



THE METROPOLITAN WATER DISTRICT  
OF SOUTHERN CALIFORNIA

**Report**  
Office of General Auditor

## **Internal Audit Report for November 2019**

### **Summary**

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Three reports were issued during the month:

- 1. Water Quality Compliance Reporting Systems Audit Report**
- 2. Examination of the Colorado River Water Users Association Financial Report**
- 3. Lake Mathews Headworks Forebay Liner & Outlet Tower Repair Project Audit Report**

### **Discussion Section**

This report highlights the significant activities of the Internal Audit Department during November 2019. In addition to presenting background information and the opinion expressed in the audit report, a discussion of findings noted during the examination is also provided.

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## **Water Quality Compliance Reporting Systems**

The Audit Department has completed a review of the administrative controls over Water Quality Compliance Reporting Systems as of August 31, 2019.

### **Scope**

Our review consisted of evaluating the accuracy of compliance reporting, adequacy of security access controls, disaster recovery preparedness, and completeness of the WQ report preparation procedures.

### **Background**

The Water Quality Section (WQS) of the Water System Operations Group is responsible for conducting chemical, microbiological, and physical analyses of water to ensure that water quality complies with drinking water quality standards. Each year, the Water Quality Laboratory staff performs over 184,000 analytical tests using more than 160 methods on nearly 50,000 samples. In addition, each of the five water treatment plant laboratories performs an additional 150,000 analytical tests. The following WQS applications and enterprise systems record the results of these tests.

- Nautilus Laboratory Information System (LIMS),
- Lab Sheet System,

- Interim Enhanced Surface Water Treatment Rule (IESWTR) Invalidation Module,
- Disinfectants/Disinfection By-Product Centralized Database Reporting Databases (DBP-CDRS), and
- Supervisory Control and Data Acquisition System (SCADA).

The number of samples and analyses for Metropolitan's source, treatment plants, and distribution system may change each year depending on regulations, monitoring plans, operations, and water quality studies. Data accuracy is critical to ensure that the quality of water supplies is maintained and in compliance with regulatory standards. WQS prepares 38 regulatory and operational reports based on results from laboratory analyses and other performance measurements.

We reviewed the three California State Water Resources Control Board's Division of Drinking Water compliance reports.

#### Quarterly D/DBP Report

The D/DBP Report shows that Metropolitan complies with the Stage 1 and Stage 2 Disinfectants/Disinfection Byproducts Rule maximum contaminant levels and treatment technique requirements. The D/DBP report provides data for the constituents, including chlorine residual, trihalomethanes, haloacetic acids, and bromate.

#### Monthly IESWTR Report

The IESWTR compliance reports show that Metropolitan's five water treatment plants comply with the California Surface Water Filtration and Disinfection Treatment Regulations. It includes combined filter effluent and individual filter turbidity, flow rates, CT ratio, disinfectant residual, and any water quality complaints.

#### Monthly Fluoride Report

The fluoride report shows that Metropolitan fluoridates within the control range levels at the five water treatment plants and within the distribution systems.

### **Opinion**

In our opinion, the accounting and administrative procedures over Water Quality Compliance Reporting System include those practices usually necessary to provide for a generally satisfactory internal control structure. The degree of compliance with such policies and procedures provided effective control for the period January 1, 2017, to August 31, 2019.

### **Comments and Recommendations**

#### **POLICY AND PROCEDURES**

Policies and procedures should be established and documented to provide a framework for achieving Metropolitan's operational goals and business objectives. Policies and procedures provide management with guidelines for consistent performance of daily operations, assist management in the training of new employees, and provide a source of reference for experienced

personnel. For the Water Quality Disinfectants/disinfection Byproducts (D/DBP) Reports, preparation procedures should be documented to define data sources and calculation methodologies. Additionally, cybersecurity policies should be established for the standalone instrumentation computers in the Water Quality laboratories. Furthermore, the approval procedures for lapse correction tickets should be documented when the SCADA turbidity data is unavailable for IESWTR Compliance Reporting.

During our review, we noted that policies and procedures were not completed for the D/DBP Compliance Report preparation procedures, the Cyber Security Policies for Instrumentation Computers, and the IESWTR Invalidation Procedures. Specifically:

- Data source descriptions and calculation formula details were not documented for the Running Annual Average (RAA) calculation on the summary page (Table 1) in the D/DBP Report.
- Policies and procedures to manage cybersecurity controls over standalone computers were not documented. Specifically, data backup procedures and malware identification processes were not described. We noted that in July 2018, one of the instrumentation computers was infected by malware after a vendor maintenance service visit.
- Approval procedures needed to invalidate SCADA turbidity data under certain operational conditions were not documented. SCADA captures turbidity values from each treatment plant every 5 minutes, which is the primary source data for compliance reporting. Invalidation processes are necessary to approve correction tickets when the SCADA system's turbidity data is not available for more than 4 hours due to operational maintenance or system shutdowns. In these instances, the Lab Sheet system values (recorded every 2 hours) are used for IESWTR reporting.

Failure to document procedures may result in inconsistent compliance reporting, compromise of laboratory data from malware infections, and operational disruptions from temporary data flow disruption.

We recommend that

- WQS document the sources and average calculation formula of the reported numbers on the summary page (Table 1) of the D/DBP Quarterly Report.
- Information Technology Group works with WQS to deploy the Cyber Security Policies and Procedures for the standalone instrumentation computers.
- WQS update the invalidation approval process, including approval authority requirements, designated authorities for each approval level, and follow-up process.

## **Examination of the Colorado River Water Users Association Financial Report**

At the request of the Metropolitan Water District of Southern California Board of Directors, we examined the Colorado River Water Users Association Financial Report (Report) for the period April 1, 2018, through March 31, 2019, to gain reasonable assurance that the Report is accurate and is supported by appropriate documentation.

### **Scope**

In making our assessment, we performed the following procedures:

- a) We agreed information from the Financial Report to source documentation, including bank statements and receipts.
- b) We confirmed a sample of transactions with third parties.
- c) We examined monthly bank reconciliations and assessed the reasonableness of reconciling items and the accuracy of balances.

Since our examination was limited in scope, we do not express an opinion on the internal control structure over the Colorado River Water Users Association taken as a whole.

### **Background**

The Colorado River Water Users Association (CRWUA) was founded in 1945 and incorporated in the State of Nevada on December 6, 1968. Its mission is to provide a forum for exchanging ideas and perspectives on Colorado River use and management with the intent of developing and advocating common objectives, initiatives, and solutions.

From April 1, 2018, through March 31, 2019, CRWUA reported total receipts of \$520,592 and total disbursements of \$495,323. As of March 31, 2019, CRWUA's total fund available was \$605,063.

### **Testing results**

Our examination did not reveal any material differences between the reported amounts and supporting documentation.

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## **Lake Mathews Headworks Forebay Liner & Outlet Tower Repair Project**

The Audit Department has completed a review of the accounting and administrative controls over Lake Mathews Headworks Forebay Liner & Outlet Tower Repair Project (104763) as of February 28, 2019. Specifically, we reviewed Metropolitan's construction contract #1866 with

J.F. Shea Construction, Inc. (J.F. Shea) and consulting agreement #140027 with HDR Engineering (HDR).

### **Scope**

Our review consisted of evaluating the accounting and administrative controls over the vendor selection process and reviewing contract administration, project monitoring, and reporting practices. We also tested compliance with the terms and conditions of the contracts and evaluated the validity and propriety of invoice payments for assurance that the amounts billed were properly calculated and adequately supported.

### **Background**

Lake Mathews is the terminus of the Colorado River Aqueduct (CRA). Water stored in the reservoir is withdrawn through the lake's main outlet towers into the forebay and conveyed through the Upper Feeder and Lower Feeder to the F. E. Weymouth and Robert B. Diemer Water Treatment Plants, respectively.

Constructed in the 1930s, the original Lake Mathews facilities included the main dam embankment, the lake's first outlet tower, and the forebay with an outlet tower. In 1961, Metropolitan raised the main dam embankment and constructed two dikes to increase the lake volume to its current capacity of 182,000 acre-feet. Lake Mathews is under the jurisdiction of the California Division of Safety of Dams, which requires that the forebay and its outlet tower remain operational at all times.

The forebay is a reinforced concrete reservoir with a capacity of 31 acre-feet. The forebay's outlet tower is a 60-foot-tall rectangular concrete structure with steel exterior walkways and a steel control building at the top. The fixed cone valves that control the release of water from the lake into the forebay produce moist conditions that gradually damaged the concrete, reinforcing steel, steel walkways, and control room, along with the lining of the forebay. As a result, repairs were needed to maintain reliability and to prevent further damage.

In November 2017, the Board appropriated \$4.57 million for the Lake Mathews Forebay Repairs Project. The Board awarded a \$3,248,000 contract to J.F. Shea for the repair of the forebay tower and lining. HDR Engineering performed the final design of the structural repairs and cathodic protection system for the tower under a board-authorized agreement. As the engineer of record, HDR provided technical support during construction. With work completed in March 2019, Metropolitan paid J.F. Shea \$3,235,983 and paid HDR \$96,717.

### **Opinion**

In our opinion, the accounting and administrative procedures over Lake Mathews Headworks Forebay Liner & Outlet Tower Repair Project include those practices usually necessary to provide for a generally satisfactory internal control structure. The degree of compliance with such policies and procedures provided effective control for the period November 1, 2017, through February 28, 2019.

## **Comments and Recommendations**

### REVIEW/APPROVAL OF CONSULTANT INVOICES

Effective review and approval controls help ensure that vendor invoices are accurate, that invoiced charges are appropriate, and that they comply with contractual terms and conditions.

We reviewed all four HDR invoices for engineering services provided during the construction phase and noted the following:

- **Untimely Vendor Billings**

On invoice #1200144569, HDR billed Metropolitan \$11,725 for work performed nearly six months earlier.

- **Inaccurate Invoices**

The descriptions shown on invoice summaries were not consistent with the invoice details for all four invoices we reviewed. For example, summaries on invoices #1200125317 and #1200160752 showed total charges and hours billed for tasks 1 and 5, but invoice details showed charges for tasks 1, 5 and, 6. We also noted a minor discrepancy in the billing rate for reimbursable mileage on invoice #1200118004.

- **Invoice Review Procedures**

The Engineering Services Group (ESG) uses a standard "Invoice Review/Certification" (Checklist) to assist staff with their review of consultant invoices. The exceptions noted above revealed that staff did not always perform the procedures as outlined in the checklist.

Untimely billings increase the difficulty of invoice reviews and increase the chances of inaccurate or unauthorized charges going undetected. Furthermore, Paragraph 9.h of Metropolitan's agreement with HDR states that "invoices submitted 120 days after completion of work, may be delayed or not paid." Finally, failure to follow the checklist and perform thorough reviews of consultant's invoices could result in a financial loss to Metropolitan.

We recommend that Engineering Services Group management take steps to ensure that consultant invoices are timely, accurate, and complete for each billing period approval for payment.