

**Performance Audit:  
Department of Watershed Management  
Customer Information System**

**December 2009**

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

File #07.02





## CITY OF ATLANTA

City Auditor's Office  
Leslie Ward, City Auditor  
404.330.6452

December 2009

### **Why We Did This Audit**

We undertook this audit because the city's financial auditor noted control deficiencies related to watershed management's customer information system in the management letters accompanying the city's fiscal year 2007 and 2008 audited financial statements. We also wanted to follow up on the extent to which the new system addresses billing and collections problems we noted in previous audits.

### **What We Recommended**

To achieve the intended benefits of the enQuesta system, the Commissioner of Watershed Management should:

- Determine why some system requirements were not implemented and whether the vendor can be held accountable.
- Document business reasons for choosing not to implement some requirements.
- Develop in-house expertise on the extraction and analysis of data from the enQuesta application.

To strengthen controls intended to protect sensitive data, the Commissioner of Watershed Management should:

- Develop departmental or city expertise in system security and IT governance.
- Ensure that watershed staff reviews all user accounts and enforce the established password policies.
- Ensure that watershed staff review all user accounts to remove IDs belonging to terminated users and unneeded generic IDs
- Enforce system settings to limit remote logon using the root account.
- Establish a policy that governs the periodic review and recertification of users, and removal of terminated users.
- Establish a policy that limits and monitors vendor access to production.
- Establish a formal change control policy that governs watershed management's responsibilities.

For more information regarding this report, contact Damien Berahzer at 404-330-6806 or [dberahzer@atlantaga.gov](mailto:dberahzer@atlantaga.gov).

## **Performance Audit:**

### **Department of Watershed Management Customer Information System**

#### **What We Found**

EnQuesta provides most of the features watershed management specified in its implementation contract. We tested a judgmental sample of 97 requirements; 90 requirements were met and 7 requirements were not implemented. The system does not produce some financial information. While the commissioner agreed with our previous audit recommendation to calculate and report current collection rate once the new system was implemented, the system as configured does not generate a current collection rate. The department has not yet used some of the features it specified that could improve customer service.

System aging reports could overstate the extent of delinquencies. While collections staff told us the aging reports classify delinquent accounts by the number of days late, the reports actually calculate the number of days since the date the bill was issued. Thus an account is considered 30 days delinquent when the bill is unpaid 13 days after it is due. The aging report also classifies penalties as 90 days past due regardless of when the penalty amount posted to the account.

Key system settings failed to enforce watershed management's security policy, allowing users to set passwords that were shorter than required and for some users to keep the same passwords indefinitely. Some unsecured system protocols and several users can access enQuesta through the operating system's root account, creating a situation where watershed management cannot determine who is performing privileged functions. Several former employees retained system access, and the department allows system access through generic accounts not assigned to an individual. Finally, the department has not established a formal change control policy for the enQuesta application and over relies on its contractor for system security and change management.

## Management Responses to Audit Recommendations

Summary of Management Responses		
<b>Recommendation #1:</b>	<b>Determine why some system requirements were not implemented and whether the vendor can be held accountable for implementing them now.</b>	
<b>Response &amp; Proposed Action:</b>	The department determined the vendor will implement 4 of the requirements.	<b>Agree</b>
<b>Timeframe:</b>	N/A	
<b>Recommendation #2:</b>	<b>Document business reasons for choosing not to implement some requirements.</b>	
<b>Response &amp; Proposed Action:</b>	The department commented on all requirements in their full response (Appendix B).	<b>Agree</b>
<b>Timeframe:</b>	N/A	
<b>Recommendation #3:</b>	<b>Develop in-house expertise on the extraction and analysis of data from the enQuesta application.</b>	
<b>Response &amp; Proposed Action:</b>	The department has acquired in-house expertise.	<b>Agree</b>
<b>Timeframe:</b>	N/A	
<b>Recommendation #4:</b>	<b>Develop departmental expertise in the areas of system security and IT governance, or establish a relationship with the city's Department of Information Technology.</b>	
<b>Response &amp; Proposed Action:</b>	The department plans to hire a UNIX Administrator and will also use DIT's policies.	<b>Agree</b>
<b>Timeframe:</b>	June 2010	
<b>Recommendation #5:</b>	<b>Ensure that watershed management staff reviews all user accounts (with the exception of the root account) and enforce the established password policies.</b>	
<b>Response &amp; Proposed Action:</b>	The department has required all user accounts to follow established policies.	<b>Agree</b>
<b>Timeframe:</b>	N/A	
<b>Recommendation #6:</b>	<b>Ensure that watershed management staff review all user accounts in enQuesta and the UNIX operating system and remove IDs belonging to terminated users and generic IDs that are no longer needed.</b>	
<b>Response &amp; Proposed Action:</b>	The department has implemented a periodic check of users accounts.	<b>Agree</b>
<b>Timeframe:</b>	March 2010	
<b>Recommendation #7:</b>	<b>Enforce system settings to limit remote logon using the root account.</b>	
<b>Response &amp; Proposed Action:</b>	The department has limited the root account from remote logon.	<b>Agree</b>
<b>Timeframe:</b>	N/A	
<b>Recommendation #8:</b>	<b>Establish a policy that governs the periodic review and recertification of users for the enQuesta application and removal of terminated users.</b>	
<b>Response &amp; Proposed Action:</b>	The department has implemented a periodic check of users and plans to implement an Human Resource Information System to assist in user validation.	<b>Agree</b>
<b>Timeframe:</b>	March 2010	
<b>Recommendation #9:</b>	<b>Establish a policy that limits vendor access to the production instance of enQuesta to an as-needed basis and governs how, when, and who is responsible for granting the vendor system access, and consider monitoring what is done by the vendor.</b>	
<b>Response &amp; Proposed Action:</b>	The department plans on installing monitoring software to monitor vendor access.	<b>Agree</b>
<b>Timeframe:</b>	March 2010	
<b>Recommendation #10:</b>	<b>Establish a formal change control policy that governs watershed management's areas of responsibility for changes to the enQuesta application.</b>	
<b>Response &amp; Proposed Action:</b>	The department plans to develop a more comprehensive change management policy.	<b>Agree</b>
<b>Timeframe:</b>	March 2010	



# CITY OF ATLANTA

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Donald T. Penovi, CPA, Vice Chair  
Cecelia Corbin Hunter  
Council President Lisa Borders

December 14, 2009

Honorable Mayor and Members of the City Council:

We undertook this post-implementation audit of the Department of Watershed Management's customer information system because the city's financial auditor noted control deficiencies related to watershed's customer information system in the management letters accompanying the city's fiscal year 2007 and 2008 audited financial statements. These deficiencies could impair the city's ability to reliably report financial data in accordance with generally accepted accounting principles. We also wanted to follow up on the extent to which the new system addresses billing and collections problems we noted in previous audits. We focused our review on information technology general controls intended to protect data confidentiality, integrity, and availability; and whether system requirements relevant to previous audit recommendations were implemented. Watershed agreed with all of our recommendations and has already implemented half of them. Their response is included in Appendix B.

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 Damien Berahzer, Gerald Schaefer, Brandon Haynes, and Lewis Adams.

Handwritten signature of Leslie Ward in cursive.

Leslie Ward  
City Auditor

Handwritten signature of Fred Williams in cursive.

Fred Williams  
Audit Committee Chair



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# Department of Watershed Management Customer Information System

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# Introduction

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We conducted this performance audit of the Department of Watershed Management's customer information system pursuant to Chapter 6 of the Atlanta City Charter, which establishes the City of Atlanta Audit Committee and the City Auditor's Office and outlines their primary duties. The Audit Committee reviewed our audit scope in November 2008.

A performance audit is an objective analysis of sufficient, appropriate evidence to assess the performance of an organization, program, activity, or function. Performance audits provide assurance or conclusions to help management and those charged with governance improve program performance and operations, reduce costs, facilitate decision-making and contribute to public accountability. Performance audits encompass a wide variety of objectives, including those related to assessing program effectiveness and results; economy and efficiency; internal controls; compliance with legal or other requirements; and objectives related to providing prospective analyses, guidance, or summary information<sup>1</sup>.

We undertook this audit because the city's financial auditor noted control deficiencies related to watershed's customer information system in the management letters accompanying the city's fiscal year 2007 and 2008 audited financial statements. These deficiencies could impair the city's ability to reliably report financial data in accordance with generally accepted accounting principles, potentially lead to loss of revenue and increase audit costs.

We also wanted to follow up on the extent to which the new system addresses billing and collections problems we noted in previous audits. Staff was unable to generate reliable collection and enforcement information from the previous system, which hampered timely collections. We focused our review on information technology general controls intended to protect data confidentiality, integrity, and availability; and whether system requirements relevant to previous audit recommendations were implemented.

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<sup>1</sup>Comptroller General of the United States, *Government Auditing Standards*, Washington, DC: U.S. Government Accountability Office, 2007, p. 17-18.

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## Background

The Department of Watershed Management provides drinking water and wastewater services for approximately 150,000 Atlanta residents, businesses and wholesale customers. Watershed contracted with Systems & Software (S&S) in 2005 to implement the department's customer information system, enQuesta. The system replaced C-Star, which was no longer supported by the vendor. According to press releases, the department completed implementation in August 2006. S&S continues to support and maintain the system for watershed under a maintenance agreement, costing about \$360,000 in fiscal year 2008 and between \$400,000 and \$500,000 in fiscal year 2009.

EnQuesta is proprietary software that, in the case of watershed, runs on an Oracle database. It is marketed as a best-in-class system to assist utilities in meeting operational and strategic goals. Watershed uses the system for all activities associated with customer service and billing.

Staff perceives benefits of new system. Watershed management said that enQuesta has added qualitative features not available in C-Star. Users are able to see more information on the main screen in enQuesta than in C-Star. EnQuesta automatically creates dunning notices for delinquent accounts and cancels dunning notices for customers on payment plans, which was not a feature of C-Star. EnQuesta allocates partial payments to water and sewer services based on their percentage of the bill, whereas C-Star allocated the funds in sequence, leaving some balances unpaid.

Watershed management intended for the new CIS to address prior audit recommendations. At the department's request, we reviewed the department's RFP for a new customer information system (CIS) in August 2004 to comment on the proposed system's ability to satisfy the intent of our audit recommendations. Watershed management's 2005 agreement with S&S to implement the system identified 311 minimum requirements for system functionality in billing, customer service, meters and reading, payments, history, work order management, reporting and billing features enhancements.

## Previous Audits Identified System, Equipment, and Process Problems Contributing to Low Collections

Low collection of water and sewer charges is a longstanding problem, dating from before the city privatized its drinking water operation in 1999. Previous audits since 2003 recommended system improvements to aid collection efforts including timely, relevant reports and automation to streamline processes. The audits referenced for this report are:

Year:	Audit Name
2003:	Billing and Collection of Water and Sewer Service Charges (United Water)
2004:	Billing and Collection of Water and Sewer Service Charges (Follow-up after city resumption of drinking water and billing operations)
2005:	Consent Decree Monitoring - Dept of Watershed Management
2007:	External Financial Audit - Report on Internal Controls
2008:	External Financial Audit - Report on Internal Controls
2009:	KPMG Audit of the Department of Watershed Management

Low collection of water and sewer charges is a longstanding problem. Our January 2003 audit of *Billing and Collection of Water and Sewer Service Charges* found numerous problems with collections. The city had entered into a 20-year agreement with United Water Services Unlimited Atlanta, LLC to provide water services and bill and collect water and sewer service charges beginning in 1999. The contractor failed to meet performance criteria agreed to in the contract, and accounts receivable more than doubled from the beginning of the contract period through the end of 2000. The city had already initiated default proceedings for noncompliance before the audit was completed. While most of the growth in accounts receivable was due to lack of enforcement – United Water terminated service on only 15 accounts over a 20-month period – the contract didn't assign responsibility for collecting \$23 million that had been delinquent prior to October 1998, and an additional \$16 million in delinquent, inactive accounts was not transferred from the city's legacy system to C-Star.

We recommended a thorough clean up of all accounts in C-Star to remove uncollectible accounts, including identifying all account balances more than 4 years old; resolving billing disputes; and reviewing the accuracy of account classifications.

To prioritize collection efforts and timely write-off of uncollectible accounts, we recommended the city have access to monthly accounts receivable reports aged at specific intervals representing probability of collections, city code requirements, and state statute of limitations for obtaining a legal judgment on accounts. We also recommended the city define what was meant by “current” and have the system generate a monthly report to calculate a current collection rate which was required by the agreement with the contractor, but never enforced. The agreement defined the current collection rate as:

$$\frac{\text{Collected}_n}{(\text{Billed}_n \pm \text{Adjusted}_n)} \times 100$$

Where  $n$  represents the current month and includes amounts collected for month  $n$  through the last day of month  $n+1$

This methodology focused on measuring the timely collection of current billings and excluded payments on past-due accounts when calculating the collection rate. The purpose of allowing payments received in a subsequent month (i.e.,  $n+1$ ) to be included in the collection rate is to ensure that the calculation captures timely payments received on billings issued late in the previous month.

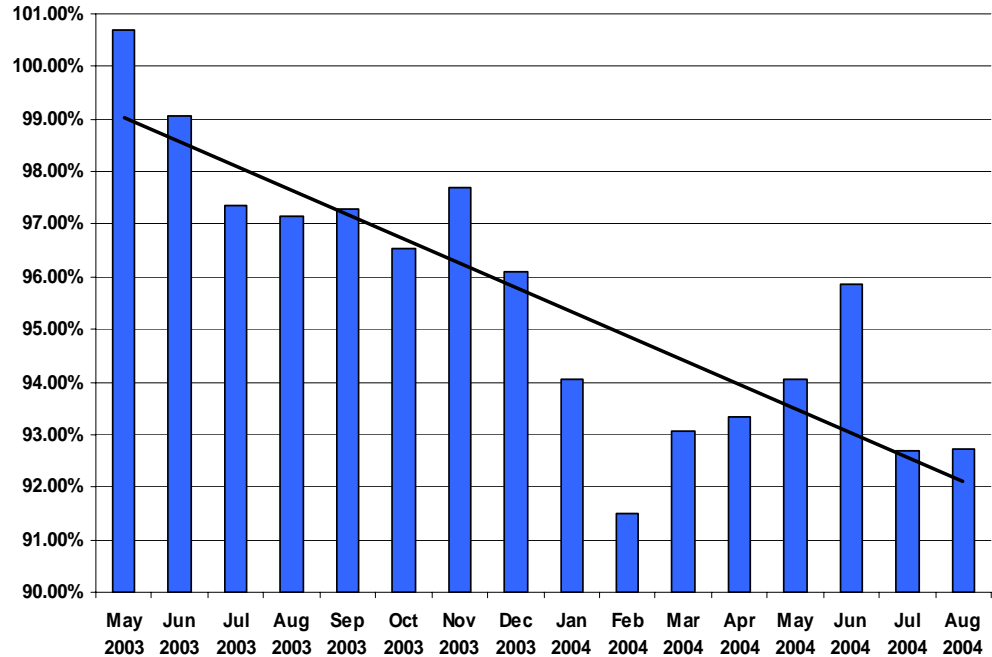
The city resumed responsibility for water services in April 2003 after the city and United Water mutually agreed to terminate the contract.

Follow-up audit found that collection rate continued to fall. Our November 2004 audit of *Billing and Collection of Water and Sewer Service Charges* found continuing problems with collections. Collection efforts started too late to be effective; the department’s average time to collect was 103 days and residential accounts were not shut off until delinquent amounts reached \$700, which at the time amounted to ten average monthly bills. While the department’s goal was to achieve a 98.5% collection rate, the average collection rate between May 2003 and August 2004 was 91.7% and the 12-month rolling average collection rate declined throughout the period.<sup>2</sup> (See Exhibit 1). The city’s accounts receivable balance for water and sewer charges was \$81.3 million at the end of August 2004.

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<sup>2</sup> We calculated a 12-month rolling average to reduce the effects of different billing and payment cycles. The C-Star 6248 report totaled all payments received in a month regardless of when billed and all billings posted in a month regardless of when payments were due. C-Star did not identify current billings and current receipts. At the time, the city billed residential customers every other month on various billing cycles.

**Exhibit 1**  
**City's Average Monthly Collection Rates after Resuming Water Operations**



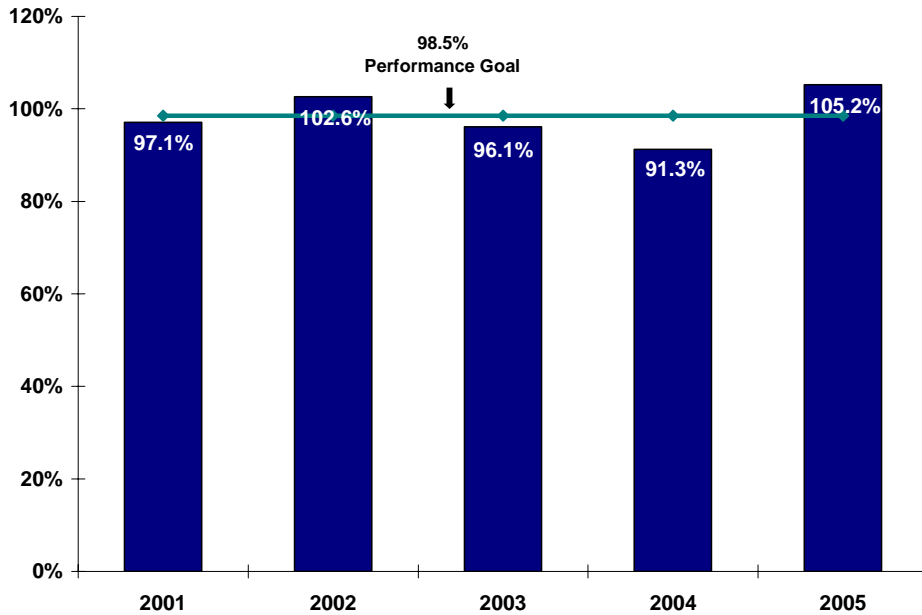
**Source:** *Performance Audit: Department of Watershed Management Follow-Up of the Billing and Collection of Water and Sewer Charges*, City Auditor's Office November 2004, p. 11.

We repeated our previous recommendations and recommended steps to speed collections and reduce the accounts receivable balance including, quicker enforcement and promptly writing off uncollectible amounts after exhausting other means of collection. The commissioner of Watershed Management agreed with our recommendations and reported improvements already underway, including steps to reduce the number of delinquent accounts by writing off approximately \$1.3 million and recommending that liens be placed on other accounts totaling \$10.6 million. Watershed management also adjusted its collection timeline to shut off delinquent accounts no later than 30 days from the bill due date. The commissioner stated that a current payment was one made by the bill due date and that the department would start calculating the current collection rate once it had implemented a new billing system.

Watershed management's collection rate improved in 2005. We continued to follow-up on collection performance while monitoring the department's progress on consent decree projects. Watershed management made significant improvements to its collection

activities, including more consistency in shutting off accounts for nonpayment, writing off more than \$12 million in uncollectible accounts, extending bill payment hours, charging late fees, and locking meters. These efforts helped the department to increase its collection rate to 105% in 2005, reflecting both write-offs and improved collection on delinquent accounts.<sup>3</sup> (See Exhibit 2).

Exhibit 2  
Average Annual Collection Rates 2001-2005

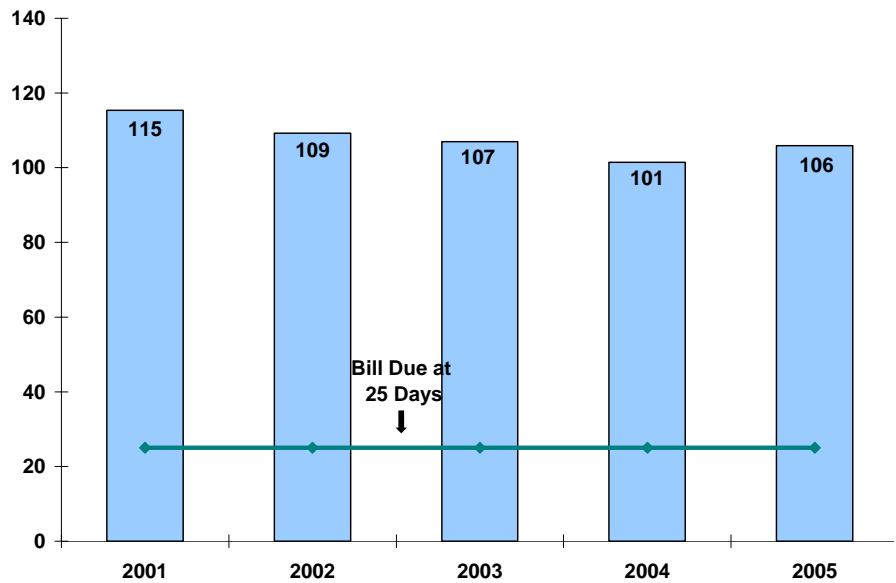


Source: *Performance Audit: Department of Watershed Management Consent Decree Monitoring*, City Auditor's Office, April 2006, p. 22.

Time to collect remained high. While the collection rate improved, time to collect payments remained high, averaging 106 days in 2005. (See Exhibit 3). The department said that many delinquent accounts were in dispute because bills were based on estimated use due to broken meters. The department estimated at the time that 8,000 meters needed repair. Further, the department was reluctant to rely on C-Star reports to take more aggressive enforcement action. Because C-Star could not exclude disputed bills or accounts on payment plans from its cut reports, staff had to manually review reports to identify accounts for which service should be terminated for nonpayment.

<sup>3</sup> We calculated the annual collection rate by dividing the adjusted billing amount for the year by cash receipts for the year. The collection rate could exceed 100% because write-offs could reduce the adjusted billing amount and cash receipts could include payments for billings from a previous year.

Exhibit 3  
Average Time to Collect Payments 2001-2005



Source: *Performance Audit: Department of Watershed Management Consent Decree Monitoring*, City Auditor's Office, April 2006, p. 24.

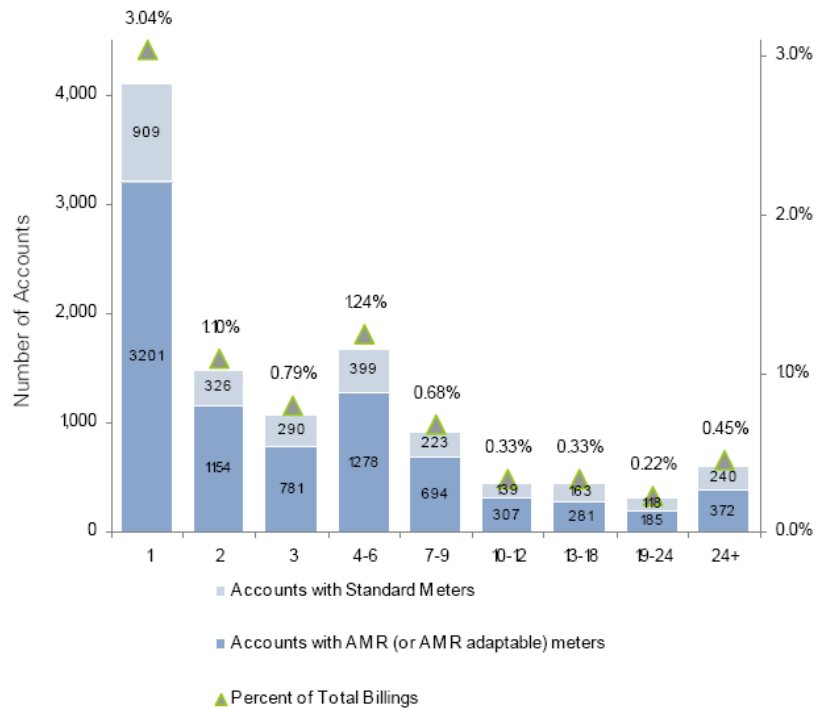
We recommended watershed management develop a strategy to improve the timeliness of collections and build on its initiatives to improve its equipment and information system to take more aggressive enforcement action. We also recommended that watershed management continue to identify and recommend uncollectible accounts for write-off on a quarterly basis in order to accurately assess the effectiveness of the collection strategy.

2009 performance review identified collection practices as an area for operational improvement. KPMG's April 2009 performance review noted that delinquent residential and commercial water and sewer accounts comprised about \$52 million of watershed management's \$81 million accounts receivable balance as of November 2008; 72% of these delinquent accounts were 120 days or more past due. Auditors recommended standardizing and speeding collection efforts and recommended the department seek additional guidance from the City Council and Department of Law to develop and document procedures for analyzing and writing off bad debts.

Watershed management continues to rely on estimated water consumption for billing. KPMG reported that the department billed accounts based on estimated consumption more than 110,000 times in calendar year 2008, representing almost 10% of its billings. As of February 2009, more than 1,300 meters had not been read at all

during the previous 12 months; more than 600 meters had not been read during the previous 24 months. These include standard meters, which must be read manually, and meters with automated meter reading (AMR) technology. (See Exhibit 4). The department reports it has nearly completed a \$35 million meter replacement program started in 2006.

Exhibit 4  
Months Since Meters Were Read as of February 2009



Source: City of Atlanta Department of Watershed Management Performance Review, KPMG, April 2009, p. 91.

The department's monthly report of accounts in dispute for February 2009 identified more than \$12.5 million in disputed bills with 7% of the disputes being more than six months old as of January 2009. The KPMG report recommended that the department document and enforce formal policies to address the number, volume, and frequency of allowable disputed charges and to prioritize resolution efforts.



## Financial Auditors Questioned Security and Change Management Practices in New System

Weak IT controls could allow financial misstatements. Financial auditors noted information technology control deficiencies related to enQuesta as part of the city's fiscal year 2007 financial audit. Auditors found the department's procedures and practices for monitoring information security were incomplete. Also, watershed management's change management processes were not formalized or documented. Auditors limited testing to inquiry procedures. The type of tests performed provides limited assurance that watershed management's financial data was free from error that would affect the city's financial statements.

A control deficiency, as defined by SAS No. 112 on Governmental Financial Audits, exists when the design or operation of a control does not allow management or employees, in the course of performing their assigned functions, the ability to prevent or detect misstatements on a timely basis.

Auditors repeated their findings and recommendations in the city's 2008 financial audit and identified the problems as significant deficiencies. A significant deficiency, as defined by SAS No. 112, "is a control deficiency, or combination of control deficiencies...such that there is more than a remote likelihood that a misstatement of the entity's financial statements that is more than inconsequential will not be prevented or detected." A significant deficiency adversely affects the city's ability to report financial data reliably in accordance to generally accepted accounting principles.

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## Audit Objectives

This report addresses the following objectives:

- Does the system as implemented meet the requirements specified in the city's agreement with S&S to achieve the intended benefits?
- Are controls in place to maintain data integrity?
- Are responsibilities of Department of Watershed Management and its maintenance contractor well defined to cover data security and system availability?

Our audit approach was to test information technology general controls intended to protect data security, integrity, and availability, rather than testing data accuracy itself:

- Data security refers to the means by which data are protected from unauthorized or unintended access, modification, or destruction.
- Data integrity refers to qualities of being complete, accurate, and adhering to its intended purpose.
- System availability refers a system being online and ready for access by its users.

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## Scope and Methodology

We conducted this audit in accordance with generally accepted government auditing standards. These 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.

Our audit methods included:

- Interviewing city staff and contractors to understand the policies implemented to help protect data integrity within enQuesta;
- Assessing control procedures related to logical access, segregation of duties, operating systems security parameters, and program changes;
- Following up on the extent to which the department implemented the financial auditors' 2007 and 2008 recommendations;
- Reviewing system requirements specified in the department's implementation contract;
- Reviewing enQuesta documentation, including user guides, business process flowcharts, and training materials; and
- Selecting a sample of system requirements and verifying functionality by:
  - Accessing and reviewing user accounts for required information

- Analyzing reports generated from enQuesta
- Capturing enQuesta screenshots containing required information
- Interviewing watershed management and staff

We judgmentally selected 97 of 311 system requirements identified in the Department of Watershed Management’s implementation agreement with S&S, focusing on those most relevant to previous audit findings and recommendations. Exhibit 5 compares the number of requirements we sampled by category to the number of requirements listed in the agreement by category.

**Exhibit 5**  
**Sampled Requirements by Category**

<b>Category</b>	<b>Number of Requirements</b>	<b>Number Verified in Audit</b>	<b>% of Requirements</b>	<b>% of Verified</b>
Billing	99	35	31.8%	36.1%
Customer Service	52	20	16.7%	20.6%
Meters And Reading	34	15	10.9%	15.5%
Payments	29	12	9.3%	12.4%
History	20	11	6.4%	11.3%
Work Order Management	17	3	5.5%	3.1%
Reporting	34	1	10.9%	1.0%
Billing Features /Functionality	26	0	8.4%	0.0%
<b>TOTAL</b>	<b>311</b>	<b>97</b>	<b>100%</b>	<b>100%</b>

**Source:** *Agreement for Customer Information System (“CIS”)/Billing System and Off-Site Billing Services 6004007863 and audit sample.*

We provided the commissioner of watershed management a detailed description of the results of our security assessments of enQuesta and its host operating system in June 2009. This report summarizes the findings and recommendations related to security, but excludes details about specific vulnerabilities. Security plans and vulnerability assessments for public utilities and technology infrastructure are not subject to disclosure under the Georgia Open Records Act.<sup>4</sup>

<sup>4</sup> O.C.G.A. § 50-18-72(15)(A)(i).



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## Findings and Analysis

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### **System Meets Most Requirements; Some Features Are Not Used**

As implemented, enQuesta provides most of the features watershed management specified in its contract with S&S that we tested. The system recently has begun to automatically generate work orders but does not produce some financial information. While the commissioner agreed with our previous audit recommendation to calculate and report the current collection rate once the new system was implemented, the system as configured does not generate a current collection rate; staff continues to rely on a custom version of the same collection report generated from the previous system. The department has not yet used some of the features it specified that could improve customer service.

System aging reports could overstate the extent of delinquencies. While collections staff told us the aging reports classify delinquent accounts by the number of days late, the reports actually calculate the number of days since the date the bill was issued. Thus an account is considered 30 days delinquent when the bill is unpaid 13 days after it is due. The aging report also classifies penalties as 90 days past due regardless of when the penalty amount is posted to the account.

#### **System Meets Most Requirements**

EnQuesta met 93% of the system requirements that we tested. (See Appendix A - System Requirements Tested). These include:

- expanded query capabilities,
- ability to maintain separate information about owners and tenants,
- ability to apply payments to specific items on a bill,
- ability to apply late fees as the greater of \$5.00 or 5% of the outstanding balance, and
- ability to establish repayment agreements on selected open items and to hold cut-off notices for customers who are meeting repayment terms.

These features will help the department address longstanding challenges in billing and collection. Seven of the 97 requirements we tested were not implemented. (See Exhibit 6).

**Exhibit 6**  
**Summary of Test Results by Requirement Category**

<b>Category</b>	<b>Tested</b>	<b>Met</b>	<b>Not Implemented</b>
Billing	35	31	4
Customer Service	20	17	3
Meters And Reading	15	15	0
Payments	12	12	0
History	11	11	0
Work Order Management	3	3	0
Reporting	1	1	0
<b>TOTAL</b>	<b>97</b>	<b>90</b>	<b>7</b>

**Source:** Requirements sampled from *Agreement for Customer Information System ("CIS") /Billing System and Off-Site Billing Services 6004007863* and results of audit tests.

Watershed continues to add functionality to the enQuesta system. Watershed management's implementation agreement with S&S specified the system must have the ability to automatically generate service orders based on trouble codes reported by meter readers. During most of our audit work, the system did not provide this functionality. Customer service inspectors prepared manual work orders that were delivered to data entry personnel for input into enQuesta. The department's monthly AMR conversion report for February 2009 identified 2,326 malfunctioning AMR meters, and KPMG reported that billing staff did not consistently create work orders when meter readings were not obtained. Our 2007 performance audit of the AMR program identified maintenance and repair of new and retrofitted meters as an ongoing risk. Watershed management automated service order generation in October 2009.

**Watershed Management Continues To Rely On Some Manual Processes That Were Intended To Be Automated**

The system does not: generate a roll-forward of receivables at certain time periods, calculate the current collection rate, or produce aging reports showing delinquencies of 120 days or 1-4 years and greater. These features were all required under watershed management's implementation agreement and were consistent with our previous recommendations. Staff cannot calculate or report the current collection rate. In addition, the application does not allow customers to request services via the

Internet, as required by the implementation agreement. Watershed management should determine why these system requirements were not met and whether the vendor can be held accountable for implementing them now. The commissioner should document business reasons if the department chooses not to implement these requirements.

Watershed management is not yet using four features that the system provides as required by the agreement. Some of these features, automating credit refunds and allowing customers to create budget payment plans, would improve customer service. Watershed management's implementation agreement with S&S specified the system must have the ability to:

- Generate a roll-forward of receivables one year old, two years old, three years old, four years old and years greater indicating the beginning balance, adjustments, payments and ending balance by each year in order to compute the allowance for doubtful accounts and/or bad debt ratio;
- Generate a monthly roll-forward of total receivables indicating the beginning balance, adjustments, payments and ending balance; and
- Provide an aging report by 30 days, 60 days, 90 days, 120 days, one year, two years, three years, four years, and amounts greater than four years.

These requirements were intended to help address longstanding problems of slow collections and slow write-off of uncollectible amounts. We recommended in 2003 and again in 2004 that the city have access to monthly accounts receivable reports aged at 30, 60, and 90 days; 6 months; 1 year; and 4 years. These intervals represented the probability of collection according to the Commercial Collection Agency Association, city code requirements, and state statute of limitations for obtaining a legal judgment on collection. KPMG recommended in its April 2009 report that the department run aging reports continuously, coinciding with billing cycles.

Roll-forward of receivables not implemented. Watershed management and S&S staff confirmed that enQuesta does not roll-forward receivables one year old, two years old, three years old, four years old and years greater. S&S told us that it will address the issue. In addition, watershed management staff told us that no single enQuesta document provides a monthly roll-forward of total

receivables indicating the beginning balance, adjustments, payments, and ending balance. Staff manually compiles information as needed from the Cash Daily Transaction Entry report and the Water and Sewer Summary Journals.

Aging report not fully implemented. According to watershed management staff, enQuesta does not generate a report that shows specifically 120 days, 1, 2, 3, and 4 year delinquencies. Staff compiles this information manually as needed based on an account's last payment date. This method could understate the age of a delinquent amount if, for example, the last payment is a partial payment or the last payment wasn't applied to the oldest outstanding bill.

System does not calculate current collection rate. Watershed management's implementation agreement with S&S specified the system must have the ability to compute the billing versus collection rate separating current billings/current collections. The system as implemented does not provide this functionality. Instead, watershed management uses a custom version of C-Star's 6248 report, which reports cash receipts and billings by customer type for the month. These reports do not provide data to calculate the current collection rate because cash receipts include past due amounts from previous months and total billings include amounts not yet due.

We recommended in 2002 and again in 2004 that the department establish a definition of "current" and report current collection rates monthly. Although never enforced, current collection rate was a key performance metric in the city's contract with United Water and how the goal of 98.5% collections was intended to be measured. The Commissioner of Watershed Management agreed with our recommendations and stated that the new billing system would provide the required functionality (See Exhibit 7).



Exhibit 7  
Commissioner's Response to Audit Recommendations Regarding  
Current Collection Rate, November 24, 2004

**Recommendation #7** is to define the term "current" for calculating the collection rate.

This has been implemented.

The definition of "current" is a payment that has been made by the due date. Per the schedule above, that is within 25 days of bill generation.

**Recommendation #8** is that a monthly report be generated, using the definition of "current" above to calculate the current collection rate.

This has not been implemented, but will be with the new billing system. The current billing system does not have the required functionality.

Until such time as the new system is in operation, we will continue to track the collection rate on a rolling 12 month average.

**Source:** *Performance Audit: Department of Watershed Management Follow-Up of the Billing and Collection of Water and Sewer Charges*, City Auditor's Office November 2004, p. 45.

Customer refunds could be automated. Watershed management's implementation agreement with S&S specified the system must provide the ability to initiate a refund check to a customer with a credit balance. We confirmed that enQuesta has this capability; however watershed management has continued to initiate refunds manually upon customer request. KPMG reported that the department's procedures for processing customer refunds appeared to conflict with current city code and may conflict with state law regarding disposition of unclaimed property. As of February 2009, nearly 29,000 customer accounts had outstanding credit balances totaling about \$4 million. Staff told us they are working with the Department of Finance to automate components of the refund process and are developing a procedure for turning unclaimed funds over to the state when they cannot locate customers owed a refund.

Additional required features could improve customer service. Watershed management's implementation agreement with S&S specified the system must enable customers to apply for service via the Internet and request budget billing via the Internet. We confirmed that enQuesta does not have the capability for customers to request services via the Internet. While enQuesta does have a budget billing function – which would allow customers to create budget payment plans to equalize estimated annual water and sewer charges and avoid seasonal spikes – watershed management has

chosen not to use the function because of ongoing problems with meters. Watershed management staff told us that lack of reliable meter readings would result in unreliable budgets. Additionally, enQuesta has the ability to adjust customer deposit amounts based on credit history, but the department charges standard amounts based on meter size.

Bill adjustment feature could have been used for back billing. Watershed management's implementation agreement with S&S specified the system must be able to make prior period adjustments without affecting current charges or consumption. The system does provide this function, which watershed management uses to adjust disputed bills. The function reverses an existing bill and creates an adjusted bill. S&S proposed using this function as one of two options to back bill customers for the July 2008 rate increase. The department chose the second option, to calculate and apply a one-time adjustment, believing it to be quicker and less costly than reversing and reissuing bills for July water use. Our August 2009 performance audit, *Back Billing of July 2008 Rate Increase*, identified problems resulting from the back bill modification.

Other required feature may be unneeded. Watershed management's implementation agreement with S&S specified the system must be able to link accounts for the purpose of generating a single bill to a master account. The system is not set up to perform this function. Watershed management staff told us that none of its customers need this feature.

#### **Account Aging Methods Could Overstate Delinquent Amounts**

System aging reports overstate the extent of delinquencies by aging accounts from the bill issue date rather than the bill due date and by classifying penalties on current bills as 90 days delinquent.

Aging report is based on time elapsed from the date the bill was computed in the system rather than the bill's due date. Watershed management's aged accounts receivable report lists accounts with balances that are 30, 60 and 90 days old. Although collections staff who use the reports told us that they thought the report classified accounts based on time elapsed from the due date, the system calculates age from the date the bill was computed in enQuesta. Under watershed management's business practice bills are generally due 17 days after the issue date. The system initially classifies an account as 30 days delinquent when it is about 13 days past the due date.

Aging report adds penalties on current bills to 90-day delinquent amounts. Watershed management assesses a late fee of 5% or \$5.00, whichever is greater, when the current bill is unpaid by the due date. While penalties are considered immediate delinquencies, meaning they are posted to accounts as past due charges, watershed management's aging report adds penalties to the 90-day delinquent amounts.

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## Stronger Controls Needed to Protect Sensitive Data

Key security settings failed to enforce watershed management policy, allowing users to set passwords that were shorter than required and for some users to keep the same passwords indefinitely. In addition, some unsecured system protocols and several users can access enQuesta through the operating system's root account. Access to this account should be limited because its functions are not restricted and it is not associated with an individual user. In effect, watershed management has no way of knowing who is performing privileged functions. Finally, several employees who no longer work for the department still had access to the system and the department allows access to the system through generic accounts not assigned to an individual. Weak access controls expose the system to risk of errors, fraud, misuse, unauthorized changes and unauthorized access to sensitive data. EnQuesta contains sensitive customer data, including social security numbers, that federal regulations requires be protected.

We provided detailed recommendations to strengthen security controls to the commissioner of the Department of Watershed Management in June 2009.

### System Configuration Should Enforce Security Policies

Reconfiguring operating system security settings to enforce watershed's password policies will reduce the risk of unauthorized access to sensitive data in enQuesta.

Watershed management hasn't enforced its password policies. Watershed management IT policies establish minimum guidelines for password security intended to minimize the security risks associated with using enQuesta.

Password requirements include:

- Minimum length of eight characters
- Password must be changed every eight weeks
- Accounts will be inactivated after two unsuccessful login attempts

System settings do not enforce these policies. Most accounts are set to a minimum length of six characters, while some accounts have no minimum length. A password of at least 8 characters is much more secure than a password of 6 characters; a “brute force attack” – computer code that systematically tries every iteration of characters – can crack an 8-character password in 4 days, while it takes only 10 minutes to crack a 6-character password. Requiring complexity such as a capital letter or special character increases these times. Some accounts had no password expiration and numerous accounts were allowed to reuse the existing password. All accounts had unlimited unsuccessful login attempts. Passwords are a means of authenticating users so that only authorized users have access to system data, and system records of who performed various functions are accurate. Weak passwords provide less protection from unauthorized access or changes to key financial data and programs.

Access through operating system root account weakens security. Some unsecured operating system protocols were enabled that could be exploited to gain access to the operating system root account and to enQuesta. The root account has unlimited privileges; if it is compromised, then all security measures are compromised. We provided detailed recommendations to better secure the operating system to the Department of Watershed Management in a separate memo in June 2009.

### **Stronger Access Controls Can Reduce Risk**

While watershed management’s process for granting employees access to the system appears to be working as intended, several terminated employees still had system accounts and several generic accounts not assigned to individual users allow access to the system. In addition, S&S has unrestricted, unmonitored system access. Access controls – which are intended to ensure that each user has access to only the resources necessary to perform his/her assigned tasks – are a key component to securing and maintaining the integrity of system data. Lack of controls or breakdown in controls

increases the risk of errors, fraud, misuse, unauthorized changes or unauthorized access to sensitive data.

Terminated employees still had access to the system. Three of a random sample of 25 user accounts active as of January 2009 belonged to employees who no longer worked for the department. Keeping these accounts active increases the risk of inappropriate or unauthorized system access. External sources could exploit the weakness to gain access to the system or current users could seek to evade accountability by accessing the system using a terminated employee's ID. Watershed management inactivated the accounts when we brought them to its attention. Watershed management should review and remove all terminated user accounts, establish a process to remove access as employees leave, and periodically review users to ensure all accounts belong to current employees.

Generic accounts allow system access. We identified nine generic accounts with access to enQuesta. Watershed management and S&S confirmed that these accounts were not needed for system operation and removed them. Each user should have a unique ID to ensure accountability and that access is appropriate. In addition, various individuals can access enQuesta through the operating system root account. Because this high privileged account is shared and can be used to directly access the system remotely, Watershed management has no way of tracking who is performing privileged functions any given time. Watershed management should review and remove all nonessential generic user accounts within the operating system and limit root logon access.

Vendor access is unmonitored. S&S has unlimited access to both test and production environments in enQuesta. S&S owns the application code and is responsible for installing updates and other approved changes, troubleshooting problems, and monitoring the availability of key services and resources on the server. While S&S needs significant access to fulfill its duties, unrestricted and unmonitored access leaves watershed management vulnerable to unauthorized access, unauthorized changes and system tampering. A disgruntled vendor employee, for example, could cause a system interruption that limits watershed management's ability to provide service to its customers. Watershed management should limit vendor access to production on an as-needed basis and monitor vendor actions.

Watershed management is subject to new federal law to protect customers from identity theft. EnQuesta contains personally

identifiable information, including social security numbers. Federal regulations require utilities that bill for past services to develop and document steps to identify and detect red flags and define appropriate responses to prevent identity theft. Strong access controls help to mitigate risk of identity theft.

Watershed management followed its process for adding new users to the system. We confirmed that all new users granted access to enQuesta between November 2008 and February 2009 had the appropriate access request forms and approvals. Information security best practices recommend that management follow a defined process in granting and documenting user access.

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## **Overreliance on Contractor Poses System Risk**

Watershed management relies on its maintenance contractor to ensure that the system meets its business needs. While leveraging outside expertise expands the department's resources, the department should acquire enough in-house system expertise to develop and enforce security policies, monitor contractor performance, and understand and use its own data.

### **Change Management Policy Needed to Clarify Responsibilities**

Change management ensures that system changes are implemented in a controlled manner by following an established framework in order to prevent unauthorized changes and minimize unintended consequences. Watershed management maintains that change management is its contractor's responsibility. While programmers are necessarily part of the change management process, management is responsible for all changes to data and data systems. Failure to follow a formal change management process increases the likelihood of unintended consequences, such as occurred with watershed management's back-billing of customers in December 2008.

Change management reduces risk of unauthorized changes or unintended consequences of program changes. Information security best practices recommend setting up formal change management procedures to handle all requests for changes to applications, processes, system and service parameters, and underlying platforms in a standard way. Changes should be logged, assessed, and

authorized before implementation and reviewed against intended outcomes after implementation. Establishing a standard process — to be followed even for routine maintenance and patches — mitigates risks to data integrity and system stability. The IT Governance Institute identifies sub-processes that should be covered in a formal change management policy, including initiating and approving change requests, developing specifications, access to source code, programming, moving to test environment, acceptance testing, and approval to move to production.

Watershed management lacks a change management policy. Watershed management has no change management policy and has told us that change management is the responsibility of its contractor. However, the S&S Support Program General Guidelines identify aspects of change management as the customer's responsibility, stating that "customers will have 10 working days to test and approve" changes and that no change will "be deployed to the production environment until changes are formally approved" by the customer. Even if watershed management undertakes some of these responsibilities in practice, lack of a formal, standard process poses risk. For example, inadequate testing of the back-billing change prior to implementation resulted in unintended consequences; watershed management had to reverse inappropriate penalties on nearly 40,000 accounts, and service was terminated for some accounts before they met the department's criteria.

Watershed management should develop a formal policy to guide change management. Based on our review of watershed management's maintenance agreement with S&S and our understanding of watershed management's business practices, the department should be responsible for 6 of the 10 change management sub-processes. (See Exhibit 8).

**Exhibit 8**  
**Recommended Change Management Responsibilities**

<b>Change Management Sub Process</b>	<b>Watershed Responsible</b>	<b>S&amp;S Responsible</b>
Initiate Change Request	✓	
Approve Change Request	✓	
Develop Specification of change	✓	
Access to source code		✓
Programmer completion of change		✓
Move change into test environment		✓
Completion of acceptance testing	✓	
Approve to move into production	✓	
Move into production		✓
Determination & acceptance of change	✓	

**Source:** Adapted from the IT Governance Institute's IT Assurance Guide for Using COBIT, page 142

**Watershed Management Should Develop In-house System Expertise**

Department responses to external audit recommendation raise questions about the extent to which management understands its responsibilities for system security. The department should acquire enough in-house system expertise to develop and enforce security policies and monitor contractor performance. Watershed management staff has also had difficulty extracting data for ad hoc analysis and answering questions about the content of system reports. More in-house expertise would allow the department to make better use of its data to support management decisions.

Watershed management is responsible for system security. Information security best practices identify the business entity as responsible for making decisions about data and system security to protect data, even when the technical aspects of security are performed by an IT function or are outsourced. Because department management is responsible for defining accountability for system security measures and for monitoring contractor performance, the department needs in-house system expertise sufficient to understand its data and the supporting technology.

Responses to security control recommendations exhibit lack of understanding of security practices. Financial auditors reported five



findings related to enQuesta system security and one finding related to program change management in its audit of the city's fiscal year 2007 financial statements. The five security related findings were repeated in the city's fiscal year 2008 financial audit and were categorized as significant deficiencies – meaning that there is “more than a remote likelihood that a misstatement of the entity's financial statements that is more than inconsequential will not be prevented or detected.”<sup>5</sup> Three of five of watershed management's responses to the auditors' findings were not relevant to the issue identified as a problem, raising questions about the extent to which management understands its responsibilities for system security. (See Exhibit 9).

**Exhibit 9**  
**Watershed Management's Responses to Deficiencies Identified in the 2007 and 2008 Report on Internal Control**

Recommendation	Watershed Response	City Auditor's Office Comments on Response
<p>Watershed should monitor key database and security related events.</p>	<p><i>For security purposes all source code files are locked with Read-only privileges. Changes to the source code made outside of the MR process are logged and monitored. The locking of the source files is internally known to System &amp; Software as our "Code Lock Down" process. All source code on a customer's sewer is owned by a restricted access user account. All source code on a Customer's sewer is write protected and cannot be changed directly on the server. Changes to any source code must first be made locally at S&amp;S then moved to a customer's "Train" environment first (i.e. any source code changes must be moved to "Train" before they can be moved to "Live"). Source code changes are first moved to a working area where they are compiled. The changed program must compile successfully before it is deployed to the EnQuesta code directories. When changed source code is moved from "Train" to "Live" the copy in "Train" remains due since the "Train" and "Live" environments exist on separate servers. Only source code in "Live" environment can be copied back to S&amp;S for modifications. All source code changes made to either the "Train" or "Live" environment are logged for future reference. Only the Software Release Manager at S&amp;S knows the password for the restricted access user account.</i></p>	<p>Watershed management's response is not relevant to the recommendation because it outlines steps taken by the vendor to secure its part of the change control process. The response does not address monitoring of the database security related events such as changes to the database schema.</p>

<sup>5</sup> American Institute of Certified Public Accountants, *The Impact of SAS 112 on Governmental Financial Statement Audits*, GAQC Member Conference Call, January 4, 2007.

Recommendation	Watershed Response	City Auditor's Office Comments on Response
Watershed should monitor audit logs.	<p>However S&amp;S does proactively monitor portions of Atlanta's EnQuesta system on a regular basis. Through a service known as Nagios, the following items are monitored on a daily basis. All contain certain thresholds to allow service alerts to be sent to the System &amp; Software Support Desk should the tolerances be exceeded:</p> <ol style="list-style-type: none"> <li>1. Current system time</li> <li>2. System uptime</li> <li>3. Status of Tomcat Web sewer</li> <li>4. Total rts count</li> <li>5. System disk space</li> <li>6. System paging</li> <li>7. UDAL/name server status - EnQuesta component for data access.</li> <li>8. RLDT status - EnQuesta component for data access.</li> </ol> <p>There are many log files on the system; many associated with the components identified above, Although we don't proactively monitor their content on a daily basis, we do use them to research and triage issues when they have been logged with the S&amp;S Helpdesk.</p>	Watershed management's response is not relevant to the recommendation because it states that the vendor uses an application to monitor critical system services and application availability and does not address monitoring of <b>audit logs</b> , such as incorrect logins.
Watershed should monitor sensitive accounts.	An account within EnQuesta is associated with a premise address and a customer. Each account is treated the same and there is no such thing as a sensitive account.	Watershed management's response is not relevant to the recommendation because it mistakes the intent of the recommendation to pertain to customer accounts rather than to user accounts (employees that use the system and have access to information such as SSN and billing information). Audit findings were to address user accounts not customer accounts.
Watershed should monitor accounts with high privileges	A 'high' privilege account is an operator who has the access to alter or delete an account in EnQuesta. We discussed that the actual report details would need to be determined if this. The privileges are base code assign to user. A '1' in the TYPE SEC field indicates that the user has the ability to run that particular program, A '3' in the TYPE SEC field indicates that the user has Admin privileges for that particular program. If this report does not suffice for your current auditing requirements, we will need to speak further regarding the particular programs within EnQuesta that you would like to know if a user has execute or admin privilege for. Knowing those will allow us to spec out the time and cost estimate for a custom report for you.	Watershed management's response does not fully address the recommendation. While the vendor identified a report that would allow Watershed the ability to identify users with high privilege access, the response does not address ongoing monitoring of these users.
Watershed should monitor inactive user accounts	In order to ensure no unauthorized system access occurs by employees who are no longer employed by the City, an internal policy needs to be created and maintained by the City's IT staff. We are in the process creating this.	Watershed management's response is relevant to the recommendations.

Source: Recommendations and responses obtained from The City of Atlanta's Report on Internal Controls for Fiscal Year 2008 issued by Banks, Finley, White and Company.

Department could make better use of its data. Watershed management IT staff was unable to extract the data we requested to analyze accounts for our audit of back-billing of customers in December 2008. Staff provided us with monthly aged accounts receivable reports that contained most of the fields that we requested, but neither IT, customer service, nor management staff were able to answer questions about the content of the reports. The department performed no systematic analysis to identify accounts affected by the back-billing posting date, rather looked up individual account histories based on individual complaints. The system contains a wealth of data; more in-house expertise would allow the department to make better use of its data to support management decisions or to respond to stakeholder requests for information.



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## Recommendations

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To achieve the intended benefits of the enQuesta system, the Commissioner of Watershed Management should:

1. Determine why some system requirements were not implemented and whether the vendor can be held accountable for implementing them now;
2. Document business reasons for choosing not to implement some requirements;
3. Develop in-house expertise on the extraction and analysis of data from the enQuesta application.

To strengthen controls intended to protect sensitive data, the Commissioner of Watershed Management should:

4. Develop departmental expertise in the areas of system security and IT governance, or establish a relationship with the city's Department of Information Technology;
5. Ensure that watershed management staff review all user accounts (with the exception of the root account) and enforce the established password policies;
6. Ensure that watershed management staff review all user accounts in enQuesta and the UNIX operating system and remove IDs belonging to terminated users and generic IDs that are no longer needed;
7. Enforce system settings to limit remote logon using the root account;
8. Establish a policy that governs the periodic review and recertification of users for the enQuesta application and removal of terminated users;
9. Establish a policy that limits vendor access to the production instance of enQuesta to an as-needed basis and governs how, when, and who is responsible for granting the vendor system access, and consider monitoring what is done by the vendor;

10. Establish a formal change control policy that governs watershed management's areas of responsibility for changes to the enQuesta application.

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# Appendices

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## Appendix A System Requirements Tested

**Met:** System meets the requirement as specified in the agreement

**Not Implemented:** Requirement not implemented in system

Requirement	City Auditor Analysis of Requirement Implementation	Reference to Updated Detailed Requirements Checklist
The enQuesta water CIS application is interfaced to the Oracle E-Business Finance application and is interfaced to the Oracle general ledger.	Met	G33a
enQuesta automatically assigns account numbers to DWM customers, where the account number is independent of the service address.	Met	A01, A02
Customers are enabled to apply for service via the Internet.	Not Implemented	A05
The enQuesta application provides, upon demand/query by DWM staff, 36 months of continuous billing and credit details about customers and/or accounts.	Met	A12
The enQuesta water CIS application provides the capability to identify customer accounts by type (e.g. financial institution, type business, residential, etc.)	Met	A13
The enQuesta water CIS application provides the capability to maintain owner information separate from tenant information.	Met	A15
The enQuesta water CIS application provides the capability to identify all premises for which a customer is being billed for services.	Met	A16
The enQuesta water CIS application provides the capability to interface with third party hand held devices for meter reading.	Met	A19
The enQuesta water CIS application provides the ability to accept deposits when the application for service is taken.	Met	A22
The enQuesta water CIS application provides the ability to bill deposits and associated service charges when the application for service is taken.	Met	A23
Ability to post to appropriate accounts in the General Ledger for all transactions related to deposits?	Met	A25
The enQuesta water CIS application provides the ability to initiate a refund check to a customer with a credit balance.	Met	A29

Requirement	City Auditor Analysis of Requirement Implementation	Reference to Updated Detailed Requirements Checklist
The enQuesta water CIS application provides the ability to automatically reverse all transactions generated as a result of posting a check, which is returned for insufficient funds.	Met	A30
The enQuesta water CIS application provides the ability to track, inquire and access all data for an account, including location, services, customer, service orders, meters, taps, accounts receivable, notes, payment arrangements, credit history, etc. from a single inquiry.	Met	A32
The enQuesta application automatically assigns a credit rating to each account based on overall credit history and user defined criteria including late payments, delinquency notices, NSF checks, meter tampering and disconnects for non-pay.	Met	A40
The enQuesta application provides the ability to automatically send copies of bills and/or selected notices to third parties.	Met	A41
The enQuesta application provides the ability to link accounts for the purpose of generating a single bill to a master account.	Not Implemented	A44
The enQuesta application provides the ability to accept payments through the Internet.	Met	A50
The enQuesta application provides the ability to request budget billing via the World Wide Web / Internet.	Not Implemented	A51
The enQuesta application provides the ability to adjust a customer deposit based on credit history.	Met	A52
The enQuesta application provides the ability to automatically and accurately extract and download routes to hand held devices for meter reading.	Met	B01
The enQuesta water CIS application provides the ability to upload and update meter readings captured by handheld device.	Met	B03
The enQuesta water CIS application provides the ability to support Internet access (TCP/IP) to any metering device and interfaces to external systems.	Met	B09
The enQuesta water CIS application provides the ability to identify and report usage on inactive, idle and cut-off meters.	Met	B11
The enQuesta water CIS application provides the ability to track the number of consecutive times that a meter reading is estimated.	Met	B12

Requirement	City Auditor Analysis of Requirement Implementation	Reference to Updated Detailed Requirements Checklist
The enQuesta application provides the ability to allow the INTERNAL AUDITOR ( <i>refers to a DWM appointed auditor</i> ) to manually calculate and enter estimated meter readings.	Met	B13
The enQuesta application provides the ability to adjust a meter reading without overriding an original or billed reading.	Met	B14
The enQuesta water CIS application provides the ability to estimate consumption for a single meter or an entire cycle based upon an average of INTERNAL AUDITOR ( <i>refers to a DWM appointed auditor</i> ) selected billing periods.	Met	B15
The enQuesta water CIS application provides ability to accommodate compound, deduct and subtractive metering.	Met	B16
The enQuesta application provides the ability to calculate and post negative consumption.	Met	B17
The enQuesta application provides the ability to make consumption adjustments without changing the amount actually used.	Met	B18
The enQuesta water CIS application provides the ability to provide for positive or negative consumption adjustments with audit trail.	Met	B19
The enQuesta water CIS application provides the ability to maintain both actual and billed consumption.	Met	B20
The enQuesta water CIS application provides the ability to automatically generate service orders based upon trouble codes reported by meter readers.	Met	B23
The enQuesta water CIS application provides the ability to maintain a full inventory of all meters (set or warehoused).	Met	B25
The enQuesta application provides the ability to automatically generate collection service orders based on minimum dollar amounts and age.	Met	C08
The enQuesta Water CIS application provides the ability to generate service orders for theft investigations.	Met	C09
The enQuesta application provides the ability to automatically generate standard fees to the customer for each type service order.	Met	C11
The enQuesta Water CIS application provides the ability to bill in a multi-company environment with multiple services.	Met	D02
The enQuesta Water CIS application provides the ability to generate simulated bills based on new rates, new services, adjusted usage.	Met	D04

Requirement	City Auditor Analysis of Requirement Implementation	Reference to Updated Detailed Requirements Checklist
The enQuesta Water CIS application provides the ability to automatically calculate and track discounts at the total bill level or the individual rate level.	Met	D07
The enQuesta Water CIS application provides the ability to recalculate estimated bills when a good reading is received either automatically or on demand.	Met	D10
The enQuesta Water CIS application provides the ability to accommodate the recording of full and partial receipts.	Met	D99b
The enQuesta Water CIS application provides the ability to calculate charges or credits to sewer based upon water consumption.	Met	D11
The enQuesta Water CIS application provides the ability to bill multiple cycles on the same day.	Met	D13
The enQuesta Water CIS application provides the ability to bill an account out of cycle after all meter readings for the account are accepted.	Met	D14
The enQuesta Water CIS application provides the ability to recognize accounts with social security and other agreements and calculate due dates based upon the terms of the agreement.	Met	D15
The enQuesta Water CIS application provides the ability to bill multiple customers for multiple services at a single premise.	Met	D16
The enQuesta application provides the ability to automatically estimate bills based on usage history when an actual reading is not input by a scheduled date.	Met	D17
The enQuesta Water CIS application provides the ability to bill for miscellaneous charges.	Met	D18
The enQuesta Water CIS application provides the ability to bill metered and flat rate services.	Met	D19
The enQuesta Water CIS application provides the ability to bill a service based on the consumption of usage of another service.	Met	D30
The enQuesta application provides the ability to calculate charges subject to a minimum billing amount.	Met	D33
The enQuesta Water CIS application provides the ability to calculate charges subject to contracted minimum or maximum dollar amounts.	Met	D34
The enQuesta application provides the ability to maintain rate history with effective dates.	Met	D37

Requirement	City Auditor Analysis of Requirement Implementation	Reference to Updated Detailed Requirements Checklist
The enQuesta Water CIS application provides the ability to track and display payment detail on any payment (a minimum of up to 60 months).	Met	D53
The enQuesta Water CIS application provides the ability to apply payments to specific items on a bill.	Met	D54
The enQuesta Water CIS application provides the ability to apply late charges to specific items on a bill and not to the entire balance.	Met	D55
The enQuesta application provides the ability to support the audit processes and provides the ability to trace the source of missing or disputed data.	Met	D61
The enQuesta Water CIS application provides the ability to generate a roll-forward of receivables one year old, two years old, three years old, four years old and years greater indicating the beginning balance, adjustments, payments and ending balance by each year in order to compute the allowance for doubtful account and/or bad debt ratio.	Not Implemented	D67
The enQuesta Water CIS application provides the ability to generate a monthly roll-forward of total receivables indicating the beginning balance, adjustments, payments and ending balance.	Not Implemented	D68
The enQuesta Water CIS application provides the ability to generate a report summing the amount of unbilled accounts receivable at the end of the city's fiscal year.	Met	D69
The enQuesta Water CIS application provides the ability to provide an aging report by 30 days, 60 days, 90 days, one year, two years, three years, four years, and amounts greater than four years.	Not Implemented	D70
The enQuesta Water CIS application provides the ability to provide automatic dunning notices when accounts age beyond 90 days.	Met	D71
The enQuesta Water CIS application provides the ability to report the number of water disconnects on monthly basis.	Met	D77
The enQuesta Water CIS application provides automatic calculation and assessment of penalties, interest and other administrative charges on over past due amounts per city ordinance.	Met	D80

Requirement	City Auditor Analysis of Requirement Implementation	Reference to Updated Detailed Requirements Checklist
The enQuesta Water CIS application provides a computation of the billing versus collection rate separating current billings / current collections and also total billings / total collections, which includes prior year collections. The application also provides this information by class of customer i.e. residential, commercial, industrial, and institutional.	Not Implemented	D82
The enQuesta Water CIS application provides management on-line query capability for operational and financial data i.e. top 100 delinquent accounts by class.	Met	D87
The enQuesta Water CIS application limits manual adjustments to authorized personnel consistent with internal control policies.	Met	D89
The enQuesta Water CIS application provides the capability to identify and report receivables that meet predetermined criteria for bad debt criteria and write-offs.	Met	D91
The enQuesta Water CIS application provides the ability to track and delineate accounts turned over to outside collection agencies, including reporting specific to these accounts.	Met	D93, D94
The enQuesta Water CIS application provides the ability to provide monthly reports of returned items (non-sufficient checks).	Met	D99
The enQuesta Water CIS application provides the ability to make prior period adjustments without affecting current charges or consumption.	Met	E05
The enQuesta Water CIS application provides the ability to track meter tampering history by customer and by location.	Met	E06
The enQuesta Water CIS application provides the ability to access billing history, payment history, adjustment history, and meter reading history by combination and singular variations of service location, customer name, or meter number.	Met	E07 through E15
The enQuesta Water CIS application provides the ability to maintain a record of open accounts receivable indefinitely.	Met	F01
The enQuesta Water CIS application provides the ability to vary re-payment agreement amounts and due dates.	Met	F02
The enQuesta Water CIS application provides the ability to establish re-payment agreement by selected open items.	Met	F03
The enQuesta Water CIS application limits the ability to purge billing and accounts receivable history based on user entered effective dates to the system administrator and the database administrator.	Met	F04
The enQuesta Water CIS application provides the ability to hold cut-off notices from being created when re-payment agreement terms are being met.	Met	F08

Requirement	City Auditor Analysis of Requirement Implementation	Reference to Updated Detailed Requirements Checklist
The enQuesta Water CIS application provides the ability to automatically generate a cut-off service order if terms of a re-payment agreement are broken.	Met	F09
The enQuesta Water CIS application provides the ability to write off an uncollectable account.	Met	F10
The enQuesta Water CIS application provides the ability to mass write off customer accounts.	Met	F11
The enQuesta Water CIS application provides the ability to access the write-off history file when creating a new account.	Met	F12
The enQuesta Water CIS application provides the ability to post payments and adjustments to accounts which have been written off.	Met	F13, F14
The enQuesta Water CIS application provides the ability to report on accounts sent to a collection agency.	Met	F15

**Source:** City Auditor's Office system requirements implementation review. The review is based on a sample of 97 requirements derived from the detailed requirements checklist of the agreement for the implementation of the enQuesta application.





Appendix B  
System Management Review and Response to Audit Recommendations

**CITY OF ATLANTA DEPARTMENT OF WATERSHED MANAGEMENT'S  
RESPONSE TO THE CIS AUDIT DRAFT REPORT  
NOVEMBER 2009**

The Department of Watershed Management has reviewed the Recommendations and Requirement Analysis completed by the audit team. The department agrees with the recommendations and has been able to complete 5 out of 10 (50%) prior to the release of the audit report and the remaining are in progress.

<b>CIS AUDIT RECOMMENDATIONS</b>		
<b>Recommendation</b>	<b>Status</b>	<b>DWM Response</b>
<b>To achieve the intended benefits of the enQuesta system, the Commissioner of Watershed Management should:</b>		
1. Determine why some system requirements were not implemented and whether the vendor can be held accountable for implementing them now;	Complete	DWM reviewed the list of seven (7) requirements identified by the Auditor as not being met and determined that the Vendor will still need to implement four (4) of the requirements. The remaining three (3) were not implemented due to the strategic needs of the business.
2. Document business reasons for choosing not to implement some requirements;	Complete	DWM has reviewed the list of requirements identified by the Auditor and has made comments on all requirements (see below) that are either "not met" or "not implemented" to explain the business justification.
3. Develop in-house expertise on the extraction and analysis of data from the enQuesta application.	Complete	DWM has been able to acquire the expertise in system security.
<b>To strengthen controls intended to protect sensitive data, the Commissioner of Watershed Management should:</b>		
4. Develop departmental expertise in the areas of system security and IT governance, or establish a relationship with the city's Department of Information Technology;	In Progress (6/2010)	DWM is planning to hire a UNIX administrator within the first or second quarter of 2010 and we plan to use the IT governance that currently exists in DIT.
5. Ensure that watershed management staff review all user accounts (with the exception of the root account) and enforce the established password policies;	Complete	DWM IT has made the appropriate change that requires <i>all</i> users to have a password with a minimum length of 8 characters and prevents the reuse of the previous 5 passwords within a 52 week period, in accordance with the established password policy.
6. Ensure that watershed management staff review all user accounts in enQuesta and the UNIX operating system and remove IDs belonging to terminated users and generic IDs that are no longer needed;	In Progress (3/2010)	DWM is currently checking for valid users on a quarterly basis; however with the implementation of HRIS (Human Resource Information System), IT will be provided with an automatic (real time) notification of employment changes for all employees and will use this information to update user accounts on all systems, including enQuesta.

## CIS AUDIT RECOMMENDATIONS

Recommendation	Status	DWM Response
7. Enforce system settings to limit remote logon using the root account;	Complete	DWM IT has made the appropriate changes to no longer allow Root access via FTP.
8. Establish a policy that governs the periodic review and recertification of users for the enQuesta application and removal of terminated users;	In Progress (3/2010)	The HRIS application is being established to notify us of any changes in employee status and appropriate action will be taken to update the enQuesta application upon notification. This will ensure that all users have appropriate levels of access.
9. Establish a policy that limits vendor access to the production instance of enQuesta to an as-needed basis and governs how, when, and who is responsible for granting the vendor system access, and consider monitoring what is done by the vendor;	In Progress (3/2010)	DWM has completed a thorough analysis of the business impact with limiting vendor accessibility. In order for vendor support from S&S, it is required that access is granted to the production instance. We are currently in the process of securing and installing monitoring software to assist with the monitoring and granting of access.
10. Establish a formal change control policy that governs watershed management's areas of responsibility for changes to the enQuesta application.	In Progress (3/2010)	A change control policy has been developed to address maintenance releases; however, this policy needs to be expanded to address all changes to the application.

## CIS REQUIREMENT ANALYSIS

This section focuses on DWM’s assessment of the seven (7) out of a sample of 97 requirements (7.2%) that were *not* identified as “met” by the auditor (the 97 requirements were a subset of 311 total requirements). Each requirement is analyzed by describing its status in one of three categories, along with the anticipated timeframe of completion:

- On Hold – CIS is capable of implementing this feature, but the department has strategically chosen to implement at a later date.
- Not Implemented – The feature is not currently implemented.
- Partially Met – The feature is partially implemented, but will require additional efforts to complete.

<b>CIS REQUIREMENT ANALYSIS</b>			
<b>CIS Requirement</b>	<b>City Auditor Analysis</b>	<b>DWM Analysis</b>	<b>DWM Comments</b>
1. Customers are enabled to apply for service via the internet.	Not Implemented	On Hold (2011-2012)	DWM has chosen not to implement this feature until other major initiatives have been completed; to ensure that the policies and procedures developed are fair, comprehensive and secure.
2. The enQuesta application provides the ability to link accounts for the purpose of generating a single bill to a master account.	Not Implemented	On Hold (2011-2012)	DWM has chosen not to implement this feature until other major initiatives have been completed.
3. The enQuesta application provides the ability to request budget billing via the World Wide Web/Internet	Not Implemented	On Hold (2011-2012)	The Department has chosen not to implement this feature until other major initiatives have been completed and the department can evaluate specifically how this option should be implemented.
4. The enQuesta Water CIS application provides the ability to generate a roll-forward of receivables one year old, two years old, three years old, four years old and years greater indicating the beginning balance, adjustments, payments and ending balance by each year in order to compute the allowance for doubtful account and/or bad debt ratio.	Not Implemented	Not Implemented (6/2010)	The vendor will implement this feature.
5. The enQuesta Water CIS application provides the ability to generate a monthly roll-forward of total receivables indicating the beginning balance, adjustments, payments and ending balance	Not Implemented	Not Implemented (6/2010)	The vendor will implement this feature.
6. The enQuesta CIS application provides the ability to provide an aging report by 30 days, 60 days, 90 days, one year, two years, three years, four years and amounts greater than four years.	Not Implemented	Partially Met (6/2010)	CIS application currently provides the 30, 60, 90 and 120 day report. The addition of the one to four years can be generated after additional programming. The vendor will expand the current report to include the additional time frames.
7. The enQuesta CIS application provides a computation of the billing versus collection rate separating current billings / current collections and also total billings/total collections, which includes prior year calculations. The application also provides this information by class of customer i.e. residential, commercial, industrial, and institutional.	Not Implemented	Not Implemented (6/2010)	Currently, reports are generated that provide monthly billings and collections data; however, the vendor will develop a report that separates current billings and collections versus total billings and collections provided by class of customer.