



## **Internal Audit Report for March 2017**

### **Summary**

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Three reports were issued during the month:

- 1. CRA Reliability Phase II Program**
- 2. Weymouth Filter Rehabilitation Project**

### **Discussion Section**

This report highlights the significant activities of the Internal Audit Department during March 2017. 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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## **CRA Reliability Phase II Program**

### **Background**

The Colorado River Aqueduct (CRA) is a 242-mile-long conveyance system that transports water from the Colorado River to Lake Matthews in Riverside County. It was constructed in the late 1930s and was placed into service in 1941. The CRA consists of five pumping plants and 124 miles of tunnels, siphons and reservoirs. There are 63 miles of canals and 55 miles of conduits. The open canals are trapezoidal, concrete-lined structures with sloping sidewalls supported by earthen embankments. Most reaches of the canal are 20 feet wide at the invert, 55 feet wide at the top and have a height of 11.75 feet.

During the mid-1980s the CRA pumps were refurbished and upgraded, which increased the system's peak flow rate to 1,750 cfs under specific conditions. When operating at this capacity, the canal freeboard is reduced to less than one foot. Freeboard protects the canal by preventing water from spilling over the concrete panel ("overtopping") and onto the earthen embankment, which undermines the structural integrity of the sidewalls. "Overtopping" had been observed at numerous locations between Copper Basin Reservoir and Iron Mountain Pumping Plant.

In September 2015 the Board authorized \$19.8 million for canal improvements and awarded contract #1823 to Kiewit Infrastructure West Co. The work included installation of 18-inch-tall concrete parapet walls at the top of the existing canal sidewalls over a combined length of 28 miles of the aqueduct. Approximately 9,100 square feet of concrete panels were replaced downstream of Copper

Basin Reservoir and site grading was performed to improve local drainage. Additionally, five flow monitoring stations were installed to provide real-time information on the water surface elevation within the canal at peak flowrates. As of November 30, 2016, the project cost to date was \$19.6 million and was 96% completed.

### **Opinion**

In our opinion, the accounting and administrative procedures over the CRA Reliability Phase II Program 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 of January 1, 2015 through November 30, 2016.

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## **Weymouth Filter Rehabilitation Project**

The Weymouth Water Treatment Plant (Weymouth) was placed into service in 1941 with a capacity of 100 million gallons per day (mgd). Over the years, the plant was expanded to its current capacity of 520 mgd. Weymouth delivers a blend of water from the Colorado River Aqueduct and State Water Project to Los Angeles and Orange Counties.

By 2015, Weymouth's 48 filters ranged between 50 and 70 years of age. After decades of continuous operation they no longer provided the degree of reliable performance required by increasingly stringent water quality regulations. Additionally, deteriorating filter components prevented the plant from achieving its full treatment capacity.

In January 2010, the Board authorized a \$1.6 million construction contract to rehabilitate four of Weymouth's 48 filters, each using a different configuration. In April 2015, after a full-scale evaluation, the Board awarded a \$31.76 million contract to Shea to rehabilitate all the filters using the optimal design. The contract scope includes installing new filter media, replacing the surface wash system with larger piping and improved flow configuration, replacing deteriorating underdrains, raising and replacing the troughs, and reinforcing filter gullet walls to improve seismic stability on all 48 filters. As of December 31, 2016, J. F. Shea had completed 77% of the filter rehabilitation work and had been paid \$23.6 million.

### **Opinion**

In our opinion, the accounting and administrative procedures over the Weymouth Filter Rehabilitation Project 104564 and Construction Contract 1809 with J.F. Shea (Shea) 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 July 1, 2013 through December 31, 2016.