



- Board of Directors  
*Engineering and Operations Committee*

4/9/2019 Board Meeting

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**7-1**

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## **Subject**

Authorize replacement of filter valve gearboxes at the Robert A. Skinner Water Treatment Plant; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (Appropriation No. 15509)

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## **Executive Summary**

This action authorizes design and construction to replace the gearboxes for 16 filter valves at the Skinner plant. This project will enhance the reliability and performance of the filters in Module 7.

### **Timing and Urgency**

Gearboxes are integral components of filter valves that allow the valves to open and close for normal filter operation. Due to the unique configuration of the Module 7 filter valves, the gearboxes for these valves are located underwater at the bottom of the filter inlet channel. Based on recent inspections and operational maintenance issues, the internal roller bearings and gears within the gearboxes are corroding and need to be replaced. This project will replace all 16 filter inlet valve gearboxes in Module 7 to maintain reliable filter operation at the Skinner plant.

This project was not included in the Capital Investment Plan (CIP) budget for fiscal years 2018/19 and 2019/20. Any project not included in the CIP budget requires specific board authorization to proceed. The project has been reviewed in accordance with Metropolitan's CIP prioritization criteria and is now recommended to be included in the Treatment Plant Reliability Program. Based on the current CIP expenditure forecast, no additional appropriation of funds is necessary to complete this work.

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## **Details**

### **Background**

The Skinner plant commenced service in 1976 with an initial capacity of 150 million gallons per day (mgd), and currently has a capacity of 350 mgd. It delivers a blend of waters from the Colorado River and State Water Project to Eastern Municipal Water District, Western Municipal Water District of Riverside County, and the San Diego County Water Authority. The plant is located north of Temecula in Riverside County.

Module 7 of the Skinner plant was placed into service in mid-2007 and contains 16 filters. Each filter is equipped with five valves serving different functions. In a typical filtration cycle, a filter is operated by sequentially opening and closing the five valves to direct flows in and out of the filter beds during filtration and backwashing cycles. Due to space constraints on the filter top deck, the gearboxes for the filter inlet valves are located beneath the water surface level in the filter inlet channel. Following 13 years of continuous submerged operation, water has seeped into these gearboxes and displaced the grease used to lubricate the internal roller bearings and gears. As a result, these roller bearings are no longer adequately lubricated, resulting in excessive friction, galling, and eventual failure to operate. In addition, the cast-iron gearbox housing and covers are beginning to corrode.

The typical service life of underwater gearboxes is 10 years. The filter inlet valve gearboxes in Module 7 have deteriorated and no longer function reliably. Furthermore, the manufacturer has discontinued production of this type of gearbox, and replacement parts for the existing gearboxes are no longer available. Replacement of the Module 7 filter inlet valve gearboxes is recommended to maintain reliable filter operation.

## **Skinner Module 7 Filter Inlet Valve Gearbox Replacement – Design and Construction**

The planned work includes removal and replacement of 16 filter inlet valve gearboxes in Module 7 of the Skinner plant. Final design and construction will be performed by Metropolitan staff. The planned activities include: preparation of procurement specifications; shutdown planning with member agencies; preparation of environmental documentation; procurement of gearboxes with proven performance in underwater service; and installation of 16 filter inlet valve gearboxes. The procurement contract for the new gearboxes is planned to be awarded under the General Manager's Administrative Code authority to award contracts of \$250,000 or less.

A total of \$660,000 is budgeted for this work. **Attachment 1** provides a breakdown of the planned costs, which include \$49,000 for design activities; \$30,000 for factory fabrication inspection and functional testing; \$16,000 for review of submittals and responding to requests for information; \$45,000 for environmental documentation, contract administration, and project management; \$440,000 for gearbox procurement and installation by Metropolitan forces; and \$80,000 for remaining budget.

Final design and construction will be performed by Metropolitan staff. The anticipated cost of final design is approximately 11.1 percent of the total construction cost. Engineering Services' target for design of projects with construction less than \$3 million is 9 to 15 percent. The total estimated cost of construction for this project is \$440,000.

### **Summary**

This action authorizes replacement of filter inlet valve gearboxes in Module 7 of the Skinner plant. See **Attachment 1** for the Allocation of Budgeted Funds and **Attachment 2** for the Location Map for this project.

This project was not included in the CIP budget for fiscal years 2018/19 and 2019/20. Any project not included in the CIP budget requires specific Board authorization to proceed. The project has been reviewed in accordance with Metropolitan's CIP prioritization criteria and is now recommended to be included in the Treatment Plant Reliability Program. Based on the current CIP expenditure forecast, no additional appropriation of funds is necessary to complete this work.

### ***Project Milestone***

June 2020 – Complete replacement of the Skinner Module 7 filter inlet valve gearboxes

### **Policy**

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Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

By Minute Item 51353, dated October 9, 2018, the Board appropriated a total of \$290 million for projects identified in the Capital Investment Plan for Fiscal Years 2018/19 and 2019/20.

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

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

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#### **CEQA determination for Option #1:**

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The overall activities involve the funding, design, minor alterations and replacement of existing public facilities with negligible or no expansion of use and no possibility of significantly impacting the physical environment. Accordingly, the proposed action qualifies under Class 1 and Class 2 Categorical Exemptions (Sections 15301 and 15302 of the State CEQA Guidelines).

#### **CEQA determination for Option #2:**

None required

**Board Options**

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**Option #1**

- a. Amend the current CIP to include this new project
- b. Authorize replacement of gearboxes for the filter inlet valves in Module 7 at the Skinner plant.

**Fiscal Impact:** \$660,000 in capital funds

**Business Analysis:** This option will enhance reliability of water delivery to member agencies.

**Option #2**

Do not proceed with the project at this time.


**Fiscal Impact:** None

**Business Analysis:** This option would forego an opportunity to reduce the risk of an unplanned capacity reduction at the Skinner plant should a filter be taken out of service for repairs.

**Staff Recommendation**

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Option #1

  
 \_\_\_\_\_ 3/21/2019  
*Date*  
 John V. Bednarski  
 Manager/Chief Engineer  
 Engineering Services

  
 \_\_\_\_\_ 3/27/2019  
*Date*  
 Jeffrey Lightlinger  
 General Manager

**Attachment 1 – Allocation of Budgeted Funds**

**Attachment 2 – Location Map**

Ref# es12669014

### Allocation of Budgeted Funds for Skinner Filter Inlet Valve Gearbox Replacement

	<b>Current Board Action (Apr. 2019)</b>
Labor	
Studies & Investigations	\$ -
Final Design	49,000
Owner Costs (Program mgmt., envir. monitoring)	45,000
Submittals Review & Record Drwgs.	16,000
Construction Inspection & Support	30,000
Metropolitan Force Construction	240,000
Materials & Supplies	200,000
Incidental Expenses	-
Professional/Technical Services	-
Equipment Use	-
Contracts	-
Remaining Budget	80,000
<b>Total</b>	<b>\$ 660,000</b>

The total estimated cost to complete the project is \$660,000. No future funding requests are currently anticipated for this project.

# Distribution System

