THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

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

3/12/2024 Board Meeting

7-4

Subject

Authorize an increase of $2,700,000 to an agreement with Tetra Tech Inc. for a new not-to-exceed total amount of $3,350,000 for final design services for improvements to the Station Light and Power Electrical System at Iron Mountain Pumping Plant; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

The 2.4 kV Station Light and Power (SL&P) system provides power to critical pumping plant equipment such as cooling water pumps, lubricating oil systems, general station lighting, microwave communications systems, and village housing. The existing SL&P switchrack and the medium- and low-voltage distribution system were part of the original pump plant construction more than 80 years ago. This system requires replacement to ensure reliable operation of the pump plant and to maintain reliable Colorado River Aqueduct (CRA) water deliveries.

This action authorizes an increase to an existing agreement with Tetra Tech Inc. for final design to replace the SL&P system at the Iron Mountain Pumping Plant. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Listing of Subconsultants, and **Attachment 3** for the Location Map.

Proposed Action(s)/Recommendation(s) and Options

Staff Recommendation: Option #1

Option #1

Authorize an increase to an existing agreement with Tetra Tech Inc. for a new not-to-exceed amount of $3,350,000 for design services for the Iron Mountain SL&P Electrical Improvements project.

Fiscal Impact: Expenditure of $4.2 million in capital funds. Approximately $100,000 in capital funds will be incurred in the current biennium and have been previously authorized. The remaining capital expenditures will be funded from future Capital Investment Plan (CIP) budgets following board approval of those budgets.
Business Analysis: This option will improve the reliability and flexibility of the electrical system, enhance operational safety, and upgrade the power distribution system to meet future load requirements of the CRA.

Option #2

Do not proceed with the project at this time.
Fiscal Impact: None
Business Analysis: This option would forego an opportunity to improve reliability, flexibility, and safety of the electrical system in the CRA.

Alternatives Considered

Alternatives considered for completing final design activities for the Iron Mountain SL&P Electrical Improvements project included assessing the availability and capability of in-house Metropolitan staff to conduct 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 program, but also other budgeted capital projects within their current schedules.

Applicable Policy

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

Related Board Action(s)/Future Action(s)

By Minute Item 52701, dated February 8, 2022, the Board authorized preliminary design for the Iron Mountain SL&P Electrical Improvements.

By Minute Item 52778, dated April 12, 2022, the Board appropriated a total of $600 million for projects identified in the CIP for Fiscal Year 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

Details and Background

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, siphons, and reservoirs; 63 miles of canals; and 55 miles of cut-and-cover conduits. The aqueduct was constructed in the late 1930s and was placed into service in 1941.

At the Iron Mountain Pumping Plant, incoming high-voltage power is stepped down to 6.9 kV for the main pump's operation and then down to 2.4 kV to supply the SL&P switchrack. This switchrack serves as the central power distribution center for the pumping plant's critical auxiliary systems, such as the cooling water pumps, lubricating oil systems, general station lighting and computer systems, microwave communications systems, and village housing. The switchrack includes vacuum circuit breakers and transformers connected through overhead copper busses and disconnect switches. These components are supported by a steel lattice frame and are situated outdoors within a fenced-in yard exposed to the elements. In the event of an unanticipated power outage to the pumping plant, power systems are kept operational by the operation of a standby diesel generator that is interconnected to the SL&P switchrack.

Power from the SL&P switchrack is delivered through an auxiliary power system that was installed in the 1930s and expanded in the 1950s. The auxiliary power distribution system consists of transformers to step down the voltage; dozens of distribution panels and hundreds of circuit breakers; thousands of feet of conduits and cable trays; and many miles of electrical wiring. Over the decades, additional electrical loads have been added at the pumping plant without upgrading the capacity of the auxiliary power systems. Additionally, the standby generator that provides emergency power is outdated and requires replacement.

The 1930s design and current condition of the SL&P switchrack has a number of deficiencies that affect the overall reliability of the switchracks, including obsolete equipment, such as vacuum circuit breakers; lack of modern safety features, such as a means to lock switches in the open state when required; and outdoor equipment with switches, breakers, and busses that are exposed to the elements and difficult to repair or maintain under adverse weather conditions.

An effort to rehabilitate and upgrade the electrical infrastructure at Metropolitan's five CRA pumping plants is underway. The upgrade of the CRA's main pump switchracks at all five plants was completed in 2017. The Board authorized a consultant agreement for the preliminary design of the Iron Mountain SL&P switchrack improvements in February 2022. Preliminary design for the improvements of the SL&P switchrack is complete, and staff recommends proceeding to final design. Staff plans to initiate design of upgrades for the remaining CRA pumping plants upon completion of design for the Iron Mountain Pumping Plant. This approach will allow staff to apply lessons learned from the Iron Mountain Pumping Plant design to the other four pumping facilities.

Iron Mountain Station Light & Power Electrical Improvements – Final Design

Planned work includes constructing a new cast-in-place concrete building, which will house new switchgear and a 4.16 kV generator. Double-stacked circuit breakers will be used to reduce the building size. The new building will extend the service life of the electrical equipment and will facilitate maintenance. The new switchgear will be upgraded from 2.3 kV to 4.16 kV to align with modern equipment voltages and will be double ended to provide redundancy and enhance reliability. A new medium- and low-voltage distribution system will be constructed that includes transformers, distribution panels, and duct banks. Finally, a new 4.16 kV standby generator will also be provided that will supply emergency power in the event of power loss from the primary electrical system.

Planned final design activities will include: (1) preparing drawings and specifications, which will include the design of the switchgear building, establishing electrical duct bank routes; finalizing equipment selections; identification of outage requirements; and the development of a construction sequencing scheme to maintain operations and establishing a cutover sequencing plan to the new equipment; (2) developing the engineer's cost estimate; and (3) advertising and receiving competitive bids.

A total of $4.2 million is required for this work. Allocated funds for professional services include $2.7 million for the final design activities by Tetra Tech Inc. (Tetra Tech) as described below; and $80,000 for constructability review. A specialty firm will perform the constructability review under contracts 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 $830,000 for preparing instrumentation and controls design drawings, technical oversight, and review of consultant's work; $390,000 for shutdown planning, environmental support, and project management; and $200,000 for the remaining budget. **Attachment 1** provides the allocation of the required funds.

As described above, the final design will be performed by Tetra Tech and Metropolitan staff. Engineering Services' performance metric target range for final design with a construction cost of more than $3 million is 9 to 12 percent. For this project, the performance metric goal for final design is 9.3 percent of the total construction cost. The total estimated cost for design is $3.53 million, which includes $2.7 million for Tetra Tech and $830,000 for Metropolitan staff design and consultant review. The estimated cost of construction for the replacement of the Iron Mountain SL&P Electrical Improvements project is anticipated to range from $38 million to $42 million.

Engineering Service (Tetra Tech Inc.) – Amendment of Existing Agreement

Tetra Tech is recommended to provide engineering services for the design of Iron Mountain SL&P switchracks improvements. The planned activities for Tetra Tech include: (1) development of final design drawings and specifications as detailed above; (2) technical assistance through bidding; (3) participation in a constructability review; and (4) preparation of an engineer's cost estimate. Tetra Tech was prequalified for this type of work via Request for Qualifications No. 1305 and previously completed the preliminary design.

This action authorizes an increase of $2.7 million to the existing agreement with Tetra Tech for a new not-to-exceed amount of $3.35 million to provide engineering design services for the Iron Mountain SL&P Switchrack Electrical Improvements. For this agreement, Metropolitan has established a Small Business

Enterprise participation level of 15 percent. Tetra Tech has agreed to meet this level of participation. The planned subconsultants for this work are listed in **Attachment 2**.

Project Milestone

March 2025 – Completion of final design & advertisement for construction bids

2/20/2024

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

2/23/2024

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Planned Subconsultants

Attachment 3 – Location Map

Ref# es12697253

Allocation of Funds for Iron Mountain Station Light & Power Electrical Improvements

	Current Board Action (Mar. 2024)
Labor	
Studies & Investigations	$ -
Final Design	830,000
Owner Costs (Program mgmt., envir. monitoring)	390,000
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	
Tetra Tech Inc.	2,700,000
Constructability Review Consultant	80,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	200,000
Total	**$ 4,200,000**

The total amount expended to date is approximately $1.7 million. The total estimated cost to complete the electrical improvements for the Station Light & Power at Iron Mountain pumping plant, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from $44.5 million to $52 million.

The Metropolitan Water District of Southern California

Subconsultants for Agreement with Tetra Tech Inc.

Subconsultant and Location	Service Category; Specialty
DRP Engineering Inc. Alhambra, CA	CAD Services
Citadel EHS Glendale, CA	Environmental Regulatory Compliance

Location Map