

**Performance Audit:
Fire Hydrant
Inspection and Maintenance**

June 2019

**City Auditor's Office
City of Atlanta**

File #19.05



Performance Audit:

Fire Hydrant Inspection and Maintenance

What We Found

The Atlanta Fire Rescue Department and Department of Watershed Management are responsible for inspecting and maintaining fire hydrants, respectively. Although the two departments service different populations of hydrants, the number of hydrants for which both departments are responsible do not align in their respective databases, which could result in incomplete inspections and repairs. We identified 1,463 hydrants with no fall 2018 inspection dates recorded in Fire Rescue's database. The Atlanta Fire Rescue Department uses unreliable technology that fails to capture all inspection results and inconsistently records inspections on hydrant cards.

The Atlanta Fire Rescue Department does not consistently communicate hydrant repair requests to Watershed Management. Two-thirds of sampled repair requests from the fall 2018 inspection season were not provided to Watershed Management as of March 2019. Other jurisdictions within Watershed Management's service area also reported repair needs inconsistently. The Department of Watershed Management partially implemented a Geographic Information System (GIS) application to link its fire hydrant asset numbers with hydrant identification numbers used by the Atlanta Fire Rescue Department. Full implementation of the application would allow the Atlanta Fire Rescue Department to simultaneously record inspection results and submit hydrant repair requests in real time.

The Department of Watershed Management developed service level agreements to measure how long it should take to resolve different types of hydrant repairs; however, it has not established service level agreements for work orders related to missing or out-of-service hydrants or the installation of a new hydrant. The department decreased median fire hydrant repair times by more than 80% from 2015 through 2018, which it attributes to the addition of contractors to address the backlog of repairs and the hiring of permanent leadership staff.

Why We Did This Audit

We undertook this audit because faulty or nonfunctioning fire hydrants can hamper emergency responses and endanger firefighters and the public. Leaking hydrants can cause significant property damage. The Atlanta Fire Rescue Department is responsible for inspecting fire hydrants and the Department of Watershed Management's Office of Linear Infrastructure Operations is responsible for maintaining fire hydrants.

What We Recommended

The Atlanta Fire Rescue Department should:

- revise its policy to include inspections
- enforce its policy and city code to inspect all private fire hydrants
- create a policy to communicate hydrant installation and removals

The Department of Watershed Management should:

- create and formalize memorandums of understanding with the Atlanta Fire Rescue department and other jurisdictions in its service area
- continue to track progress toward meeting service level agreements
- complete the hydrant asset identification project to reconcile the departments' records
- work with the Atlanta Fire Rescue Department to use the Geographic Information System (GIS) application as a comprehensive inspection and repair database

Management Responses to Audit Recommendations

Summary of Management Responses

Recommendation #1: We recommend that the Atlanta Fire Rescue Department revise its policy to include specific verification procedures to ensure that all hydrants are inspected as required and the hydrant database is updated with the inspection date and results.

Response & Proposed Action: The AFRD Hydrant Maintenance Procedure will be revised by the AFRD Operations Committee. This policy revision will include the following actions to become sustainable and viable for daily use. **Agree**

- Outlining of the process for reporting hydrant repair requests and confirmation of completed repairs with DWM.
- Management of follow-up hydrant inspections and development of a real-world re-inspections process that incorporates time necessary to complete hydrant repairs.
- Reestablishing the process for updating the existing hydrant database.
- Enforce the use of hydrant cards as a secondary system for validation of Inspections.
- Redefine the 45-day inspection window and active management oversight process.

Incorporating the use of the Hansen database for future hydrant management efficiencies thus communicating vital hydrant status information between AFRD & DWM.

Timeframe: July 2020

Recommendation #2: We recommend that the Atlanta Fire Rescue Department enforce the department's policy and city code to inspect all private hydrants within the city limits.

Response & Proposed Action: The AFRD Hydrant Maintenance Procedure will be revised by the AFRD Operations Committee to include the overall management of private hydrants. This policy revision will include the following action to become sustainable and viable for daily use with regards to private hydrants. **Agree**

- Revision of the practical management process of private hydrants with regards to the COA Code of Ordinance.

Timeframe: July 2020

Recommendation #3: We recommend that the Atlanta Fire Rescue Department and the Department of Watershed Management create a policy to communicate hydrant installations and removals.

- a. The policy should also include procedures for updating the fire hydrant database.

Response & Proposed Action: The AFRD will work closely with the DWM to define the communications of hydrant installations and removals. AFRD will also improve its record keeping (Fire database entry and updates) based on these actions. In addition, these recordkeeping procedures will be incorporated in the AFRD Maintenance SOP as relevant to the process. **Agree**

Timeframe: July 2020

Recommendation #4: We recommend that the Department of Watershed Management create and formalize memorandums of understanding between the department and each of the other jurisdictions to document each entity's roles and responsibilities.

The agreement should:

- a. include responsibilities for hydrant inspections
- b. describe how and when repair requests will be reported
- c. describe how hydrant status will be reported back to the jurisdictions once repairs are completed

Response & Proposed Action: The AFRD is amenable to the establishment of a Memorandum of Understanding (MOU) with the Department of Watershed Management to further define its role in the hydrant maintenance process and for the ultimate purpose of establishing clear expectations in the maintenance process between the two COA entities. This document should be developed and drafted under the direction of DWM as they are the recipient of the services provided by AFRD. This document should include: hydrant responsibilities, repair request reporting procedures, hydrant status information sharing, etc. **Agree**

Timeframe: June 2020

Recommendation #5: We recommend that the Atlanta Fire Rescue Department and the Department of Watershed Management complete the hydrant asset identification project, which maps Watershed Management asset identification numbers with Fire Rescue's hydrant identification numbers.

Response & Proposed Action: The AFRD, along with DWM, will continue with the Hydrant Asset Project with the goal of ultimately moving to one database for the purpose of managing this asset for the COA. The AFRD's position has been to ultimately migrate to the DWM hydrant database. This would ultimately provide a master list of Fire Hydrants for the COA that could effectively assist with management by all entities involved.

Agree

Please note below the areas crucial to the AFRD that must be address in this collaborative effort.

- Maintaining the unique identifiers for AFRD.
- Development/ improvement of backup system with hydrant card use.
- Purchase/acquire necessary resources to meet MOU with regards to field inspections and reporting.
- Updating AFRD policy to incorporate the use of DWM database.

Timeframe: June 2020

Recommendation #6: We recommend that the Atlanta Fire Rescue Department and the Department of Watershed Management determine the feasibility of using Watershed Management's GIS application as a comprehensive inspection and repair database.

a. Watershed Management should customize the application, based on Fire Rescue's needs, to replace the department's current hydrant database.

b. Watershed Management should ensure that the database is backed up daily.

c. Fire Rescue should continue to update hydrant cards as a secondary data source.

d. Fire Rescue should identify resources to purchase any needed external devices needed to access the application in the field to conduct inspections.

e. Fire Rescue should update its policies to incorporate use of the database.

Response & Proposed Action: DWM will work with AFRD to ensure the application contains information needed by AFRD and ensure that the application is properly supported.

Agree

Timeframe: June 2020

Recommendation #7:	We recommend that the Atlanta Fire Rescue Department update its policy to include specific procedures for documenting inspections on the hydrant cards.	Agree
Response & Proposed Action:	<p>The Temporary Actions AFRD will take pending the completion of the Hydrant Asset Collaboration Project</p> <ul style="list-style-type: none"> Revision of the AFRD Hydrant Maintenance Policy to meet today's business practice. 	Agree
Timeframe:	October 2019	
Recommendation #8:	We recommend that the Atlanta Fire Rescue Department enforce hydrant card verification to ensure that inspections and needed repairs are accurately documented in the hydrant database.	Agree
Response & Proposed Action:	Proposed Action: The AFRD will enforce hydrant card use and verify/ to ensure that repairs are documented in its database and reported to DWM pending the implementation of a consolidated platform.	Agree
Timeframe:	October 2019	
Recommendation #9:	We recommend that the Department of Watershed Management continue to track progress toward meeting service level agreements and consider the feasibility of adding additional resources to help meet the targets.	Agree
Response & Proposed Action:	DWM agrees with the recommendation. DWM has dedicated additional resources towards scheduling and performing related work since 2017 and will continue this effort in addition to our monthly reporting.	Agree
Timeframe:	September 2019	



CITY OF ATLANTA

AMANDA NOBLE
City Auditor
anoble@atlantaga.gov

STEPHANIE JACKSON
Deputy City Auditor
sjackson@atlantaga.gov

CITY AUDITOR'S OFFICE
68 MITCHELL STREET SW, SUITE 12100
ATLANTA, GEORGIA 30303-0312
<http://www.atlaudit.org>
(404) 330-6452
FAX: (404) 658-6077

AUDIT COMMITTEE
Marion Cameron, CPA, Chair
Daniel Ebersole
Danielle Hampton
Amanda Beck, PhD

June 17, 2019

Honorable Mayor and Members of the City Council:

We undertook this audit because faulty or nonfunctioning fire hydrants can hamper emergency responses and endanger firefighters and the public. Leaking hydrants can cause significant property damage. The Atlanta Fire Rescue Department is responsible for inspecting fire hydrants and the Department of Watershed Management's Office of Linear Infrastructure Operations is responsible for maintaining fire hydrants. The Department of Watershed Management reported that it had significantly reduced the backlog for fire hydrant repairs in fiscal year 2018.

The Audit Committee has reviewed this report and is releasing it in accordance with Article 2, Chapter 6 of the City Charter. We appreciate the courtesy and cooperation of city staff throughout the audit. The team for this project was Jamie Amos, Ivy Williams, and Diana Lynn.

Amanda Noble
City Auditor

Marion Cameron
Chair, Audit Committee

Fire Hydrant Inspection and Maintenance

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Introduction

We undertook this audit because faulty or nonfunctioning fire hydrants can hamper emergency responses and endanger firefighters and the public. Leaking hydrants can cause significant property damage. The Atlanta Fire Rescue Department is responsible for inspecting fire hydrants and the Department of Watershed Management's Office of Linear Infrastructure Operations is responsible for maintaining fire hydrants. The Department of Watershed Management reported that it had significantly reduced the backlog for fire hydrant repairs in fiscal year 2018.

Background

Two city departments share responsibility for inspecting and maintaining public hydrants within the city limits. The Atlanta Fire Rescue Department is responsible for inspecting hydrants, while repair and maintenance are primarily handled by the Department of Watershed Management. The Department of Watershed Management's Office of Linear Infrastructure Operations is responsible for installing, maintaining, and repairing public hydrants within the city limits as well as other jurisdictions including Fairburn, Sandy Springs, Union City, and the City of South Fulton.

The American Water Works Association (AWWA) suggests that the primary purpose of hydrants is fire suppression. Fire hydrants serve other functions, such as testing the water distribution system's flow capabilities. Municipalities also use hydrants to flush water distribution system mains, clean streets and sewers, for recreation, and during street and building construction. Hydrant owners are responsible for ensuring there is adequate fire flow for every hydrant.

Atlanta Fire Rescue Department Inspects Public and Private Hydrants

Fire Rescue is responsible for inspecting all fire hydrants within the city limits—both public and private hydrants. Watershed Management only maintains public hydrants within city limits and its service area. Public hydrants belong to the municipality; private hydrants are owned and maintained by property or business owners. Property owners are required to ensure that these hydrants are inspected annually. Public hydrants are a valve connection on a water supply system having one or more outlets that are used to supply fire department pumps with

water. According to Fire Rescue staff, fire personnel paint all hydrants within the city limits silver (see Exhibit 1).

Exhibit 1: Public Hydrants Are Painted Silver



Source: Photograph taken by auditors during site inspection in October 2018.

The City Performs Hydrant Inspections Twice A Year

The Atlanta Fire Rescue Department conducts fire hydrant inspections bi-annually, in the spring and fall. According to the department’s hydrant inspection and maintenance policy, firefighters are required to begin spring inspections on the first Monday of April and fall inspections on the second Monday of September. Inspections must be completed within 45 days. Inspections are conducted by field operations personnel, which is made up of seven battalions, including one at the airport. Fire Rescue assigns each battalion three shifts, designated as A, B, and C, and allocates each shift to firefighter crews called “companies.” Each company, or shift, is responsible for inspecting a set of hydrants.

During the spring inspection process, companies flush the hydrants and conduct preventive maintenance by greasing stems and painting the hydrants. Hydrants are painted during fall inspections only if needed. Fire Rescue checks for leaks and tests hydrant functionality by opening the main valve to flush the hydrant until the water is reasonably clear,

as shown in Exhibit 2. Staff told us that firefighters use food-grade grease to lubricate the hydrant threads.

Exhibit 2: Hydrants Are Flushed Until Water Runs Clear



Source: Photographs taken by auditor during site inspection in October 2018.

While inspecting the hydrants, companies visually check for damage—for example, a hydrant may be leaning or knocked over from the impact of a vehicle (see left photo in Exhibit 3). The firefighters also check for leaks at the base of the hydrant. If the department’s inspection determines that the hydrant is not functioning properly, the firefighter will place an out-of-service disk on the hydrant (see right photo in Exhibit 3).

Exhibit 3: Nonfunctional Hydrants May Be Placed Out-of-Service



Source: Photographs taken by auditor during site inspection in October 2018.

Firefighters record inspection results and hydrant functionality on hydrant cards and document any repairs needed (see Exhibit 4). Upon returning to the fire station, companies are required to update the database by completing either an inspection form with “no repairs” or a form “with repairs” for the hydrants that are non-functional or in need of maintenance. The inspection form documents that an inspection has been conducted and captures the inspecting officer, shift, inspection date, and any notes. If repairs are needed, the form includes a second checklist that documents specific hydrant issues. Once the completed inspection is submitted, an inspection identification number is created by the system, which indicates that the inspection was successfully recorded in the database.

Exhibit 4: Inspection Results are Noted on Hydrant Cards and Input into Database

ATLANTA FIRE DEPARTMENT HYDRANT RECORD

Hydrant#: **7320** Station: **16** ZoneColor: **Red**
 XCoordinate: YCoordinate:
 Address: **683 DALVIGNEY ST NW**
 Location: @ **JULIAN**
 Main Size: **12** Bonnet: **Silver** Manufacturer: **Mueller**
 Type: **Steamer Cap** Private: **No**

Inspection Codes

1. Clear away obstructions - assure accessibility
2. Check for leaks in valve, hydrant closed
3. Check for leaks in drip valve, hydrant open and caps secured
4. Check outlet threads/caps for dirt, note missing caps/chains
5. Check operating valve for freedom in opening and closing
6. Check hydrant for need of paint
7. Report all damage to hydrant repair form
8. Flush hydrant until water runs clean
9. Complete hydrant record

Repairs : Water Dept. 404-658-7220 Fax 404-658-6252				
Date	Code	Shift	InspectionID	RepairID
4-26	1-9	C	351831	
2-2-05		C	367473	
4-22-19		B	4108233	
10-10-15		B	423902	
6/7/16	1-9	C	445572	
10/4/16	1-9	C	459518	
4/10/17		A	4671817	
9/27/17		A	487066	
12/31/17		B	45276	

[Hydrants](#) [Reports](#) [Admin](#)

Fire Hydrant Database

HOME
Form
Hydrant # 336
Station # 1

Add inspection

<p>personnel</p> <p>Clear away obstructions - assure accessibility <input checked="" type="checkbox"/></p> <p>Check for leaks in valve, hydrant closed <input checked="" type="checkbox"/></p> <p>Check for leaks in drip valve, hydrant open and caps secured <input checked="" type="checkbox"/></p> <p>Check outlet threads/caps for dirt, note missing caps/chains <input checked="" type="checkbox"/></p> <p>Check operating valve for freedom in opening and closing <input checked="" type="checkbox"/></p> <p>Check hydrant for paint needed <input checked="" type="checkbox"/></p> <p>Report all damage to hydrant repair form <input checked="" type="checkbox"/></p> <p>Flush hydrant until water run clean <input checked="" type="checkbox"/></p> <p>Complete hydrant record <input checked="" type="checkbox"/></p>	<p>checklist</p> <p>Remarks</p> <p>Inspecting Officer: <input type="text"/></p> <p>Shift: <input type="text" value="A"/> Inspection Date: <input type="text" value="01/29/01"/> (EX: 01/29/01)</p> <p style="text-align: center;"> <input type="button" value="Submit"/> <input type="button" value="Cancel"/> *PLEASE PRESS ONLY ONCE* </p>
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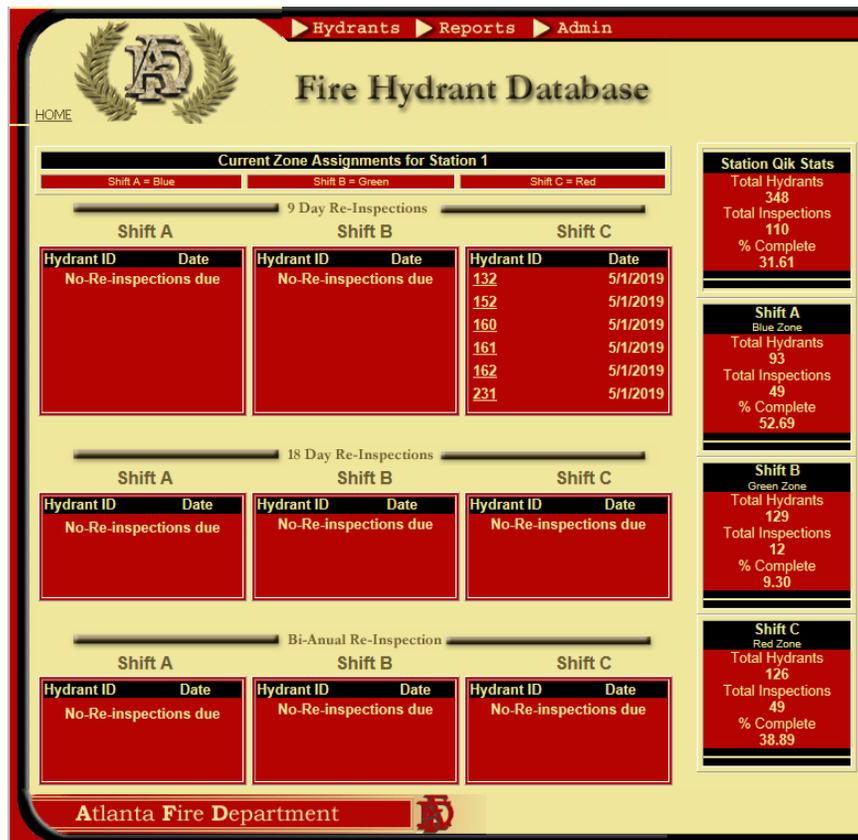
Source: Hydrant card from Atlanta Fire Rescue Department Station 1 (left); Screenshot of Fire Rescue’s Hydrant Database inspection record (right).

The battalion chief is responsible for consolidating all documented repairs into a memorandum on a daily basis with the hydrant identification numbers, the addresses, and the repairs needed, and forwarding the report to the Department of Watershed Management.

According to Fire Rescue’s procedures, the companies are required to conduct reinspections on the hydrants needing repairs nine days after the initial inspections to determine whether the necessary work has been completed and the hydrants are functional. Reinspection results are to be logged into the hydrant database (see Exhibit 5). If the hydrant is still in need of repairs, the companies are required to

reinspect 18 days after the initial inspection and send a memorandum to the Department of Watershed Management to document repairs needed. The companies are also required to reinspect all hydrants needing repairs 90 days after the initial inspections (July 1 for the spring and December 1 for the fall). If the inspection determines the hydrant is still in need of repairs, the department is required to send a third memorandum to the Department of Watershed Management and follow-up to ensure that the repairs are completed.

Exhibit 5: Fire Rescue’s Database Documents Inspections

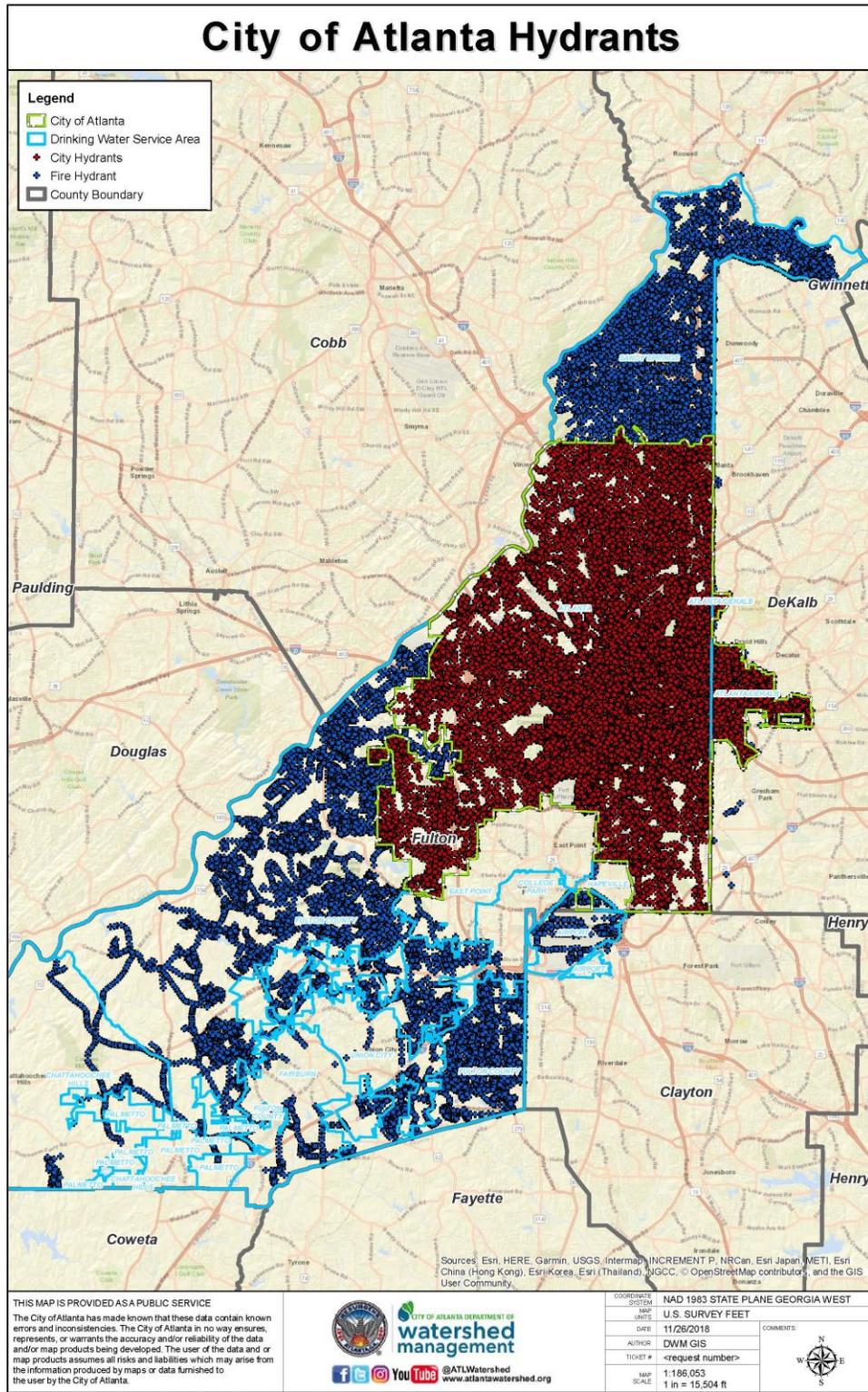


Source: Screenshot of Fire Rescue’s hydrant database

City Maintains Hydrants in Multiple Services Areas

The Department of Watershed Management is responsible for maintaining and repairing public fire hydrants within the city of Atlanta as well as other jurisdictions where the department provides water service. Hydrant inspections outside of the city limits are conducted by fire departments within those municipalities. Exhibit 6 outlines the water and hydrant service area for the Department of Watershed Management. The red markers represent city hydrants, while the blue markers represent hydrants in other municipalities.

Exhibit 6: Watershed Management's Hydrant Service Areas Extend Beyond City Limits



Source: Department of Watershed Management GIS staff, as of November 26, 2018.

The water distribution group within the Office of Linear Operations is responsible for completing hydrant maintenance and repairs. Watershed Management uses Hansen, a work order management system, to schedule and record hydrant repairs. The department receives hydrant repair requests via reports, telephone calls, and emails from the Atlanta Fire Rescue Department and other fire departments that conduct inspections within the service areas. Watershed Management crews may also independently generate hydrant repair work orders while conducting other work in the field. Watershed Management staff told us that the department's priority is to ensure the city has adequate hydrant coverage in the event of a fire.

Best Practices Provide Inspection and Maintenance Guidance

Hydrants are subject to aging, deterioration from weather conditions, distribution system failures, and damage from traffic, tampering, and unauthorized use. The AWWA recommends a periodic hydrant testing and maintenance program be followed to ensure hydrants are functional for fire suppression. The AWWA states that all hydrants should be inspected at least once a year to make sure that they are operational.

Audit Objectives

This report addresses the following objectives:

- Is the city aware of the operational status of all its hydrants?
- Does the Atlanta Fire Rescue Department perform fire hydrant inspections in a timely manner?
- Does the Department of Watershed Management perform fire hydrant repairs in a timely manner?

Scope and Methodology

We conducted this audit in accordance with generally accepted government auditing standards. We primarily focused on hydrant inspection and maintenance information from January 2015 through December 2018.

Our audit methods included:

- reviewing the Atlanta Fire Rescue Department and the Department of Watershed Management's procedures and practices for inspections and repairs

- reviewing best practices from the American Water Works Association and National Fire Protection Association for fire hydrant inspections and maintenance standards
- interviewing personnel from the Atlanta Fire Rescue Department and the Department of Watershed Management to determine how the city conducts and manages inspections and repairs
- interviewing staff from South Fulton, Fairburn, Sandy Springs and Union City to understand how each city relays hydrant repair requests to Watershed Management
- conducting field ride-alongs with Fire Rescue staff to observe hydrant inspections from October 2018 through December 2018
- conducting field ride-alongs with Watershed Management employees to observe the hydrant repairs in December 2018
- interviewing Fire Rescue’s hydrant database administrator to understand how hydrants and inspections are documented, stored, and updated
- comparing Fire Rescue’s hydrant card records to its hydrant database for consistency
- analyzing reports from Fire Rescue’s hydrant database for the fall 2018 inspections to determine whether employees complied with procedures for inspecting and reinspecting hydrants
- tracking 36 hydrants through the repair process from inspection to maintenance to confirm whether reinspection and repair reporting procedures were followed for the fall 2018 inspections
- analyzing Hansen records for hydrant repair work orders from January 1, 2015, through December 14, 2018, to determine repair turnaround times and whether Watershed Management met service level agreements
- interviewing the Department of Watershed Management staff to understand the Geographical Information System application

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.

Findings and Analysis

Operational Status of Hydrants Is Unknown Due to Coordination and Technology Problems

Watershed Management is responsible for maintaining all public hydrants within its service area, which extends beyond the city limits. Fire Rescue is required to inspect both public and private fire hydrants within the city limits. Although the two departments service different populations, the number of hydrants for which both departments are responsible do not align in their respective databases, which could result in incomplete inspections and repairs.

We identified 1,463 hydrants with no fall 2018 inspection dates recorded in Fire Rescue's database. These inspections may have been missed, may have been conducted but not entered into the database, or entered but not saved by the database. The Atlanta Fire Rescue Department uses unreliable technology that fails to capture all inspections results. Fire Rescue also uses a hydrant card system which is inconsistently implemented; all companies do not update the cards with the current inspection information. We were unable to confirm the reliability of the hydrant database because the cards were not consistently used.

Fire Rescue and the other municipalities do not consistently relay hydrant repair requests to Watershed Management. Although Fire Rescue completed most inspections within its 45-day window, it had not provided two-thirds of sampled repair requests from the fall 2018 inspection season to Watershed Management as of March 2019. Other jurisdictions within Watershed Management's service area, with the exception of Sandy Springs, also reported repair needs inconsistently.

The Department of Watershed Management created a Geographic Information System (GIS) application to link Hansen fire hydrant asset numbers with hydrant identification numbers used by the Atlanta Fire Rescue Department; however, the project is not fully implemented. The application pinpoints hydrants on a map and would allow Fire Rescue to use the application to complete inspections and submit hydrant repair requests in real time.

To increase inspection efficiency and capture inspections and repair requests in real time, we recommend that the Atlanta Fire Rescue Department work with the Department of Watershed Management to determine the feasibility of moving to one comprehensive database that

is backed up daily and continue to update hydrant cards as a secondary source. Once implemented, we recommend that Fire Rescue update its policy to reflect the new process.

In the meantime, we recommend that the Atlanta Fire Rescue Department update its policy to include specific procedures for documenting inspections on the hydrant cards. We also recommend the department enforce hydrant card verification to ensure that inspections and needed repairs are accurately documented in the hydrant database.

Atlanta Fire Rescue Department May Not Inspect All Hydrants Under Its Jurisdiction

Nine percent of the more than 16,000 fire hydrants within the city limits that the Atlanta Fire Rescue Department is responsible for inspecting had no fall 2018 inspection date recorded in the department's database. These inspections may have been missed, may have been conducted but not entered into the database, or entered but not saved by the database. We also found that the population of public hydrants within the city does not align between Fire Rescue and Watershed Management, which could result in some inspections or repairs not being completed. The departments do not have a master list of hydrants serviced by the city or a formal policy for communicating the addition or removal of hydrants.

Fire Rescue may not consistently inspect private hydrants according to the department's policy and city code. The Law Department confirmed that, while Fire Rescue is responsible for inspecting private fire hydrants, the city would not be liable for private hydrants that are inoperable in an emergency. Fire Rescue management initially stated that the department did not officially inspect private hydrants, but later confirmed that all hydrants, regardless ownership, should be inspected as required in the department's policy. Multiple firefighters stated that they inspect private hydrants. The department needs to know the location and functional status of the closest hydrants in case of a fire.

We recommend that the Atlanta Fire Rescue Department and the Department of Watershed Management work together to create a policy to communicate hydrant installations and removals. The policy should also include procedures for updating the fire hydrant database.

Fire Rescue inspected 91% of all hydrants within the city during the fall 2018 inspections, according to the department's hydrant database. Of the 16,246 hydrants the fire department is responsible for inspecting within the city, we identified 1,463 hydrants without an initial

inspection date documented in the hydrant database for the fall 2018 period (see Exhibit 7). These inspections may either not have been conducted or not entered into or saved in the database. The hydrants that showed no inspection data consisted of 1,328 public and 133 private hydrants; two hydrants were not assigned to either group. The department inspected 14,783 hydrants during the fall inspection period.

Exhibit 7: Hydrant Database Shows No Inspection for 1,463 Hydrants in Fall 2018

	Inspected	Not Inspected	Total
Private Hydrants	1,173	133	1,306
Public Hydrants	13,609	1,328	14,937
Not Assigned	1	2	3
Total	14,783	1,463	16,246
Percent of Total	91%	9%	

Source: Records from the Atlanta Fire Rescue Department hydrant database as of March 2019.

The Atlanta Fire Rescue Department’s procedures require fire companies to inspect all hydrants twice per year. The policy also includes a broad statement that management is responsible for compliance, ensuring adherence, and maintaining records of all hydrants inspected. The department’s policy does not include procedures to ensure all hydrant inspections are completed and verified.

We recommend that the department revise its policy to include specific verification procedures to ensure that all hydrants are inspected as required, and the hydrant database is updated with the inspection date and results.

Discrepancies among data sources could result in missing inspections or maintenance. Watershed Management is responsible for maintaining all public hydrants within its service area, which extends beyond the city limits. Fire Rescue is required to inspect both public and private fire hydrants within the city limits. Although the two departments service different populations, the number of hydrants for which both departments are responsible do not align in their respective databases (see shaded column in Exhibit 8). According to Fire Rescue’s hydrant database, the department is responsible for inspecting 16,246 hydrants within city limits, including 14,937 public hydrants and 1,306 private hydrants. Three of the hydrants are not assigned to either designation of public or private in the hydrant database. Watershed Management’s records show 24,687 public hydrants, including 14,633 within city limits and 10,054 located within the department’s service area outside the

city limits. We found a difference of 307 public fire hydrants within city limits between the two departments, which could result in missed inspections or repairs.

Exhibit 8: Watershed Management and Fire Rescue Hydrant Populations Do Not Align

Responsible Department	Private Hydrants Within City Limits	Public Hydrants Within City Limits	Public Hydrants Outside City Limits	Total Hydrant Population
Atlanta Fire Rescue Department <i>Inspects</i>	1,306	14,940*	N/A	16,246
Department of Watershed Management <i>Maintains</i>	N/A	14,633	10,054	24,687

*Public hydrants within city limits include three hydrants that were not assigned to either the public or private designations.

Source: Fire Rescue hydrant database as of January 2019 and Watershed Management’s records as of November 2018.

The departments use different naming conventions to identify hydrants, which prevents standardized asset identification between the two departments and may result in hydrants remaining uninspected or delayed repairs. Watershed Management and Fire Rescue have begun to align hydrant identification numbers from their respective databases, but this initiative—started in April 2017—has not yet been completed.

Watershed Management does not communicate hydrant installations and removals. Fire Rescue staff told us that companies learn of the addition or removal of hydrants while conducting the spring and fall inspections. Watershed Management’s lack of a formal process to notify Fire Rescue of changes in the hydrant population could contribute to hydrants not being inspected by Fire Rescue.

The Atlanta Fire Rescue Department does not have a formal process for adding or removing hydrants from its database. Once a hydrant installation or removal is observed in the field, companies report hydrant changes to the hydrant database administrator, requesting that the hydrant number be added or deleted in the database; this practice is not documented in Fire Rescue’s policies and procedures. Fire Rescue staff stated that firefighters will not conduct an inspection until the new hydrant is assigned to a station and shift. Fire Rescue should develop a formal procedure to ensure that new hydrants are added to the department’s hydrant database and receive inspections.

We recommend that the Atlanta Fire Rescue Department and the Department of Watershed Management create a policy to communicate hydrant installations and removals. The policy should also include procedures for updating the fire hydrant database.

Fire Rescue's inspections of private hydrants appear inconsistent with city code requirements. Fire Rescue management initially stated that the department did not officially inspect private hydrants, but firefighters may verify hydrant functionality during inspections. We received an update from management that all hydrants, regardless of ownership, are inspected as required in the department's policy; the employee verified his statement with other management and confirmed his statement was incorrect.

According to staff from one company, commercial and residential property owners should hire contractors to inspect and maintain private hydrants, but firefighters do conduct inspections of private hydrants and update the database for operational purposes. The employee did not know how the private hydrant owners received communication regarding maintenance and repair needs. Another company's firefighter stated during an interview that they inspect private hydrants. Both companies affirmed that firefighters need to know the location and functional status of the closest fire hydrants in case of an emergency.

The department's policy requires all hydrants in the city to be inspected. The policy specifically includes procedures for inspecting and conducting preventive maintenance for private hydrants, as well as reporting needed repairs to the hydrant owner. According to city code (Sec. 78-63), any person who manages or controls any multifamily house, trailer camp or mobile home camp with ten or more dwelling units or commercial properties exceeding 10,000 square feet gross area has a duty to provide and repair fire hydrants at the person's expense.

The Department of Law confirmed that Fire Rescue is responsible for inspecting private fire hydrants according to city code. While the Atlanta Fire Rescue Department should have information about which hydrants are functional, Law stated that the city would not be liable for private hydrants that are inoperable during a fire.

We recommend that the Atlanta Fire Rescue Department enforce the department's policy and city code to inspect all private hydrants within the city limits.

Fire Rescue's Hydrant Database is Unreliable and Unstable

Fire Rescue's hydrant database is unstable and does not consistently capture inspections and needed repairs. Fire Rescue employees stated that the system may freeze without capturing inspection entries and repair confirmations. We identified 11 hydrants with multiple initial inspection entries, and one hydrant with 17 initial inspections recorded during the 45-day inspection period.

We also found that Fire Rescue’s recordkeeping process is inconsistent, which may reduce the accuracy of the records in the hydrant database. Firefighters record inspection results in three different locations—on printouts of hydrants slated for inspection from the hydrant database, on hydrant cards, and then again in the hydrant database. Use of the hydrant cards is not consistent among companies, although Fire Rescue’s procedures describe using hydrant cards to record inspection results and note repairs needed. We also found that managers do not verify the accuracy of information recorded on the hydrant cards to ensure that changes are corrected and updated in the database, as required by Fire Rescue’s procedures.

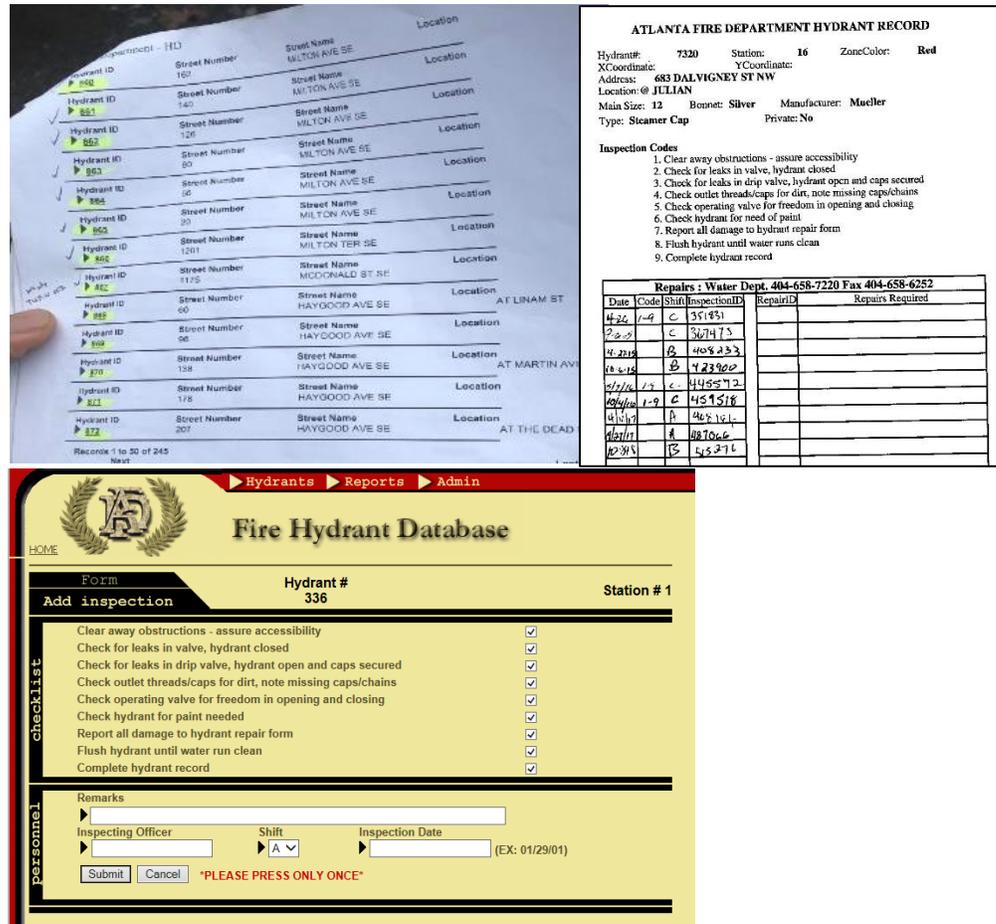
The Atlanta Fire Rescue Department’s hydrant database is unstable and does not capture all records entered. According to Fire Rescue employees, software errors may prevent the database from registering repair requests. Fire Rescue companies told us that the hydrant database freezes as employees enter inspection results, and the system may not provide an inspection or repair identification number. This number should be generated automatically by the system and serves as confirmation that the database accepted and documented the inspection and/or repair request. Fire Rescue employees may make multiple attempts to enter inspections into the database. We identified 11 hydrants with more than one initial inspection record for fall 2018, and one hydrant had 17 initial inspections recorded over 13 different dates during the 45-day inspection period. The database shows the hydrant identification number for this hydrant as “0”.

Fire Rescue’s recordkeeping process is inconsistent, which may reduce the accuracy of the records in the hydrant database. Fire Rescue’s procedures state that during the inspection, the hydrant card shall be checked for accuracy of information by the officer in charge; however, we observed that the cards were not consistently used. As a result, it was not possible to use the hydrant cards to support and verify the inspection entries in the hydrant database. We observed inconsistent use of hydrant cards at two fire stations; one station used hydrant cards to document inspections and repairs, while the other station did not use hydrant cards during fall 2018. Fire Rescue employees told us that firefighters enter the inspection results into the database but may not use the hydrant cards to document inspections. Firefighters may use a separate hydrant list to record results instead of documenting inspection results on the hydrant cards.

While in the field, firefighters use hydrant inspection lists printed from the hydrant database to conduct inspections and document hydrants in need of repair. After the inspections are completed, some firefighters

return to the station and record the information from the inspection lists onto hydrant cards. They then enter the data into the hydrant database (see examples in Exhibit 9). Once inspection data is entered, the database generates an inspection identification number and repair identification number if needed. Some employees update the hydrant cards with the inspection date and repair identification number.

Exhibit 9: Inspection Results May Be Recorded in Three Locations



Source: Photos of printout and hydrant card taken by auditors during field inspection ride-along in October 2018; screenshot of Fire Rescue database taken by auditors in March 2019.

According to Fire Rescue management, the department moved from using the hydrant cards to the hydrant database as the system of record a few years ago; however, the more experienced firefighters did not trust the database and used the hydrant cards as documentation, while newer firefighters did not like using the hydrant cards and primarily used the database to document inspections.

We also found that Fire Rescue managers did not verify the accuracy of the hydrant cards, as required by the department’s policy. The policy

requires managers to verify the accuracy of information recorded on the hydrant cards and ensure that changes are corrected and updated in the hydrant database.

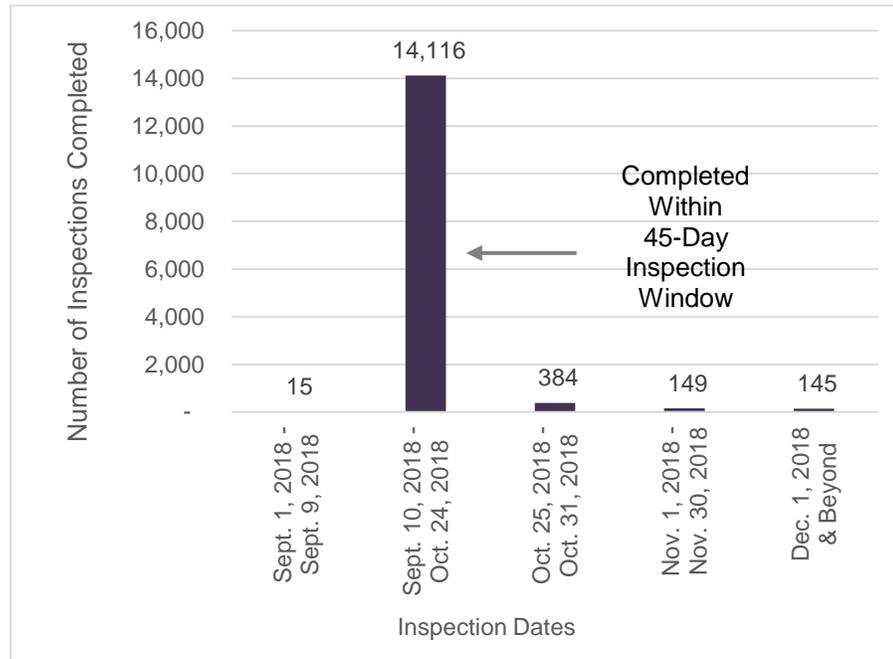
Lack of Communication Hinders Hydrant Inspection and Maintenance Process

The Atlanta Fire Rescue Department completed most initial hydrant inspections within the 45-day inspection window but did not consistently communicate repair requests to the Department of Watershed Management. Fire Rescue also failed to conduct hydrant reinspections, as required by its policy. Other jurisdictions within Watershed Management's hydrant service area report repair requests inconsistently, or not at all. Watershed Management does not have formal agreements with municipalities within its hydrant service area to document roles and responsibilities, which may delay hydrant repairs. The department also does not communicate completed hydrant repairs consistently to internal or external service areas, as suggested by best practices.

While companies completed 95% of initial inspections by the 45-day inspection deadline, Fire Rescue did not consistently transfer repair requests to Watershed Management. Firefighters conducted 14,809 hydrant inspections during the fall 2018 inspection season. We found that 14,131 were completed within the 45-day inspection window, including 15 completed prior to the inspection season (see Exhibit 10). A total of 678 inspections were completed after the 45-day period.

Firefighters identified 423 hydrants that required repairs during the fall inspections. The Atlanta Fire Rescue Department's policy states that companies shall complete hydrant inspections within forty-five days after the first Monday in April and second Monday in September.

Exhibit 10: Fire Rescue Conducts Most Inspections Within Deadlines



Source: Records pulled from the Atlanta Fire Rescue Department’s hydrant database as of January 2019.

The Atlanta Fire Rescue Department did not consistently communicate repair needs to the Department of Watershed Management. Fire Rescue employees told us that they either rely upon management to generate and send a memorandum that identifies repairs needed, as stated in the policy, or to contact Watershed Management directly by email or phone. Fire Rescue management told us that during hydrant inspection season the department emails a weekly repair request report generated from its hydrant database to Watershed Management. Watershed Management staff told us that they had not received a repair request memorandum since fall 2016.

We tracked 36 hydrants through the inspection and maintenance process; the sample represents hydrants flagged for repair during inspections that we observed. All 36 hydrants were inspected in fall 2018 and identified as in need of repair. As of March 2019, Fire Rescue had not communicated 25 of the 36 (69%) repair requests to Watershed Management (see Exhibit 11). According to reports from the hydrant database, two of the 25 hydrants that were not communicated did not need repairs. Fire Rescue’s policy states that management must consolidate the hydrant repair forms from each station into a daily memorandum, which is forwarded to the Department of Watershed Management.

Exhibit 11: Fire Rescue Did Not Send Two-Thirds of Sampled Hydrant Repair Requests to Watershed Management

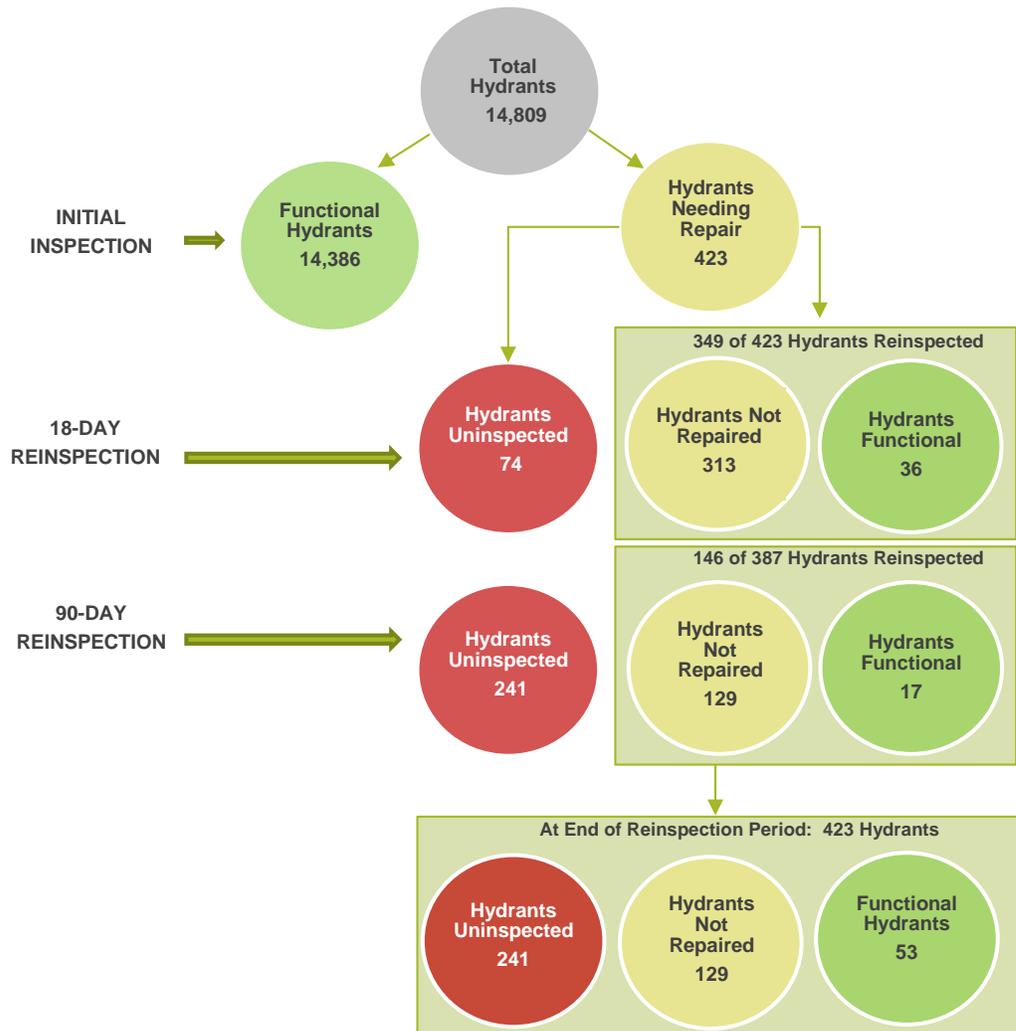
Status of Repair Request	Total	Percent of Total
Sent to DWM for Repairs	11	31%
Did Not Send to DWM for Repairs	25	69%
Total	36	100%

Source: Sample pulled from auditor observations in the field or of the database during October 2018. Contact status was determined by the Department of Watershed Management between January and March 2019.

A Watershed Management employee told us that he receives hydrant repair requests via email or telephone from fire stations year-round. Staff stated that the emails submitted by Fire Rescue did not consistently communicate hydrant locations or repair descriptions. Some emails contained a list with the hydrant numbers and locations, while others listed only the location or the location and a description of the problem. Watershed Management also received hydrant repair requests from multiple people within the same fire station. Fire Rescue’s lack of consistent and centralized communication and adherence to the department’s policy may lead to hydrants not being repaired.

Fire Rescue did not complete reinspections as required by its policy. The department reinspected 349 of the 423 hydrants (83%) needing repairs after 18 days (see Exhibit 12). Companies did not reinspect 74 hydrants as required. Of the 349 hydrant reinspections, Fire Rescue determined 36 hydrants had been repaired and 313 still needed repairs. Hydrants that are repaired and operational do not require further reinspections; the department requires additional 90-day reinspections of hydrants not repaired and operational.

Exhibit 12: Fire Did Not Consistently Reinspect Hydrants



Source: Developed by auditors using data pulled from the Atlanta Fire Rescue Department's hydrant database in January 2019.

The Atlanta Fire Rescue Department completed 146 of 387 90-day hydrant reinspections—firefighters did not reinspect 241 hydrants. This group of 241 hydrants includes the 74 hydrants that were missed at the 18-day reinspection. The Department of Watershed Management repaired an additional 17 hydrants by the 90-day reinspection period, for a total of 53 hydrants repaired.

The department did not complete 241 of 423 (57%) hydrant reinspections by the end of the fall 2018 inspection period. The department's policy requires fire staff to conduct 9-, 18-, and 90-day reinspections until the hydrant is repaired and to communicate hydrants still in need of repairs to Watershed Management after the 18- and 90-

day reinspections are complete. According the database administrator, the hydrant database does not have a field to track the 9-day hydrant reinspections. Fire Rescue's failure to complete the reinspections and communicate hydrant repair requests may prevent Watershed Management from repairing hydrants timely.

Other cities in the Department of Watershed Management's service area did not consistently report hydrant repair needs, increasing risk to the city. Three other cities with hydrants maintained by the Department of Watershed Management—Sandy Springs, Fairburn and Union City—have procedures in place to report repair needs to the city, but none are consistent. Sandy Springs communicates hydrant repairs directly to the department, Fairburn reports repair needs to its internal water department, which sends the requests to ATL311, and Union City sends the list of hydrant repairs to its public works department, which communicates the repair needs to the Department of Watershed Management. The City of South Fulton fire staff stated they report hydrant repairs to their own water department but were not aware of how those repair needs are communicated to the city.

According to the American Water Works Association, the owner of the hydrant is responsible for maintenance and repair unless a verifiable agreement is in place between the two jurisdictions. While Sandy Springs and the city have an agreement in place, none of the external jurisdictions have formal memorandums of understanding in place to clarify roles, responsibilities, and outline the responsibilities of each organization. The Department of Watershed Management expressed concern about the inconsistency of hydrant inspections and communicating repair requests. We verified that Fire Rescue and other jurisdictions were receptive to implementing memorandums of understanding between each service area and Watershed Management.

Best practices recommend that the water utility communicate hydrant status updates to fire departments. According to the Atlanta Fire Rescue Department, the Department of Watershed Management does not consistently communicate completed hydrant repairs. Fire Rescue employees stated that they primarily learn of hydrant repair by conducting inspections and reinspections, not through official communications from the department.

Watershed Management does not have standard operating procedures in place for communicating to Fire Rescue when hydrant repairs are completed. Additionally, the Atlanta Fire Rescue Department and the Department of Watershed Management do not have an established agreement regarding each departments' roles and responsibilities.

We recommend the Department of Watershed Management create and formalize memorandums of understanding between the department and the Atlanta Fire Rescue Department along with each of the other jurisdictions to document roles and responsibilities. The agreement should include responsibilities for hydrant inspections, describe how and when repair requests will be reported, and how hydrant statuses will be reported back to the jurisdictions once repairs are completed.

To increase inspection efficiency and capture inspections and repair requests in real time, we also recommend that the Atlanta Fire Rescue Department work with the Department of Watershed Management to determine the feasibility of moving to one comprehensive database that is backed up daily and continue to update hydrant cards as a secondary source. Once implemented, we recommend that Fire Rescue update its policy to reflect the new process.

In the meantime, we recommend that the Atlanta Fire Rescue Department update its policy to include specific procedures for documenting inspections on the hydrant cards. We also recommend that the department enforce hydrant card verification to ensure that inspections and needed repairs are accurately documented in the hydrant database.

City Should Complete Application to Identify Real-Time Hydrant Operational Status

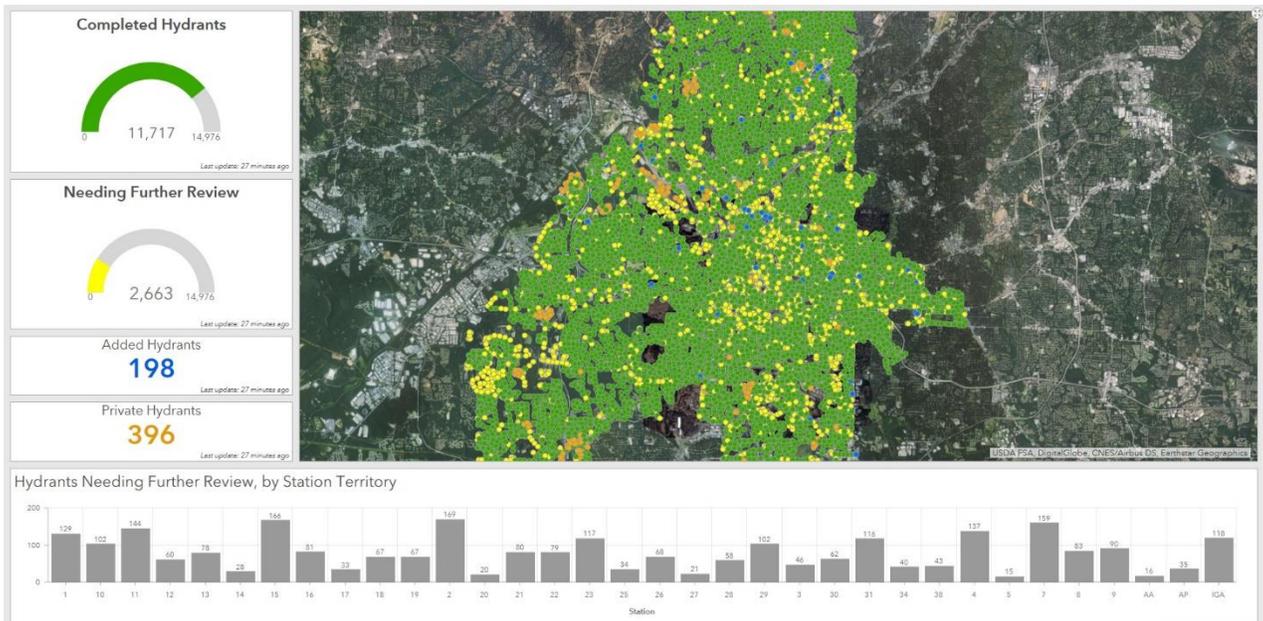
The Department of Watershed Management created a Geographic Information System (GIS) application to link Hansen fire hydrant asset numbers with hydrant identification numbers used by the Atlanta Fire Rescue Department. The application captures the global positioning system (GPS) coordinates (latitude, longitude) of each hydrant, which allows for increased accuracy in identifying hydrants in need of repair and displays hydrant functionality in real time.

Currently, Fire Rescue submits cross streets and addresses to Watershed Management in repair requests, which can make it difficult for Watershed Management to locate the hydrant and increases repair times. The application would allow for both departments to more easily identify hydrants in need of inspection and repair. In the event of a fire, it would allow for Fire Rescue to locate a functional hydrant, including private hydrants. Newly installed hydrants, hydrant removals, and current repair status could be electronically updated in the application.

The departments began working together in 2016, but the project has not yet been fully implemented. According to Watershed Management's

GIS team, the project was never an official project and was not allocated resources. Watershed Management staff told us that approximately 83% of fire hydrant asset numbers and locations have been linked. The project has stalled, with lack of communication, lack of resources, and leadership changes in both departments cited as reasons. The departments have currently begun communications again to move the project forward. Exhibit 13 shows the number of hydrants linked in the GIS application.

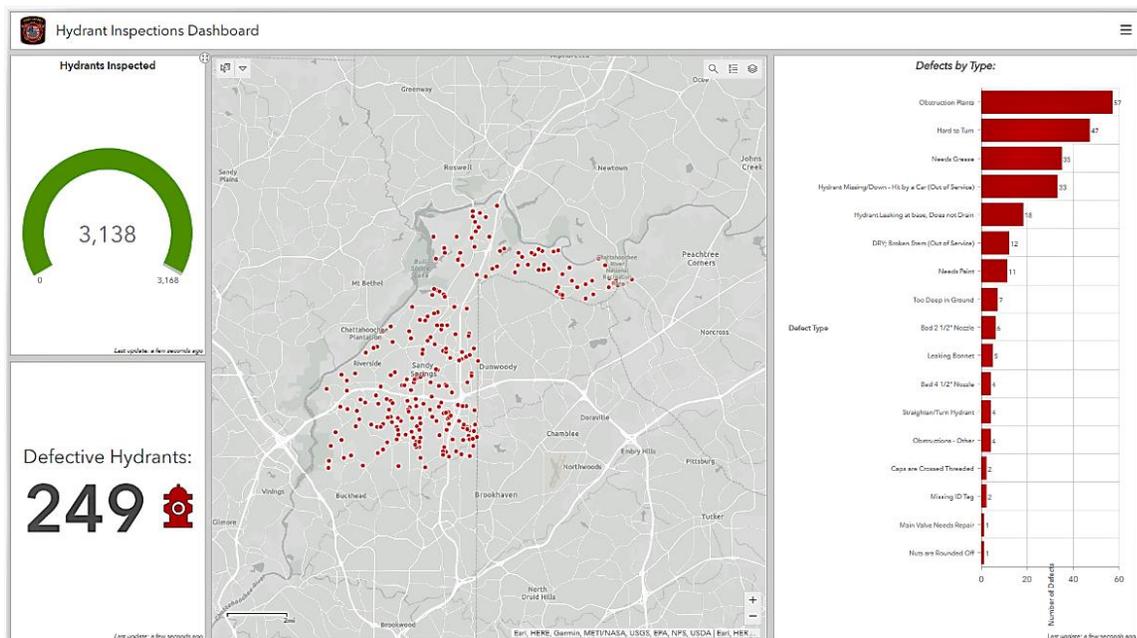
Exhibit 13: Hydrants Plotted by the Department of Watershed Management



Source: Screenshot provided by the Department of Watershed Management staff.

The application can also be used to capture inspection and maintenance information for other jurisdictions within Watershed Management’s service area. We met with watershed officials in Sandy Springs, which uses a similar GIS application to conduct hydrant inspections and note needed repairs (see Exhibit 14). The application pinpoints each hydrant, shows the number of hydrants inspected, and illustrates the number and location of defective hydrants.

Exhibit 14: Hydrants with Repair Needs from Sandy Springs



Source: Screenshot provided by Sandy Springs Fire Department in April 2019.

We recommend that the Department of Watershed Management continue to work with the Atlanta Fire Rescue Department to complete the hydrant asset identification project. Watershed Management staff should customize the application, based on Fire Rescue’s needs, to replace the department’s current hydrant database. Fire Rescue should identify resources to purchase any needed external devices needed to access the application in the field to conduct inspections.

Watershed Management Reduced Repair Times, But Fell Short of Targets

The Department of Watershed Management decreased fire hydrant repair times by more than 80% from 2015 through 2018 (mid-December). The department attributes the large decline to the addition of contractors and the hiring of permanent leadership staff. Although repair turnaround time improved, the department had not yet reached service level agreement targets for hydrant-related work orders. Hydrant work orders are required to be completed within either 10 or 20 days after the work order is initiated, depending on the work order type. The department’s performance goal is for 90 percent of work orders to meet the 10- or 20-day service level agreement. Other than a spike during 2016, the annual number of work orders remained relatively consistent over the four-year period. We did not note any

consistent surges in the workload that could be attributed to the Atlanta Fire Rescue Department's spring and fall hydrant inspections.

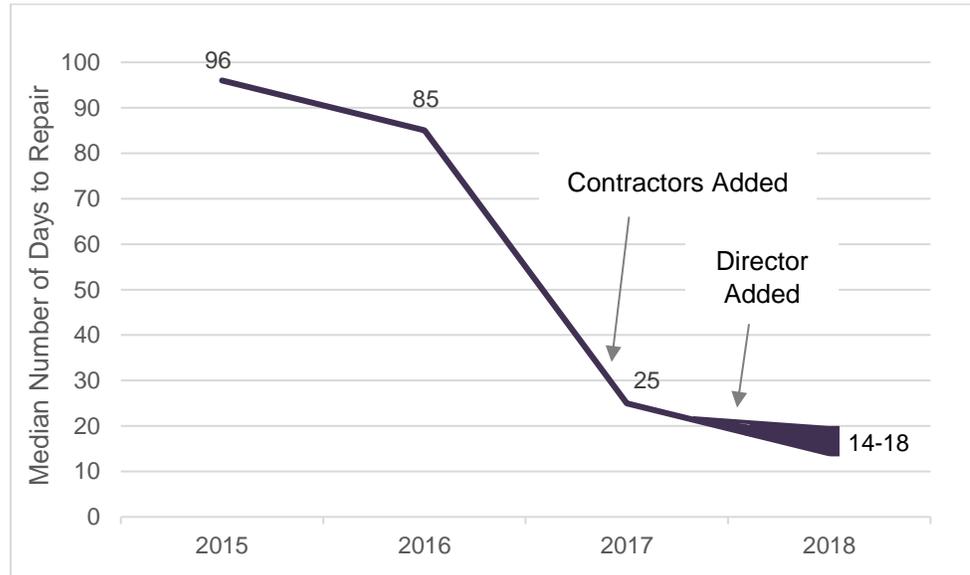
Watershed Management continues to have data integrity issues with the work order management system data, as we have noted in previous audits. We identified 437 work orders within the four-year period in which we could not calculate completion times because the work order initiation date was after the completion date entry in Hansen. We recommend that the Department of Watershed Management continue to track progress toward meeting service level agreements and consider the feasibility of adding additional resources to help meet the targets.

Added Resources Decreased Hydrant Work Order Repair Times

The Department of Watershed Management decreased the median time to complete hydrant-related work orders from 96 days in 2015 to 14-18 days in 2018 (see Exhibit 15). The commissioner told us that the department made operational changes to reduce the work order turnaround times—the department hired contractors at the end of 2016 and also hired a permanent water distribution director in July 2017. The additional resources helped to clear the existing work order backlog and turn around new work orders more quickly.

We analyzed Hansen data from January 1, 2015 through December 14, 2018, which included 6,888 hydrant-related work orders. We calculated the time to complete the work order from the initiation date to the date the work order was completed. At the time of the data pull, 310 of the work orders were still open; most of which were initiated in 2018. Some of the open work orders had not yet reached the service level agreement, and in some cases, the performance target had already passed. In order to calculate the median number of days to complete hydrant repairs per year, we estimated completion of these open work orders using two scenarios; a best case that closed the work order on the day the information was pulled in December 2018, and a worst case that closed the work order two years later. Using these assumptions, the median number of days to complete hydrant repairs initiated in 2018 is between 14 and 18 days.

Exhibit 15: Median Hydrant Repair Times Declined About 80 Days Over Four Years



Source: Work order data from Hansen, January 2015 through December 14, 2018, and historical information from the Department of Watershed Management.

We were unable to analyze 437 of the 6,888 work orders because the recorded completion date was before the recorded initiation date. The department enters the work order initiation and completion dates into Hansen manually.

The annual number of hydrant repair work orders remained fairly consistent over the four-year period (through December 14, 2018). The Department of Watershed Management initiated 557 work orders in December 2016, which brought the total for that year higher than any other year during the period (see Exhibit 16).

Exhibit 16: Work Orders Increase By 10% in 2016

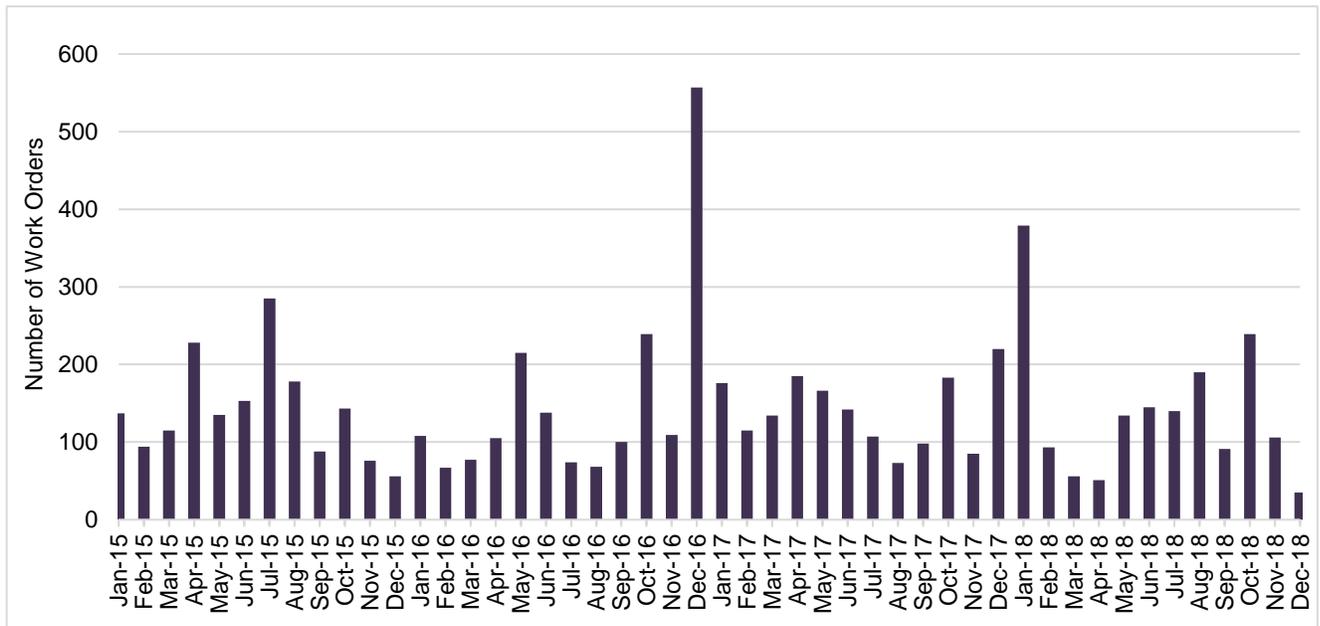
	2015	2016	2017	2018
January	137	108	176	379
February	94	67	115	93
March	115	77	134	56
April	228	105	185	51
May	135	215	166	134
June	153	138	142	145
July	285	74	107	140
August	178	68	73	190
September	88	100	98	91
October	143	239	183	239
November	76	109	85	106
December	56	557	220	35*
Total	1,688	1,857	1,684	1,659

*December 2018 is through December 14th.

Source: Work order data from Hansen, January 2015 through December 14, 2018

Hydrant work orders are initiated year-round; we did not note a clear pattern in the work order workload that might indicate an influx of work orders resulting from Fire Rescue’s spring and fall inspections (see Exhibit 17).

Exhibit 17: Hydrant Workload Had No Consistent Trend



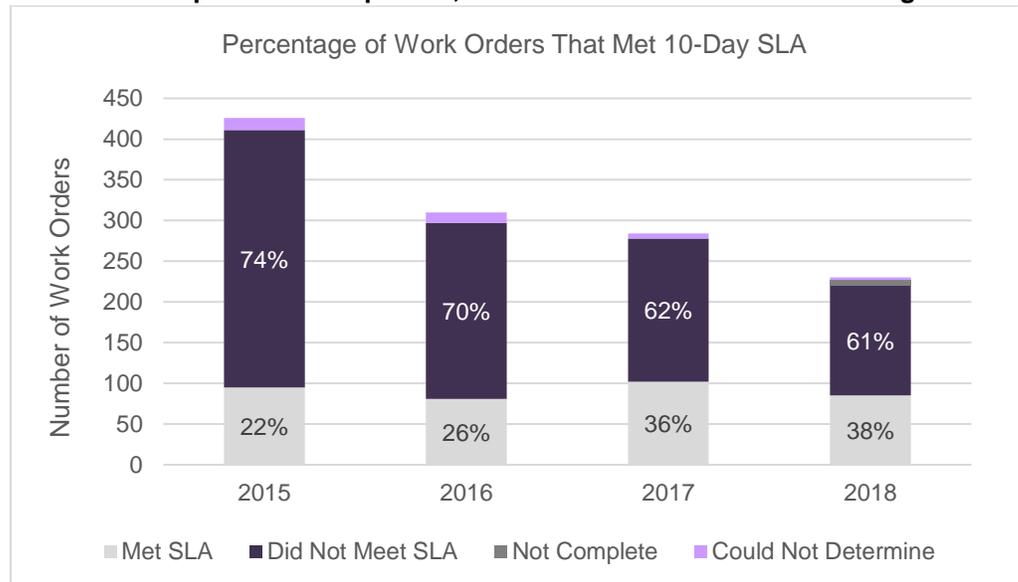
Source: Work order data from Hansen, January 2015 through December 14, 2018

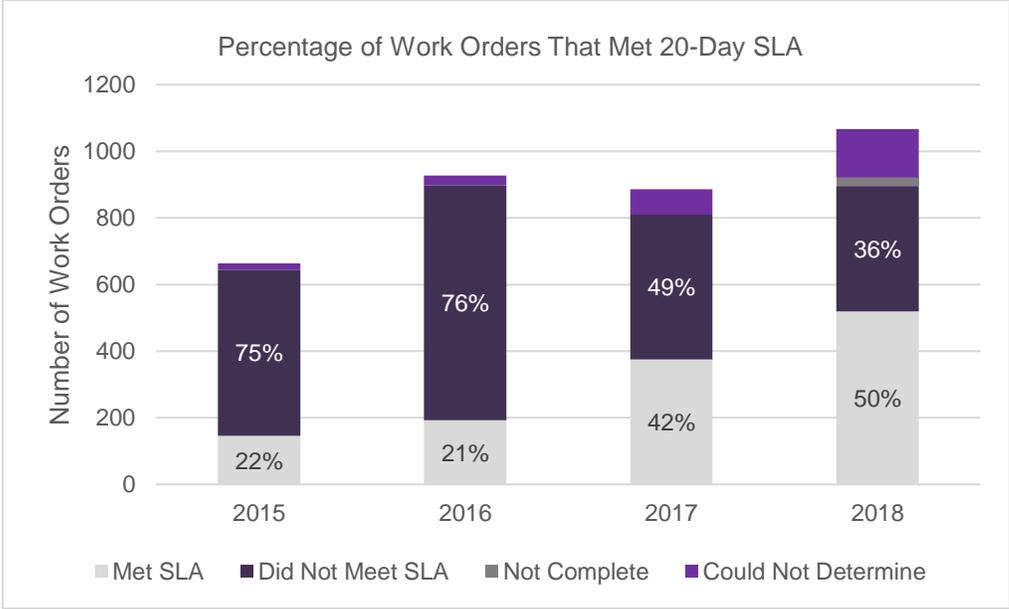
Despite Improvements, Hydrant Repair Times Missed Targets

Although Watershed Management improved hydrant-related repair times, it has yet to meet service level agreement performance goals, as shown in Exhibit 18. The department measures performance for fire hydrant-related work from the date that its inspector confirms a repair is needed to the date the problem is resolved. The department developed service level agreements to measure how long it should take to resolve different types of complaints. The service level agreement for hydrant repairs is either 10 or 20 days, depending on the work order type. For example, the service level agreement to repair a hydrant leak is 10 calendar days, while general hydrant repairs or replacements are 20 calendar days. The department's performance goal is to complete 90% of the work orders within the service level agreement.

Watershed Management completed 38% of work orders with 10-day service level agreements on time in 2018, which is an improvement from 22% in 2015. Similarly, the department completed 50% of work orders with 20-day service level agreements on time in 2018, compared to 22% in 2015. Watershed Management has not established service level agreements for work orders related to missing or out-of-service hydrants, or the installation of a new hydrant. These work orders comprised 26% of the total number of hydrant-related workorders in the period we reviewed.

Exhibit 18: Repair Times Improved, But Did Not Meet Performance Targets





Note: Percentages do not total 100% for each year because “Not Complete” And “Could Not Determine” are not reflected numerically.

Source: Work order data from Hansen as of December 14, 2018.

We recommend that the Department of Watershed Management continue to track progress toward meeting service level agreements and consider the feasibility of adding additional resources to help meet the targets.

Recommendations

In order to ensure compliance with procedures and best practices, the Fire Chief should:

1. revise departmental policy to include specific verification procedures to ensure that all hydrants are inspected as required, and the hydrant database is updated with the inspection date and results
2. enforce the department's policy and city code to inspect all private hydrants within the city limits

In order to improve communication regarding hydrant inspections and repair requests, the Fire Chief and the Commissioner of Watershed Management should:

3. create a policy to communicate hydrant installations and removals
 - a. the policy should also include procedures for updating the fire hydrant database

In order to ensure fire hydrants are inspected and maintained to performance and fire suppression standards, the Commissioner of Watershed Management should:

4. create and formalize memorandums of understanding between the department and each of the other jurisdictions to document each entity's roles and responsibilities. The agreement should include:
 - a. responsibilities for hydrant inspections
 - b. how and when repair requests will be reported
 - c. how hydrant status will be reported back to the jurisdictions once repairs are completed

In order to increase inspection efficiency and capture inspections and repair requests in real time, the Fire Chief and the Commissioner of Watershed Management should:

5. complete the hydrant asset identification project, which maps Watershed Management asset identification numbers with Fire Rescue's hydrant identification numbers

6. determine the feasibility of using Watershed Management's GIS application as a comprehensive inspection and repair database
 - a. Watershed Management should customize the application, based on Fire Rescue's needs, to replace the department's current hydrant database
 - b. Watershed Management should ensure that the database is backed up daily
 - c. Fire Rescue should continue to update hydrant cards as a secondary data source
 - d. Fire Rescue should identify resources to purchase any needed external devices needed to access the application in the field to conduct inspections
 - e. Fire Rescue should update its policies to incorporate use of the database

Until the GIS database is in place, the Fire Chief should:

7. update its policy to include specific procedures for documenting inspections on the hydrant cards
8. enforce hydrant card verification to ensure that inspections and needed repairs are accurately documented in the hydrant database

In order to improve hydrant repair response times, the Commissioner of Watershed Management should:

9. continue to track progress toward meeting service level agreements and consider the feasibility of adding additional resources to help meet the targets

Appendices

Appendix A: Management Review and Response to Audit Recommendations

Report # 19.05	Fire Hydrant Inspection and Maintenance	Date: June 2019
<p>Recommendation 1: We recommend that the Atlanta Fire Rescue Department revise its policy to include specific verification procedures to ensure that all hydrants are inspected as required and the hydrant database updated with the inspection date and results.</p>		
<p>Proposed Action: The AFRD Hydrant Maintenance Procedure will be revised by the AFRD Operations Committee. This policy revision will include the following actions to become sustainable and viable for daily use.</p> <ul style="list-style-type: none"> • Outlining of the process for reporting hydrant repair requests and confirmation of completed repairs with DWM • Management of follow-up hydrant inspections and development of a real-world re-inspections process that incorporates time necessary to complete hydrant repairs. • Reestablishing the process for updating the existing hydrant database • Enforce the use of hydrant cards as a secondary system for validation of Inspections. • Redefine the 45-day inspection window and active management oversight process. • Incorporating the use of the Hansen database for future hydrant management efficiencies thus communicating vital hydrant status information between AFRD & DWM. 	<p>Response: Agree</p>	
<p>Person Responsible: Deputy Chief Glen Riley, Field Operations Division</p>	<p>Implementation Date: July 1, 2020</p>	
<p>Recommendation 2: We recommend that the Atlanta Fire Rescue Department enforce the department's policy and city code to inspect all private hydrants within the city limits.</p>		
<p>Proposed Action: The AFRD Hydrant Maintenance Procedure will be revised by the AFRD Operations Committee to include the overall management of private hydrants. This policy revision will include the following action to become sustainable and viable for daily use with regards to private hydrants.</p> <ul style="list-style-type: none"> • Revision of the practical management process of private hydrants with regards to the COA Code of Ordinance. 	<p>Response: Agree</p>	
<p>Person Responsible: Deputy Chief Glen Riley, Field Operations Division</p>	<p>Implementation Date: July 1, 2020</p>	

Recommendation 3:

We recommend that the Atlanta Fire Rescue Department and the Department of Watershed Management create a policy to communicate hydrant installations and removals.

- a. The policy should also include procedures for updating the fire hydrant database.

Proposed Action: The AFRD will work closely with the DWM to define the communications of hydrant installations and removals. AFRD will also improve its record keeping (Fire database entry and updates) based on these actions. In addition, these recordkeeping procedures will be incorporated in the AFRD Maintenance SOP as relevant to the process.

Response:

Agree

Person Responsible: Deputy Chief Roderick Smith, Technical Services Division

Implementation Date:

July 1, 2020

Recommendation 4:

We recommend that the Department of Watershed Management create and formalize memorandums of understanding between the department and each of the other jurisdictions to document each entity's roles and responsibilities.

The agreement should include:

- a. responsibilities for hydrant inspections
- b. how and when repair requests will be reported
- c. how hydrant status will be reported back to the jurisdictions once repairs are completed.

Proposed Action: The AFRD is amenable to the establishment of a Memorandum of Understanding (MOU) with the Department of Watershed Management to further define its role in the hydrant maintenance process and for the ultimate purpose of establishing clear expectations in the maintenance process between the two COA entities. This document should be developed and drafted under the direction of DWM as they are the recipient of the services provided by AFRD. This document should include: hydrant responsibilities, repair request reporting procedures, hydrant status information sharing, etc.

Response:

Agree

Person Responsible: Deputy Chief Roderick Smith & Deputy Chief Glen Riley

Implementation Date:

Spring 2020

Recommendation 5:

We recommend that the Atlanta Fire Rescue Department and the Department of Watershed Management complete the hydrant asset identification project, which maps Watershed Management asset identification numbers with Fire Rescue's hydrant identification numbers.

<p>Proposed Action: The AFRD, along with DWM, will continue with the Hydrant Asset Project with the goal of ultimately moving to one database for the purpose of managing this asset for the COA. The AFRD's position has been to ultimately migrate to the DWM hydrant database. This would ultimately provide a master list of Fire Hydrants for the COA that could effectively assist with management by all entities involved. Please note below the areas crucial to the AFRD that must be address in this collaborative effort.</p> <ul style="list-style-type: none"> • Maintaining the unique identifiers for AFRD • Development/ improvement of backup system with hydrant card use • Purchase/acquire necessary resources to meet MOU with regards to field inspections and reporting • Updating AFRD policy to incorporate the use of DWM database 	<p>Response: Agree</p>
<p>Person Responsible: Deputy Chief Roderick Smith & Deputy Chief Glen Riley</p>	<p>Implementation Date: Spring 2020</p>

Recommendation 6:

We recommend that the Atlanta Fire Rescue Department and the Department of Watershed Management determine the feasibility of using Watershed Management's GIS application as a comprehensive inspection and repair database.

- a. Watershed Management should customize the application, based on Fire Rescue's needs, to replace the department's current hydrant database
- b. Watershed Management should ensure that the database is backed up daily
- c. Fire Rescue should continue to update hydrant cards as a secondary data source
- d. Fire Rescue should identify resources to purchase any needed external devices needed to access the application in the field to conduct inspections
- e. Fire Rescue should update its policies to incorporate use of the database

<p>Proposed Action: DWM will work with AFRD to ensure the application contains information needed by AFRD and ensure that the application is properly supported.</p>	<p>Response: Agree</p>
<p>Person Responsible: Darren Boykin, DWM-OLIO, Rob Bocarro, DWM-OES and Khalid Yamin, DWM-OES</p>	<p>Implementation Date: Spring 2020</p>

Recommendation 7:

We recommend that the Atlanta Fire Rescue Department update its policy to include specific procedures for documenting inspections on the hydrant cards.

Proposed Action: The Temporary Actions AFRD will take pending the completion of the Hydrant Asset Collaboration Project

- Revision of the AFRD Hydrant Maintenance Policy to meet today's business practice.

Response:
Agree

Person Responsible: Deputy Chief Glen Riley, Field Operations Division

Implementation Date:
October 2019

Recommendation 8:

We recommend that the Atlanta Fire Rescue Department enforce hydrant card verification to ensure that inspections and needed repairs are accurately documented in the hydrant database.

Proposed Action: The AFRD will enforce hydrant card use and verify/ to ensure that repairs are documented in its database and reported to DWM pending the implementation of a consolidated platform.

Response:
Agree

Person Responsible: Deputy Chief Glen Riley, Field Operations Division

Implementation Date:
October 2019

Recommendation 9:

We recommend that the Department of Watershed Management continue to track progress toward meeting service level agreements and consider the feasibility of adding additional resources to help meet the targets.

Proposed Action: DWM agrees with the recommendation. DWM has dedicated additional resources towards scheduling and performing related work since 2017 and will continue this effort in addition to our monthly reporting.

Response:
Agree

Person Responsible: Darren Boykin, DWM-OLIO and Sterling Thomas, DWM-OPA

Implementation Date:
Summer 2019

Appendix B: Acceptance of Performance Audit from Atlanta Fire Rescue Department



CITY OF ATLANTA FIRE – RESCUE DEPARTMENT

KEISHA LANCE BOTTOMS
MAYOR

226 Peachtree St., S.W.
Atlanta, GA 30303-3749
PHONE (404) 546-7000 FAX (404) 546-2930
ICHIEFS ID – ATLFDHQ

RANDALL B. SLAUGHTER
FIRE CHIEF

May 1, 2019

Amanda Noble, City Auditor
City of Atlanta
City Auditor's Office
68 Mitchell Street Suite 12100
Atlanta, Georgia 30303-0312

Re: Acceptance of Performance Audit on Fire Hydrant Inspections & Maintenance

Dear Ms. Noble:

Please accept this memorandum as acknowledgement of receipt for the draft investigative report composed by the City Auditor's Office on Fire Hydrant Inspection and Maintenance Performance Audit. Please see below the corrective action(s) proposed by the AFRD to address this matter:

Revise and enforce the policy of public and private hydrants inspections

The AFRD Hydrant Maintenance Procedure will be revised by the AFRD Operations Committee. This policy revision will include the following actions to become sustainable and viable for daily use.

- Outlining of the process for reporting hydrant repair requests and confirmation of completed repairs with DWM
- Management of follow-up hydrant inspections and development of a real-world re-inspections process that incorporates time necessary to complete hydrant repairs.
- Revision of the practical management process of private hydrants with regards to the COA Code of Ordinance
- Reestablishing the process for updating the existing hydrant database

- Enforce the use of hydrant cards as a secondary system for validation of inspections
- Redefine the 45-day inspection window and active management oversight process
- Incorporating the use of the Hansen database for future hydrant management efficiencies thus communicating vital hydrant status information between AFRD & DWM

Improve communications of hydrant status

The AFRD will work closely with the DWM to define the communications of hydrant installations and removals. AFRD will also improve its record keeping (Fire database entry and updates) based on these actions. In addition, these record keeping procedures will be incorporated in the AFRD Maintenance SOP as relevant to the process.

Development of Memorandum of Understanding with the AFRD & DWM

The AFRD is amenable to the establishment of a Memorandum of Understanding (MOU) with the Department of Watershed Management to further define its role in the hydrant maintenance process and for the ultimate purpose of establishing clear expectations in the maintenance process between the two COA entities. This document should be developed and drafted under the direction of DWM as they are the recipient of the services provided by AFRD. This document should include: hydrant responsibilities, repair request reporting procedures, hydrant status information sharing, etc.

Hydrant Asset Collaboration Project (Use of Watershed management database for capturing inspections and repairs)

The AFRD, along with DWM, will continue with the Hydrant Asset Project with the goal of ultimately moving to one database for the purpose of managing this asset for the COA. The AFRD's position has been to ultimately migrate to the DWM hydrant database. This would ultimately provide a master list of Fire Hydrants for the COA that could effectively assist with management by all entities involved. Please note below the areas crucial to the AFRD that must be address in this collaborative effort.

- Maintaining the unique identifiers for AFRD
- Development/ improvement of backup system with hydrant card use

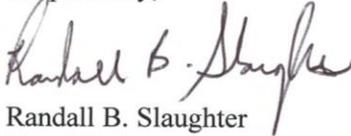
- Purchase/acquire necessary resources to meet MOU with regards to field inspections and reporting
- Updating AFRD policy to incorporate the use of DWM database

Temporary Actions for AFRD pending the completion of the Hydrant Asset Collaboration Project

- Revision of the AFRD Hydrant Maintenance Policy to meet today's business practice
- Enforce hydrant card use and verify/ to ensure that repairs are documented in database

Please contact me if there is are any additional questions or concerns.

Respectfully,



Randall B. Slaughter
Fire Chief