



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

4/11/2023 Board Meeting

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**7-6**

**Subject**

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Authorize an agreement with Canary Systems California, LLC, for an amount not to exceed \$1.95 million to upgrade the data acquisition systems at Diamond Valley Lake and Garvey Reservoir; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

**Executive Summary**

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The data acquisition systems at Diamond Valley Lake (DVL) and Garvey Reservoir automatically collect data from instrumentation in and around the dams. This data is collected and monitored to prepare mandatory reports for submission to the California Division of Safety of Dams (DSOD), and to provide early indication of any potential problems with the dam embankments or foundations. The current complement of instruments, monitoring equipment, and data acquisition software and hardware was installed in the late 1990s at DVL and in 2011 at Garvey Reservoir and is reaching the end of its service life. New data acquisition systems are needed to maintain Metropolitan's ability to continuously monitor dam performance and to comply with the dams' operating permits. This action authorizes an agreement to upgrade the automated data acquisition systems at DVL and Garvey Reservoir.

**Details**

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**Background**

DVL is Southern California's largest surface water reservoir, with a maximum storage capacity of 810,000 acre-feet. The facility provides emergency storage in the event of a major earthquake, carryover storage as a reserve for drought conditions, and seasonal storage to meet annual member agency demands. DVL began operation in 2000 and is located south of the city of Hemet in Riverside County. Garvey Reservoir was constructed in 1954 as a component of the Middle Feeder system. The reservoir receives treated water from the F. E. Weymouth Water Treatment Plant and has a maximum storage volume of 1,600 acre-feet. The reservoir provides critical hydraulic flexibility to Metropolitan's distribution system by stabilizing flows within the Middle Feeder. Garvey Reservoir also ensures deliveries to member agency service connections when pipelines are shut down for maintenance.

Extensive dam monitoring systems were installed at DVL and Garvey Reservoir to provide early warning signs of potential dam distress and to monitor the real-time performance of the embankments and foundations. The dam monitoring systems typically use data acquisition systems to automatically read, store, and transmit measurements from piezometers, settlement sensors, seepage weirs, inclinometers, extensometers, anchor load cells, and strong motion accelerographs. The data is then transmitted through Metropolitan's wide area network to the Headquarters Building at Union Station and to the Operations Control Center at Eagle Rock, where it enables continuous monitoring of dam performance, detection of potential conditions requiring a prompt response, and compilation of regulatory reports required by DSOD.

At DVL, approximately 300 instruments, including seepage weirs, accelerographs, piezometers, and anchor load cells installed in the inlet/ outlet tower, are relied upon to collect key data and relay that information to Metropolitan's monitoring systems. For Garvey Reservoir, approximately 50 instruments, including piezometers, underdrain flow transducers, and liner drain flowmeters, collect key data and relay that information for monitoring purposes. Over the last decade, hardware and power components of these systems have been deteriorating with an increasing frequency of failures at both facilities, resulting in incomplete or inaccurate data

sets, which require extensive manual corrections. Repair of the system components has become increasingly difficult as the units are no longer manufactured, and spare parts are no longer readily available to reliably record instrumentation data at both reservoirs. The original electronic hardware, including radios, motherboards, and power regulators, is also showing signs of deterioration.

Staff recently completed Request for Qualifications (RFQ) No. 1318 to establish a pool of qualified candidates to replace the automated data acquisition system at Garvey Reservoir and DVL. Staff recommends authorizing a professional service agreement based on the results of this RFQ to replace the automated data acquisition systems at both reservoirs.

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 action described herein, pending board authorization of the agreement described below. Based on the current Capital Investment Plan (CIP) expenditure forecast, funds for work to be performed pursuant to this action during the current biennium are available within the CIP appropriation for fiscal years 2022/23 and 2023/24 (Appropriation No. 15525). 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 Dams and Reservoirs Improvements Program.

### **Automated Data Acquisition System Upgrades at DVL and Garvey Reservoir – Procurement and Installation**

Planned upgrades include replacement of the existing remote monitoring units, piezometer, seepage weir sensors, radio equipment, power systems, and communications components. The upgraded system will utilize a cloud solution that will host the software for storing and post-processing of the data as well as providing a dashboard for real-time data reporting and continuous monitoring. The upgraded system will include the ability to alert staff if any instrumentation measurements that exceed pre-defined thresholds.

The scope of work for the implementation of automated data acquisition system upgrades consists of field evaluations, system design, instrumentation, and automatic data acquisition equipment replacement, as well as data management storage and preparation of dashboard reports. This work is planned to be conducted by a consultant and Metropolitan staff. Canary Systems California, LLC (Canary Systems) will design the new and upgraded system; provide the new instrumentation and automatic data acquisition equipment; and program and commission the new system. Metropolitan staff will remove the obsolete system components and perform construction work, including grading, excavation, and installing equipment. Metropolitan staff will also provide geotechnical support, perform related structural and electrical design, conduct overall project management, and perform technical reviews.

A total of \$3.48 million is required to complete this work. Allocated funds include \$1.95 million for design, procurement, and installation activities by Canary Systems, as described above. Allocated funds for Metropolitan staff include \$500,000 for Metropolitan force construction as described above; \$392,000 for design activities and technical oversight of consultant's work; \$107,000 for submittals review, response to technical requests for information, and preparation of record drawings; \$275,000 for environmental support, agreement administration, and project management; and \$256,000 for remaining budget. **Attachment 1** provides the allocation of the required funds. The total estimated cost to upgrade the dam monitoring systems at DVL and Garvey Reservoir, including the amount allocated to date and funds allocated for the work described in this action, is \$5.88 million.

### ***Engineering Services (Canary Systems California, LLC) – New Agreement***

Canary Systems California, LLC is recommended to provide engineering services to complete design, equipment procurement, programming, and commissioning of the upgraded dam monitoring systems and data management for DVL and Garvey Reservoir. Canary Systems was prequalified under RFQ No. 1318, which established a prequalified list of firms to provide engineering services for dam monitoring systems. Staff received responses to the RFQ from six firms. Staff evaluated each firm based on its qualifications and staffing plan, costs, record of past performance, references, technical approach and methodology, guarantee of support and spare parts, environmental sensitivity, and project schedule. Canary Systems was selected to provide the needed services based on the evaluation of the above-listed criteria set forth in the RFQ.

The planned activities for Canary Systems at each site include: (1) field evaluations at DVL and Garvey Reservoir; (2) conducting workshops with Metropolitan staff to assess the existing monitoring systems, computer

database, and historical data migrations; (3) development of design criteria, data flow diagrams, and deployment requirements for the proposed system; (4) furnishing the required hardware for the proposed system; (5) system, programming, commissioning, and testing; and (6) real-time data management and dashboarding.

This action authorizes an agreement with Canary Systems for a not-to-exceed amount of \$1.95 million to upgrade the automated data acquisition systems at DVL and Garvey Reservoir. For this agreement, Metropolitan has established a Small Business Enterprise (SBE) participation level of at least 25 percent. Canary Systems California, LLC is an SBE firm and thus achieves 100 percent participation. There are no planned sub-consultants for this work.

### **Alternatives Considered**

Alternatives considered for upgrading Metropolitan's dam monitoring systems included using a traditional design-bid-build procurement strategy wherein prescriptive specifications for equipment and software would be developed by staff for advertisement for competitive bidding. With this approach, Metropolitan is responsible for coordination between the designer, specialized equipment supplier, and the contractor.

The selected option of authorizing an agreement for the design, procurement, and integration of dam monitoring systems at DVL and Garvey Reservoir allows Metropolitan to select an industry expert to perform a specialized, project-based service, minimizes the risk of potential compatibility issues between system data acquisition and software required for post-processing and reporting of the data, and offers a competitively bid best value for Metropolitan. Further, Metropolitan forces can effectively execute the construction work associated with installation.

### **Summary**

This action authorizes a new agreement with Canary Systems California, LLC for a not-to-exceed amount of \$1.95 million for design, procurement, programming, commissioning, and data management to upgrade the instrumentation and automated data acquisition systems at DVL and Garvey Reservoir. See **Attachment 1** for the Allocation of Funds, and **Attachment 2** for the Location Map.

### **Project Milestone**

June 2024 – Complete implementation of dam monitoring system upgrades at DVL and Garvey Reservoir

### **Policy**

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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 50527, dated July 12, 2022, the Board authorize design and installation of Stage 1 upgrades to the dam monitoring system at Diamond Valley Lake.

By Minute Item 50943, dated September 12, 2017, the Board authorized upgrades to the geodetic deformation monitoring system at Diamond Valley Lake.

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 2022/23 and 2023/24.

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

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

The Diamond Valley Lake project was previously determined to be categorically exempt under the provisions of CEQA and State CEQA Guidelines. The Board found this project to be categorically exempt under Class 1, Section 15301; Class 2, Section 15302; and Class 3, Section and 15303 of the State CEQA Guidelines on July 12, 2016. A Notice of Exemption (NOE) was filed on the project at that time, and the statute of limitations has ended. With the current Board action, there is no substantial change proposed to the project since the original NOE was filed. 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 Garvey Reservoir project is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action involves funding of minor modifications, reconstructions, or replacements, along with the construction and location of limited numbers of new, small facilities or structures facilities involving negligible or no expansion of use and no possibility of significantly impacting the physical environment. The proposed action may involve minor modifications in the condition of land, water, and/or vegetation, which does not involve removal of healthy, mature, scenic trees. In addition, the proposed action 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 for Class 1, Class 2, Class 3, Class 4, and Class 6 Categorical Exemptions (Sections 15301, 15302, 15303, 15304, and 15306 of the State CEQA Guidelines).

**CEQA determination for Option #2:**

None required

**Board Options**

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**Option #1**

Authorize an agreement with Canary Systems California, LLC, for an amount not to exceed \$1.95 million to upgrade the data acquisition systems at Diamond Valley Lake and Garvey Reservoir.

**Fiscal Impact:** Expenditure of \$3.48 million in capital funds. All costs will be incurred in the current biennium and have been previously appropriated.

**Business Analysis:** This option will enhance the reliability and safety of DVL and Garvey Reservoir and will maintain the capability to continuously monitor dam performance in compliance with DSOD reporting requirements.

**Option #2**

Do not proceed with the project at this time.

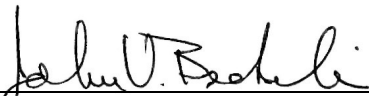
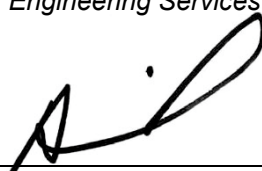
**Fiscal Impact:** None

**Business Analysis:** This option would forego an opportunity to protect Metropolitan's assets and enhance the capability to monitor the performance of dams at DVL and Garvey Reservoir.

**Staff Recommendation**

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**Option #1**

 _____ John V. Bednarski Manager/Chief Engineer Engineering Services	3/23/2023 _____ Date
 _____ Adel Hagekhalil General Manager	3/24/2023 _____ Date

**Attachment 1 – Allocation of Budgeted Funds**

**Attachment 2 – Location Map**

### Allocation of Funds for DVL and Garvey Reservoir Dam Acquisition System Upgrades

	<b>Current Board Action (Apr. 2023)</b>
Labor	
Studies & Investigations	\$ -
Final Design	392,000
Owner Costs (Program mgmt., Agreement Admin.)	275,000
Submittals Review & Record Drwgs.	107,000
Construction Inspection & Support	-
Metropolitan Force Construction	500,000
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Canary Systems California, LLC	1,950,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	256,000
<b>Total</b>	<b>\$ 3,480,000</b>

The total amount expended to date for the dam monitoring system upgrades at Diamond Valley Lake and Garvey Reservoir is approximately \$2.4 million. The total estimated cost to complete this project, including the amount appropriated to date and funds allocated for the work described in this action, is \$5.88 million.

