CITY AUDITOR'S OFFICE

Water System Security

September 17, 2009 **AUDIT REPORT NO. 0910**

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September 17, 2009

Honorable Members of the City Council:

Enclosed is our report on *Water System Security,* Audit No. 0910, which focused on the City's vulnerability assessment that was conducted pursuant to the federal Bioterrorism Act.

We found that overall the City's Water Resources Department is reducing the vulnerability of the City's water supply. Areas for improvement identified during the audit include implementing interim security improvements at one location and determining whether to enforce or modify a security procedure included in the Water Resources Security Procedures Manual.

We would like to thank Water Resources staff for their cooperation and assistance during the audit. As a result of the City's reorganization, this functional area is now within the Public Works and Water Resources Division.

If you need additional information or have any questions, please contact me at (480) 312-7867.

Sincerely,

Sharron Walker

Sharron Walker, CPA, CFE
City Auditor

Audit Team:

Joyce Gilbride, Assistant City Auditor
Kim Prendergast, Senior Auditor

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EXECUTIVE SUMMARY

An audit of *Water System Security* was included on the City Council-approved fiscal year 2008/09 Audit Plan. This audit evaluated whether the City assessed the vulnerability of its water system and planned for emergency response as required by the federal *Public Health Security and Bioterrorism Preparedness and Response Act of 2002* (*Bioterrorism Act*) and whether the City was addressing items identified in the resulting *City of Scottsdale Water Resources Department Vulnerability Assessment* (*Vulnerability Assessment*).

As required by the *Bioterrorism Act*, the City's Water Resources Department assessed the vulnerability of the water system and planned for emergency response. Overall, we found that actions have been taken to reduce the vulnerability of the City's water supply, but additional measures remain to be taken before all significant vulnerabilities are addressed. Due to the sensitive nature of the *Vulnerability Assessment*, this audit report provides only high-level descriptions of that report and the City's related actions.

BACKGROUND

Bioterrorism Act of 2002

The terrorist attacks of 2001 reinforced the need to enhance the security of the United States. In response, Congress passed several laws, including the *Public Health Security and Bioterrorism Preparedness and Response Act of 2002* (*Bioterrorism Act*). This act was signed into law on June 12, 2002, (Public Law 107-188) and amends the Safe Drinking Water Act to require all water utilities serving populations greater than 3,300 to:

1. Conduct a Vulnerability Assessment of its system to a terrorist attack or other intentional act;
2. Certify and submit a copy of the assessment to the Environmental Protection Agency (EPA) within a specified schedule; and
3. Prepare or revise an Emergency Response Plan that incorporates the emergency responses to scenarios included in the Vulnerability Assessment and certify to the EPA that the system has completed such a plan within six months of completing the Vulnerability Assessment.

The compliance schedule for cities that serve a population greater than 100,000 was to certify and submit the Vulnerability Assessment by March 31, 2003, and to certify the Emergency Response Plan within six months of the Vulnerability Assessment but no later than September 30, 2003.

In 2002, the City of Scottsdale's Water Resources Department began implementing the Act's requirements, including conducting a Vulnerability Assessment, submitting the Vulnerability Assessment to the EPA, and preparing an Emergency Response Plan.

Scottsdale's Water Resources Department provides drinking water, sewer, and reclaimed water services to an area that encompasses approximately 185 square miles, generally coinciding with the City limits. The current population of the service area is estimated at 225,000 people as of February 2009. An independent water company services the remainder of Scottsdale's residents, generally those north of Jackrabbit Road, south of Indian Bend Road, and west of the Arizona Canal.

Water Facilities

The City has a Water Campus located in the northern part of the City with a water and a wastewater treatment plant; a southern water treatment plant; a groundwater treatment plant; groundwater recharge filtration facilities; transmission, distribution and storage facilities; and reclaimed water distribution systems.

The City's water facilities have the capacity to provide 136.2 Million Gallons per Day (MGD) of drinking water. Current production needs have not yet neared maximum capacity, with the actual average daily flow for fiscal year 2008/09 at 69.4 MGD, and a peak flow of 100.7 MGD on July 9, 2008.

Physical Security of Water Facilities

The Water Resources Department uses multiple layers of measures to protect the security of the water system. Water Operations has a monitoring console that provides live data from cameras located at different water sites and facilities throughout the City's system. The camera data can also be viewed by other Water Resources Department staff and the Police Department's Municipal Security Division.

Data recorders are physically located at most sites, independently recording and saving camera data and transmitting it to Water Operations.

Each site is unique and has different types of physical security in place. At most sites, there are motion detectors that allow cameras to automatically turn toward the motion when the detector is activated. In addition, a variety of key card access, padlocks, security alarms, and sign-in procedures are used to provide further access control.

The Police Department's Municipal Security Division partners with the Water Resources Department to assist in "hardening" locations' security, monitoring security alarms, producing incident reports for Water Resources staff to follow up on, and providing guard patrols for water sites. For example, if a security patrol identified a gate that was not shutting properly but was secure, an incident report will be produced by Municipal Security so that Water Resources staff know to inspect the gate for needed repairs.

Technological Security

The SCADA (Supervisory Control and Data Acquisition) system is used to collect data from various sensors throughout the City's water distribution and production system. The data is collected and sent to a central computer system for the data to be managed and controlled. To access the SCADA system, users must go through three levels of security with specific login requirements. A backup system at an alternative site is updated on a regular basis to ensure data integrity should anything happen to the primary SCADA system.

OBJECTIVES, SCOPE, AND METHODOLOGY

The objectives of the audit were to determine whether the City assessed the vulnerability of the water system and planned for emergency response as required by the *Public Health Security and Bioterrorism Preparedness and Response Act of 2002* (*Bioterrorism Act*), and to determine whether the City was addressing items identified in the *City of Scottsdale Water Resources Department Vulnerability Assessment* (*Vulnerability Assessment*).

The scope of the audit included water system security at the City of Scottsdale since the passage of the *Bioterrorism Act*.

To accomplish the audit objectives we:

- Reviewed the *Vulnerability Assessment* results and recommendations.
- Examined the certifications of Vulnerability Assessment and Emergency Response Plans as submitted to the Environmental Protection Agency. These certifications were statements prepared by department officials that the Vulnerability Assessment was conducted and the Emergency Response Plan was completed.
- Reviewed the *Bioterrorism Act*, and in particular, the pertinent section -- Title IV, Drinking Water Security and Safety.
- Toured Water facilities with Water Security staff.
- Interviewed staff from Water Resources, Water Operations, Water Quality, and Municipal Security to gain an understanding of the *Vulnerability Assessment* and emergency response processes.

To gain an understanding of the City's Water System existing security, we visited various water system facilities and activities and observed various security features.

Overall, we found that the City is using the *Vulnerability Assessment* appropriately to reduce the vulnerability of the City's water supply. However, measures still need to be taken before all significant vulnerabilities are addressed.

We conducted this audit in accordance with generally accepted government auditing standards as required by Article III, Scottsdale Revised Code, Section 2-117, et seq. Generally accepted government auditing standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Audit work took place from February 2009 through August 2009, with Kim Prendergast conducting the work.

FINDINGS AND ANALYSIS

Finding 1. Implement interim security improvements at Water Resources location.

While most Water Resources facilities were secured and protected as recommended, facilities at one location have not been adequately addressed.

The *City of Scottsdale Water Resources Department Vulnerability Assessment* (*Vulnerability Assessment*), prepared in 2003 as a confidential, non-public record, identified recommended physical and operational system improvements to decrease security risks at specific water system facilities. Improvements recommended in the *Vulnerability Assessment* were not completed at one location due to planned expansion and other improvements that would have rendered the security measures ineffective. The expansion and improvements are nearing completion, and certain actions could be taken in the short term to address vulnerabilities.

Recommendation: Water Resources staff should expedite the safeguarding and securing of certain critical water and wastewater facilities on an interim basis.

Finding 2. Review Water Resources Security Procedures Manual to correct procedures.

The City's Water Resources Department Security Procedures Manual specifies for a vendor to deliver supplies, fuel, or chemicals, the vendor is required to first fax to the department the driver's license of the delivery driver. When the delivery arrives at the Water Resources facility, a department employee is to verify the driver matches the faxed identification.

In practice, however, the Water Resources Department does not follow this procedure because of the difficulty of using the faxed driver's identification.

As a result, the potential exists for unauthorized individuals to access Water facilities that may be critical to the system.

Recommendation: Water Resources staff should follow the *Water Resources Department Security Procedures Manual* regarding delivery driver identification checks, or revise security procedures to accurately reflect the actions required to be taken to effectively reduce this risk.

Water Resources staff should consult with Municipal Security staff regarding implementation of best practices to address vendor access to facilities.

MANAGEMENT RESPONSE

Water Resources Department
Interoffice Memorandum

Date: September 8, 2009

To: Sharron E. Walker, City Auditor

From: Marshall P. Brown, Water Resources Managing Director

Re: RESPONSE TO CITY AUDIT REPORT NO. 0910

We appreciate the work performed by Kim Prendergast and Joyce Gilbride in completing the Water System Security Audit No. 0910. Attached is our written response to the observations set forth by your team, which include our timeline for implementation.

We further appreciate the opportunity to collaborate with your office as protection of our customers, employees and the water system is a top priority for our department.

Attachment: Action Plan

CC: Joyce Gilbride, Assistant City Auditor
Kim Prendergast, Senior Auditor
Dave Petty, Water Operations Director

MB:mw

ACTION PLAN

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1. Implement interim security improvements at Water Resources location.

MANAGEMENT RESPONSE: Agree

PROPOSED RESOLUTION:

Working in conjunction with the Municipal Security staff, Water Resources will implement the following measures in order to enhance security at this location.

- Implement dedicated security guard services during business hours, Monday-Friday, effective January 2010.
- Implement dedicated security guard services 24/7/365 effective July 2010.
- Install signage alerting the public that the site is electronically monitored effective November 2009.
- Install an additional four (4) security cameras to be monitored by Municipal Security and Water Resources staff effective November 2009.
- Install an additional eight (8) security cameras to be monitored by Municipal Security and Water Resources staff effective December 2009.
- Install an additional six (6) security cameras to be monitored by Municipal Security and Water Resources staff effective June 2011.

RESPONSIBLE PARTY: Dave Petty - Water Operations Director

COMPLETED BY: Varies from November 2009 through June 2011

2. Review Water Resources Security Procedures Manual to correct procedures.

MANAGEMENT RESPONSE: Agree

PROPOSED RESOLUTION:

Working in conjunction with the Municipal Security staff, Water Resources will implement the following measures in order to address this item.

- Revise the Security Procedures Manual to include effective practices and procedures effective November 2009.
- Utilize the security guard service to administer the revised process effective January 2010.

RESPONSIBLE PARTY: Dave Petty - Water Operations Director

COMPLETED BY: November 2009 and January 2010

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