



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

7/10/2018 Board Meeting

8-1

Subject

Adopt CEQA determination and appropriate \$2.3 million; and authorize: (1) final design to replace the domestic water treatment systems at the Colorado River Aqueduct pumping plants; and (2) final design to replace the roadway pavement at the pumping plant villages (Appropriation No. 15483)

Executive Summary

This action authorizes the design of two rehabilitation projects at Metropolitan's Colorado River Aqueduct (CRA) pumping plants. These projects will replace the aging domestic water treatment systems and replace deteriorated asphalt pavement throughout the pumping plant villages.

Timing and Urgency

The CRA pumping plants and villages are isolated facilities that rely on local domestic water systems for the supply of potable water. The water treatment systems have been in operation for nearly 25 years and their major components are aging and need to be replaced.

The existing asphalt roadways at the CRA pumping plants are over 30 years old and have deteriorated due to the harsh desert conditions and poor drainage. In addition, the ongoing projects at each plant to replace the water distribution and sewer systems will require extensive excavation and trenching, which will further distress the pavement. A coordinated pavement renewal project is planned in order to replace the pavement in stages as the subsurface utility work is completed at each plant.

These projects have been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria and are included in the CRA Reliability Program. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2018/19.

Details

Background

The CRA is a 242-mile-long conveyance system that transports water from the Colorado River to Lake Mathews. It consists of five pumping plants, 124 miles of tunnels, 63 miles of canals, and 55 miles of conduits, siphons, and reservoirs. The aqueduct was constructed in the late 1930s and was placed into service in 1941. The CRA pumping plants are located in remote areas of Riverside and San Bernardino Counties, where municipal water supplies are not available. Two projects are recommended to move forward at this time to address the aging water treatment systems and deteriorating pavement at the pumping plants.

Project No. 1 – CRA Domestic Water Treatment System Replacement – Final Design Phase (\$1,590,000)

The CRA pumping plants and villages are isolated facilities that rely on local domestic water systems for the supply of potable water. The domestic water systems contain water treatment equipment that includes membrane filtration, activated carbon adsorption, and sodium hypochlorite feed systems. This equipment is spread over multiple locations around each plant's pump house. Water from the aqueduct is initially pumped to the on-site systems for treatment to meet potable water standards. Following treatment, the water is then pumped to a

storage tank located on the hill above each pump house. It is then conveyed through distribution piping to the pump house, guest lodge and kitchen, employee houses, and support buildings. The largest treatment system can process up to 30,000 gallons per day. Metropolitan staff regularly monitors and tests water quality within the domestic water systems in accordance with state Division of Drinking Water requirements.

The membrane filtration modules are early-generation units. While still operational today, they are deteriorating and require frequent repairs and adjustments. Replacement parts are difficult to obtain. The domestic water treatment systems are critical components of the infrastructure that supports the CRA pumping plants. In order to maintain compliance with drinking water regulations, reduce the frequency of repairs, and maintain reliable operation, the systems need to be replaced.

In January 2016, Metropolitan's Board authorized preliminary design to replace the domestic water treatment systems. Preliminary design has been completed, and staff recommends proceeding with final design at this time. The existing treatment systems will be replaced with new systems that include strainers, microfiltration units, and disinfection equipment. These systems will be installed at the same locations as the existing equipment, within the pump houses. The existing granulated activated carbon vessels will be relocated to new climate-controlled enclosures adjacent to the pump houses. The water quality monitoring instrumentation and laboratory equipment will also be replaced.

The water treatment systems will fully comply with state and federal drinking water regulations, and the planned capacities will be consistent with projections of current and future demands at each plant. Staff recommends that the water treatment equipment be procured in advance of construction due to the long lead time for delivery of the equipment, and to enable the design to reflect the specific configuration of the selected equipment.

Planned final design phase activities include: (1) preparation of drawings and specifications for the equipment procurement and construction contracts; (2) development of a construction cost estimate; (3) third-party value engineering review; (4) local agency permitting; and (5) receipt of competitive bids. All work except for the value engineering will be performed by Metropolitan staff. The value engineering support will be provided by a specialized consultant, as discussed below.

This action appropriates \$1.59 million and authorizes final design to replace the domestic water treatment systems at Metropolitan's pumping plants along the CRA. Requested funds include: \$1,015,000 for the design activities described above; \$40,000 for the value engineering review; \$326,000 for permitting, preparation of environmental documentation, bidding, and project management; and \$209,000 for remaining budget.

The anticipated cost of final design to replace the domestic water treatment systems at all five pumping plants is approximately 11.9 percent of the estimated construction cost. Engineering Services' goal for design of projects with construction greater than \$3 million is 9 to 12 percent. For this project, the construction cost is anticipated to range from \$7.8 million to \$8.5 million.

The total estimated cost to replace the domestic water treatment systems, including the amount appropriated to date, the current funds requested, and future procurement and construction costs, is anticipated to range from \$11.8 million to \$12.5 million.

Staff will return to the Board to award a procurement contract for the water treatment equipment, and to award a construction contract to replace the domestic water treatment systems.

Project No. 2 – CRA Villages Roadway Pavement Replacement, Stage 1 – Final Design Phase (\$710,000)

The asphalt-paved surfaces and roadways at the CRA pumping plants provide all-weather access between buildings and the villages for Metropolitan staff, residents, and visitors. There is a total of approximately 40 acres of asphalt-paved surfaces and roadways at all five pumping plants. These asphalt surfaces are over 30 years old. Due to the harsh desert conditions and deterioration of the subgrade over time, potholes and cracks have developed throughout the pumping plants. In many areas, poor drainage has also contributed to deterioration of the roadways. Over the next several years, replacement of the domestic and nonpotable water distribution systems, along with the ongoing sewer replacement projects, will require extensive cutting and trenching of the existing roadways. This work will further distress the asphalt pavement.

Staff recommends that the roadway pavement be rehabilitated or replaced in multiple stages, in coordination with the planned utility replacements and other rehabilitation work at the pumping plants. Stage 1, which is the subject of this action, will repair roadway pavement in the villages, adjacent to employee housing. These repairs will be incorporated into the upcoming construction contracts for the utility replacement work. Stage 2 will replace pavement along the main access roads and adjacent to maintenance buildings, under one or more stand-alone contracts. Finally, Stage 3 will repair pavement in the vicinity of the pump houses. This work will be completed in conjunction with other planned construction projects, such as electrical ductbank installations.

In December 2017, Metropolitan's Board authorized preliminary design to replace the roadway pavement at the pumping plants. Preliminary design has been completed, and staff recommends proceeding with final design of the Stage 1 repairs at this time. Staff will return to the Board to authorize final design to replace pavement for the remaining stages at a later date.

This project will replace 10 acres of roadway pavement within the pumping plant villages. The planned work includes: (1) removal and replacement of asphalt; (2) addition of aggregate base where needed; (3) grading and installation of culverts to improve drainage; and (4) roadway striping.

Planned final design phase activities include: (1) field investigations and potholing of utilities; (2) preparation of drawings and specifications; (3) development of a construction cost estimate; (4) hazardous material testing; and (5) receipt of competitive bids. All work will be performed by Metropolitan staff.

This action appropriates \$710,000 and authorizes final design of the initial stage to replace roadway pavement at the CRA pumping plants. Requested funds include: \$374,000 for final design; \$197,000 for surveying, preparation of environmental documentation, bidding, and project management; and \$139,000 for remaining budget.

The anticipated cost of final design for the Stage 1 pavement repairs at all five pumping plants is approximately 15 percent of the estimated construction cost. Engineering Services' goal for design of projects with construction less than \$3 million is 12 to 15 percent. For this project, the construction cost is anticipated to range from \$2.2 million to \$2.5 million.

The total estimated cost to replace the roadway pavement at the pumping plant villages, including the amount appropriated to date, current funds requested, and future design and construction costs, is anticipated to range from \$3.6 million to \$4 million.

Value Engineering Review – No Action Required

The third-party value engineering review for Project No. 1 will be performed by a specialty firm under an agreement planned to be executed under the General Manager's Administrative Code authority to award contracts of \$250,000 or less. The estimated cost for this support is \$40,000. No action is required for this agreement.

Summary

This action appropriates \$2.3 million and authorizes design to replace the domestic water treatment systems and replace the pavement in the villages at the CRA pumping plants. These projects are included within capital Appropriation No. 15483, the CRA Reliability Appropriation – FY 2012/13 Through FY 2017/18, which was initiated in fiscal year 2012/13. With the present action, the total funding for Appropriation No. 15483 will increase from \$14.27 million to \$16.57 million.

These projects have been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2018/19 capital expenditure plan. See **Attachment 1** for the Financial Statement and **Attachment 2** for the Location Map.

Project Milestone

December 2019 – Completion of final design to replace the water treatment systems and pavement at the villages at all five pumping plants

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

By Minute Item 50356, dated January 12, 2016, the Board authorized preliminary design to replace the CRA domestic water systems.

By Minute Item 51040, dated December 12, 2017, the Board authorized preliminary design to replace roadway pavement throughout the CRA villages.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

Project No. 1 – CRA Domestic Water Treatment System Replacement – Final Design Phase

The project was previously determined by the Board to be categorically exempt under Classes 1, 2, 3, and 4 (Sections 15301, 15302, 15303, and 15304 of the State CEQA Guidelines) on January 12, 2016. With the current action, there is no substantial change proposed since the original project was first approved in 2016. 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 regard to the proposed action.

The CEQA determination is: Determine that the proposed action has been previously addressed in the 2016 categorical exemptions (Classes 1, 2, 3, and 4; Sections 15301, 15302, 15303, and 15304 of the State CEQA Guidelines) and that no further environmental analysis or documentation is required.

Project No. 2 – CRA Villages Roadway Pavement Replacement, Stage 1 – Final Design Phase

The project was previously determined by the Board to be categorically exempt under Classes 1, 2, 3, and 4 (Sections 15301, 15302, 15303, and 15304 of the State CEQA Guidelines) on December 12, 2017. With the current action, there is no substantial change proposed since the original project was first approved in 2017. 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 regard to the proposed action.

The CEQA determination is: Determine that the proposed action has been previously addressed in the 2017 categorical exemptions (Classes 1, 2, 3, and 4; Sections 15301, 15302, 15303, and 15304 of the State CEQA Guidelines) and that no further environmental analysis or documentation is required.

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determination that Projects No. 1 and No. 2 were previously determined to be categorically exempt, and that no further environmental analysis or documentation is required, and

- a. Appropriate \$2.3 million;
- b. Authorize final design to replace the domestic water treatment systems at the CRA pumping plants; and
- c. Authorize final design to replace roadway pavement in the pumping plant villages.

Fiscal Impact: \$2.3 million of capital funds under Appropriation No. 15483

Business Analysis: This option will enhance critical infrastructure that supports efficient operation and reliability of the CRA pumping plants.

Option #2

Do not proceed with the two replacement projects at this time.

Fiscal Impact: None

Business Analysis: This option would forego an opportunity to improve reliability of the domestic water treatment systems, and to repair deteriorated roadways, which may lead to costly urgent repairs.

Staff Recommendation

Option #1



Michael J. Rojas
Interim Manager/Chief Engineer
Engineering Services

6/21/2018

Date



Jeffrey Kightlinger
General Manager

6/26/2018

Date

Attachment 1 – Financial Statement

Attachment 2 – Location Map

Ref# es12660211

Financial Statement for CRA Reliability Appropriation – FY 2012/13 Through FY 2017/18

A breakdown of Board Action No. 9 for Appropriation No. 15483¹ is as follows:

	Previous Total Appropriated Amount (Dec. 2017)	Current Board Action No. 9 (July 2018)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 2,146,000	\$ -	\$ 2,146,000
Final Design	3,311,000	1,389,000	4,700,000
Owner Costs (Program mgmt., bidding, & permitting)	1,454,000	506,000	1,960,000
Submittals Review & Record Drwgs.	88,000	-	88,000
Construction Inspection & Support	591,000	-	591,000
Metropolitan Force Construction	947,000	-	947,000
Materials & Supplies	104,000	-	104,000
Incidental Expenses	22,000	17,000	39,000
Professional/Technical Services	1,182,000	-	1,182,000
Value engineering firm	-	40,000	40,000
Equipment Use	63,000	-	63,000
Contracts	2,975,254	-	2,975,254
Remaining Budget	1,386,746	348,000	1,734,746
Total	\$ 14,270,000	\$ 2,300,000	\$ 16,570,000

Funding Request

Appropriation Name:	CRA Reliability Appropriation – FY 2012/13 Through FY 2017/18		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15483	Board Action No.:	9
Requested Amount:	\$ 2,300,000	Budget Page No.:	270
Total Appropriated Amount:	\$ 16,570,000	Total Appropriation Estimate:	\$ 145,204,000

¹ The total amount expended to date to replace the domestic water treatment systems at the CRA pumping plants is approximately \$583,000. The total estimated cost to complete the project, including the amount appropriated to date, current funds requested, and future construction costs, is anticipated to range from \$11.8 million to \$12.5 million.

The total amount expended to date to replace the roadway pavement in the pumping plant villages is approximately \$173,000. The total estimated cost to complete the project, including the amount appropriated to date, current funds requested, and future construction costs, is anticipated to range from \$3.6 million to \$4 million.

Location Map

