections 15301 and 15302 of the State CEQA Guidelines), along with the adopted 2003 MND and its MMRP, and that no further environmental analysis or documentation is required.

CEQA determination for Option #2:

None required

Board Options/Fiscal Impacts

Option #1

Adopt the CEQA determination and

- a. Appropriate \$1.04 million in budgeted funds; and
- b. Award a construction contract in the amount of \$683,735 to Tri-Technic, Inc. to perform all work as described in Specifications No. 1491 for the Weymouth Plant-Convert Filter Building No. 2 Washwater Pumps to Variable Frequency Drive Project.

Fiscal Impact: \$1.04 million under Approp. 15369

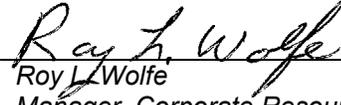
Option #2

Do not award a construction contract for replacement of washwater pump drives. Rebidding the contract would have an unknown impact on project costs.

Fiscal impact: None

Staff Recommendation

Option #1

 _____ Roy L. Wolfe Manager, Corporate Resources	3/18/2004 Date
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 _____ Ronald R. Gastelum Chief Executive Officer	3/23/2004 Date
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Attachment 1 – Detailed Report

Attachment 2 – Financial Statement

Attachment 3 – Abstract of Bids

Attachment 4 – Location Map

Detailed Report

The F. E. Weymouth Filtration Plant (Weymouth plant) was placed into service in 1941 with an initial capacity of 100 mgd. The Weymouth plant was expanded twice to its current capacity of 520 mgd. The plant delivers treated water to Metropolitan's Central Pool portion of the distribution system.

The Weymouth Improvements Program was established to implement multiple projects necessary to ensure plant reliability and comply with drinking water and environmental regulations.

Weymouth Plant-Convert Filter Building No. 2 Washwater Return Pumps to Variable Frequency Drive (\$1.04 million)

Purpose/Background

Weymouth Filter Building No. 2 was constructed in 1960 as part of Expansion No. 2. During filter backwash operations, all backwash water from the 24 east filters drains into a sump in Filter Building No. 2. From this sump, the backwash water is pumped to the Washwater Reclamation Plant (WWRP) via two return pumps. The three washwater supply pumps send filtered water to the washwater tanks for storage. The five pumps' motors are rated at 2.4 kV, each with an on/off start. This project will convert the pump motors from 2.4 kV to 480 volts and add variable-frequency drives (VFDs) and an electrical substation.

A higher coagulant dosage is required to comply with Stage 1 of the Disinfectants/Disinfection By-Products Rule when treating higher percentages of State project water. A higher coagulant dosage results in increased residual solids loading in the WWRP and requires improved performance of the WWRP. Water quality pilot studies have shown that washwater reclamation plants operate best with stable, slowly changing flowrates. Sudden spikes of higher flow from a pump starting can result in poor water quality exiting the reclamation plant. The use of VFDs will allow the pumps to regulate the flows into the WWRP, reduce start/stop cycles, and prolong the life of the electric motors. This improvement will enhance the overall treatment effectiveness and improve water quality.

The Weymouth plant's electrical system features a distribution voltage of 2.4kV, which is virtually obsolete. VFDs and other electrical equipment are not readily available in this voltage. In addition, electricians must be certified in high voltage systems to safely maintain the 2.4 kV system. Conversion of these motors from 2.4 kV to 480 volts will simplify maintenance, provide compatibility with planned ozone and solids handling facilities, and allow consistent operation and maintenance practices with the pumps in Filter Building No. 1. A new 1,000 kV electrical substation will provide 480-volt power to both the washwater return and supply pumps in Filter Building No. 2 and the upcoming new solids handling facility.

In March 2003, Metropolitan's Board authorized final design of the pump project. This work is one element of a comprehensive strategy for the Weymouth plant to accommodate extended operation at elevated coagulant dosages. In August 2003, the Board authorized final design of the electrical substation. Construction of the substation contract was identified to be separate from the upcoming solids handling project to expedite overall project completion.

Project Description

This project will install a new electrical substation, replace existing 2.4 kV motors with new 480-volt motors, and add variable frequency drive controllers to two washwater return pumps and three backwash supply pumps in Filter Building No. 2.

Metropolitan staff will perform construction management of the work. The Engineering Services goal for inspection of projects with construction cost less than \$10 million is 12 to 15 percent. For this project, the anticipated cost of inspection and support is 12.8 percent of the construction cost.

Bid Results and Business Outreach

As shown in Attachment 3, a total of three bids were received and opened under Specifications No. 1491 for the Weymouth Plant-Convert Filter Building No. 2 Washwater Pumps to Variable Frequency Drive Project. The low bid from Tri-Technic, Inc., in the amount of \$683,735, complies with the requirements of the specifications. The engineer's estimate was \$725,000. For this project, Metropolitan requires Small Business Enterprise (SBE) participation of at least 22 percent of the total construction bid. Tri-Technic, Inc. is a SBE firm and will achieve 100 percent participation for the project.

Project Milestones

May 2004 – Issue Notice to Proceed to contractor

April 2005 – Completion of construction

Financial Statement

A breakdown of Action No. 8 for Appropriation No. 15369 for the Weymouth Filtration Plant Improvements Program is as follows:

	Previous Total Appropriated Amount (Aug. 2003)	Current Board Action No. 8 (Apr. 2004)	New Total Appropriated Amount
Labor			
Studies and Investigations	\$ 846,000	\$ 0	\$ 846,000
Design and Specifications	518,000	0	518,000
Owner Costs (Program management, start-up)	1,024,000	96,000	1,120,000
Construction Inspection and Support	580,000	94,000	674,000
Metropolitan Installation and Construction	737,000	47,000	784,000
Materials and Supplies	692,000	0	692,000
Incidental Expenses	35,000	5,000	40,000
Professional/Technical Services	2,145,000		2,145,000
Contracts	5,097,000	683,735	5,780,735
Remaining Budget	1,752,000	114,265	1,866,265
Total	<u>\$13,426,000</u>	<u>\$1,040,000</u>	<u>\$14,466,000</u>

Funding Request

Program Name:	Weymouth Filtration Plant Improvements Program		
Source of Funds:	Construction Funds (Pay-As-You-Go Fund)		
Appropriation No.:	15369	Board Action No.:	8
Requested Amount:	\$ 1,040,000	Capital Program No.:	15369-I
Total Appropriated Amount:	\$ 14,466,000	Capital Program Page No.:	E-75
Total Program Estimate:	\$ 68,252,000	Program Goal:	I – Infrastructure Reliability

The Metropolitan Water District of Southern California
Abstract of Bids Received on March 3, 2004 at 2:00 P.M.

Specifications No. 1491

**Weymouth Plant-Convert Filter Building No. 2 Washwater Pumps to
Variable Frequency Drive**

The contract consists of high voltage work in an existing substation, installing a unit substation, motor control center, replacing five existing 2.4 kV pump motors with new 480-volt motors, replacing five existing 2.4 kV motor controllers with variable frequency drives, and performing other appurtenant work as specified and shown on the drawings in Specifications No. 1491.

Engineer's Estimate: \$725,000

Bidder and Location	Total	SBE \$	SBE %	Met SBE
Tri-Technic, Inc., Jamestown, CA	\$683,735	\$683,735	100%	Yes
Pacific Industrial Electric, Brea, CA	\$898,000	N/A	N/A	N/A
ABHE & Svoboda Inc, Prior Lake, Minn.	\$915,150	N/A	N/A	N/A

