

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

May 11, 2004 Board Meeting

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**8-4**

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**Subject**

Appropriate \$525,000 for two reliability studies as part of the Weymouth Improvements Program (Approp.15369)

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**Description**

The F. E. Weymouth Filtration Plant (Weymouth plant) was originally constructed in 1941. Throughout the years, staff has performed routine preventive maintenance on process equipment to ensure continued operation of the plant. Due to the age of the Weymouth plant and changes to plant processes which have occurred over time, staff has initiated a planning effort as part of the Infrastructure Reliability and Protection Plan to identify modifications and improvements which are necessary to ensure continued reliable plant operation. To date, studies have been performed on selected equipment and systems, focusing primarily on critical items directly involved in the treatment process. Several high priority projects have already been implemented under the Weymouth Improvements Program due to either the age of the equipment or to remove a process bottleneck. Staff now recommends a comprehensive assessment of all facilities at the Weymouth plant to assess condition, risk of interruption of service, vulnerability to catastrophic events such as earthquake or fire, and gradual diminishment of capability over time. This comprehensive assessment will be conducted under two efforts: the Weymouth Reliability Assessment and the La Verne Power System Upgrade Study.

**Weymouth Improvements Program (\$525,000)**

**Weymouth Reliability Assessment (\$190,000)**

The Weymouth Reliability Assessment will focus on plant reliability including identification of equipment and facilities that may need to be upgraded to ensure reliable plant operation in the future. The assessment will address the condition, age, redundancy, and operating and maintenance history of equipment such as pumps, valves, mechanical systems, and the structures that house this equipment. Examples of systems may include potable and service water systems, chemical feed and mixing, metering, etc. The assessment will also address the vulnerability of plant operation to equipment failures or events such as fires and earthquakes.

**La Verne Power System Upgrade Study (\$335,000)**

Many of the major electrical components at the Weymouth plant are over 60 years old. Potential deficiencies have been identified in the electrical power system in La Verne that require further study to ensure continued reliable operation of the Weymouth plant. This action authorizes investigations to identify necessary improvements. The recommendations from this study will be coordinated with the design of the future ozone facilities at the Weymouth plant to ensure cost-effective implementation of needed improvements.

The Reliability Assessment and the Power System Upgrade Study will be performed by a combination of Metropolitan staff and Carollo Engineers under an existing professional services agreement. Carollo Engineers was selected through a competitive process (Request for Qualifications 578) to perform this type of work, and authority to enter into the agreement was approved by Metropolitan's Board in June 2003.

The two projects within this action have 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 statements, and [Attachment 3](#) for the location map.

**Policy**

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Metropolitan Water District Administrative Code § 5108: Capital Project Appropriation

**California Environmental Quality Act (CEQA)**

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CEQA determination for Option #1:

**Weymouth Reliability Assessment and La Verne Power System Upgrade Study**

The proposed actions are categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed actions consist of 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).

CEQA determination for Option #2:

None required

**Board Options/Fiscal Impacts**

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**Option #1**

Adopt the CEQA determination and

- a. Appropriate \$525,000 in budgeted funds; and
- b. Authorize the Weymouth Reliability Assessment and the La Verne Power System Upgrade Study.

**Fiscal Impact:** \$525,000 under Approp. 15369

**Option #2**

Do not authorize the work described in this letter. Implementation of this option will forego an opportunity to reduce long-term O&M costs and to reduce the risk of unplanned plant outages.

**Fiscal Impact:** None

**Staff Recommendation**

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Option #1

 _____ Roy L. Wolfe Manager, Corporate Resources	4/5/2004 Date
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 _____ Ronald R. Gastelum Chief Executive Officer	4/20/2004 Date
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[Attachment 1 – Detailed Report](#)

[Attachment 2 – Financial Statement](#)

[Attachment 3 – Location Map](#)

## **Detailed Report**

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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 Improvements Program (\$525,000)**

#### **Weymouth Reliability Assessment (\$190,000)**

##### ***Purpose/Background***

The Weymouth Reliability Assessment will focus on plant reliability including identification of equipment and facilities that may need to be upgraded to ensure reliable plant operation in the future. The assessment will focus on mechanical equipment and systems, and the structures which house them.

##### ***Project Description***

The study includes a systematic assessment of the facilities at the Weymouth site to identify equipment and facilities whose performance may have degraded over time or may not be adequate to meet current and projected water demands. The assessment will address the condition, age, redundancy, and operating and maintenance history of equipment such as pumps, valves, mechanical systems, and the structures that house this equipment. Examples of systems may include potable and service water systems, chemical feed and mixing, metering, etc. In addition, the vulnerability of facilities to events such as earthquakes and fires will be evaluated to determine if selective upgrading is required. Recommendations for replacing or upgrading facilities will be evaluated through the Capital Investment Plan process.

#### **La Verne Power System Upgrade Study (\$335,000)**

##### ***Purpose/Background***

Loss of electrical power to the La Verne facility may disrupt the filtration plant's ability to treat water until power is restored. A single 12-kilovolt (kV) feeder from Southern California Edison (SCE) supplies electricity, and a single one-megawatt generator provides back-up power to the plant.

Some of the major electrical components at Weymouth are over 60 years old. If major electrical equipment such as the main transformer or switchgear were to fail, the plant would lose power. The primary distribution voltage is 2.4 kV, which is virtually obsolete and is incompatible with planned new ozone facilities. Existing electrical equipment also requires extensive maintenance, and replacement parts are no longer available for some of the equipment. Staff recommends that these concerns with Weymouth's aging electrical system be further studied. Results of the studies may lead to recommendations for electrical system upgrades.

##### ***Project Description***

This study will evaluate alternatives to upgrade the emergency power system and existing electrical distribution equipment to maintain plant reliability. Some of the improvements to be considered include a new power service with two circuits from SCE with the ability to automatically switch to the standby circuit, additional emergency power capabilities, installation of microturbines, adding double-ended substations on critical systems, and seismic upgrades to the electrical equipment. The proposed study will develop and evaluate cost-effective potential solutions.

The addition of ozone facilities at Weymouth will greatly increase the power demand at the treatment plant. A new SCE service to the site will be required to supply this additional power. Upgrading the aging electrical system at Weymouth at the same time as ORP construction may reduce the cost of these upgrades and provide a more compatible and reliable electrical system.

This action authorizes a reliability assessment and study of upgrades to the electrical power system at the Weymouth plant. The work will be performed by a combination of Metropolitan staff and Carollo Engineers. Carollo Engineers' efforts will be performed under an existing professional services agreement which was authorized by Metropolitan's Board in June 2003. Carollo Engineers was selected through a competitive process (RFQ 578). Metropolitan staff will manage the program, supply background information on the facilities, and provide technical oversight.

***Project Milestones***

October 2004 – Complete the Power System Upgrade Study

February 2005 – Complete the Reliability Assessment

**Financial Statement**

A breakdown of Action No. 9 for Appropriation No. 15369 for the Weymouth Filtration Plant Improvements Program is as follows:

	<b>Previous Total Appropriated Amount (Apr. 2004)</b>	<b>Current Board Action No. 9 (May 2004)</b>	<b>New Total Appropriated Amount</b>
Labor			
Studies and Investigations	\$ 846,000	\$ 277,000	\$ 1,123,000
Design and Specifications	518,000	0	518,000
Owner Costs (Program management, start-up)	1,120,000	30,000	1,150,000
Construction Inspection and Support	674,000	0	674,000
Metropolitan Installation and Construction	784,000	0	784,000
Materials and Supplies	692,000	0	692,000
Incidental Expenses	40,000	8,000	48,000
Professional/Technical Services	2,145,000		2,287,000
Carollo Engineers		142,000	
Contracts	5,780,735	0	5,780,735
Remaining Budget	1,866,265	68,000	1,934,265
<b>Total</b>	<b><u>\$14,466,000</u></b>	<b><u>\$525,000</u></b>	<b><u>\$14,991,000</u></b>

**Funding Request**

<b>Program Name:</b>	Weymouth Filtration Plant Improvements Program		
<b>Source of Funds:</b>	Construction Funds (Pay-As-You-Go Fund)		
<b>Appropriation No.:</b>	15369	<b>Board Action No.:</b>	9
<b>Requested Amount:</b>	\$ 525,000	<b>Capital Program No.:</b>	15369-I
<b>Total Appropriated Amount:</b>	\$ 14,991,000	<b>Capital Program Page No.:</b>	E-75
<b>Total Program Estimate:</b>	\$ 68,252,000	<b>Program Goal:</b>	I – Infrastructure Reliability

