

Final Audit Follow-Up

As of August 31, 2012



Sam M. McCall, Ph.D., CPA, CGFM, CIA, CGAP
City Auditor

Water Infrastructure

(Report #0919 issued September 30, 2009)

Report #1301

October 10, 2012

Summary

As of August 31, 2012, Underground Utilities had completed or resolved 39 of the 42 action plan steps established to address issues identified in the Water Infrastructure Audit, report #0919, issued September 30, 2009. Because of significant actions taken, responsibility for ensuring completion of the remaining three steps has been turned over to Underground Utilities management.

In audit report #0919 we noted that, overall, Underground Utilities adequately accounts for and maintains the City's water infrastructure. We reported adequate processes, for the most part, were in place to ensure new infrastructure is properly designed and installed, and to ensure replacements and expansions are adequately planned and funded. As noted, several of those processes were the result of recent improvements and enhancements initiated by Underground Utilities. We also identified issues indicative of the need for further improvements and enhancements. Accordingly, recommendations were made that related to:

- Physically accounting for and tracking infrastructure components;
- Maintaining infrastructure;
- Designing, constructing, and installing new infrastructure; and
- Planning infrastructure replacements.

Forty-two action plan steps were developed to address the identified issues. As of August 31, 2012, thirty-nine of those action plan steps had been completed or resolved. In regard to the three remaining action plan steps, actions had been taken but not yet completed as of August 31, 2012. Based on the current status and Underground Utilities' stated intentions, responsibility for ensuring completion of those three steps has been turned over to management.

This particular follow-up engagement addressed the 13 actions plan steps that had not been completed as of the prior follow-up engagement. (In our prior follow-up engagement we reported that 29 action plan steps had been completed or otherwise resolved.) Of those 13 action plan steps, 10 were completed and resolved by Underground Utilities during the period covered by this review. Those completed actions included:

- Designating and recording critical attributes in the City's Geographic Information System (GIS) for new water infrastructure component (mains, valves, hydrants, etc.) additions. *(Three steps)*
- Producing and providing management useful reports reflecting maintenance activity and results in regard to hydrants and valves. *(Two steps)*
- Revising the valve inspection cycle and addressing the frequency at which water valves are inspected through ongoing reviews of maintenance reports. *(One step)*

- Implementing a process whereby supervisors can pre-create system work orders directly from the GIS, thereby allowing a more efficient process for completion and documentation of water valve inspections and maintenance activities. (*One step*)
- Updating and enhancing written procedures for the exercising of water valves. (*One step*)
- Resumption of the hydrant replacement program and enhancement of documentation to track replaced hydrants. (*Two steps*)

In regard to the remaining three action plan steps addressed in this follow-up engagement, responsibility for finalization/completion has been turned over to Underground Utilities management. Those three remaining steps pertain to the determination and entry of complete attribute specifications (for various water infrastructure components) into the PeopleSoft Financials System and ensuring subsequent term contracts contain appropriate provisions to help ensure acquisition of proper components.

We appreciate the cooperation and assistance provided by Underground Utilities staff during the audit follow-up process.

Scope, Objectives, and Methodology

We conducted this audit follow-up in accordance with the International Standards for the Professional Practice of Internal Auditing and Generally Accepted Government Auditing Standards. Those standards require we plan and perform the audit follow-up to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit follow-up objectives.

Report #0919

The scope of report #0919 included a review of Underground Utilities' processes established to install (construct), maintain, and account for the City's water infrastructure. The objectives were to determine whether:

- Adequate and complete records were maintained to enable Underground Utilities to effectively and efficiently track, monitor, and manage the City's potable water system (water) infrastructure;
- The Underground Utilities had a process in place to ensure the City's water infrastructure is appropriately maintained in accordance with industry standards and state regulations;
- The Underground Utilities had a process in place to ensure additions and changes (expansions, relocations, and replacements) are properly designed, constructed, and installed;
- The Underground Utilities had a process in place for planning, funding, and providing for replacement of certain water infrastructure components at the end of their useful service lives; and
- The Underground Utilities had an adequate process in place for planning and funding water infrastructure expansion due to City growth and increased demand.

The audit focused on programs and processes in effect during the time of our initial audit fieldwork in winter and spring 2009.

Report #1301

This is our fifth and final follow-up on action plan steps identified in audit report #0919. The purpose of this follow up is to report on the progress and status of efforts to complete action plan steps due for completion as of August 31, 2012. To determine the status of the action plan steps, we interviewed staff, made observations, and reviewed relevant documentation.

Background

The City's Water Utility was established in 1907. Effective April 1, 2008, the water, sewer, gas, and stormwater utility functions were consolidated into a new City department, Underground Utilities. At the time of our initial audit, the City's water infrastructure was comprised of:

- 27 active production wells;
- 8 elevated storage tanks;
- 1,224 miles of water mains;
- 73,440 water laterals (representing pipe sections connecting water mains to residential or commercial premises or to fire hydrants);
- 6,949 fire hydrants;
- 24,489 system and control valves (excluding valves on individual service lines); and
- Other miscellaneous components comprised of various fittings (e.g., bends, caps, sleeves, taps, etc.).

Traditionally, water infrastructure expansion and replacement has been performed by a combination of City crews, City contractors, and private developers. For example, City crews or contractors hired by the City may be used to install new water infrastructure as part of a road infrastructure project. On the other hand, a private developer may have water infrastructure installed when building a new neighborhood. Upon completion of that new development (neighborhood), the City will take ownership of that infrastructure.

Several Underground Utilities divisions perform functions pertaining to water infrastructure, including:

- Constructions and Operations;
- Gas Operations and Regulatory Compliance (helps maintain water valves in addition to gas valves);

- Water Quality;
- Water Resources Engineering (WRE); and
- Business and Technology Development.

At the time of our initial audit, there were two major software applications used to help track, maintain, and manage the City's water infrastructure: (1) Geographic Information System (GIS) and (2) Mobile Work Management System.

The primary authorities that control and regulate the City's water distribution system infrastructure are the Florida Department of Environmental Protection (FDEP) and Northwest Florida Water Management District.

Costs incurred under capital projects established for the City's water infrastructure in fiscal year 2008 totaled \$9.1 million.

Previous Conditions and Current Status

In report #0919, we noted that, overall, Underground Utilities adequately accounts for and maintains the City's water infrastructure. We also identified issues indicative of the need for further improvements and enhancements.

Forty-two action plan steps were developed to address the identified issues. Of those 42 steps, 29 were reported as completed or otherwise resolved in our four prior follow-up reports. The remaining 13 action plan steps were due for completion no later than August 31, 2012. As shown below in Table 1, as of that date, Underground Utilities had completed and/or resolved 10 of those remaining 13 steps. In regard to the three remaining action plan steps, actions had been taken but not yet completed as of August 31, 2012. Based on the current status and Underground Utilities' stated intentions, responsibility for ensuring completion of those three steps is turned over to management.

**Table 1
Action Plan Steps from Audit Report #0919
Due as of August 31, 2012 and Current Status**

Action Plan Steps Due as of August 31, 2012	Current Status
Ensure new infrastructure is added to and tracked in GIS	
<ul style="list-style-type: none"> A formal process will be established to identify and track external and internal projects involving the addition of new components to the water infrastructure. That process will include assigning responsibility to a project manager for ensuring new components are added to the GIS. A quality assurance/quality control process (QA/QC) will be developed and used to verify and document that new components are added to the GIS. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<ul style="list-style-type: none"> Formal procedures will be developed that specify As-Built drawings are required for water infrastructure additions installed by private developers, even when the developer does not execute a formal letter of agreement with the City. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
Ensure critical and useful component attributes are tracked in GIS	
<ul style="list-style-type: none"> Critical and useful attributes for each component type will be identified/designated. 	<ul style="list-style-type: none"> ✓ In the initial audit we acknowledged the City’s conversion from a paper map system to the GIS significantly enhanced Underground Utilities’ ability to efficiently track and account for the City’s water infrastructure components. Several enhancements were recommended to improve the use of the GIS as a management and operational tool. One recommended enhancement was for Underground Utilities to make additional efforts to ensure the recording of critical attribute data in the GIS for subsequent water infrastructure installations. One specific recommendation in connection with those efforts provided for Underground Utilities to formally identify/designate critical attributes for each component (e.g., mains, hydrants, valves, laterals). Underground Utilities has subsequently designated those GIS attributes that are deemed to be critical (installation date, diameter, type/subtype, material, model, etc.). Accordingly, this step is completed.
<ul style="list-style-type: none"> For all subsequent infrastructure additions, the designated critical and useful attributes will be recorded in the GIS. A QA/QC process will be developed and used to assist staff in ensuring the designated critical and useful attributes are captured and recorded in the GIS for new infrastructure additions. 	<ul style="list-style-type: none"> ✓ Another specific recommendation relating to the previous action plan step was for Underground Utilities to require the designated critical attributes to be recorded in the GIS for each new component subsequently added to the City’s water infrastructure. Our analysis conducted during this current follow-up engagement showed critical

	<p>attributes were generally being identified and recorded in the GIS for many new water infrastructure components added to the GIS in the last year. Our analysis also shows that improvements and enhancements to those efforts are still needed, as some critical attributes were not consistently identified and recorded. For example, the existence of hydrant isolation valves (or lack of such valves) was not recorded for 49 of the 142 fire hydrants installed since July 1, 2011. (The existence of a hydrant isolation valve is a designated critical attribute.) In response to our inquiry on this matter, Underground Utilities provided evidence of an ongoing QA/QC process whereby designated staff is identifying instances where critical attributes still need to be identified and recorded. Based on these efforts and actions, this step is considered completed and resolved.</p>
<ul style="list-style-type: none"> • Efforts to identify and record “known” or “approximate” component installation dates as part of the on-going Master Water Plan update will be emphasized. 	<ul style="list-style-type: none"> ✓ From one perspective, installation dates (even if reasonably approximated) are considered an important attribute as they can provide management useful information for planning and budgeting infrastructure replacements. In the initial audit, we reported that installation dates had not been recorded in the GIS for the vast majority of water infrastructure components depicted in the GIS. As reported, the lack of those dates resulted primarily from the lack of available data. The data is not available as the City’s water infrastructure has been added over the last 100 years as the City has grown and expanded, and records of most of those expansions are either no longer available or lack sufficient data to determine the installation dates. <p>In addition to capturing and recording installation dates for all <u>subsequent</u> water infrastructure additions (see previous action plan step), we recommended Underground Utilities emphasize its on-going efforts to identify and record approximate installation dates for <u>existing</u> components as part of the ongoing Master Water Plan update. In response to our inquiry made in connection with this current follow-up engagement, Underground Utilities provided records showing the City’s contractor (hired to assist the City in preparing the Master Water Plan update) identified installation dates for 67 relatively new water mains (all installed since 2004). Those dates were recorded in the GIS by Underground Utilities. We commend Underground Utilities for those actions; however, installation dates still have not been determined, or estimated,</p>

	<p>and recorded in the GIS for the vast majority of the City’s water infrastructure installed in prior years.</p> <p>In regard to those remaining components for which installation dates have not determined (approximated) and recorded, Underground Utilities indicated there is no known cost beneficial method to ascertain actual or approximate installation dates. Furthermore, Underground Utilities indicated the primary factor used to determine needed infrastructure replacement is not age (i.e., as determined from installation dates) but, instead, the physical condition of the infrastructure as determined from standard maintenance activities (inspections, repairs, etc.) and related records. Accordingly, this step is considered resolved.</p>
<ul style="list-style-type: none"> • Efforts will be enhanced to capture and record accurate and complete fire hydrant attribute data in connection with the on-going “GIS data cleansing” project. 	<p>✓ Completed/Resolved in a prior period.</p>
<ul style="list-style-type: none"> • Staff will revisit a sample of hydrants previously surveyed during the “GIS data cleansing” project to ascertain if the audit findings, relating to incomplete/inaccurate recording of data for surveyed hydrants, were isolated or representative of work completed to date. If representative of work completed to date, hydrants will be resurveyed to capture and record accurate and complete data in the GIS. 	<p>✓ Completed/Resolved in a prior period.</p>
<p>Ensure efficient tracking of all infrastructure components</p>	
<ul style="list-style-type: none"> • The GIS will be used as the primary record to account for and track critical and useful attributes for water wells and storage tanks. 	<p>✓ Completed/Resolved in a prior period.</p>
<ul style="list-style-type: none"> • The GIS will be used as the primary record to account for and track privately-owned backflow control valves. 	<p>✓ Completed/Resolved in a prior period.</p>
<ul style="list-style-type: none"> • A process will be developed to timely remove “virtual” water meters when the actual meters are installed at applicable premises. 	<p>✓ Completed/Resolved in a prior period.</p>
<ul style="list-style-type: none"> • All automatic flush stands will be added to and reflected in GIS. 	<p>✓ Completed/Resolved in a prior period.</p>
<p>Ensure proper, logical, consistent, and informative data in the Mobile Work Management System</p>	
<ul style="list-style-type: none"> • The Mobile Work Management System and process for completing work orders in that system will be revised to: <ul style="list-style-type: none"> – Identify/designate “critical fields” for each work order type. 	<p>✓ Completed/Resolved in a prior period.</p>

<ul style="list-style-type: none"> - Require completion of all critical fields for each work order, including “work performed” and “actual problem.” - Allow for documentation of multiple problems and multiple tasks on an individual work order. - Provide for use of the same attribute to identify similar problems and tasks. - Preclude use of the same attribute to describe dissimilar problems and work tasks. - Preclude use of inappropriate or illogical attributes to describe tasks performed. - Eliminate use of generic descriptions such as “repaired” or “replaced.” - Require recording of a facility ID when a facility ID exists for the component worked on. 	
<ul style="list-style-type: none"> • Staff creating and completing system work orders will be trained on the revised processes and methods developed pursuant to the previous action plan step. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<ul style="list-style-type: none"> • The 6,066 invalid preventive maintenance fire hydrant work orders will be deleted from the Mobile Work Management System. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<p>Ensure appropriate and useful managerial reports from the Mobile Work Management System</p>	
<ul style="list-style-type: none"> • Current reports produced for water and hydrant repairs will be revised to reflect the “actual” problem. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<ul style="list-style-type: none"> • Periodic reports will be generated and provided to management reflecting the number of isolation valves inspected and the number of hydrants inspected during designated periods. 	<ul style="list-style-type: none"> ✓ In our initial audit, we recommended Underground Utilities generate and make available to management reports reflecting the number of isolation valves and hydrants inspected during specified periods (monthly, quarterly, annually, or other defined periods). This recommendation was made as reports at the time of our initial audit only showed the number of completed Mobile System valve and hydrant inspection work orders, but not the number of valves and/or hydrants inspected. As reported, because multiple inspection work orders were sometimes created for an individual valve, those reports did not provide management information as to the number of individual valves or hydrants inspected. Subsequent to the initial audit, Underground Utilities staff developed programs within the GIS that allows immediate generation of reports, as well as map depictions, showing the number of water valves or hydrants inspected during a specified period of time (i.e., the time

	<p>period can be established and modified as needed). Accordingly, this action step is considered completed and resolved.</p>
<ul style="list-style-type: none"> • In regard to valve inspections, periodic reports will be generated and provided to management reflecting: <ul style="list-style-type: none"> – The number of valves successfully exercised. – The number not successfully exercised. – The specific problems or issues identified during the inspections. – Work tasks performed as the results of the inspections. 	<p>✓ In our initial audit, we recommended Underground Utilities generate and make available to management reports reflecting the number of water isolation valves that were successfully exercised, the number of water isolation valves that were not successfully exercised, the specific problems or issues identified during the inspection process, and work tasks performed as a result of inspections. During this follow up engagement we found Underground Utilities staff now makes available to management various summary and detail reports showing, for example, the number of valves exercised and not exercised during inspections, problems/issues identified, and work tasks performed. Accordingly, this action step has been completed.</p>
<ul style="list-style-type: none"> • A determination will be made as to what represents an “excessive period” for a work order to remain open in the system without any recorded activity. Periodic reports will be generated reflecting work orders that have been outstanding for the defined excessive period. Based on review of those reports, appropriate actions will be taken to ensure work is completed, the system is updated to reflect completed work, and/or invalid work orders are deleted. 	<p>✓ Completed/Resolved in a prior period.</p>
<p>Ensure tracking of maintenance activities</p>	
<ul style="list-style-type: none"> • The Mobile Work Management System will be used to schedule, document, and monitor sandblasting and painting of fire hydrants. 	<p>✓ Completed/Resolved in a prior period.</p>
<ul style="list-style-type: none"> • The Mobile Work Management System will be used to document manual flushes of water mains and the quantities of water used during those flushes. 	<p>✓ Completed/Resolved in a prior period.</p>
<p>Ensure proper and timely maintenance of isolation valves</p>	
<ul style="list-style-type: none"> • Management will monitor the frequency at which water isolation valves are being exercised. As resources are available processes, procedures, and methods will be modified and/or enhanced to ensure those valves are exercised on the established rotation. 	<p>✓ In our initial audit we reported that, under processes and circumstances in effect at that time, Underground Utilities would not inspect (and exercise) applicable water valves on the four-year cycle prescribed by Underground Utilities written procedures in place at the time of our audit. We estimated and reported that it would take at least seven years to inspect all valves. We recommended management closely monitor the inspection/exercise process and, to the extent</p>

	<p>resources were made available, make adjustments to processes so as to ensure valves are inspected in the prescribed four-year rotation. Underground Utilities developed an action plan step to address this recommendation.</p> <p>During our current follow-up engagement, Underground Utilities management provided examples of weekly and monthly reports generated and made available for their review. Those reports show the number of valves inspected (both by individual staff and in total) for each week and month. Those reports are used by management to determine the success and progress of the valve inspection process. Additionally, as noted in the status reported for a subsequent action plan step (see below), management revised the inspection cycle from a four-year rotation to a ten-year rotation. As reported, management stated current resources do not allow for all water valves to be inspected on a cycle of less than ten years. Additionally, management indicated past inspection results have not shown problems that warrant a more frequent cycle (i.e., less than ten years). Furthermore, Underground Utilities management stated the valve inspection procedures were subject to further revisions as the Water Resources Engineering Division reviews all policies and procedures that relate to the City’s water infrastructure. Based on these actions, this step is considered completed and resolved.</p>
<ul style="list-style-type: none"> • Staff will explore the feasibility of an interface between the Mobile Work Management System and the GIS, such that work orders can be generated directly from the GIS. 	<ul style="list-style-type: none"> ✓ In our initial audit, we recommended Underground Utilities staff consider creating a system interface between the GIS and the Mobile Work Management System (Mobile System) that allows work orders to be created directly from the GIS. The purpose of that enhancement would be to facilitate field staffs’ ability to timely complete and document the inspection and exercise of key water (and gas) valves. Within the limits of available technology and resources, Underground Utilities subsequently implemented a process whereby designated staff (e.g., supervisors) can create Mobile System work orders directly from the GIS. Through this process a supervisor can, for example, identify and select a specific City area within the GIS and “pre-create” work orders for the desired infrastructure components (e.g., water or gas valves) located in that designated area. The selection of an area and pre-creation of work orders can be accomplished efficiently and quickly through just a few automated steps. When

	<p>Underground Utilities field staff visit a specific valve within the designated area (e.g., to inspect, exercise, or repair the valve) they can quickly and easily open the pre-created work order directly from GIS without having to separately open both GIS and the Mobile System and navigate between the two systems as they document their work. This process facilitates Underground Utilities field staff’s ability to complete and document applicable work, including inspection and exercising of water valves. We commend Underground Utilities for this enhancement. Underground Utilities staff indicated that, as technology advances and resources become available, additional efforts will be made to make further enhancements that will make work processes even more efficient. Accordingly, this action step is considered completed and resolved.</p>
<p>Ensure consistent and proper maintenance activities</p>	
<ul style="list-style-type: none"> • Written procedures for the exercising of water isolation valves will be enhanced to (1) define isolation valves that should be exercised and (2) accurately identify the number of those valves. 	<ul style="list-style-type: none"> ✓ In our initial audit, we noted written procedures established for maintenance and inspection of water valves provided that all City water isolation valves be surveyed (exercised) on a four-year rotation. As reported, those procedures indicated there were 12,500 water isolation valves but our audit determined there were 16,885 water isolation valves in the City’s water infrastructure. Also, we noted those procedures did not define what constituted a water “isolation” valve. Accordingly, we recommended that those written procedures be updated to reflect the definition and correct number of valves that are to be exercised and maintained on the established schedule. Underground Utilities developed an action plan step to address this recommendation. <p>In August 2012, Underground Utilities revised the written procedures. Among other things, those revisions provided more detailed instructions for specific steps that are to be completed during the valve inspection (and exercise) process. Instead of indicating the number of valves to be inspected, the revised procedures provide that inspections will be coordinated, scheduled, and completed based on geographical region, or “section.” (There are 12 designated sections within the City’s water infrastructure.) The revised procedures do not distinguish between isolation and non-isolation valves. Underground Utilities management indicated no distinction was made because the intent is to inspect and exercise all water valves and not just those considered isolation valves. Furthermore, those revised procedures provide for</p>

	<p>all valves to be inspected on a ten-year cycle instead of a four-year cycle. In our discussions on that matter, Underground Utilities management stated current resources do not allow for all valves to be inspected on a less frequent cycle. Additionally, management indicated past inspection results do not show problems such that a more frequent cycle (e.g., four-year cycle opposed to a ten-year cycle) is warranted. Underground Utilities management also stated these procedures were subject to further revisions as the Water Resource Engineering Division reviews all policies and procedures in regard to the City’s water infrastructure. Accordingly, this step is considered completed and resolved.</p>
<ul style="list-style-type: none"> • Written procedures will be established that address (1) fire hydrant inspections, (2) flushing of water mains, and (3) standard reports that should be generated periodically from the Mobile Work Management System. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<p>Ensure availability of backup engines and generators at City wells</p>	
<ul style="list-style-type: none"> • A contract will be executed with a vendor to provide for timely responses (i.e., within two hours) in instances where backup engines and generators at applicable City wells are not functional. The contract will include provisions for rental of equipment as needed. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<p>Ensure proper and consistent maintenance of wells and storage tanks</p>	
<ul style="list-style-type: none"> • Prospective vendors will be required to provide proof of licensure status when submitting their proposals in response to requests for services. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<ul style="list-style-type: none"> • Written procedures will be established that address (1) annual calibrations of water well meters, (2) exercising well backup equipment, (3) staffing water wells, (4) periodically inspecting, cleaning, and painting storage tanks, and (5) documenting various maintenance activities. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<p>Ensure appropriate safety measures are implemented</p>	
<ul style="list-style-type: none"> • Discussions will be held with the Aviation Department, and the Federal Aviation Administration (FAA) if needed, to ascertain if aviation lights are appropriate for each of the City’s elevated storage tanks. If a determination is made that lights are needed for certain tanks currently without such lights, a plan will be developed to install the appropriate lights. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.

Ensure appropriate infrastructure additions	
<ul style="list-style-type: none"> Plans and processes requiring proper involvement by the Water Resources Engineering (WRE) Division for “in-house” infrastructure additions will be finalized. A standard checklist will be developed to verify and document proper involvement by WRE staff. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
Ensure appropriate inspections are performed and documented	
<ul style="list-style-type: none"> A standard inspection form/checklist will be developed and used by WRE inspectors to formally document their final inspection and approval of new infrastructure additions installed by contractors and private developers. Areas specified in the audit report will be addressed on that form/checklist. The completed form/checklist will be signed and dated by the applicable inspector and the supervising WRE senior engineer. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<ul style="list-style-type: none"> WRE inspectors will better document, in their inspector logbooks, the resolution of identified problems. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<ul style="list-style-type: none"> A standard inspection form/checklist will be developed and used for “in house” infrastructure additions. That form will be used to document staff’s assertions as to (1) use of proper materials and installation methods, (2) performance of required pressure tests, and (3) conduct of required disinfections and water quality tests. This form/checklist will also be used to document the results of the required pressure and water quality results. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<ul style="list-style-type: none"> A process will be developed to inspect infrastructure additions installed by the contractor on behalf of the City. Once developed, that process will address (1) use of proper materials and installation methods, (2) performance of required pressure tests and related results, and (3) conduct of required disinfections and water quality tests and related results. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
Ensure projects are permitted as required	
<ul style="list-style-type: none"> Each applicable project will be self-permitted in accordance with the delegation order issued by the FDEP. A copy of the applicable self-permit will be attached to and retained with project records. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.

Ensure acquisition of appropriate materials and components

- Attribute specifications in the PeopleSoft Financials System for each approved water infrastructure material and component will refer to the Underground Utilities’ “Standard Specifications for the Design and Construction of Water and Wastewater Facilities.”

- In our prior follow-up reports we noted complete and accurate attribute specifications for fire hydrants had been entered into the City’s PeopleSoft Financials System. In the most recent of those prior follow-up reports (report #1207, dated February 24, 2012), we also noted that Underground Utilities had:
 - Developed and issued a request for proposals (RFP) for new water and sewer infrastructure materials and components to prospective vendors.
 - Received and evaluated responses to that RFP.
 - Obtained approval from the City Commission on December 7, 2011, to negotiate a contract with the firm (vendor) that provided the best (highest ranked) response.

We reported in that prior follow-up report that, if successfully negotiated and executed, the contract would require the vendor to provide applicable material and components that meet the specifications established and provided by the Underground Utilities Water Engineering Resources (WRE) Division. Furthermore, under the anticipated contract the vendor would maintain the applicable parts and materials on hand such that they are available to the City at any time. Accordingly, the same quantity of parts and materials may no longer be maintained in inventory by the City’s Utility Supply Center. Lastly, the anticipated contract would provide Underground Utilities staff the right to inspect the quality, materials, and condition of all parts (components) and to reject items deemed inferior. As of the end of that prior follow-up review, Underground Utilities had not negotiated and executed that contract.

During our current follow-up review, we found Underground Utilities was still in the process of negotiating a contract with the applicable vendor. In their discussions on this matter, Underground Utilities management indicated that turnover in a key staff position had hindered finalization and execution of a contract with the vendor. Management indicated it plans to finalize the contract and present it to the City Commission for approval in the near future.

We recommend management complete the negotiations, obtain final City Commission approval, and execute the contract as planned.

	<p>Additionally, as some parts (albeit a lesser quantity) may still be maintained by the City for the benefit of Underground Utilities, we continue to recommend that the PeopleSoft Financials System be updated to reflect complete material specifications established by the WRE Division for all water infrastructure items (and not just hydrants). This step is turned over to management to ensure final resolution.</p>
<ul style="list-style-type: none"> • Subsequent purchase contracts for water infrastructure components will refer to the complete specifications established in the Underground Utilities’ “Standard Specifications for the Design and Construction of Water and Wastewater Facilities.” 	<ul style="list-style-type: none"> ➤ See described status reported for the previous action plan step.
<ul style="list-style-type: none"> • Subsequent purchase contracts for water infrastructure components will require suppliers to submit documentation (shop drawings/material submittals) to demonstrate their materials comply with City specifications. 	<ul style="list-style-type: none"> ➤ See described status reported for the previous action plan step.
<p>Ensure replacement of deteriorated and older infrastructure</p>	
<ul style="list-style-type: none"> • A plan will be developed for replacement of the City’s downtown water infrastructure. That plan will (1) define the downtown area, (2) specify the locations within that area for which the infrastructure should be replaced, (3) project the costs of replacement, (4) identify funding to be used for replacement, (5) identify the most efficient and appropriate replacement methods, and (6) include a schedule and timeframe for completing the replacement. 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<ul style="list-style-type: none"> • To the extent funding is available, the current contract with Malcolm Pirnie for the update to the City’s Master Water Plan will be amended to include assistance in development of a “downtown water infrastructure replacement plan.” 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<ul style="list-style-type: none"> • To the extent funding is available, the downtown water infrastructure improvements will be initiated in accordance with the plan developed pursuant to the previous action plan steps. (NOTE: This step was due for completion after March 31, 2011.) 	<ul style="list-style-type: none"> ✓ Completed/Resolved in a prior period.
<ul style="list-style-type: none"> • Underground Utilities will resume the hydrant replacement program, if appropriate based on City decisions regarding funding and the appropriate entity to perform hydrant maintenance. 	<ul style="list-style-type: none"> ✓ Prior to our initial audit, Underground Utilities established a program whereby older City hydrants (e.g., with 4½ inch valve openings) were being replaced with newer hydrants meeting current standard specification requirements (e.g., 5¼ inch valve openings). Replacements were also done when hydrants broke or were damaged

	<p>(i.e., due to vehicle accidents). Those replacements were funded from Underground Utilities resources obtained through charges to customers for water consumption. In our initial audit we reported the hydrant replacement program had been temporarily suspended until determinations were made as to (1) whether a new funding source would be established to fund hydrant replacements and (2) whether Underground Utilities would continue to perform the replacements, or if a private contractor would be used to replace those hydrants. Subsequent to our initial audit, those determinations were made resulting in the resumption of the hydrant replacement program. Specifically, a new capital project for hydrant maintenance and replacement was initiated and authorized, whereby Underground Utilities staff (and not a private contractor) continues to maintain and replace City hydrants. However, unlike previous hydrant maintenance and replacement activities, that project is funded by the City’s fires services fee. The project plans for 100 replacements in FY 2012. Accordingly, this action plan step is considered completed.</p>
<ul style="list-style-type: none"> • If the hydrant replacement program is resumed by Underground Utilities, a method will be established to track replaced hydrants (i.e., under that program) in the Mobile Work Management System. 	<ul style="list-style-type: none"> ✓ Hydrant replacements under the current hydrant replacement program are being tracked in the Mobile Work Management System. Recent enhancements were made to improve that tracking process. This action plan step is completed.

Table Legend:

- Issue to be addressed from the original audit.
- ✓ Issue addressed and resolved.
- Actions taken but not completed; responsibility for finalization of action step turned over to management.

Conclusion

Table 1 above shows 39 of the 42 action plan steps developed to address issues and recommendations in audit report #0919 have been completed or resolved. The three remaining steps pertain to the determination and entry of complete attribute specifications (for various water infrastructure components) into the PeopleSoft Financials System and ensuring subsequent term contracts contain appropriate provisions to help ensure acquisition of proper components. Actions have and are being taken to complete those remaining three steps. Accordingly, responsibility for ensuring their completion is turned over to Underground Utilities management.

We appreciate the cooperation and assistance provided by Underground Utilities staff during the audit follow-up process.

Appointed Official's Response

City Manager:

I appreciate the effort Underground Utilities staff has made in the past and continues to make in improving the operations of the water utility. Operations were significantly improved by using the latest technology in the form of the automated mapping system (GIS), Mobile Work Management System, and several other applications to ensure the reliability and cost effectiveness of our water system. I sincerely thank and commend the audit staff for their assistance in their review of the water infrastructure.

Copies of this final audit follow-up #1301 or audit report #0919 may be obtained from the City Auditor's website (<http://talgov.com/auditing/index.cfm>) or via request by telephone (850 / 891-8397), by FAX (850 / 891-0912), by mail or in person (Office of the City Auditor, 300 S. Adams Street, Mail Box A-22, Tallahassee, FL 32301-1731), or by e-mail (auditors@talgov.com).

Audit follow-up conducted by:
T. Bert Fletcher, CPA, Sr. Audit Manager
Sam M. McCall, Ph.D., CPA, CGFM, CIA, CGAP, City Auditor