Audit of Water and Wastewater Services Division's Backflow Prevention Device Testing

Office of the County Auditor

Audit Report

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County Auditor

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Report No. 25-10
February 12, 2025

OFFICE OF THE COUNTY AUDITOR
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February 12, 2025

Honorable Mayor and Board of County Commissioners

Pursuant to the fiscal year 2024 Annual Audit Plan, we have conducted an audit of the Water and Wastewater Services Division's (WWS) Backflow Prevention Device Testing. The objectives of our audit were to determine whether backflow prevention devices owned by WWS and their customers, are certified and in compliance with applicable laws, rules, and regulations, and whether WWS has adequate processes and procedures in place to monitor and track backflow prevention device compliance.

We conclude that, except as noted in this report, backflow prevention devices owned by WWS and their customers, are certified in compliance with applicable laws, rules, and regulations, and WWS has adequate processes and procedures in place to monitor and track backflow prevention device compliance with certification requirements.

We appreciate the cooperation and assistance provided by WWS throughout our audit process.

Respectfully submitted,

Bob Melton
County Auditor

cc: Monica Cepero, County Administrator
Andrew Meyers, County Attorney
Dr. Kimm Campbell, Deputy County Administrator
Kevin Kelleher, Assistant County Administrator
Trevor Fisher, Director, Public Works Department
Alan Garcia, Director, Water and Wastewater Services Division

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INTRODUCTION

Scope and Methodology

The Office of the County Auditor conducts audits of Broward County's entities, programs, activities, and contractors to provide the Board of County Commissioners, Broward County's residents, County management, and other stakeholders unbiased, timely, and relevant information for use in promoting government accountability and stewardship and improving government operations.

We have conducted an audit of the Water and Wastewater Services Division's (WWS) Backflow Prevention Device Testing. The objectives of our audit were to determine whether:

1. Backflow prevention devices owned by WWS and their customers are certified in compliance with applicable laws, rules, and regulations.
2. WWS has adequate processes and procedures in place to monitor and track backflow prevention device compliance.
3. Other Opportunities for Improvements exist.

To determine whether backflow prevention devices owned by WWS, and their customers are certified in compliance with applicable laws, rules, and regulations, we reviewed a list of customer owned devices to determine if the list is complete in both WWS's and contractor's systems. We then reviewed the customer owned and WWS backflow devices to determine if they were compliant with testing requirements. We also tested if the customer owned and WWS owned devices were reported appropriately to the required regulatory agencies.

To determine whether WWS has adequate processes and procedures in place to monitor and track backflow prevention device compliance, we reviewed the backflow devices owned by WWS to determine if they are used appropriately and are in compliance with County and State requirements.

We conducted this audit in accordance with Generally Accepted Government Auditing Standards except for the requirement for an external peer review which is planned for the current fiscal year. The standards require that we plan and perform the audit to obtain sufficient and 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 conclusions based on our audit objectives.

Our audit included such tests of records and other auditing procedures, as we considered necessary in the circumstances. The audit period was from January 1, 2023 to June 30, 2024. However, transactions, processes, and situations reviewed were not limited by the audit period.

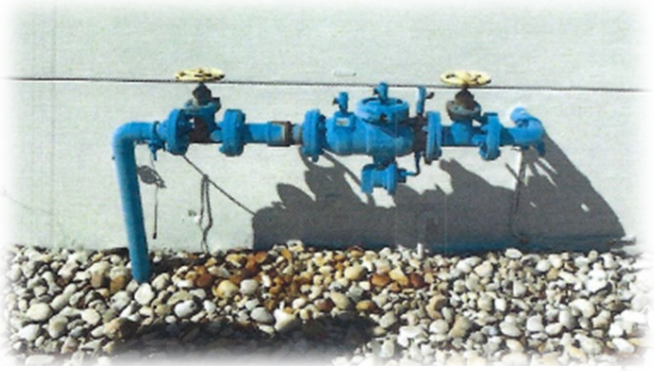
Overall Conclusion

We conclude that, except as noted in this report, backflow prevention devices owned by WWS and their customers are certified in compliance with applicable laws, rules, and regulations, and WWS has adequate processes and procedures in place to monitor and track backflow prevention device compliance with certification requirements.

Background

Backflow Prevention Devices

Backflow prevention devices are installed in certain residential and all commercial properties to prevent the incorrect flow of contaminants such as: foul water, chemicals, and other pollutants into the public drinking water supply. Pollutants caused by toilets with faulty valves, swimming pools, agricultural, and industrial activity may flow back into the public drinking water supply if these devices are not maintained and certified properly.



Backflow Prevention Device #1

All commercial, institutional, and governmental customers as well as residential/multi-family buildings over three stories that are potable water customers of WWS, are responsible for the protection of the utility system from contamination or pollution due to the backflow or back siphonage of contaminants or pollutants though the water service connection. Owners must install and maintain backflow prevention devices at no cost to Broward County. There are also backflow devices that are owned by WWS at WWS facilities and liftsations.

Backflow Prevention Device #2

WWS New and Redeveloped Property Locations

The WWS Engineering division provides Meter Release forms for newly developed or redeveloped property locations to the WWS Field Customer Services (FCS) to record the water meter, property location, and new water account. FCS inputs the account information into the Customer Information System (CIS) which includes the meter number, addressee, and property location. The Meter Release forms do not contain backflow device information. This information should be subsequently obtained when the backflow prevention device is first tested upon installation and permitting (see Testing Process below). The purchase and installation of backflow devices are the property owner's responsibility and occur after the installation of the water meters.

Testing Process

Backflow prevention devices must be tested and certified annually by appropriately licensed personnel. For example, only qualified technicians trained by the fire service can perform inspections, tests, or maintenance on fire service-related backflows, and only persons with a current backflow testing certification, working under the umbrella of a licensed plumber, can perform inspections, tests or maintenance on domestic services supplying water to the building (excluding fire protection services) and to irrigation services.

WWS notifies customers by mail 60 days and 30 days prior to the annual backflow compliance submittal reporting deadline. Customers contract with appropriately licensed personnel to test backflow prevention devices for compliance. Licensed personnel perform the testing, complete a Field Test Report with the backflow prevention device serial number, make, model, specifications for the device, property name and location, field tester name, certification number, expiration date of the certification, water meter number, and sends the results to Backflow Solutions. Inc. (BSI). BSI is a company that collects and reports backflow prevention device testing results on behalf of various water utility jurisdictions, including WWS. Using the data collected from BSI, WWS updates their records within the Peace Customer Information System (CIS) and submits required annual compliance reports to the Florida Department of Environmental Protection.

As of the date of this report, there are over 6,000 customer owned backflow devices and 191 WWS owned backflow devices.

OPPORTUNITIES FOR IMPROVEMENT

Our audit disclosed certain policies, procedures and practices that could be improved. Our audit was neither designed nor intended to be a detailed study of every relevant system, procedure or transaction. Accordingly, the Opportunities for Improvement presented in this report may not be all-inclusive of areas where improvement may be needed.

1. WWS Should Ensure all Customer Owned Backflow Prevention Devices are Identified and Tested to Prevent Contamination of the Water System.

The Water and Wastewater Services Division (WWS) does not adequately track and report the test status of all customer owned backflow prevention devices. We found that WWS's records and regulatory reports were missing backflow prevention devices that were required to be tracked and reported.

WWS's internal database, Peace Customer Information System (CIS) and the third-party list provided by Backflow Solutions, Inc (BSI), which WWS relies upon to provide a complete population of all backflow prevention devices, do not include all customer owned backflow prevention devices. We found that 13 out of 67 (19%) sampled properties, where a backflow prevention device would be required, were missing from at least one of the lists as shown in Figure 1. We judgmentally selected a sample of 67 properties from multiple sources to identify properties that require a backflow prevention device and to determine whether the properties are in either on the WWS CIS database, the BSI list, or both.

Figure 1- Sample Testing Results for Customer Owned Backflow Prevention Devices

	Map Properties	ERF	City Permits	Restaurant Properties	Total
Missing from BSI Only	1	1	0	7	**9**
Missing from Both CIS and BSI	0	1	0	3	**4**
Subtotal- Exceptions	**1**	**2**	**0**	**10**	**13**
On Both CIS and BSI	20	7	2	25	**54**
Total Sample	**21**	**9**	**2**	**35**	**67**

Source: Prepared by the Office of the County Auditor based on data received from WWS, BSI, City of Lighthouse Point, and Property Appraiser's Office

Our sample of 67 properties consisted of selections from the WWS utility map, WWS engineering reports, city permitting records, and Property Appraiser records. We judgmentally selected:

- Twenty-one (21) properties from the WWS utility map (Map Properties) as provided on the WWS website to locate properties that would require a backflow prevention device in the WWS service area.

- Nine (9) selections from Engineering Release Forms (ERF) for calendar year 2023. These release forms are provided by the WWS Engineering Division for WWS specific projects for newly developed or redeveloped properties.

- Two (2) applicable permits (City Permits) from one city with properties within the WWS service area. Cities with properties within the WWS service area are required to install backflow devices based on the building department permits. We specifically, requested all permits from three cities and found two permits from one of the three cities that included installation of a backflow prevention device.

- Thirty-five (35) restaurant properties located within the WWS service area from the Property Appraiser's website as restaurants are required to have a backflow device.

Backflow devices are required to be tested annually and WWS is required to track and report the test status to regulatory authorities. WWS should maintain an independent list, verified for completeness of newly added backflow devices. WWS should only rely on BSI for ensuring that devices are tested, not for relying on BSI to provide a complete population of all backflow prevention devices.

BSI relies on self-reported information by the licensed personnel performing the testing and certifications and WWS does not maintain an independent list, that is verified for completeness or reconciled to BSI's list. The current process does not ensure that all devices are identified and tested. The process only ensures testing of self-reported devices and devices previously known, not the newly added ones. As a result, devices missing from the required lists may be untested and pose a threat to contamination of the water system; however, for the 13 exceptions identified above, WWS confirmed that the devices were tested and included in the following year reports.

We recommend management:

A. Develop written policies and procedures to identify all backflow prevention devices in the WWS service area and to ensure all identified backflow prevention devices are tested annually.

B. Develop an independent list of backflow prevention devices and perform annual procedures to verify completeness. Such procedures should include:

i. Periodic review of building permits issued by jurisdictions with properties within WWS service area.

ii. Reconciliation of items listed within the CIS and BSI databases.

2. The Peace Customer Information System (CIS) Database Should Contain Accurate, Up to Date Information on Customer Owned Backflow Prevention Devices.

For the customer owned backflow prevention devices that are included within the CIS database, we noted that information fields were missing and WWS does not utilize the "certified date" field that is available within the CIS database. Specifically, of 30 samples reviewed:

- Thirty (100%) did not have a certification date recorded in the database.
- Four (13%) did not have backflow serial numbers recorded in the database.

Although management relies on BSI to track and maintain the status of customer owned backflow devices, management should maintain appropriate information to track compliance of backflow prevention device testing, independent of BSI. This ensures compliance by the properties and allows the WWS Division to ensure the devices are installed properly according to the County Code and prevents backflow prevention devices from being untested or tested untimely and thereby ensures non-contamination of the WWS Community Water System.

We recommend management develop procedures to ensure the data fields in the CIS database are fully populated and accurately reflect the status of backflow prevention devices.

MANAGEMENT'S RESPONSE

KEVIN KELLEHER, Assistant County Administrator
115 S. Andrews Avenue, Room 409 • Fort Lauderdale, Florida 33301 • 954-357-7320 • FAX 954-357-7360

MEMORANDUM

DATE: February 11, 2025

TO: Robert Melton, County Auditor

FROM: Kevin Kelleher, Assistant County Administrator

SUBJECT: Management Response to Office of the County Auditor's Audit of Water and Wastewater Services Backflow Prevention Device Testing

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The Public Works Department and the Water Wastewater Services (WWS) have reviewed the above referenced Office of the County Auditor's Audit of Water and Wastewater Services Backflow Prevention Device Testing and submit the following as Management's response.

In summary, Management acknowledges the Auditor's overall conclusion that backflow prevention devices owned by WWS and their customers are certified in compliance with applicable laws, rules, and regulations, and WWS has adequate processes and procedures in place to monitor and track backflow prevention device compliance and certification results. Management also accepts the Auditor's two (2) opportunities for improvement and WWS will implement the procedural improvements recommended in the report within 90 days.

Below please find the detailed responses to each of the Auditor's opportunities for improvement and recommendations.

Opportunity 1: WWS Should Ensure all Customer Owned Backflow Prevention Devices are Identified and Tested to Prevent Contamination into the Water System.

Recommendations: We recommend management:

A. Develop written policies and procedures to identify all backflow prevention devices in the WWS service area and to ensure all identified backflow prevention devices are tested annually.

B. Develop an independent list of backflow prevention devices and perform annual procedures to verify completeness. Such procedures should include:

i. Periodic review of building permits issued by jurisdictions within properties within WWS service area.
ii. Reconciliation of items listed within the CIS and BSI databases.

Response: ***WWS agrees*** with the Auditor's recommendation to develop and enhance written procedures for identifying and testing all backflow prevention devices in the WWS service area. WWS also responded to each of the opportunities for improvement in greater detail below:

A. ***Agree and in progress****.* WWS is in the process of developing, enhancing and implementing more robust written procedures to establish and maintain accurate inventory of all backflow devices in the WWS service area. This will ensure that all backflow devices receive annual compliance testing.

B. ***Agree.*** WWS will develop an independent list of all backflow prevention devices generated from the WWS Customer Information System (CIS) system. The report will be generated annually by the WWS Information Technology Division and reviewed to update the CIS and Backflow Solutions Inc. (BSI) databases.

i. WWS will complete an annual review of building permits, WWS engineering reports, and property categories that require a backflow device in the WWS service area. This information will be used to update the WWS Backflow Inventory and CIS database for backflow compliance testing purposes.

ii. WWS will review and reconcile backflow devices in the CIS database and the BSI database annually. Using the CIS and BSI databases provides a multi-layered approach to ensure all data is inputted to meet backflow compliance testing requirements. The missing data in the CIS database was limited and did not compromise water safety in the WWS service area. The County contracts with BSI to provide a secure online database to provide a functional backflow device tracking system for use by County staff and licensed backflow testing professionals. The backflow devices were properly monitored and tested using the BSI System.

Opportunity 2: The Customer Information System (CIS) Database Should Contain Accurate, Up to Date Information on Customer Owned Backflow Prevention Devices

Recommendation: We recommend management develop procedures to ensure the data fields in the CIS database are fully populated and accurately reflect the status of the backflow prevention devices.

Response: ***WWS agrees*** and will continue to develop and implement procedures to ensure that the most critical data (i.e. serial numbers) and property information are consistently entered into the CIS database to accurately reflect compliance testing status of backflow devices. While the current procedures can be enhanced, the CIS and BSI

databases were meaningfully and effectively used to monitor, track and test over 6,000 backflow devices in the WWS service area.

The CIS computer system does not have a data field to store field test reports within the CIS database. To address this audit opportunity, WWS will store the test reports in both the BSI database and in a designated folder within the “Docuware” Document Management System.

Thank you for the opportunity to respond and provide Management’s comments to the audit. If there are any additions, deletions/omissions, or other changes or modifications to Management’s response, please provide us the opportunity to review prior to issuance. Should you have any questions or require additional information, please do not hesitate to contact me.

c: Monica Cepero, County Administrator
Dr. Kimm Campbell, Deputy County Administrator
Trevor M.A. Fisher, P.E. Director, Public Works Department
Alan Garcia, P.E. Director, Water and Wastewater Services
Andrew Meyers, County Attorney