



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

4/11/2017 Board Meeting

7-1

Subject

Adopt CEQA determination and appropriate \$1.32 million; and authorize design to rehabilitate finished water reservoirs at the Joseph Jensen and Henry J. Mills Water Treatment Plants (Appropriation No. 15417)

Executive Summary

This action authorizes preliminary design to rehabilitate three finished water reservoirs with floating covers at the Henry J. Mills and Joseph Jensen Water Treatment Plants, along with final design to repair the concrete roof of one finished water reservoir at the Jensen plant. Improvements are also needed to the reservoir isolation gates at the Mills plant and to the reservoir inlet vents at the Jensen plant. These reservoirs provide operational storage capacity within the distribution system to regulate deliveries to member agencies.

Timing and Urgency

All reservoirs holding treated water are required by the state Division of Drinking Water (DDW) to be covered in order to prevent contamination. Metropolitan's potable water storage facilities feature either rigid roofs or flexible floating covers. Four finished water reservoirs at the Mills and Jensen plants have covers and equipment that have deteriorated over 20 years of continuous use. These facilities need to be rehabilitated to protect water quality and maintain reliable deliveries to member agencies.

These projects have been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria and are included in the Distribution System Reliability Program. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2016/17.

Details

Background

The Mills plant was placed into service in 1978 and has a current treatment capacity of 220 million gallons per day (mgd). The Jensen plant was placed into service in 1972 and has a capacity of 750 mgd. The Mills plant normally treats water from the East Branch of the State Water Project (SWP), while the Jensen plant normally treats water from the West Branch of the SWP. The Mills plant is located within the city of Riverside, and the Jensen plant is located in the community of Granada Hills.

To protect treated water from contamination, finished water reservoirs are required by drinking water regulations to be covered. Metropolitan maintains an ongoing inspection and maintenance program for its reservoirs to ensure compliance with those regulations. The service life of a reservoir's floating cover or rigid roofing system is typically determined by the condition of the roofing material. As the material ages, it becomes more difficult to make effective repairs. The typical service life for a floating cover or the roofing system applied to a rigid roof is approximately 20 years.

The Mills plant relies on two finished water reservoirs with floating covers and geomembrane liners to provide storage for the downstream distribution system. Their capacity is approximately 25 million gallons (MG) each. The hypalon cover on Reservoir No. 1 was installed in 1997, while the polypropylene cover on Reservoir No. 2 was installed in 1996. Over the past three years, an increasing number of rips and pinhole leaks in the covers

were discovered and repaired. Due to their deterioration, the floating covers and geomembrane liners at both reservoirs need to be replaced.

Additional rehabilitation work is needed at the Mills finished water reservoirs. Both of these reservoirs are classified as dams by the state Division of Safety of Dams (DSOD), whose operating permits require that the shutoff gates be maintained in an operable condition. The existing gates at both Mills reservoirs are corroded and leaking, and need to be refurbished or replaced. To enable the reservoir improvements to move forward, and to aid in routine maintenance in the future, a new drop gate needs to be installed in one of the two inlet channels. Finally, security enhancements are needed as the western edge of Reservoir No. 2 is adjacent to a public road.

The Jensen plant has two 50-MG finished water reservoirs. Reservoir No. 1 is a concrete structure with a concrete roof that was completed in 1972. Reservoir No. 2 has a polypropylene floating cover that was installed in 1997. The concrete roof of Reservoir No. 1 has a bituminous built-up roofing system and lightweight concrete cap made of perlite. Portions of the perlite cap have deteriorated over time due to weathering. Any further deterioration may result in ponded rainwater leaking into the reservoir, leading to the reservoir being removed from service in order to maintain treated water quality. In August 2014, Metropolitan's Board authorized preliminary design to refurbish the perlite cap. Following field surveys, material testing, and structural assessment of the roof, staff determined that approximately 30 percent of the perlite surface has deteriorated and needs to be repaired. The recommended approach is to replace the damaged perlite with a thin concrete layer, which will extend the cover life for approximately 20 years.

The floating cover at Reservoir No. 2 is also showing significant signs of wear and needs to be replaced. In addition, modifications to the Reservoir No. 2 inlet are needed, as turbulent flow at the inlet has torn holes in the floating cover on several occasions near the corners of the fixed metal air vents.

In order to maintain treated water quality, comply with DSOD operating permits, and minimize the risk of costly urgent repairs, staff recommends rehabilitating the three floating-cover reservoirs and repairing the concrete reservoir roof at the Mills and Jensen plants.

Project No. 1 – Mills Finished Water Reservoir Rehabilitation – Preliminary Design Phase (\$790,000)

The rehabilitation work will include installation of new finished water reservoir liners and floating covers with a rain removal system, refurbishment or replacement of existing reservoir gates, installation of a new drop gate, and installation of enhanced security features.

Planned preliminary design phase activities include: conducting a detailed field inspection of existing reservoir geomembrane liners, rainwater collection and removal systems, slide gates, and electrical service; development of final design criteria; preparation of layout drawings; development of a construction cost estimate; and value engineering. Specialized technical support for the floating cover and liner will be provided by Hilts Consulting Group, Inc., as discussed below, while all other activities will be performed by Metropolitan staff.

This action appropriates \$790,000 and authorizes preliminary design to rehabilitate the finished water reservoirs at the Mills plant. Requested funds include \$558,000 for the technical activities described above; \$41,000 for third-party value engineering; \$88,000 for permitting with DSOD and DDW, project management, and environmental support; and \$103,000 for remaining budget. Staff will return to the Board at a later date for authorization of final design.

Project No. 2 – Jensen Finished Water Reservoir Rehabilitation – Design Phase (\$530,000)

The rehabilitation work will include repair of the perlite cap for Reservoir No. 1; installation of a new finished water reservoir liner and floating cover with a rainwater removal system at Reservoir No. 2; and improvement of the existing inlet configuration for Reservoir No. 2.

Planned design phase activities for the Reservoir No. 1 repairs include preparation of drawings and specifications, development of a construction cost estimate, and receipt of competitive bids. For Reservoir No. 2, the planned activities are similar to those described above for the Mills plant. Specialized technical support for the floating cover and liner improvements will be provided by Hilts Consulting Group, Inc., as discussed below, while all other activities will be performed by Metropolitan staff.

This action appropriates \$530,000 and authorizes design to refurbish the roof at Jensen Reservoir No. 1, along with preliminary design to replace the floating cover on Jensen Reservoir No. 2. Requested funds include \$213,500 for the technical activities described above for Reservoir No. 2; \$40,000 for third-party value engineering; \$90,500 for final design of the roof repairs for Reservoir No. 1; \$112,000 for project management; and \$74,000 for remaining budget. The cost of final design for the Reservoir No. 1 repairs is approximately 14.6 percent of the estimated total construction cost. Engineering Services' goal for design of projects with construction cost less than \$3 million is 9 to 15 percent. The total construction cost of the Reservoir No. 1 repairs is anticipated to range from \$600,000 to \$700,000.

Staff will return to the Board at a later date for award of the construction contract to repair Reservoir No. 1, and for authorization of final design to rehabilitate Reservoir No. 2.

Specialized Technical Support (Hilts Consulting Group, Inc.) – No Action Required

Hilts Consulting Group, Inc. is recommended to provide technical support for replacement of the floating covers including development of design criteria, preparation of layout drawings, and value engineering support. This work is highly specialized and Metropolitan does not maintain the expertise in-house. The estimated cost for these services is \$74,000.

This agreement is planned to be awarded under the General Manager's Administrative Code authority. Hilts Consulting Group, Inc. is a Small Business Enterprise (SBE) firm, and thus achieves 100 percent SBE participation. No subconsultants are planned for this agreement.

Summary

This action appropriates \$1.32 million and authorizes design to rehabilitate four finished water reservoirs at the Jensen and Mills plants. These projects have been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2016/17 capital expenditure plan. See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map.

The improvements for Jensen Reservoir No. 2 and the Mills reservoirs are included within Appropriation No. 15417, the Reservoir Cover Replacement Appropriation, which was initiated in fiscal year 2001/02. The Jensen Reservoir No. 1 roof refurbishment was initiated under Appropriation No. 15486, and with this action will be included within Appropriation No. 15417. With the present action, the total funding for Appropriation No. 15417 will increase from \$41,996,000 to \$43,316,000.

Project Milestones

January 2018 – Completion of design to refurbish the concrete reservoir roof at the Jensen plant

March 2018 – Completion of preliminary design to rehabilitate three floating-cover reservoirs at the Jensen and Mills plants

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

Project No. 1 – Mills Finished Water Reservoir Rehabilitation – Preliminary Design Phase

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. The proposed action also consists 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 action qualifies under Class 1, 2 and 6 Categorical Exemptions (Class 1, Sections 15301, Class 2, Section 15302, and Class 6, Section 15306, of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under three Categorical Exemptions (Class 1, Section 15301, Class 2, Section 15302, and Class 6, Section 15306, of the State CEQA Guidelines).

Project No. 2 – Jensen Finished Water Reservoir Rehabilitation – Design Phase

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. In particular, the proposed action consists of modifying existing public facilities with negligible or no expansion of use beyond that existing at the time of the lead agency's determination, and the rehabilitation and replacement of existing equipment where older components are replaced by new components with the same purpose and capacity. In addition, the proposed action will not have a significant effect on the physical environment. Accordingly, this proposed action qualifies as a Class 1 and Class 2 Categorical Exemption (Section 15301 and Section 15302 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under two Categorical Exemptions (Class 1, Section 15301 and Class 2, Section 15302, of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determination that the proposed actions are categorically exempt, and

- a. Appropriate \$1.32 million;
- b. Authorize preliminary design to rehabilitate three finished water reservoirs with floating covers at the Jensen and Mills plants; and
- c. Authorize final design to repair the concrete roof of one finished water reservoir at the Jensen plant.

Fiscal Impact: \$1.32 million of capital funds under Appropriation No. 15417

Business Analysis: This option will improve reliability of the Mills and Jensen reservoirs, maintain treated water quality, and enhance operational flexibility within the distribution system to meet member agency demands.

Option #2

Do not proceed with rehabilitation of the four finished water reservoirs at this time.

Fiscal Impact: None

Business Analysis: Under this option, staff would continue to inspect and repair the finished water reservoir covers. If damage to a floating cover or the concrete roof could no longer be reliably repaired, the reservoir would be removed from service until the roof is replaced. Operational storage capacity within the distribution system would be reduced during that time.

Staff Recommendation

Option #1



Gordon Johnson
Manager/Chief Engineer,
Engineering Services

3/21/2017
Date



Jeffrey Nighthinger
General Manager

3/28/2017
Date

Attachment 1 – Financial Statement

Attachment 2 – Location Map

Ref# es12647702

Financial Statement for Reservoir Cover Replacement Appropriation

A breakdown of Board Action No. 6 for Appropriation No. 15417 to rehabilitate finished water reservoirs at the Mills and Jensen plants¹ is as follows:

| | Previous Total Appropriated Amount (Nov. 2015) | Current Board Action No. 6 (Apr. 2017) | New Total Appropriated Amount |
|-------------------------------------|---|---|--|
| Labor | | | |
| Studies and Investigations | \$ 293,000 ² | \$ 728,000 | \$ 1,021,000 |
| Final Design | 161,000 | 90,000 | 251,000 |
| Owner Costs (Program mgmt.) | 1,945,420 | 186,000 | 2,131,420 |
| Submittals Review & Record Drwgs | 200,000 | - | 200,000 |
| Construction Inspection and Support | 2,278,000 | - | 2,278,000 |
| Metropolitan Force Construction | 1,050,000 | - | 1,050,000 |
| Materials and Supplies | 11,000 | - | 11,000 |
| Incidental Expenses | 379,840 | 5,000 | 384,840 |
| Equipment Use | - | - | - |
| Professional/Technical Services | 2,897,223 | - | 2,897,223 |
| Hilts Consulting Group, Inc. | - | 74,000 | 74,000 |
| Value engineering firm | - | 60,000 | 60,000 |
| Contracts | 31,038,012 | - | 31,038,012 |
| Remaining Budget | 1,742,505 | 177,000 | 1,919,505 |
| Total | \$ 41,996,000 | \$ 1,320,000 | \$ 43,316,000 |

Funding Request

| | | | |
|-----------------------------------|---|-------------------------------------|--------------|
| Appropriation Name: | Reservoir Cover Replacement Appropriation | | |
| Source of Funds: | Revenue Bonds, Replacement and Refurbishment or General Funds | | |
| Appropriation No.: | 15417 | Board Action No.: | 6 |
| Requested Amount: | \$1,320,000 | Budget Page No.: | 251 |
| Total Appropriated Amount: | \$43,316,000 | Total Appropriation Estimate | \$41,500,000 |

¹ The total amount expended to date to refurbish Jensen Finished Water Reservoir No. 1 is approximately \$166,000. This is the initial action to refurbish Jensen Reservoir No. 2 and the two finished water reservoirs at the Mills plant.

² Upon approval of this action, the preliminary design budget of \$166,000 to refurbish Jensen Reservoir No. 1 will be transferred from Appropriation No. 15486 to Appropriation No. 15417.

