



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

10/10/2023 Board Meeting

7-2

Subject

Authorize an agreement with Black & Veatch Corporation in an amount not to exceed \$750,000 for design of new access platforms to facilitate maintenance activities on the main pumps at the five Colorado River Aqueduct pumping plants; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

On a regular and as-needed basis, Metropolitan staff performs routine and corrective maintenance on all 45 main pumps at the five pumping plants on the Colorado River Aqueduct (CRA). To conduct this work, staff currently erects temporary working platforms and ladders that extend approximately 20 feet above the pump room floor to gain access to a portion of the main pumps. This practice of erecting and breaking down these platforms is labor intensive as it requires an entire day to set up the temporary systems prior to performing any maintenance activities. A second day of staff time is required to disassemble the platforms once the maintenance work is completed. This action authorizes an agreement with Black & Veatch Corporation (Black & Veatch) to provide design services for new access platforms and related improvements that will facilitate efficient maintenance activities at all five pumping plants while enhancing a safe work environment for staff when these platforms are in use.

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.

Each of the five CRA pumping plants has a multi-level pumphouse building that contains nine main pump units. To perform routine maintenance including inspecting for oil leaks and checking the condition of the electrical cables, and cooling water and lubrication lines, staff can access the pumps from two openings on the pump bay floor levels. One opening is located on the main motor room floor and is readily accessible. Staff gains access to the second pump opening via a hatch, which is located 20 feet above the lower-level pump room floor.

Access to the second opening requires staff to assemble a temporary platform. When performing maintenance, staff erects a temporary working platform with steel members and wood deck boards underneath these hatches. At four plants, the platform steel members with wooden deck boards are clamped onto the pump bay crane rails. At the other plant, the temporary working platform is secured to the ceiling by straps with lateral ties to restrict lateral movement. Temporary ladders are used to gain access to these working platforms. In addition, temporary guard rails are installed to provide fall protection and comply with safety standards. Currently, each plant has a platform assembly, which requires staff to disassemble and reassemble from unit to unit when performing routine maintenance. This is a labor-intensive process that requires between 8 to 12 hours to erect, and a similar amount of time to disassemble. Metropolitan staff performs maintenance on these pumps monthly and as required to perform repairs.

To facilitate safe and efficient maintenance, staff recommends providing new platform systems at each plant as well as making other access improvements including fixed ladders, elevated walkways, and guardrails along the

pump bay walls. The new platforms and ladders will be lightweight, portable, and easy to assemble and disassemble. The new platforms, safety ladders, elevated walkways, and guardrails will provide staff with the ability to perform maintenance activities efficiently and enhance safety.

Budget Impact

In accordance with the April 2022 action on the biennial budget for fiscal years 2022/23 and 2023/24, the General Manager will authorize staff to proceed with the actions described herein, pending board authorization of the agreements described below. Based on the current Capital Investment Plan (CIP) expenditure forecast, funds for the work to be performed pursuant to this action during the current biennium are available within the Capital Investment Plan Appropriation for Fiscal Years 2022/23 and 2023/24 (Appropriation No. 15525). This project anticipates an expenditure of \$1.22 million in capital funds. Approximately \$500,000 will be incurred in the current biennium and has been previously authorized. The remaining funds for this action will be accounted for in the next biennial budget. This project has been reviewed in accordance with Metropolitan's CIP prioritization criteria and was approved by Metropolitan's CIP Evaluation Team to be included in the CRA Reliability Program.

CRA Pumping Plants Main Pump Access Improvements – Design

Planned improvements under this project include the design and fabrication of scaffolding systems for work platforms, ladders, and their associated support structures at all five CRA pumping plants. The final number of work platforms will be confirmed during design and will be based on factors such as maintenance needs, individual site configurations, storage availability, and risk assessments. Due to the unique nature of each pump plant and individual pump bay, it is anticipated that custom designs will be required for each location. In general, the platforms will be approximately 10 feet wide by 10 feet long with a 4-foot-wide opening to accommodate the pump shaft and will include safety guardrails, kick plates, and a ladder system. The platform-based access systems will be designed to meet all current safety requirements for this type of workspace. Planned design activities include the development of design criteria, preparation of conceptual drawings and reports, including structural calculations, development of three-dimensional models for the proposed platform systems, preparation of procurement package for the complete platform systems, and final design drawings and specifications for installation. These activities will be performed by Black & Veatch as discussed below. Metropolitan staff will perform overall project management and consultant oversight.

A total of \$1,220,000 is required for this work. Allocated funds include \$750,000 for design activities (\$350,000 for preliminary investigations of all 45 pump bays, evaluation of design alternatives and criteria, and development of three-dimensional models, and \$400,000 for final design activities) by Black & Veatch, under a new agreement, as described below, and \$75,000 for value engineering and constructability review workshops. The workshops 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. Allocated funds for Metropolitan staff activities include \$230,000 for technical oversight and review of consultant's work; \$105,000 for environmental support, project management, and project controls; and \$60,000 for remaining budget. **Attachment 1** provides the allocation of the required funds.

As described above, design will be performed by Black & Veatch and Metropolitan staff. Engineering Services' performance metric target range for final design with construction more than \$3 million is 9 to 12 percent. For this project, the performance metric goal for final design is 9.5 percent of the total construction cost. The estimated cost of final design is \$475,000, which includes \$400,000 for Black and Veatch and \$75,000 for Metropolitan staff. The estimated cost of construction for the new platforms and other access improvements at the CRA pumping plants is anticipated to range from \$5 million to \$7 million.

Design Services (Black & Veatch Corporation) – New Agreement

Black & Veatch is recommended to perform design services for the main pump access improvements. Black & Veatch was selected through a competitive process via Request for Proposal No. 1341. Black & Veatch was selected for these services based on the firm's experience and expertise in designing structures and platforms.

The planned activities for Black & Veatch include: (1) detailed field investigations of the 45 pump bays; (2) evaluation of design alternatives; (3) development of design criteria; (4) preparation of conceptual design report, including three-dimensional models of the proposed platform systems; (5) preparation of procurement

package for new platform systems; (6) final design drawings and specifications for installation; (7) development of construction cost estimates; and (8) design support during advertisement.

This action authorizes an agreement with Black & Veatch for a not-to-exceed amount of \$750,000 to provide design services for the CRA Pumping Plants Main Pump Access Platform Improvement project. For this agreement, Metropolitan has established a Small Business Enterprise participation level of 25 percent. Black & Veatch has agreed to meet this level of participation. See **Attachment 2** for a listing of the subconsultants.

Alternatives Considered

During the planning process for this project, staff considered designing 45 individual platform units, one for each pump bay across all five CRA pumping plants. After assessing the maintenance needs, storage availability within the individual pump bays, and overall costs, staff determined that the number of platforms could be reduced. The selected alternative provides an effective, efficient, and safe way to perform maintenance activities within the limited space configuration of the individual pump bays.

In addition, the availability and capability of in-house Metropolitan staff was considered to complete the design activities for this work. Metropolitan's staffing strategy for utilizing consultants and in-house Metropolitan staff has been: (1) to assess current work assignments for in-house staff to determine the potential availability of staff to conduct this work; and (2) for long-term rehabilitation projects, when resource needs exceed available in-house staffing or require specialized technical expertise.

After assessing the current workload for in-house staff and the relative priority of this project, staff recommends the use of a professional services agreement to complete the subject project. This approach will allow for the completion of not only this project, but also other budgeted capital projects within their current schedules and ensure that the work is conducted in the most efficient manner possible.

Summary

This action authorizes an agreement with Black & Veatch in an amount not to exceed \$750,000 to provide design services for the CRA Pumping Plants Main Pump Access Improvements. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the List of Subconsultants, and **Attachment 3** for the Location Map.

Project Milestone

December 2024 – Completion of design

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

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

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

By Minute Item 52778, dated April 12, 2022, the Board appropriated a total of \$600 million for projects identified in the Capital Investment Plan for Fiscal Years 2022/2023 and 2023/2024.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is not subject to CEQA because the overall activities involve data collection, research, resource evaluation, and feasibility and planning studies for possible future actions that do not require the preparation of an Environmental Impact Report or Negative Declaration, and which do not result in serious or major disturbance to an environmental resource. Accordingly, the proposed action qualifies under Class 6 (Section 15306) and Section 15262 of the State CEQA Guidelines.

CEQA determination for Option #2:

None required

Board Options

Option #1

Authorize an agreement with Black & Veatch in an amount not to exceed \$750,000 for design services for access platform improvements to facilitate maintenance activities on the main pumps at the five CRA pumping plants.

Fiscal Impact: Expenditure of \$1,220,000 in capital funds. Approximately \$500,000 in capital funds will be incurred in the current biennium and have been previously authorized. The remaining capital expenditures will be funded from future CIP budgets following board approval of those budgets.

Business Analysis: This option will enhance safety and facilitate reliable access for maintenance activities at all five CRA pumping plants.

Option #2

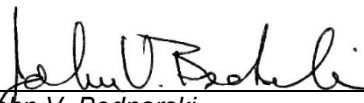

Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: Under this option, staff will continue to utilize existing temporary maintenance platforms and forego an opportunity to improve worker safety.

Staff Recommendation

Option #1

	9/21/2023
_____ John V. Bednarski Manager/Chief Engineer Engineering Services	Date
	9/27/2023
_____ Adel Hagekhalil General Manager	Date

Attachment 1 – Allocation of Funds

Attachment 2 – Listing of Subconsultants

Attachment 3 – Location Map

Ref# es12695937

Allocation of Funds for CRA Pumping Plants Main Pump Access Improvements

	Current Board Action (Oct. 2023)
Labor	
Investigations & Conceptual Design	\$ 155,000
Final Design	75,000
Owner Costs (Program mgmt., envir. monitoring)	105,000
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Black & Veatch Corporation	750,000
Value Engineering	75,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	60,000
Total	\$ 1,220,000

The total amount expended to date for the CRA Main Pump Access Improvements Project is approximately \$40,000. The total estimated cost to complete the project, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from \$7 million to \$9 million.

The Metropolitan Water District of Southern California
Subconsultants for Agreement with Black & Veatch Corporation

Subconsultant and Location	Service Category; Specialty
Jamison Engineering Contractors Inc. Santa Ana, CA	Constructability
Paul Hansen Engineering LLC Rancho Palos Verdes, CA	Cost Estimating
The Terrazas Group LLC Pasadena, CA	3-D Microstation Drafting

Location Map

