



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

9/14/2010 Board Meeting

**7-7**

**Subject**

Appropriate \$1.67 million; and authorize three improvement projects at the Mills plant to improve reliability, regulatory compliance, and worker safety (Approp. 15452)

**Description**

This action authorizes three projects at the Henry J. Mills Water Treatment Plant: (1) Final design to improve the industrial wastewater handling facilities; (2) Final design of the industrial wastewater sewer discharge system; and (3) Final design and Metropolitan force construction of potable water safety stations inside the chemical piping galleries of Modules Nos. 3 and 4.

**Timing and Urgency**

Staff recommends moving forward with the three projects at this time to increase the reliability of existing industrial wastewater equipment; minimize risk of noncompliance with environmental regulations; provide an alternate means of industrial wastewater disposal; and improve employee safety in the event of a chemical spill inside the piping galleries.

These projects have been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria. The first and the third projects are categorized as Stewardship projects and the second project is categorized as a Cost & Efficiency project. All three projects are budgeted within Metropolitan's CIP for fiscal year 2010/11.

**Background**

The Mills plant exclusively treats water from the East Branch of the State Water Project. The plant was placed into service in 1978 with an initial capacity of 75 million gallons per day (mgd), and was expanded twice. It is currently rated to treat 220 mgd. The Mills plant delivers treated water to Eastern Municipal Water District and Western Municipal Water District of Riverside County.

**Project No. 1 - Industrial Wastewater Handling Facilities Improvements – Final Design Phase (\$375,000)**

At the Mills plant, industrial wastewater is generated from a number of sources and operational activities, such as wash-down of the chemical tank farms and piping galleries. Wastewater generated in the roofed chemical tank farms is held in the tank farms' sumps, until transported off-site by a disposal vendor. Wastewater generated in the piping galleries and other locations outside of the tank farms is captured and directed into the plant industrial drainage system. This wastewater may contain chemicals in the event of chemical piping leaks or chemical spills. The wastewater from the drainage system is collected and stored in two 6,000-gallon fiberglass-reinforced plastic (FRP) containment tanks and two 20,000-gallon unlined steel storage tanks for pH verification prior to proper disposal. As indicated in the August 2009 board letter requesting preliminary design funding, the 20,000-gallon tanks require upgrading in order to meet environmental codes and improve worker safety.

Preliminary design has been completed, and staff recommends proceeding with final design of a new system with two 20,000-gallon epoxy-lined steel storage tanks; permanent tank foundations and secondary containment; a tank mixing and discharge system; a pH adjustment feed system; two hard-piped emergency eyewash and deluge

shower stations; and instrumentation for level, pH and influent flow monitoring. These improvements will enhance reliability of the system; allow safer and more efficient handling of wastewater and chemical leaks/spills; and minimize the risk of accidental release of industrial wastewater to the surrounding area, which could result in violation of environmental, health and safety regulations.

Final design phase activities will include field investigations, preparation of specifications and plans, updating of existing drawings, shutdown preparations, development of a construction cost estimate, receipt of bids, and all activities in advance of award of a construction contract.

This action appropriates \$375,000 and authorizes final design of the improvements to the industrial wastewater handling facilities. Requested funds include \$237,000 for final design; \$44,000 for environmental permitting and surveys; \$74,000 for bidding process and project management; and \$20,000 for remaining budget. The anticipated cost of final design is approximately 14.8 percent of the estimated construction cost. Engineering Services' goal for design of projects with estimated construction cost less than \$3 million is 9 to 15 percent. The construction cost for this project is anticipated to range from \$1.6 million to \$1.8 million. Final design activities will be performed by Metropolitan staff.

### **Project No. 2 - Industrial Wastewater Sewer Discharge System – Final Design Phase (\$135,000)**

The Mills plant has incurred significant cost in the past (approximately \$100,000/year) to dispose of hazardous industrial wastewater. Recently, the Mills plant has reduced the generation of industrial wastewater by recycling clean water and reducing rainwater intrusion into the industrial drainage system. To provide an additional disposal option for industrial wastewater, staff has obtained a permit from the city of Riverside to discharge industrial wastewater into the sanitary sewer system, provided the wastewater does not exceed specific contaminant levels and its pH is between 5 and 11.5. However, no discharges to the sewer have occurred yet because there is no sewer connection near the containment tanks on the north side of the Mills plant.

In August 2009, Metropolitan's Board authorized preliminary design phase activities for the industrial wastewater sewer discharge system. Preliminary design has been completed, and staff recommends proceeding with final design for the following improvements: addition of an industrial wastewater pumping station; construction of a 1,500-foot-long sewer force main, and connection to the existing sanitary sewer; modification of chemical tank farm sump piping to allow discharge to the containment tanks; and addition of flow and pH monitoring equipment for sewer discharge reporting. These improvements will allow the plant to discharge industrial wastewater to the sanitary sewer when the industrial wastewater's pH is between 5 and 11.5. This will result in significant cost savings, since a wide range of wastewaters can be discharged to the sewer instead of being hauled off-site at a higher cost. It is estimated that approximately 60 percent of the collected wastewater could be discharged to the sewer instead of being hauled off-site, initially saving approximately \$88,000 per year. The amount of savings is expected to increase over time.

Final design phase activities will include field investigations, preparation of specifications and plans, updating of existing drawings, shutdown preparations, development of a construction cost estimate, receipt of bids, and all activities in advance of award of a construction contract.

This action appropriates \$135,000 and authorizes final design of the industrial wastewater sewer discharge system. Requested funds include \$73,000 for final design; \$19,000 for environmental permitting; \$33,000 for bidding process and project management; and \$10,000 for remaining budget. The anticipated cost of final design is approximately 14.6 percent of the estimated construction cost. Engineering Services' goal for design of projects with estimated construction cost less than \$3 million is 9 to 15 percent. The construction cost for this project is anticipated to range from \$500,000 to \$600,000. Final design activities will be performed by Metropolitan staff.

### **Project No. 3 – Modules Nos. 3 and 4 Potable Water Safety Stations and Water Line Extensions – Final Design, Procurement and Construction (\$1,160,000)**

When Modules Nos. 3 and 4 were constructed in 1996, the piping galleries included chemical process control components such as control valves, flowmeters, and analyzers for the ammonia, sodium hydroxide, and chlorine solution systems. The installation did not include emergency eyewash stations, emergency deluge showers, or

potable water line extensions to the piping galleries where pressurized chemical feed pipelines are located. Since the construction of Modules Nos. 3 and 4, new chemicals such as fluorosilicic acid, analyzer reagents, and pH buffer solutions and their valves, meters, instrumentation, and other chemical feed equipment have been added throughout the chemical piping galleries. Six temporary self-contained, portable eyewash stations with drench hoses were installed in the chemical piping galleries to enhance worker safety.

In August 2009, Metropolitan's Board authorized preliminary design activities for the addition of potable water safety stations and water line extensions at Mills Modules Nos. 3 and 4. Preliminary design has been completed, and staff recommends moving forward at this time with final design and construction by Metropolitan forces to install 17 hard-piped emergency eyewash and deluge shower stations in the galleries. Each safety station will have a flow switch that senses potable water flow to the station, and will alarm the plant's Control Room if the station is used. This feature facilitates quicker medical assistance to the injured.

Metropolitan staff will perform all design and construction activities. Work includes installation of safety stations, instrumentation and piping; extension of potable water lines throughout the piping galleries; connection of activation alarms to nearby Remote Terminal Units (RTUs) for signaling the Control Room; programming the plant's Supervisory Control and Data Acquisition (SCADA) system; and connecting to power sources at several Motor Control Centers (MCCs).

This action appropriates \$1.16 million and authorizes final design phase activities and construction of potable water safety stations and water line extensions at Mills Modules Nos. 3 and 4, to enhance worker safety and to comply with current safety regulations. The appropriated funds include \$454,000 for Metropolitan force construction; \$346,000 for materials and supplies; \$118,000 for final design; \$36,000 for environmental monitoring, hazardous material sampling, and project management; \$16,000 for inspection; \$64,000 for technical support from design staff during construction, and for record drawings; and \$126,000 for remaining budget. All work will be performed by Metropolitan staff.

For this project, the anticipated cost of final design as a percentage of the construction cost is approximately 14.8 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 estimated to be \$800,000.

All projects have been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds have been included in the fiscal year 2010/11 capital budget. See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map.

These projects are consistent with Metropolitan's goals for sustainability by enhancing the reliability of the Mills plant, in order to maintain reliable water deliveries in the future.

### ***Project Milestones***

July 2011 – Completion of final design of industrial wastewater handling facilities improvements

July 2011 – Completion of final design of industrial wastewater sewer discharge system

July 2011 – Completion of construction of Modules Nos. 3 and 4 potable water safety stations and water line extensions

### **Policy**

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Metropolitan Water District Administrative Code Section 5108: Appropriations

### **California Environmental Quality Act (CEQA)**

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#### **Project No. 1: Industrial Wastewater Handling Facilities Improvements – Final Design Phase**

CEQA determination for Option #1:

The proposed action was previously determined by the Board to be categorically exempt under Classes 1, 2, 3, 4, and 6 (Sections 15301, 15302, 15303, 15304, and 15306 of the State CEQA Guidelines) on August 18, 2009. With the current board action, there is no substantial change proposed since the original project was first approved

in 2009. 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 action.

The CEQA determination is: Determine that the proposed action has been previously addressed in the 2009 categorical exemptions (Classes 1, 2, 3, 4, and 6; Sections 15301, 15302, 15303, 15304, and 15306 of the State CEQA Guidelines) and that no further environmental analysis or documentation is required.

CEQA determination for Options #2 and #3:

None required

### **Project No. 2: Industrial Wastewater Sewer Discharge System – Final Design Phase**

CEQA determination for Option #1:

The proposed action was previously determined by the Board to be categorically exempt under Classes 1, 2, 3, 4, and 6 (Sections 15301, 15302, 15303, 15304, and 15306 of the State CEQA Guidelines) on August 18, 2009. With the current board action, there is no substantial change proposed since the original project was first approved in 2009. 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 action.

The CEQA determination is: Determine that the proposed action has been previously addressed in the 2009 categorical exemptions (Classes 1, 2, 3, 4, and 6; Sections 15301, 15302, 15303, 15304, and 15306 of the State CEQA Guidelines) and that no further environmental analysis or documentation is required.

CEQA determination for Options #2 and #3:

None required

### **Project No. 3: Modules Nos. 3 and 4 Potable Water Safety Stations and Water Line Extensions – Final Design, Procurement and Construction**

CEQA determination for Options #1 and #2:

The proposed action was previously determined by the Board to be categorically exempt under Classes 1, 3, and 6 (Sections 15301, 15303, and 15306 of the State CEQA Guidelines) on August 18, 2009. With the current board action, there is no substantial change proposed since the original project was first approved in 2009. 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 action.

The CEQA determination is: Determine that the proposed action has been previously addressed in the 2009 categorical exemptions (Classes 1, 3, and 6; Sections 15301, 15303, and 15306 of the State CEQA Guidelines) and that no further environmental analysis or documentation is required.

CEQA determination for Option #3:

None required

## **Board Options**

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### **Option #1**

Adopt the CEQA determinations and

- a. Appropriate \$1.67 million;
- b. Authorize final design of the Mills industrial wastewater handling improvements and new sewer discharge; and
- c. Authorize final design and construction of the Mills Modules Nos. 3 and 4 potable water safety stations.

**Fiscal Impact:** \$1.67 million in budgeted funds under Approp. 15452

**Business Analysis:** This option will improve industrial wastewater handling, which will reduce the risk of unintentional on-site discharge of non-permitted industrial wastewater, and will provide a more reliable, flexible, and cost-effective wastewater handling and discharge system. It will also provide potable water safety stations which will enhance staff safety, maintain compliance with state safety regulations, and reduce plant maintenance efforts.

**Option #2**

Adopt the CEQA determinations and

- a. Appropriate \$1.16 million;
- b. Do not authorize final design of the industrial wastewater handling improvements or new sewer discharge; and
- c. Authorize final design and construction for the Mills Modules Nos. 3 and 4 potable water safety stations.

**Fiscal Impact:** \$1.16 million in budgeted funds under Approp. 15452

**Business Analysis:** Under this option, the existing industrial wastewater handling facilities would not be improved. The plant would continue to handle the wastewater using a less reliable system, and would continue to incur higher costs for off-site wastewater disposal. The risk of unintentional on-site discharge of wastewater would be addressed through ongoing operator training and frequent equipment inspections. Addition of safety stations would enhance staff safety, maintain compliance with state safety regulations, and reduce plant maintenance efforts.

**Option #3**

Do not proceed with the three projects.

**Fiscal Impact:** None

**Business Analysis:** Under this option, the existing industrial wastewater handling facilities would not be improved. The plant would continue to handle the wastewater using a less reliable system, and would continue to incur higher costs for off-site wastewater disposal. The risk of unintentional on-site discharge of wastewater would be addressed through ongoing operator training and frequent equipment inspections. Worker safety would not be enhanced inside the chemical piping galleries.

**Staff Recommendation**

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Option #1

  
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 Roy L. Wolfe  
 Manager, Corporate Resources

8/24/2010  
 \_\_\_\_\_  
 Date

  
 \_\_\_\_\_  
 Jeffrey Kightlinger  
 General Manager

8/24/2010  
 \_\_\_\_\_  
 Date

**Attachment 1 – Financial Statement**

**Attachment 2 – Location Map**

**Financial Statement for Mills Improvements Program – Phase II**

A breakdown of Board Action No. 9 for Appropriation No. 15452 for the Mills Industrial Wastewater Handling Facilities Improvements project\*, the Mills Industrial Wastewater Sewer Discharge System project\*\*, and the Mills Modules Nos. 3 and 4 Potable Water Safety Stations project\*\*\* is as follows:

|   | <b>Previous Total<br/>Appropriated<br/>Amount<br/>(July 2010)</b> | <b>Current Board<br/>Action No. 9<br/>(Sept. 2010)</b> | <b>New Total<br/>Appropriated<br/>Amount</b> |
|---|---|--|--|
| Labor   |   |  |  |
| Studies and Investigations                              | \$ 1,113,100  | \$ -   | \$ 1,113,100                                 |
| Final Design  | 498,000   | 428,000  | 926,000                                      |
| Owner Costs (Program mgmt.,<br>envir. doc., permitting) | 736,200   | 249,000  | 985,200                                      |
| Construction Inspection and<br>Support                  | 61,000  | 6,000  | 67,000                                       |
| Metropolitan Force Construction                         | 676,000   | 444,000  | 1,120,000                                    |
| Materials and Supplies                                  | 553,000   | 346,000  | 899,000                                      |
| Incidental Expenses                                     | 54,700  | 41,000   | 95,700                                       |
| Professional/Technical Services                         | 97,000  | -  | 97,000                                       |
| Equipment Use   | 50,000  | -  | 50,000                                       |
| Contracts   | -   | -  | -  |
| Remaining Budget  | 329,000   | 156,000  | 485,000                                      |
| <b>Total</b>  | <b>\$ 4,168,000</b>   | <b>\$ 1,670,000</b>                                    | <b>\$ 5,838,000</b>                          |

**Funding Request**

|                                   |   |                                  |                           |
|-----------------------------------|---|----------------------------------|---------------------------|
| <b>Program Name:</b>              | Mills Improvements Program – Phase II                         |                                  |                           |
| <b>Source of Funds:</b>           | Revenue Bonds, Replacement and Refurbishment or General Funds |                                  |                           |
| <b>Appropriation No.:</b>         | 15452   | <b>Board Action No.:</b>         | 9                         |
| <b>Requested Amount:</b>          | \$ 1,670,000  | <b>Capital Program No.:</b>      | 15452-I                   |
| <b>Total Appropriated Amount:</b> | \$ 5,838,000  | <b>Capital Program Page No.:</b> | E-43                      |
| <b>Total Program Estimate:</b>    | \$ 15,923,300   | <b>Program Goal:</b>             | I- Infrastructure Upgrade |

\* The total amount expended to date on the Mills Industrial Wastewater Handling Facilities Improvements project is approximately \$190,000.

\*\* The total amount expended to date on the Mills Industrial Wastewater Sewer Discharge project is approximately \$42,000.

\*\*\* The total amount expended to date on the Mills Modules Nos. 3 and 4 Potable Water Safety Stations project is approximately \$194,000.

# Location Map

