



THE METROPOLITAN WATER DISTRICT  
OF SOUTHERN CALIFORNIA

**Report**  
Office of General Auditor

## **Internal Audit Report for September 2019**

### **Summary**

---

Two reports were issued during the month:

- 1. Diemer East Filter Building Upgrades Project (104254) Audit Report**
- 2. Emergency Response Planning and Exercises Audit Report**

### **Discussion Section**

This report highlights the significant activities of the Internal Audit Department during September 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.

---

## **Diemer East Filter Building Upgrades Project Audit Report**

The Audit Department has completed a review of the accounting and administrative controls over the Diemer East Filter Building Upgrades Project (104254) as of April 30, 2019. Specifically, we reviewed Metropolitan's construction contract 1804 with C.W. Roen Construction Company ("Roen").

### **Scope**

Our review consisted of evaluating the accounting and administrative controls over the contract administration and reporting practices. Specifically, we reviewed the contractor selection process and project monitoring procedures. We also tested compliance with the terms and conditions of the contract and evaluated the validity and propriety of invoice payments for assurance that the amounts billed were properly calculated and adequately supported. Finally, we verified that costs were properly recorded to the project.

### **Background**

The Diemer plant was placed into service in 1963 with an initial capacity of 200 million gallons per day ("mgd"). In 1969, the plant was expanded to its present capacity of 520 mgd. The Diemer plant delivers a blend of waters from the Colorado River and the State Water Project to Metropolitan's Central Pool and to an exclusive service area in Orange County. The Diemer plant is located within the city of Yorba Linda, approximately one-half mile south of the Whittier Fault, which is capable of generating a 6.8-magnitude earthquake. This audit consisted of a review of two actions at the Diemer plant. Specifically, we reviewed the contract executed for filter replacements/upgrades and for earthquake/seismic retrofit work.

First, a review of the filter and valve replacements was conducted. The Diemer plant has two filter buildings. The east filter building was completed in 1963 during the original plant construction, while the west filter building was added in 1969. Each building has three levels, with the lowest level consisting of a sump, which collects used filter backwash water. The middle level is comprised of 24 filter basins and a gallery that houses piping, filter valves, and equipment that operates and monitors the filters. The filter control building, which contains process control equipment, is on the top level.

Each filter is operated by opening and closing a series of valves that allow water to flow in and out of the filter basins during filtration and backwashing. Filter valves are designed to close tightly to prevent mixing filtered and unfiltered water and prevent leakage into the washwater reclamation system.

Over the life of the Diemer plant, staff performed regular maintenance on the filter valves to support reliable plant operation. However, gradual deterioration of the valves occurred through continuous use, including corrosion of the steel valve bodies and degradation of the embedded seals. Detailed inspections conducted during shutdowns identified that these valves no longer provided a water-tight seal and did not operate effectively. Accordingly, in May 2013, Metropolitan's Board awarded two procurement contracts for replacement filter valves and authorized final design for their installation.

Secondly, the audit included a review of seismic upgrades completed at the Diemer plant. As noted, the plant was constructed in the early 1960s and it was designed to meet building codes in effect during its construction. However, building codes and seismic design standards have evolved over the years requiring periodic upgrades and physical plant improvements.

Under Metropolitan's seismic assessment program, staff conducted detailed structural evaluations of the Diemer plant's two filter buildings. These evaluations were based on current building codes and updated site-specific geotechnical information. The evaluations concluded that both buildings required structural upgrades to withstand a major earthquake. In October 2012, Metropolitan's Board authorized final design of seismic upgrades for the filter buildings.

In order to minimize impacts to plant operations and enhance construction efficiency, staff combined the filter valve replacement work with the filter building seismic upgrades. Two staged construction contracts were planned so that half the Diemer plant filters would remain in service at all times.

In February 2015, the Board appropriated \$13.5 million for the East Filter Building Project and awarded a \$9.31 million construction contract to Roen. The scope of Roen's work included replacement of 127 deteriorated valves and seismic strengthening of the filter buildings. The work was completed on May 10, 2017. As of April 2019, Metropolitan paid Roen \$9,748,678, including extra work orders totaling \$438,678.

### **Opinion**

In our opinion, the accounting and administrative procedures over the Diemer East Filter Building Upgrades Project include those practices usually necessary to provide for a satisfactory internal control structure. The degree of compliance with such policies and procedures provided effective control for the period January 1, 2015, through April 30, 2019.

### **Comments and Recommendations**

None.

---

## **Emergency Response Planning and Exercises Audit Report**

The Audit Department has completed a review of the administrative controls over Emergency Response Planning and Exercises as of December 31, 2018.

### **Scope**

Our review consisted of evaluating the adequacy of the emergency response program performed by the Water System Operations (WSO). Specifically, we reviewed the emergency response reporting functions, emergency response/action plans, emergency exercises/tests performed, implementation of lessons learned, and scheduled training to the employees assigned to emergency response tasks.

### **Background**

Water System Operations treats and delivers water from the Colorado River and the SWP through a raw water conveyance system, five treatment plants, and an extensive treated water distribution network. This flexible system provides reliable deliveries to the member agencies to meet the District's mission. WSO accomplishes its goals through a comprehensive management structure that supports each function of the water delivery process. Included in these efforts are security functions that ensure that employees, water infrastructure, and equipment are adequately protected, and provides emergency management support.

Towards this goal, Metropolitan established Operating Policy A-06 that describes how Metropolitan organizes and deploys resources to manage emergencies and ensure continuity of water system operations and critical business processes. Included in this policy is the Emergency Response Program which is the combination of facilities, equipment, personnel, planning, procedures, training, exercises, and communications that, taken together, result in effective mitigation, preparation, and response to an emergency. Moreover, the Plan establishes a dedicated Emergency Operations Center (EOC), and smaller Incident Command Centers (ICCs) to respond to an emergency.

The EOC, located in Eagle Rock, is a central location that facilitates Metropolitan's response to large emergencies. The ICCs are smaller command centers where field managers coordinate the response to local incidents. The Metropolitan Emergency Response Plan includes five treatment plants, three Conveyance and Distribution (C&D) regions, and five special ICCs (Water Quality, IT, Headquarters, Business Continuity, and Lake Mathews.)

When an emergency occurs, the EOC can be activated in two ways: an automatic activation or a directed activation. An automatic activation happens when there is a sizeable earthquake in or around Metropolitan's service area. Designated staff automatically respond to the EOC or an ICC, depending on where they are assigned. The automatic activation includes a magnitude 5.5 or higher earthquake within the service area or along the Colorado River Aqueduct (CRA); 6.0 or higher within 30 miles of the service area or the CRA; or 7.0 or higher south of Baker and Bakersfield. A directed activation occurs when a member agency requests that the EOC be made operational. Finally, by the direction of the General Manager, Assistant General Manager, or the Water System Operations Group Manager, the EOC or the ICC's can be activated.

The Water Operations and Planning Section of the Water System Operations Group manages the emergency response team and the WSO Group Manager is the EOC Director during an emergency.

### **Opinion**

In our opinion, the administrative procedures over Emergency Response Planning and Exercises include those practices usually necessary to provide for a generally satisfactory internal control structure. The degree of compliance with such policies and procedures provided for effective control for the period ending December 31, 2018.

### **Comments and Recommendations**

#### **EMERGENCY RESPONSE PROGRAM**

Compliance with the Operating Policy A-06 (Emergency Management and Business Continuity) is necessary to ensure that Metropolitan is at a state of readiness to respond to natural disasters or emergencies. These include incidents that disrupt or threaten to disrupt the ability to provide service to the member agencies or results in the loss of critical business functions. The Policy requires that the Emergency Response Plan (ERP) and Emergency Action Plans (EAP) be updated periodically to address system changes, staff reassignments, incident responses, and from lessons learned from disaster exercises. Process changes made to these plans should be reviewed and approved by the Emergency Management Program Manager. Finally, periodic training should be completed to ensure that assigned employees understand their duties and responsibilities in the event of an emergency.

During our review, we noted that:

- Documentation supporting the review and approval by the Emergency Program Manager for process changes made to the emergency action plans (EAPs) could not be located. These EAPs are prepared by the WSO and Engineering sections to guide staff in responding to an emergency
- Review of the organization charts for the Emergency Response plan revealed that 33 out of 494 (8%) assigned employees had been terminated or transferred to other business functions. It should be noted that Management had taken actions to revise these assignments.
- Documentation certifying the completion of required training for 42 of 50 employees could not be located. Review of the Emergency Response plan reveals that employees are required to complete three FEMA online Independent Study (IS) training classes (IS- 100, IS-200, and IS-700). These classes inform employees of the framework and job responsibilities of the National Incident Management System (NIMS) and the Incident Command System (ICS). It should be noted that management is in the process of establishing a tracking program to ensure that all required training is completed.

Inadequate ICC activation guidance may result in a delay in emergency actions, which could result in the disruption of water system operations. Moreover, the lack of plan coordination may result in inconsistencies in emergency preparedness and response. Finally, incomplete training may result in confusion on how to perform assigned emergency tasks effectively.

We recommend:

- WSO Management establish procedures to ensure that changes made to the EAPs and other regulatory required emergency plans are reviewed and approved. This documentation process should include the Emergency Management Program Manager (EMPM) as a recipient of these changes.
- EMPM update re-assigned and terminated employees in the plans.
- EMPM continue to implement management approved emergency training program for employees assigned to emergency response.