

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

September 14, 2004 Board Meeting

9-1

Subject

Appropriate \$19.8 million for water quality and rehabilitation projects within the Weymouth Improvements Program; and award a \$14.09 million construction contract to Brutoco Engineering & Construction, Inc. for the Solids Handling Facilities Project (Approp. 15369)

Description

Weymouth Solids Handling Facilities (\$19.424 million)

The coagulant chemical feed systems at Metropolitan's treatment plants were originally designed for turbidity and particle removal which resulted in low to moderate chemical usage. To comply with Stage 1 of the Disinfectants/Disinfection By-Products Rule, the coagulant dosages have been significantly increased to improve disinfection by-product precursor removal. The higher coagulant dosage is specifically required while treating the higher percentages of State project water that are used at the F. E. Weymouth Filtration Plant. The resulting increased solids production is currently being mechanically processed with temporary (leased) equipment. Permanent solids handling facilities will allow Metropolitan to reliably treat higher percentages of State project water while complying with water quality regulations and existing permit conditions.

In May 2003, Metropolitan's Board authorized preliminary design of the Weymouth Solids Handling Facilities and entering into a professional services agreement with Black & Veatch Corporation for water treatment process engineering services. In August 2003, Metropolitan's Board authorized final design of the solids handling facilities at Weymouth by Black & Veatch.

On August 10, 2004, a total of three bids were received and opened under Specifications No. 1492 for the Weymouth Solids Handling Facilities Project. The low bid from Brutoco Engineering & Construction, Inc., in the amount of \$14.09 million, complies with the requirements of the specifications. The engineer's estimate was \$14.5 million. For this project, Metropolitan requires Small Business Enterprise participation of at least 33 percent of the total construction bid. Brutoco has committed to meet this requirement.

This action awards a \$14.09 million construction contract to Brutoco Engineering & Construction, Inc. to construct the Weymouth Solids Handling Facilities, and authorizes construction inspection and support for this project. Metropolitan staff will perform construction management, and Black & Veatch will provide engineering support during construction. This action authorizes an increase of \$800,000 to Black & Veatch's existing agreement, for a new not-to-exceed total of \$3.8 million for this work. For this project, the anticipated cost of inspection and support is 8.2 percent of the construction cost. The Engineering Services goal for inspection of projects with construction cost more than \$10 million is 9 to 12 percent.

Weymouth Basins Nos. 1 and 2 Rehabilitation (\$236,000)

The original Weymouth plant contained two flocculation and sedimentation basins that are still in use today. The aging equipment in these basins is more than 60 years old. This equipment, while maintained regularly, has failed on numerous occasions and requires significant maintenance to keep the equipment operational. The sedimentation basins' perimeter-weir also needs to be replaced, as it has poor settling performance with many of the floc particles carrying over into the filters.

This action authorizes staff to investigate improvements and rehabilitation options for the flocculation and sedimentation basin equipment at Basins Nos. 1 and 2, and to proceed with preliminary design of these improvements.

Weymouth Filter Valve Replacement (\$140,000)

The 40-year-old valves and actuators in Filter Building No. 2 are reaching the end of their useful life. Despite routine maintenance, approximately 50 percent of the valves no longer have a tight shut-off and many of the actuators leak oil. The obsolete actuator design poses health and safety concerns. A study authorized by Metropolitan's Board in August 2001 has concluded that 144 valves and actuators in Filter Building No. 2 should be replaced.

This action authorizes preliminary design to replace these valves and actuators.

These three projects have been evaluated and recommended by Metropolitan's Capital Investment Plan Evaluation Team and funds have been included in the fiscal year 2004/05 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 determinations for Option #1:

Weymouth Solids Handling Facilities Project

To comply with CEQA and the State CEQA Guidelines, Metropolitan as the Lead Agency prepared a Mitigated Negative Declaration (MND) for the Weymouth Solids Handling Facilities 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. The present board actions are solely based on appropriating funds, awarding a construction contract, and amending an existing professional services agreement and not on any changes to the approved project. Hence, the previously adopted environmental documentation in conjunction with the current actions fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further environmental documentation is necessary for the Board to act on with respect to the proposed actions.

The CEQA determination is: Determine that the proposed actions have been previously addressed in the adopted 2003 MND and the MMRP and that no further environmental analysis or documentation is required.

Weymouth Basins Nos. 1 and 2 Rehabilitation Project

The proposed actions associated with the Weymouth Basin Nos. 1 and 2 Rehabilitation Project are categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed actions consists of funding, initiating preliminary design, and carrying out basic data collection and resource evaluation activities, which do 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 actions qualify as a Class 6 Categorical Exemption (Section 15306 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed actions qualify under a Categorical Exemption (Class 6, Section 15306 of the State CEQA Guidelines).

Weymouth Filter Valve Replacement Project

The study of the Weymouth Filter Valve Replacement Project was previously determined to be categorically exempt under the provisions of CEQA and State CEQA Guidelines. The activity associated with this project was found by the Board to be exempt under Class 6, Section 15306 of the State CEQA Guidelines on August 20, 2001. A Notice of Exemption (NOE) was filed on the project at that time and the statute of limitations has ended. With the current board actions for funding and initiating preliminary design, there are no substantial changes proposed to the project since the original NOE was filed. 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 actions.

The CEQA determination is: Determine that the proposed actions have been previously addressed in the 2001 NOE (Class 6, Section 15306 of the State CEQA Guidelines) and that no further environmental analysis or documentation is required.

CEQA determinations for Option #2:

Weymouth Solids Handling Facilities Project

None required

Weymouth Basins Nos. 1 and 2 Rehabilitation Project and Weymouth Filter Valve Replacement Project

CEQA determinations same as Option #1

Board Options/Fiscal Impacts

Option #1

Adopt the CEQA determinations and

- a. Appropriate \$19.8 million in capital funds;
- b. Award a construction contract in the amount of \$14.09 million to Brutoco Engineering & Construction, Inc. to construct the Weymouth Plant Solids Handling Facilities;
- c. Authorize an increase to an agreement with Black & Veatch Corporation for a new not-to-exceed total of \$3.8 million to provide engineering support of the solids handling facilities; and
- d. Authorize preliminary design to rehabilitate Basins Nos. 1 and 2 and to replace the filter valves and actuators in Filter Building No. 2.

Fiscal Impact: \$19.8 million in budgeted capital, as well as Pay-As-You-Go funds under Approp. 15369

Option #2

Adopt the CEQA determinations and

- a. Appropriate \$376,000 in budgeted funds;
- b. Authorize preliminary design to rehabilitate Basins Nos. 1 and 2 and to replace the filter valves and actuators in Filter Building No. 2; and
- c. Do not award a contract for construction of the Weymouth Solids Handling Facilities.

Fiscal Impact: \$376,000 in budgeted Pay-As-You-Go funds under Approp. 15369. The plant will continue to use the existing belt press contractor at a daily cost of \$2,000 to \$8,000 depending on the solids production.

Staff Recommendation

Option #1



Roy L. Wolfe
Manager, Corporate Resources

9/2/2004
Date



Ronald R. Gastelum
Chief Executive Officer

9/2/2004
Date

Attachment 1 – Detailed Report

Attachment 2 – Financial Statement

Attachment 3 – Abstract of Bids

Attachment 4 – Location Map

BLA #2607

Detailed Report

The F. E. Weymouth Filtration 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 Solids Handling Facilities (\$19.424 million)

Purpose/Background

Stage 1 of the Disinfectants/Disinfection By-Products Rule (D/DBP), which became effective January 1, 2002, requires improved removal of the precursors that form disinfection by-products (DBPs). State project water (SPW) contains higher concentrations of DBP precursors (e.g., total organic carbon and bromide) than Colorado River Water, and forms more DBPs when chlorinated. Until the Weymouth Oxidation Retrofit Program (ORP) is operational, treating a higher percentage of SPW necessitates the use of higher coagulant dosages to remove total organic carbon. The high coagulant dosages required to comply with the D/DBP Rule produce increased residual solids. This increased solids production is currently being mechanically processed with temporary (leased) equipment.

Metropolitan staff studied future on-site solids handling facilities and other issues related to elevated coagulant dosages. These studies concluded that new solids handling facilities are required to process the increased solids production. Staff recommends the addition of two sludge thickeners, a permanent belt press, and a hopper system to economically dewater sludge prior to disposal off-site. Addition of these facilities will allow Metropolitan to reliably treat higher percentages of SPW while complying with water quality regulations and existing discharge permit conditions.

In May 2003, Metropolitan's Board authorized preliminary design of the Weymouth Solids Handling Facilities and entering into a professional services agreement with Black & Veatch Corporation for water treatment process engineering services, including assistance with design of solids handling facilities at the Weymouth and Diemer plants. In August 2003, Metropolitan's Board authorized final design of the Weymouth Solids Handling Facilities.

Project Description

The new permanent solids handling facilities will consist of two additional thickeners, three belt presses, a polymer feed system, hoppers, and the interconnecting pumping, piping, electrical, and control systems necessary for a complete and reliable system. The belt presses and polymer feed system will be housed in a new dewatering building located east of the existing thickeners.

The design consultant, Black & Veatch, will provide engineering support during construction. An increase to Black & Veatch's existing agreement in the amount of \$800,000 is recommended to provide these services. Metropolitan staff will perform construction management of this project. Security systems for the new facility will be installed under an existing agreement.

Bid Results and Business Outreach

As shown in Attachment 3, a total of three bids were received and opened under Specifications No. 1492 for the Weymouth Solids Handling Facilities Project. The low bid from Brutoco Engineering & Construction, Inc., in the amount of \$14.09 million, complies with the requirements of the specifications. The engineer's estimate was \$14.5 million. For this project, Metropolitan requires Small Business Enterprise participation of at least 33 percent of the total construction bid. Brutoco Engineering & Construction, Inc. has committed to meet this requirement.

Project Milestones

- September 2004 – Issue Notice to Proceed
- January 2006 – Completion of construction

Weymouth Basins Nos. 1 and 2 Rehabilitation (\$236,000)***Purpose/Background***

Flocculation and Sedimentation Basins Nos. 1 and 2 were built in 1940 as part of the original Weymouth plant construction. Each basin has a capacity of 55 million gallons per day.

The flocculation and sludge removal processes are critical components of the conventional treatment process. Their reliable operation is required for effective treatment under all plant conditions. However, under elevated coagulant dosages, their failure would result in immediate reduction in plant capacity. In Basins Nos. 1 and 2, excessive maintenance is required to keep the more than 60 year-old equipment operational. In the event of failure of this equipment, the basin must be shut down for necessary repairs.

Sedimentation Basins Nos. 1 and 2 has a center-feed configuration. From the center, water flows radially to the peripheral effluent troughs. This design, with shorter settling times and higher velocities over the weir, can result in solids carryover to the filters that increases the backwash frequency.

Project Description

This project will identify the improvements needed to rehabilitate equipment in Basins Nos. 1 and 2, and will evaluate options to improve settling. The evaluation will identify and assess various options to improve the treatment process, extend the life of the basins, and enhance settling, and include a preliminary design of the recommended work.

Project Milestones

- May 2005 – Complete preliminary design
- July 2005 – Return to Board to authorize final design

Weymouth Filter Building No. 2 Valve and Actuator Replacement (\$140,000)***Purpose/Background***

The Weymouth filter valves have been in service for over 40 years and are approaching the end of their useful life. Maintenance costs for the aging actuators are increasing due to the failure of internal operating components and the difficulty of obtaining replacement parts. The actuators lack modern safety features, such as failsafe interlocks and lockout capability, which are required in all modern valve actuators. A study authorized by the Board in August 2001 concluded that 144 valves and actuators in Filter Building No. 2 should be replaced in order to maintain filter reliability and safe operations.

Project Description

This project consists of preliminary design for replacement of the valves and actuators in Filter Building No. 2.

Project Milestones

- April 2005 – Complete preliminary design
- July 2005 – Return to Board to authorize final design

Financial Statement for Weymouth Filtration Plant Improvements Program

A breakdown of Action No. 10 for Appropriation No. 15369 for the Weymouth Filtration Plant Improvements Program is as follows:

	Previous Total Appropriated Amount (May 2004)	Current Board Action No. 10 (Sept. 2004)	New Total Appropriated Amount
Labor			
Studies and Investigations	\$ 1,123,000	\$ 86,000	\$ 1,209,000
Final Design	518,000	0	518,000
Owner Costs (Program management)	1,150,000	289,000	1,439,000
Construction Inspection and Support	674,000	1,202,000	1,876,000
Metropolitan Installation and Construction (SCADA integration, leased equipment relocation, shutdown support and start-up)	784,000	314,000	1,098,000
Materials and Supplies	692,000	129,000	821,000
Incidental Expenses	48,000	13,000	61,000
Professional/Technical Services	2,287,000	1,145,000	3,432,000
Contracts	5,780,735	14,090,000	19,870,735
Remaining Budget	1,934,265	2,532,000	4,466,265
Total	\$14,991,000	\$19,800,000	\$34,791,000

Funding Request

Program Name:	Weymouth Filtration Plant Improvements Program		
Source of Funds:	Construction Funds (Revenue Bonds, General Funds or Pay-As-You-Go Fund)		
Appropriation No.:	15369	Board Action No.:	10
Requested Amount:	\$ 19,800,000	Capital Program No.:	15369-I
Total Appropriated Amount:	\$ 34,791,000	Capital Program Page No.:	E-63
Total Program Estimate:	\$ 74,660,000	Program Goal:	I – Infrastructure Reliability

The Metropolitan Water District of Southern California
Abstract of Bids Received on August 10, 2004 at 2:00 P.M.
Specifications No. 1492
Weymouth Plant-Solids Handling Facilities

The project consists of upgrading an existing sludge pump station by replacing three pumps and adding two additional pumps; constructing two gravity thickeners; a new solids dewatering facility building to house three belt filter presses, an electrical room, polymer storage and mixing equipment, and three cake pumps; a truck loading facility; and four elevated solids storage hoppers. The project also includes piping reconfiguration, site work and appurtenant work.

Engineer's Estimate: \$14,500,000

Bidder and Location	Total	SBE \$	SBE %	Met SBE
Brutoco Engineering & Construction, Fontana, CA	\$14,090,000	\$4,801,978	34%	Yes
C.W. Roen Construction Co., Danville, CA	\$15,305,000	N/A	N/A	N/A
Kiewit Pacific Co., Santa Fe Springs, CA	\$15,876,000	N/A	N/A	N/A

* SBE (Small Business Enterprise) Participation set at 33 percent
N/A – Not Applicable

