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June 30, 2009

The Honorable Alan P. Krasnoff and  
Members of the City Council  
City of Chesapeake  
City Hall – 6<sup>th</sup> Floor  
Chesapeake, Virginia 23328

Dear Mayor Krasnoff and Members of the City Council:

We have completed our review of the City of Chesapeake's Public Utilities Department (Public Utilities) for July 1, 2008 to March 31, 2009. Our review was conducted for the purpose of determining whether Public Utilities was providing services in an economical, efficient, and effective manner, whether its goals and objectives were being achieved, and whether it was complying with applicable City and Department procedures in areas of operations, billings, cash, revenues, fees, and information technology. This Public Utilities audit focused significantly on contractual services, billing, and customer service related controls and issues.

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

Public Utilities provided essential services within the 353 square miles of the City of Chesapeake (City). It provided the citizens and the businesses of Chesapeake a reliable and sufficient supply of safe drinking water as well as a reliable wastewater collection system. Public Utilities was an enterprise fund and operated in a responsive, efficient and cost effective manner. The Department maintained thousands of miles of pipeline to deliver potable water and receive wastewater. Public Utilities treated its own raw water and serviced the majority of Chesapeake with City water.

The City did not treat its own wastewater; rather, the sewer lines delivered the wastewater from City feed lines to larger mains owned and operated by the Hampton Roads Sanitation District (HRSD), which treated the wastewater. In order to facilitate cost savings and be more customer friendly, the City and Public Utilities entered into an agreement with HRSD to provide customer invoicing. Under this contract, HRSD included Public Utilities' water charges and wastewater collection on the same invoice with the customer's HRSD wastewater treatment charges and collected both payments.

The agreement was intended to provide Public Utilities with cost savings as a result of not having to maintain a duplicate invoicing system and allowed customers to receive only one invoice instead of two.

For Fiscal Year (FY) 2008-2009, Public Utilities had an operating budget of over \$38 million excluding debt service, and an authorized compliment of approximately 209 full-time personnel and 6 part-time personnel, with the majority located in either Maintenance and Operations or Water Productions. Debt service added almost \$13 million to the budget. As an enterprise fund, Public Utilities generated its own revenue. Public Utilities occupied offices on the second floor of the City Hall Municipal Building and at the Butts Station Operations Center. In addition, Public Utilities operated two water treatment plants and numerous pump stations.

Based on our review, we determined that Public Utilities had accomplished its overall mission of providing the citizens of Chesapeake a reliable and sufficient supply of safe drinking water and a reliable wastewater collection system through responsive, efficient and cost effective operation. However, we did identify several significant issues that needed to be addressed. These issues included insufficient system controls during the implementation of the agreement between the City and HRSD, Public Utilities water usage adjustments that were not recognized by HRSD and resulted in delays of up to eight months in recognizing customer account adjustments, an HRSD invoice format that was difficult to understand, lack of a contingency plan if HRSD did not satisfy all of the provisions of its contract, changes to customer account records without prior management review, and other system billing control and cash handling issues.

This report, in draft, was provided to Public Utilities officials for review and response, and their comments have been considered in the preparation of this report. These comments have been included in the Managerial Summary, the Audit Report, and Appendix A. Public Utilities management, supervisors, and staffs were very helpful throughout the course of this audit. We appreciated their courtesy and cooperation on this assignment.

Sincerely,



Jay Poole  
City Auditor  
City of Chesapeake, Virginia

C: William E. Harrell, City Manager  
Amar Dwarkanath, Deputy City Manager  
James K. Walski, Director of Public Utilities

## **A. Objectives, Scope, and Methodology**

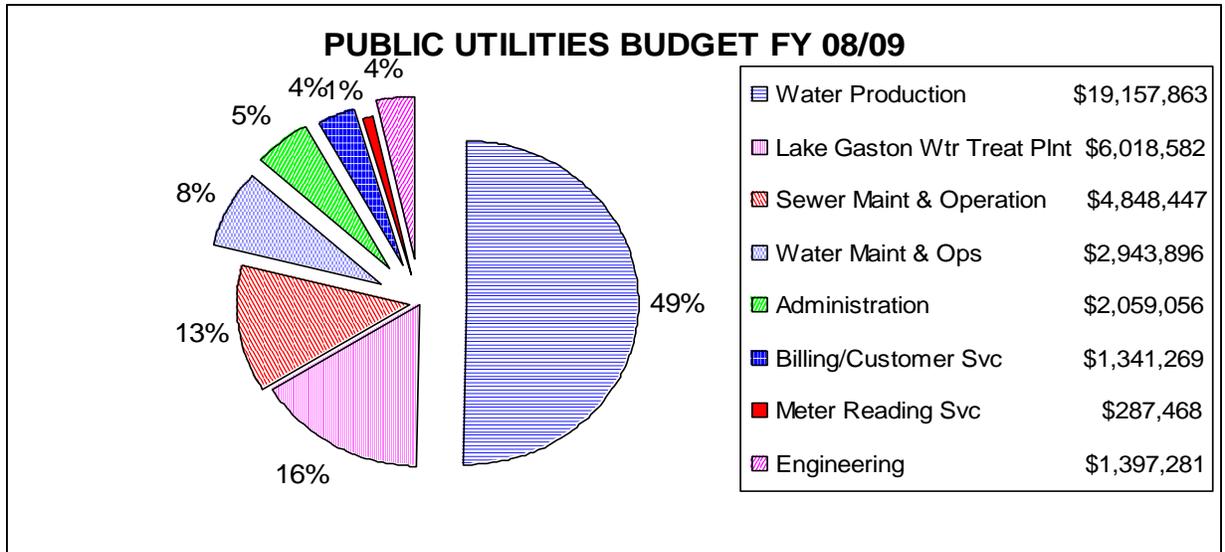
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The City did not treat its own wastewater; rather the sewer lines delivered the wastewater from City feed lines to larger mains owned and operated by the Hampton Roads Sanitation District (HRSD), which treated the wastewater. In order to facilitate cost savings and be more customer friendly, the City and Public Utilities entered into an agreement with HRSD to provide customer invoicing. Under this contract, HRSD included Public Utilities' water charges and wastewater collection on the same invoice with the customers' HRSD wastewater treatment charges and collected both payments. The agreement was intended to provide Public Utilities with cost savings as a result of not having to maintain a duplicate invoicing system and allowed customers to receive only one invoice instead of two.

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***Public Utilities Budget for FY 08/09 without Debt Service***

To conduct this audit, we reviewed and evaluated City and Public Utilities Department policies, procedures, and operations, contract documents and reports. Also, we reviewed HRSD meeting records, data related to staffing levels and turnover, and conducted surveys of other local Public Utilities Departments. We conducted site visits of both water treatment plants and “ride-a-longs” with both Field Forces and Maintenance and Operations. We discussed these audit areas and conducted interviews with the Financial and Customer Service Administrator, Customer Service Manager, Customer Service Supervisor, Water Resources Administrator, Fiscal Administrator, and various other Public Utilities personnel.

### **Major Observations and Conclusions**

Based on our review, we determined that Public Utilities had accomplished its overall mission of providing the citizens of Chesapeake a reliable and sufficient supply of safe drinking water and a reliable wastewater collection system through responsive, efficient and cost effective operation. However, we did identify several significant issues that needed to be addressed. These issues included insufficient system controls during the implementation of the agreement between the City and HRSD, Public Utilities water usage adjustments that were not recognized by HRSD and resulted in delays of up to eight months in recognizing customer account adjustments, an HRSD invoice format that was difficult to understand, lack of a contingency plan if HRSD did not satisfy all of the provisions of its contract, changes to customer account records without prior management review, and other system billing control and cash handling issues.

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## **Methodology**

To conduct this audit, we reviewed Public Utilities policies, procedures, and practices. This review included testing and evaluation of the Department's customer billing system. We conducted extensive analysis of the inconsistencies in the handling of customer adjustments, timeliness of the adjustments, and the routine difficulty in explaining the various items on the customer's bills. We also reviewed vendor performance issues with the HRSD contract related to the invoicing of City water bills as well as system controls and technology.

In addition to these items, we reviewed compliance with selected City and State policies and procedures. We reviewed citizen satisfaction surveys, departmental reports, and a special consent order issued by the Virginia Department of Environmental Quality for HRSD and multiple Hampton Roads localities. We also interviewed numerous staff from Maintenance and Operations, Billing, and Customer Service, Water Production within Public Utilities, as well as staff from the City's Information Technology Department.

## **B. Performance Information**

Public Utilities impacted the lives of most of Chesapeake's residents through its provision of water services. The Department's goal was to provide a reliable and sufficient supply of safe drinking water and a reliable wastewater collection system. Public Utilities did this in almost a completely transparent manner. Every time a resident turned on a faucet or flushed a toilet, Public Utilities was involved. This involvement could have been anything from maintaining sufficient water pressure in the system to ensuring wastewater pump stations were operating, to detecting and solving bacterial irregularities in the drinking water. If the need to fight a fire occurred, Public Utilities was able to monitor the system to ensure that sufficient water pressure was available at the scene.

Despite an oftentimes adverse public opinion, Public Utilities met or exceeded all quality standards for a municipal water system. Public Utilities used state-of-the-art methods to purify the drinking water and maintained a laboratory designated solely for the continuous monitoring of the water quality. Public Utilities also completed a software implementation in its Maintenance and Operations (M&O) division that had the potential to significantly improve how that division did business.

### **1. Organization**

Public Utilities was divided into five functional divisions and eight service areas: Administration; Water Production (Lake Gaston and Northwest River); Engineering; Maintenance and Operations (which was subdivided into M&O – Sewer and M&O – Water); and Billing and Customer Service, which handled the meter reading service. Each division carried out an essential function independent from the others.

### **2. Administration Division**

The Administration Division was responsible for providing overall departmental leadership and necessary supporting functions, such as payroll and accounting, for the Public Utilities operational divisions. This division was responsible for coordinating the Department's operations, preparing the operating and capital improvement budgets, and preparation of all necessary financial reports. The water quality hotline and the Utility Capital Improvement – Debt Service fund were also managed within this division.

### **3. Water Production Division**

The Water Production Division was responsible for ensuring the safety and reliability of the City's drinking water. To meet this mandate, the Division operated two treatment plants, namely Northwest River and Lake Gaston, as well as maintaining several remote storage facilities.

The Northwest River Treatment Plant operated in the southern part of the City and drew its primary water source from the nearby Northwest River. Due to the

occasionally poor quality of the source water, this plant relied on conventional methods and a 'reverse osmosis' filtration system to treat the water. Additional treatment procedures were performed to meet established quality standards. The Northwest River Treatment Plant also housed a state-of-the-art laboratory for the testing and monitoring of the water as it passed through treatment processes. The laboratory also sampled water at various sites across the city to ensure that the quality standards were being maintained.



***Northwest River Water Treatment Plant – Control Room and Laboratory***

The Lake Gaston Treatment Plant operated in the western part of the City and was constructed to ultimately service water from the Lake Gaston watershed. In 2009, the plant used water purchased from the City of Norfolk in its raw state and treated this water using new technological processes. When the plant was opened in 2006, the City of Chesapeake had one of the few municipal treatment plants in the country using state-of-the-art membrane filtration. Both the Northwest River and Lake Gaston plants met or exceeded all state and federal guidelines for safe drinking water



***Lake Gaston Water Treatment Plant – Early Stage Processing and Micro-fiber Filtration System***

#### **4. Engineering Division**

The Engineering Division served as Public Utilities' main source of technical assistance regarding water and sewer issues for developers, engineers, contractors and the general public. Engineering also advised other City departments. This division was responsible for plat and plan review for new developments, facilitated emergency operations plans, and maintained all utility plans and engineering records. Engineering also was tasked with developing City-funded utilities projects, assisting with state utility construction or relocation projects, and administering the state cross-connection control program for the City.

#### **5. Maintenance and Operations Division (M&O)**

The M&O Division was primarily responsible for the maintenance and repair of the thousands of miles of City water and sewer lines. This division was subdivided into two service areas: Sewer and Water Distribution.

M&O – Sewer was responsible for the 24-hour maintenance and operation of all sewage pumping stations, gravity and sewer force mains to ensure a continuous wastewater disposal system. This division performed all routine maintenance and emergency repairs on all of the sewer mains, pump stations, and all other parts of the sewer system. M&O – Sewer also cleared out sewer blockages.



***M&O – Sewer finishing maintenance on a pump and removing waste from a grate***

M&O – Water Distribution was responsible for the 24-hour maintenance and operation of all water distribution mains, ensuring a continuous potable water supply and adequate fire protection. This division performed hydrant tests and repairs, service pressure tests, main leak repairs, and meter and valve repair and replacement. M&O – Water Distribution also installed new water service connections.

## **6. Billing and Customer Service Division**

The Billing and Customer Service Division was responsible for all customer accounts and activities. The Division initiated customer accounts, maintained customer histories, collected payments, and handled billing and service issues. The City and Public Utilities had contracted with HRSD to provide invoicing services for all Chesapeake customers' billings. Under this contract, HRSD produced a joint invoice with both water and sewer charges and accepted payment for Chesapeake water charges and wastewater collection at all HRSD payment locations.



***Public Utilities Customer Service Center***

As a part of the Billing and Customer Service Division, Meter Reading Services was responsible for the accurate reading of customers' water meters. Meters were read every 58 – 60 days for residential customers and were invoiced every two months. Meters were read every month for commercial accounts and were invoiced monthly.



***Replacement of a water meter by field forces***

## **7. Maximo Implementation**

In 2007, the City and Public Utilities entered into a special consent order issued by the Virginia Department of Environmental Quality for HRSD and all of the Hampton Roads local Public Utilities and Public Works Departments responsible for providing sewer services. The consent order dealt with several areas, including system age and integrity, adequacy of system capacity, and system maintenance and operations. As part of their response to the consent order, Chesapeake's Public Utilities M&O initiated a software implementation for the Maximo program.

Maximo was a multi-faceted program that could be used for inventory tracking, work order entry, job scheduling, and job costing. It was expected to bring needed efficiencies and cost savings to the M&O Division, as well as provide enhanced management of various planned maintenance and emergency repairs throughout the City's water delivery and wastewater systems. During the M&O Maximo implementation, various other City departments, such as Police, Fire, and Parks and Recreation participated on the implementation team in order to provide for a consistent platform among departments when Maximo was implemented Citywide.

## **8. Citizen Satisfaction**

A telephone survey of Chesapeake citizens was conducted by Continental Research Associates, Inc., a Hampton Roads marketing research firm. A total of 301 interviews were completed from August 23<sup>rd</sup> through September 18<sup>th</sup> of 2007. The purpose of the study was to learn how Chesapeake residents felt about their community and the services that were provided by the City. In this survey, 94.4% of the citizens felt that the quality of the drinking water was important or extremely important. However, despite meeting or exceeding all state and federal quality levels, only 51.8% of the citizens surveyed were satisfied or extremely satisfied with the quality of the City's drinking water.

This lack of satisfaction with Chesapeake water was an unfortunate remnant from before the time Chesapeake constructed its state-of-the-art water treatment plants. Since the upgraded Northwest River Water Treatment Plant became operational in 1999, the water quality had improved substantially and in a newspaper-conducted 1999 survey, Chesapeake water scored higher in taste tests than water from Norfolk, Portsmouth, and Virginia Beach.

## **9. Process Improvements Initiated by Public Utilities**

### **a. Strategic Plan Committee**

According to internal documents, prior to 2006, the Department formed a committee to develop a Strategic Plan. In 2006 the committee was expanded to include an Information Technology representative. According to the Customer Service Manager, the Committee was addressing technology issues in its strategic plans. In 2006 members of the Committee visited Dominion Power, Portsmouth, Norfolk, and Virginia Beach to review their billing processes. In 2007, after HRSD billing issues surfaced, additional Committee activity was postponed until 2008. In 2009 the City retained AAC, a management consulting group, to help develop a plan for a potential new billing and operations system.

The Committee had been working to find innovative ways to read meters electronically, with the results transmitted back to Public Utilities. Two options under consideration included the AMR (Automated Meter Reading<sup>1</sup>) or AMI (Automated Meter Infrastructure<sup>2</sup>), or a combination of both systems. Automating the meter readings would save staff time reading meters and conserve on fuel costs for vehicles. The Committee was also looking at both digital platforms to:

- allow quicker billing,
- increase the accuracy of meter readings,
- lower the cost to read meters,
- increase the ability to detect and prevent theft of service,

The objective of the new billing management system was to address existing system deficiencies and provide technology solutions to automate billing processes that were manual. The Committee was working with AAC to develop a Functional Matrix and criteria to streamline processes. So far, 12 criteria had been developed. Two of the 12 criteria, Billing Management and Service Order Management, addressed automating the billing adjustments and service work order processes, both of which were manual. Public Utilities planned to continue working with AAC to eventually select a system that would work for Public Utilities.

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<sup>1</sup> **Automatic meter reading, or AMR**, is the technology of automatically collecting data from water meter or energy metering devices (water, gas, electric) and transferring that data to a central database for billing and/or analyzing. This saves employee trips, and means that billing can be based on actual consumption rather than on an estimate based on previous consumption, giving customers better control of their use of electric energy, gas usage, or water consumption. ([www.Wikipedia.com](http://www.Wikipedia.com))

<sup>2</sup> An **Automated Meter Infrastructure, or AMI**, incorporates intelligent water meters that can communicate with the utility company over wired or wireless networks. Meters can be read daily, or more frequently, as appropriate. It is not necessary to send a service person to visit every customer location once a month.

## **b. Other Departmental Improvements**

As a result of our audit, Public Utilities created a Standard Operating Procedure (SOP) to address the timing of deposits. According to the Customer Service Supervisor, the new procedure required that deposits be completed by 5:15 p.m. each day by the Supervisor. The new procedure also required payments to be processed up to 4:30 p.m. All payments received after 4:30 p.m. were processed manually and taken the Treasurer's Office by 8:30 a.m. the following day.

Also, Public Utilities planned the following improvements:

- Pursuing establishment of an over/short account with the Finance Department,
- Establishing dual access controls for the safe,
- Requiring contents of the safe to be inventoried at least once every six months and when staff changes occur,
- Requiring periodic review of system access to remove those individuals who were no longer authorized to access the system.

## **C. Contractual and Vendor Issues**

We identified a number of critical issues related to the contract between HRSD and the City that needed to be addressed. First, the Customer Payment Agreement between HRSD and the City did not adequately control invoicing and cash handling processes. Second, HRSD did not always recognize water usage adjustments made by Public Utilities, and customers sometimes had to wait as long as eight months to receive HRSD account credits due them. Third, Public Utilities' Customer Service Representatives experienced difficulty explaining the HRSD invoice adjustments to customers. Fourth, HRSD was not contractually obligated to give Public Utilities customer billing histories at the end of the contract term.

### **1. Contract System Implementation and Control Difficulties**

**Finding - The implementation of the Customer Payment Agreement (Agreement) between Hampton Roads Sanitation District (HRSD) and the City did not adequately control billing and cash handling collections processes. In addition, HRSD did not adequately test its new billing software, creating billing discrepancies for over 5,500 Chesapeake customers.**

The Customer Payment Agreement dated June 1999 outsourced the Public Utilities' billing and cash handling collections processes for City water and sewer utility charges to HRSD. Section 2, **Responsibilities of the Parties** of the Agreement stated:

“Both parties agree to maintain an adequate system of internal control which provides reasonable assurance that the objectives of this agreement will be achieved. The internal control procedures should include: (1) proper authorization of transactions; (2) segregation of duties; (3) design and use of adequate documents and records to ensure proper recording of transactions; (4) safeguards over access to and use of assets and records and (5) independent checks on performance and proper valuation of recorded amounts.”

Section 2 also states:

“In the event of a discrepancy relative to a customer payment accepted by one participating jurisdiction on the behalf of another under the terms of this Agreement, responsibility for resolving the discrepancy lies with HRSD and the jurisdiction processing the payment.”

We noted that HRSD did not have adequate controls to monitor the effects of software changes and did not notify the City of the situation when HRSD implemented its new Customer Care and Billing System (CCBS) in the summer of 2007. According to HRSD minutes, HRSD experienced billing delays within its own system resulting from deficient files, missing sub-meter credits, issues associated with customers enrolled in HRSD's old AutoPay program, and customers receiving back-to-back bills. HRSD did

not advise Public Utilities about these issues until October 2007, approximately four months after their inception.

As a result of these problems, a variety of billing discrepancies were created for over 5,500 Chesapeake customers. Public Utilities initiated weekly meetings each month with HRSD to resolve the processing issues and to provide the necessary data for their new system. Although the two entities had been working to resolve the majority of initial discrepancies, they were unable to resolve all of them. Billing discrepancies continued to be identified by Public Utilities and HRSD exception reports related to inconsistencies with meter types, readings, processing errors, and similar items.

Until March 2008, HRSD was unable to state the root cause of the errors; however, they subsequently reported that most errors were related to billing incompatibility. Also, according to their March 25, 2008 Board Minutes, HRSD's consultant identified three major control weaknesses in their own billing system implementation:

- **Inadequate testing.** Testing of the new billing system did not detect the billing discrepancies. A comprehensive testing program using the proper testing methodology should have been able to detect the issues prior to implementation.
- **HRSD's billing system was not standardized using Electronic Data Interchange (EDI)**<sup>3</sup>. In the absence of a standard EDI, HRSD should have developed a written policy for data interchange. Since the data interchanges were not standardized, the data interchange was done on a "case-by-case" basis.
- **Lack of a comprehensive and mutually agreed upon permanent set of documentation, or "data dictionary."** This data dictionary should have been developed prior to implementation. Since the data dictionary was not developed for each jurisdiction, HRSD had been developing it in a "piece-meal" fashion through phone calls and emails. Without a data dictionary, it would be difficult for any jurisdiction to test its output.

Since Public Utilities was completely dependent on HRSD's billing system, thousands of customers were inconvenienced, Chesapeake's public image and customers' confidence in Public Utilities were compromised, working relationships with HRSD were strained, receipt of money was delayed because customers were not billed properly, and many staff hours were lost due to the need to address the billing issues that arose. The billing discrepancies also prompted a high volume of incoming calls to the Department's Customer Service Center, which strained the Department's resources and caused call overflow into the City's Customer Contact Center.

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<sup>3</sup> **Electronic Data Interchange (EDI)** refers to the structured transmission of data between organizations by electronic means. It is used to transfer electronic documents from one computer system to another; i.e., from one trading partner to another trading partner. (Source: Wikipedia)

**Recommendation – The City should take steps to ensure that HRSD satisfies its internal control obligations as stated in the Agreement. The City should also take steps to make sure that future billing discrepancies are minimized.**

Because of the monitoring resources that were likely to be required to address this finding and other subsequent findings, the City may wish to seriously evaluate whether it wishes to continue the Agreement with HRSD. If the City does elect to continue the Agreement, it should take steps to ensure that HRSD carries out the internal control requirements detailed in the Agreement. We noted that HRSD's new management has hired a consultant to review some of the control deficiencies associated with their system implementation. Public Utilities should review the results of the consultant's work to ensure that (1) the control deficiencies have been addressed, and (2) any future adverse impacts for Chesapeake customers will be minimized.

**Response – A) During the May 14, 2009 conference call with HRSD, we asked about the current status of the HRSD internal control procedures and documentation. The HRSD Director of Information Services stated the internal control documentation has not been updated to reflect the implementation of the CC&B (i.e. CCBS) system. He indicated that they have focused on correcting billing concerns with the multiple jurisdictions and could not commit to a schedule to complete the documentation for a review.**

We are not aware of any cash handling discrepancies. The problems encountered were with the billing software.

**B) When the City of Chesapeake started joint billing with HRSD in 1999, a daily billing reconciliation was implemented. This was done to identify any and all billing discrepancies. The joint billing system worked fine for 8 years. Unfortunately, when HRSD implemented their new billing system, we stopped receiving any billing reports. Although the billing reports were requested many times, we were told the reports were in development and not ready yet. We were unable to continue our daily reconciliation through billing reports; but the cash reports and accounts receivables reports continued and these were used.**

Once it was obvious that the problem would not be readily resolved, we immediately tried to revert to our previous practice of printing our own bills. When this request was made it was found that after the contract was executed with HRSD that subroutine was no longer maintained and our bills could no longer be printed in-house. So we dropped back further and sought a contractor to whom we could outsource the printing and mailing tasks.

A third party vendor capable of printing our bills was found, but that was also for naught. We were informed that when the City's cash system was subsequently updated, Public Utilities had not been considered as a contingency. We were further informed that a quick upgrade was impossible due to the lack of

resources. Even if they were, it was estimated to take approximately nine months to do the work.

We resumed receiving the billing reports again in April, 2008. We restarted our reconciliation process through the billing reports at that time.

## **2. Delays in Processing Customer Credits**

**Finding - HRSD did not always recognize adjustments made by Public Utilities for reduced water consumption. As a result, customers sometimes had to wait as long as eight months to receive HRSD account credits due them.**

The Agreement between the City and HRSD established responsibility for billing and cash handling of Public Utilities water and sewer charges in conjunction with the billing and collection of sewer charges from HRSD. Therefore, when Public Utilities made adjustments to customer accounts for reduced water consumption, those adjustments should have been reflected in both the Public Utilities charges and the HRSD charges.

When Public Utilities made adjustments for customer accounts, the adjustment register would be generated and sent electronically each night to HRSD for processing. Based on our sample of 15 items, all of the Public Utilities adjustments appeared on the next bill after the date of the adjustment. However, corresponding adjustments were not always made by HRSD, or in some instances were not applied until as much as eight months after the Public Utilities adjustment. In addition, for all 15 items reviewed, the credits, which ranged in amount from \$19.80 to as much as \$1,153.53, were not shown on the initial HRSD invoice that disclosed the initial Public Utilities adjustment. Furthermore, three of the adjustments, which had been outstanding for over six months, were not made by HRSD until after Audit Services advised Public Utilities of the need for them in March of 2009.

Specific results of our testing follow on the next page:

### Exhibit 1 – Timing Delays for HRSD Adjustments

	Reason for Adjustment	Public Utilities Consumption Adjustment (in units)	Public Utilities Credit Adjustment	Public Utilities Adjustment Date	HRSD Consumption Adjustment	HRSD Credit Adjustment	HRSD Billing Adjustment Date	Approximate Timing Difference in days
1	Reading Correction	10	\$21.47	7/07/2008	Undisclosed on bill	19.80	7/15/2008	8 days
2	Service Bill Error	36	193.21	7/07/2008	Undisclosed on bill	100.98	7/17/2008	10 days
3	Plumbing Fixture Leak	24	85.86	8/27/2008	Undisclosed on bill	156.52	3/19/2009*	204 days (6 mos. 20 days)
4	Flush Tank Leak	50	178.90	8/27/2008	Undisclosed on bill	196.02	3/24/2009*	209 days (6 mos. 29 days)
5	Reading Correction	12	37.57	7/07/2008	Undisclosed on bill	25.74	7/17/2008	10 days
6	Unidentified Loss	264	944.60	8/15/2008	Undisclosed on bill	500.37	8/18/2008	3 days
7	Service Line Leak	532	2150.28	9/30/2008	Undisclosed on bill	1,153.53	10/20/2008	20 days
8	Service Billed in Error	8	17.44	10/24/2008	Undisclosed on bill	18.99	11/13/2008	20 days
9	Reading Correction	5	0	none	Undisclosed on bill	13.62	11/13/2008	n/a
10	Flush Tank Leak	81	315.30	9/17/08	Undisclosed on bill	177.03	3/19/2009*	183 days (6 mos. 2 days)
11	Unidentified Loss	17	65.79	9/17/08	Undisclosed on bill	64.47	9/19/2008	2 days
12	Reading Correction	99	531.33	7/22/2008	Undisclosed on bill	506.34	8/08/2008	17 days
13	Plumbing Fixture Leak	64	229.00	6/5/2008	Undisclosed on bill	313.76	3/1/2009	269 days (8 mos. 24 days)
14	Flush Tank/ Svce Line Leaks	208	740.66	6/12/2008	Undisclosed on bill	479.15	9/09/2008	89 days (2 mos. 28 days)
15	Service Line Leaks	21	94.35	1/29/08	Undisclosed on bill	98.04	2/18/2008	20 days

\*These adjustments were not made by HRSD until after Audit Services notified Public Utilities of the need for them.

The following excerpt from HRSD's March 25, 2008 Commission minutes highlights HRSD's policy practice regarding adjustments:

"Many HRSD customers are ... confused about whom to contact with questions related to consumption and billing. In any given billing cycle, we should anticipate 250 to 350 account inquiries due to consumption issues alone. Each of these inquiries requires a significant amount of staff time to research and resolve. Typically this work should be accomplished by the appropriate locality department of utilities but this has often been the source of confusion and frustration for our customers. While HRSD can research these issues, we cannot make account adjustments without the water purveyor making the adjustment first. These adjustments are based on individual local government policies and HRSD is fully dependent upon these water purveyors to apply the appropriate credits correctly in accordance with their own policies....The bottom line is HRSD will have hundreds of consumption related billing issues each billing cycle. These are not the result of the billing system, but solely a function of meter based billing water. As the new billing system continues to stabilize, staff expects the billing system to continue to be implicated in many of these unrelated meter/consumption issues."

As this excerpt suggests, in the absence of specific billing and adjustment terms, HRSD did not appear to be obligated contractually to recognize the City's water consumption billing adjustments. The Agreement did not specify how Public Utilities' water consumption adjustments would be reflected in HRSD's sewer charges. According to Public Utilities, HRSD had its own set of policies regarding adjustments, which was separate from Public Utilities' policies. It should be noted that, for those adjustments that HRSD did recognize, HRSD delayed its own adjustment processing to assist Chesapeake in correcting the City's invoicing discrepancies before correcting its (HRSD's) own billing errors.

While we understand HRSD's reasons for waiting to process adjustments until confirmed by individual localities, whenever HRSD delayed or denied billing adjustments, the effect was higher collections for HRSD. More importantly, without locality intervention, customers in some cases either did not receive the credits due them in a timely fashion or may not have received them at all.

**Recommendation – Public Utilities should take steps to ensure that its adjustments for reduced water consumption are reflected in HRSD's sewer charge adjustments in a timely fashion.**

Should the City decide to continue its Agreement with HRSD, it should request that HRSD provide comprehensive explanations of their adjustments on customer bills which would include, but not be limited to, the amount of adjusted water consumption and the period affected. Public Utilities should also consider establishing a time frame for when HRSD's adjustments related to Public Utilities' customer accounts should occur. These steps will help ensure customers will receive all the credits due them.

**Response - A process has been initiated to sample the timeliness of HRSD's adjustment processing to their customers. Two weeks after the adjustment to our charges has been made, accounts will be randomly selected to see if HRSD has processed their side of the adjustment.**

While this process will let us know if HRSD is adjusting the accounts in a timely fashion, it may not affect how HRSD processes their respective adjustments. HRSD has internal policies and procedures for processing their own adjustments.

### **3. Invoice Format Confusion and Adjustment Discrepancies**

**Finding - Public Utilities' Customer Service Representatives found it difficult to explain the invoices because of the HRSD invoice format and inconsistency between methods used by HRSD and Public Utilities to apply adjustments. HRSD also back-dated adjustments in the customer history, creating discrepancies in customer balances.**

The Customer Payment Agreement stated that the customers were to be invoiced bi-monthly. Proper accounting required adjustments to be posted in the period in which they were identified.

We noted that the water consumption amounts used as the basis for Public Utilities and HRSD bills were not always reflected on the invoices, nor were the formulas used to calculate any HRSD and Public Utilities adjustments. To compound the issue, HRSD did not use the same method as the Public Utilities for determining consumption when calculating adjustments; HRSD used a minimum of 2 monthly (4 bi-monthly) consumption units whereas Public Utilities used a minimum of 3 monthly (6 bi-monthly) consumption units. Finally, HRSD allowed back-dated adjustments to the customer history, which made the tracking of adjustments difficult.

This situation occurred because the HRSD bill format was not transparent enough to allow customers to easily understand how adjustments were calculated. Also, HRSD's accounting policies allowed back-dating of adjustments.

As a result of these practices, the invoices were difficult to explain to customers. If requests were made to address HRSD adjustments, the Customer Service Representatives would often need to research the adjustment with HRSD directly, or forward the customer to an HRSD representative who could explain the adjustment.

**Recommendation – Public Utilities should clearly define its invoice format expectations and to continue to explore new billing system alternatives that would work with the Customer Information System to provide Public Utilities with accurate data to address customer questions regarding their invoice adjustments.**

At a minimum, a clear explanation for adjustments should be documented on the invoices along with the period affected. Public Utilities should also require adjustments to be processed on the date received, and discontinue back-dating adjustments to the customer history. An addendum to the contract should be made to address these requirements.

**Response – Initially, a former representative of HRSD announced that each jurisdiction could design the format of their bill. Now we have been advised that it is “not feasible” for jurisdictions to design their bill format.**

**We have constantly informed HRSD about the confusing bill format. We have been successful in convincing HRSD to make minor clarifications; but those are still far from resolving the issue.**

#### **4. Provision of Customer Histories**

**Finding - HRSD was not contractually obligated to provide Chesapeake with customers’ service billing history and notes at the end of the contract term.**

In order to effectively manage the billing operations and be in compliance with the City’s records retention policy, management should always retain any and all historical records regarding customer activity and billing. Care should be taken to ensure the availability of records as well as protection of customer accounts.

We noted that HRSD was not contractually obligated to provide Chesapeake with customers’ service billing history and notes at the end of the contract term. This situation occurred because the requirement was not specified in the Agreement. Unfortunately, without the requirement, HRSD was not obligated to provide the City with their customers’ account history. Thus, there was no assurance that the information would be available when the contract ended.

**Recommendation – If Public Utilities continues to outsource the customer and billing activity, it should ensure that the new Agreement include a requirement for customer billing history and notes to be transferred to the department.**

Retaining those records will help to ensure that customer history is readily available for departmental or legal purposes. Also, Public Utilities will comply with the City’s record retention guidelines pertaining to customer activity and billing history.

**Response – When the City executed the contract with HRSD, only the mailing of the bills was transferred out of our hands. The only two observable changes were the originator of the mailed bills and that there was now one combined bill.**

**Public Utilities personnel continued to read the meters, to enter the data into the City's software program and the system calculated the billing information and that was forwarded to HRSD. HRSD then took that information; added their billing charges, printed the bills and mailed them.**

**We have always maintained our original Customer Information System. So, no Chesapeake information would be expected to be lost should we disengage from HRSD.**

## **D. Operational Information Technology Issues**

While HRSD was contracted to handle customer invoicing, Public Utilities was still heavily dependent on Information Technology for its legacy systems that were still used to service customer accounts. Areas where improvements were needed included the lack of a contingency plan in the advent of a problem with HRSD's invoicing, programming changes which allowed automated processing updates to and from HRSD files, and a situation which created the appearance of a conflict of interest.

### **1. Contingency Plan**

**Finding - At the inception of the Agreement, the Information Technology Department disabled the Public Utilities Department's ability to print Chesapeake invoices, leaving Public Utilities without a contingency plan or recourse if HRSD did not satisfy all of the provisions of the Agreement.**

In order to ensure that Public Utilities had the option of discontinuing the HRSD Agreement if HRSD did not satisfy its contractual obligations, the City should have had a contingency plan. One element of this plan would be maintaining the City's ability to print its own invoices.

Sometime after the implementation of the Agreement in 1999, Information Technology disabled Public Utilities ability to be able to print invoices. According to Information Technology, it was considered unnecessary to upgrade Public Utilities invoice printing capability because, at that time, the City was already invoicing Public Utilities services through HRSD's Customer Care and Billing System (CCBS). Thus, when the billing issues related to the Agreement arose in July of 2007, Public Utilities no longer had the ability to print its own invoices.

Public Utilities made a subsequent request to restore its invoice print capability in October of 2007. In response to Public Utilities request, Information Technology provided, on February 8, 2008, alternative billing options to consider at various cost levels. As part of these billing options Information Technology included a one time cost of \$325,000 to restore the original print program. The decision to restore Public Utilities print capability was postponed when Public Utilities moved forward to explore other billing system alternatives based on their self-identified needs.

This situation occurred because Information Technology considered the upgrade unnecessary since HRSD was already invoicing for Public Utilities' bills. Therefore, Information Technology performed software upgrades and conversions to only those programming codes that were already in production.

Since the Department did not revert back to its original invoice printing process, the Department had to continue outsourcing Chesapeake billing to HRSD, even while billing errors occurred. Therefore, Public Utilities was unable to temporarily

suspend or terminate the invoicing and payment collection arrangements with HRSD, potentially adversely impacting its customers.

**Recommendation – Public Utilities should continue to work with Information Technology either to (1) make necessary upgrades to the existing system (to include creating printing capacity), or (2) evaluate the acquisition of a new system to provide a contingency plan in the advent of unanticipated issues with the existing billing and payment arrangements.**

To achieve its goal of creating a contingency plan, Public Utilities was working with the AAC consultants to determine the Department's application and functional needs. A functional matrix had been developed to assist in this process. To further assist with this process, we would suggest the following:

- Document management expectations about expected results and control requirements and while making the documentation accessible for personnel.
- Define risk and performance objectives. Regularly measure, assess, and report on those risks and test results based on performance objectives.
- Establish plans for the overall technology direction.
- Ensure internal programs allow management to approve and validate customer data prior to it being updated into the customer accounts.
- Should any part of the billing system be outsourced, ensure that the third party service provider activity is monitored and evaluated regularly against agreed upon service levels to ensure performance is acceptable and that risks are being addressed.

**Response - Our current Customer Information System was identified in an early IT Master Plan as obsolete and at risk of failure. It is written in an obsolete language (COBOL) similar to the Human Resources program currently being phased out. The last such programmer has retired from the City.**

**The process of evaluating the entire system actually began in early 2006. An in-house committee was formed in 2006; they investigated the various alternatives available to us. They visited numerous users and sought out their experiences and advice. It was recommended that we needed the help of an experienced firm. This process was temporarily halted however to devote full attention to the billing issues; all resources were brought to bear on our customers' behalves. Finally after order was restored, our search resumed.**

**AAC Utility Partners were brought on board as our consultants in January 2009. Our goal is to objectively evaluate all possible CIS alternatives and identify the best solution(s) for our business environment.**

## **2. Programming Changes and Potential Conflict of Interest**

**Finding - Information Technology (IT) programming changes allowed HRSD files to automatically upload adjustment and payment changes into internal customer account records without prior Public Utilities management review, validation, or authorization. In addition, HRSD hired a former City programmer who continued to have access to production changes on the City's Public Utilities Billing System. This situation created the appearance of a conflict of interest.**

Public Utilities should evaluate control risks during application development to ensure proper internal controls and segregation of duties. The Department should also validate the accuracy and completeness of data uploaded into customer accounts to ensure that the integrity of the data is not compromised. The programmers responsible for making programming changes should do so only when authorized by management through a Help Expert Automation Tool (HEAT) request or an IT Request-for-Service, and with supervision and accountability within IT.

When the City entered into the Agreement with HRSD in 1999, the program design was revised to allow electronically transmitted HRSD daily changes, adjustments, and payment data to be uploaded to customer accounts with little to no management intervention prior to the uploads. According to a City Systems Analyst, prior to his history with the City, the original Chesapeake legacy billing program was based on a "Gener/OL," a fourth generation language (4GL) programming tool purchased by the City many years ago. It was used only to develop online programs which interacted with a real-time user through the City's legacy billing system. Application programmers were authorized to develop and place into production programs that would drive the City's business processes, such as the Public Utilities' bills. When Gener/OL was installed, it was installed with only one set of libraries. That meant that when it was necessary, at times, to make an adjustment to an online program originally written using Gener/OL, it had to be done in the production libraries. The lack of test and staging libraries for Gener/OL allowed application programmers the opportunity to make changes directly into production programs whether they were authorized by management or not, an issue previously cited in external Information Technology audits.

Gener/OL was not used in the batch programs that applied to the nightly HRSD updates. The batch programs that did apply to the nightly HRSD updates were coded in native Common Business Oriented Language (COBOL). These programs were also developed by application programmers. Public Utilities' management did review updates (payments, adjustments and fees) to customer accounts using reports produced by these batch programs, but only *after* the updates were applied to customer accounts, so special procedures were necessary to reverse transactions deemed erroneous or inappropriate by Public Utilities management.

In addition, according to the HRSD Commission Minutes of April 22, 2008, HRSD hired the Applications Programmer who had maintained Public Utilities' legacy software system. He was hired to assist HRSD with resolving the joint billing issues with Chesapeake. He also continued to work with the City as part of the Encore (post retirement) Program.

The control deficiencies that allowed HRSD data to be transmitted without review prior to uploading data into city customer accounts occurred because, at that time, it appeared that Information Technology allowed the application programmers to design and edit programs placed into production. However, it was not clear whether management had any input or approval of those automatic processes placed into production. Also, HRSD had hired the City's retired programmer to attempt to be more responsive to issues arising from the lack of compatibility between Public Utilities and the HRSD systems.

The lack of Public Utilities review or authorization of programming changes meant that customer account records could have been compromised without detection. Also, unauthorized program changes could have resulted in lost revenues for the City. This risk was exacerbated by HRSD's use of the programmer who had primary access to the City's legacy billing system.

**Recommendation – Public Utilities should continue to address technology in their overall strategic plans. Within those plans, Public Utilities should take steps to ensure that adjustments and payment changes from HRSD to customer accounts receive appropriate management review, validation, and authorization prior to uploading data to City records. In addition, any programming changes should be well documented, reviewed, and authorized by both Public Utilities and Information Technology management, and management should review the accuracy and completeness of data transmitted. These actions should help mitigate the risks associated with the potential conflict of interest.**

The Public Utilities and Information Technology departments should revise the program design so that HRSD was no longer automatically allowed to upload adjustment and payment data without review and authorization by City personnel. In addition, the City should take steps to ensure that any system changes initiated by the retired employee were thoroughly reviewed, to mitigate any risks associated with them.

**Response – 1) Technology is a key part of the Department's strategic plan and has continuously been addressed. This can be evidenced by many examples throughout the Department. Our water treatment plants use advanced treatment technology to function. Three operators monitor the processes at each plant. Our water distribution system and sanitary sewer system are both monitored with telemetry.**

**Our field forces are converting to the Maximo software system and laptop computers. These will allow more efficient work flow and information transfer.**

The MISS Utility group uses laptops and air cards to receive marking notices via WiFi. This eliminates trips in to the office to retrieve e-mails. They also utilize the data from GIS in their work.

Our Customer Service Office utilizes an Automated Call Distribution (ACD) system. Arguably, the Department was the first to introduce this technology to the City. Because this system was in place, 382-CITY simply had to tap into this resource to get the City's call center up and running. We shared our experiences with them.

This technology proved to be invaluable during HRSD's software implementation. Our call volume increased from 350 to 400 telephone calls a day to over 1,000. Because of the way we designed our system, we could increase the number of people answering the telephones. Due to the volume of calls, we brought in part time people to handle the increased call load.

We have also been accomplishing our goal to expand Automated Meter Reading (AMR). In addition to implementing the use of handheld computers to enter meter readings, many of the large meters are now read via the touch read system. This technology is currently being tested with the residential meters.

Additionally, we have a project underway to evaluate all possible CIS alternatives and identify the best solution(s) for our business environment.

2) Adjustment and payment files, as received from HRSD, contain control records for the number of records and dollar value of adjustments or payments to be received on the nightly interface. The files are processed thru a pre-load edit process that verifies the number of records and dollar value of transactions as well as a validation of key data fields to insured data validity. Only after these edits/audits are completed, are the payment and adjustment files processed to customer accounts. With these validations, we do not believe there is a need to preview detail payment records, as it would retard the process and expose the operations to errors in the collection procedures.

As an indication of how this process has been performing, in the six month period from August 2008 to February 2009, we processed 188,439 payments and experienced no payment errors on the interface.

3) Over the eight years since the contract with HRSD was executed, it is unknown when our options began to disappear. During that time the contract was running smoothly; the eventuality of a problem seemed remote.

Public Utilities will request to be advised concerning changes that are either made or not made to Public Utilities' software or any software that could apply to our needs. We defer to the more knowledgeable departments that have a better understanding of the various applications being modified.

**The Department of Public Utilities was not aware that it had been decided not to upgrade the billing system's print subroutine. Yet we continue to use the core program while we search for an alternative.**

**The Public Utilities Department was advised that our former programmer was working with HRSD to facilitate the resolution. This is under the purview of the Department of Information Technology.**

## **E. Public Utilities' Billing System**

While Public Utilities provided HRSD with electronic billing data, the Department continued to use other facets of Chesapeake's original billing system to calculate the bills and maintain customer history. It was also used to capture meter and tap data, and manually calculated billing adjustments and adjustment history for HRSD. In reviewing the system, we identified issues related to bill monitoring, records retention, and system access.

### **1. Bill Monitoring Processes**

**Finding - The bill-monitoring processes that Public Utilities used after the inception of the Agreement needed improvement.**

As previously noted, when the City entered into the Agreement with HRSD, Public Utilities outsourced its invoicing. Public Utilities staff was still required to collect data from their legacy billing system to provide the raw data input for its invoicing and adjustments. Public Utilities continued to conduct meter readings, calculate customer bill, maintain its own customer history, and pursue customer collections. Also, Public Utilities billing system needed to be re-designed to streamline processes, automate manual processes, and minimize duplication of efforts.

We noted that after the inception of the Agreement with HRSD, Public Utilities began utilizing a billing monitoring process that included reviewing elements of both its own previous legacy system and the HRSD system. However, some of the control deficiencies that had existed in the legacy system continued to exist.

- Based on observations, the legacy system was not dynamic enough to calculate billing adjustments: instead it relied on time-consuming manual processes for these types of calculations.
- Public Utilities was at a disadvantage when it had to enter customer notes for both the Chesapeake system and HRSD's CCBS system.
- HRSD did not provide Public Utilities with feedback regarding the number and dollar amounts of invoices processed. As a result, discrepancies between the quantity of customers billed versus the quantity of customers invoiced were created.
- Customer Service and Billing representatives often researched both the HRSD system and the legacy system in order to be able to accurately determine and calculate adjustments and evaluate the status of an individual customer account. The legacy system maintained only the most recent 6 invoices (older invoices were kept on laser fiche), while HRSD maintained a customer history for a period in excess of 4 years.

This situation occurred because Public Utilities wanted to maintain its own billing monitoring process since it needed to have its own customer history and wanted to maintain controls over the billing process. Also, having its own customer history helped

Public Utilities to view account discrepancies when HRSD's billing errors began to occur in the summer of 2007.

Unfortunately, when the HRSD system failed to generate bills correctly, the Public Utilities' bill monitoring process did not efficiently detect the billing discrepancies. Therefore, Customer Service Representatives were inundated with calls and were required to conduct difficult, complicated research, and enter manual adjustments from a departmentally created Account Adjustment form. Customer payments were delayed to the City, and unnecessary late fees were generated that later had to be identified and then reversed by the Public Utilities' billing division. Public Utilities also had to have weekly conference calls with HRSD to help determine the magnitude of the issue and find solutions.

**Recommendation – Public Utilities should take steps to enhance its bill monitoring processes. Also, Public Utilities should consider expanding its customer history.**

Public Utilities should take steps to ensure that overall processes are streamlined and eliminate duplication of efforts. If the Department decides to continue using both the HRSD billing and parts of the Public Utilities systems, the Department should work with IT to automate the computation capability for billing adjustments and notes. Also, Public Utilities should work with HRSD to develop specific billing responsibilities (such as the timeline for HRSD to process its adjustments relative to Chesapeake adjustments, the transfer of customer billing history and notes to Public Utilities, etc.) Public Utilities should also request that HRSD provide information on the number and dollar amounts of invoices processed so that they can be appropriately reconciled against customer accounts.

**Response – Public Utilities considers its bill monitoring system as very effective. We suspected the HRSD problem months before it was divulged. Unfortunately, HRSD temporarily stopped sending the billing reports needed to conduct the monitoring. It was obvious from the reports that continued to come in that something was not right. Other avenues were available. For a while, communications with HRSD was not effective. That obstacle was removed by the current General Manager. Prior to that though, Public Utilities personnel had to take the initiative to visit HRSD, by pass the formal chain of command, and get answers from counterparts. Once we obtained some information, we were able to move forward to begin to correct the problem.**

Our customer screens go back six billing periods; further info is available but not on-line. This is probably a result of the age of our software and will probably desist once a new Customer Information System is acquired. The process of evaluating the entire system is underway (see #D1 above).

## **2. Records Retention Procedures**

**Finding - Hundreds of pages of billing reports were printed by Information Technology and distributed to Public Utilities weekly. However, very few of these pages were ever needed in hard copy format. Additionally, hundreds of manually hand written application forms and adjustment forms were also maintained, cluttering office areas.**

According to the City's Records Management Plan dated June 2008, **§42.1-87 Archival Public Records**, "Public records deemed unnecessary for the transaction of the business of any county, city or town, yet deemed to be of archival value, shall be stored either in the Library of Virginia or in the locality at the decision of the local officials responsible for maintaining public records."

Stacks of unused reports and forms had accumulated and begun crowding and cluttering offices and hallways. According to the Customer Service Manager, the Department was initially under direct orders to maintain and not destroy any records due to pending lawsuits. However, the orders had been lifted, and the Department was in the process of following the City's records management plan. Public Utilities planned to also work with Information Technology to explore alternative ways of storing standardized reports electronically.

The situation occurred because records management was not a priority, especially when the billing issues began. There had not been a periodic review of the report processing, retention, and usage. However, if this situation is not addressed, paper, people, time, and valuable office, and storage space will continue to be used unnecessarily.

**Recommendation - Public Utilities should continue its efforts to implement the City's Record Retention Plan by periodically reviewing Public Utilities report processing, retention, and usage requirements. Also, the City's Records Management Plan should be used to assist in developing alternative storage methods for older reports.**

Also, Public Utilities should continue to work with Information Technology to explore ways to file reports electronically, automate processes that still required the use of hand written forms, and implement laserfiche imaging, where applicable. The department should also minimize the use of resources by reading and filing future standard reports electronically instead of printing them.

**Response – Recent lawsuits had resulted in the Department of Public Utilities being advised by Legal Counsel to neither destroy existing records or reports, nor to revise how they were scheduled. Since the conclusion, we have been advised that those requirements are no longer in effect. The Department is resuming the maintenance of records as defined in the City's Record Retention Plan. In addition, IT has been contacted to explore alternative storage methods of same.**

### **3. Former Employee System Access**

**Finding - Four individuals continued to have access to the Public Utilities Billing System even though they were no longer employed by the City.**

System access should be made available to only those employees who have direct responsibility with those systems. We noted that four former employees still had access to the Public Utilities Billing System even though they were no longer employed with the City. One additional individual was listed twice under two different last names.

This situation occurred because the Department did not have a standard operating procedure that required periodic review of access to systems or ensure that separating employees had their system access terminated. However, if this situation is not addressed, unauthorized individuals who continued to have system access could potentially manipulate customer data and view confidential customer information.

**Recommendation – Public Utilities should consider establishing procedures that would require periodic review of system access to ensure the list of individuals who have access is up-to-date.**

Public Utilities should terminate system access immediately when an employee leaves the Department. It should also ensure that it reviews its listing of authorized system users at least once every three months.

**Response - A system has been implemented to terminate system access as soon as they leave the Department. As a check and balance, the list of authorized system users will be checked quarterly.**

## **F. Other Operational Issues**

We noted that Public Utilities connection and disconnection fees were generally lower than amounts charged by other localities. We also identified operational issues related to meter equipment and warranties, meter re-reads and back checks, cash handling processes, and controls over items in the departmental safe.

### **1. Connection Fee Charges**

**Finding - Public Utility water connection and disconnection fees appeared to be lower than amounts charged in other localities.**

Public Utilities was established as a governmental enterprise fund. In governmental accounting, enterprise funds that provide goods or services to the public for a fee should be self-supporting, or at least charging fees consistent with prevailing fees charged for similar services.

Chesapeake's water connection and disconnection fees were generally lower than fees charged by the other localities. The table below shows comparative fee structures from the Cities of Chesapeake, Norfolk, Virginia Beach, and Portsmouth. In reviewing this data, we noted that Chesapeake's connection/set-up fee and disconnect/cut-off fee were lower and its account balance subject to service cut-off was higher than those in the other three localities. We noted that, since Chesapeake had approximately 6,000 connections or disconnections annually, if it charged \$10 more per transaction, it could receive as much as an additional \$60,000 annually.

### **Exhibit 2 – Connection and Disconnection Fees**

<b>Fee structure</b>	<b>Chesapeake</b>	<b>Norfolk</b>	<b>Portsmouth</b>	<b>Va. Beach</b>
<b>Connection/Set-up fee</b>	\$10	\$20	\$12+\$70 deposit + payments toward previous outstanding balances due	\$20
<b>Accounts subject to water service cut-off</b>	Past due customer account balances exceeding \$525 as of April 24, 2009	Past due customer account balances exceeding \$25	30 days and two weeks past due customer account balances	No dollar threshold. Includes all customer account balances 30 days past due
<b>Reminder notice fee</b>	\$5 door tag fee	\$0	\$12	\$1.50 fee applies for any bills not paid within 3 days of bill due date (notice gives approx 14 additional days to pay from original due date)
<b>Disconnect/Cut-off fee</b>	\$5	\$15	\$12	\$20
<b>Illegal meter tampering fees</b>	\$15	\$0	\$60 for illegal device+ \$12 for illegally turning on water	\$50
<b>Fee for pulling meter</b>	\$15	\$25	Fee is already included in the illegal meter tampering fee	\$25

This situation occurred because Public Utilities had not elected to increase the water connect/disconnect fee structures. Public Utilities also had not developed cost data that indicated the actual departmental cost associated with each of the disconnection fees. However, as a result, Public Utilities connect and disconnect fees were generally lower than fees collected by other localities for those services. As a result, the City may not have been maximizing its revenues for those transactions.

**Recommendation – Public Utilities should conduct a cost analysis to determine if fees associated with connecting or disconnecting water services should be increased.**

The cost analysis should take into consideration both direct and indirect costs associated with connecting and disconnecting water services. In this manner, Public Utilities can establish the true costs for the purposes of identifying a reasonable fee structure to recoup the costs for these services.

**Response - Public Utilities rates and fees are established to allow the department to be self-sufficient. The Public Utilities Department has a Rate Study/Financial Plan done approximately every five years. Additionally, the City had a cost of services study done several years ago. As the chart reflects, each municipality apparently has a unique method for calculating the fees. This recommendation will be kept in mind for the next review/study.**

## **2. Meter Replacement**

**Finding - According to a water service representative, antiquated and out-of-warranty meters were not being replaced in a timely manner.**

A meter equipment replacement program should be in place to help ensure the functionality and reliability of the department's meters and to maximize their years of effective useful life. Also, replacing older meters with newer meters that could transmit electronic readings had the potential to reduce the number of meters that had to be read manually.

At the time of the audit, the Water Service Superintendent indicated that M&O was approximately three years behind schedule in replacing meters. This equated to approximately 9,000 meters that needed to be replaced in the City. Discussions had been occurring within the department to update or modernize the meters assuming funding could be obtained.

Although M&O had a meter equipment replacement plan, the rise in meter costs, lack of City funding, contract renewal processing time, and limited staff contributed to the inability of the division to replace meters according to the replacement plan. Public Utilities was aware of the emerging AMR and AMI technologies and made a conscientious decision to delay replacing meters until the new technology became available.

As a result of this situation, meter failures could occur faster than the equipment was being replaced. Also, without new meters, the City was losing the potential benefit of new electronic meters that did not have to be read manually.

**Recommendation – When funds become available, Public Utilities should take steps to ensure that meters are replaced in a timely fashion.**

Public Utilities should determine when to modernize, upgrade, or simply replace its antiquated meters. Also, the Department should explore opportunities to install the electronic meters. Over the long term, the use of these meters may help to reduce the need for manual meter reading.

**Response - Previously, the department implemented a meter change-out program. As meters age, they tend to slow down (i.e. under read). Every year a large number of meters would be purchased for eventual installation in the place of old or damaged meters. This program requires a long term contract of several years.**

**One of the tasks of our current CIS consultant is to also recommend a schedule/plan to possibly implement a system of automated meter reading. This will identify likely candidate meter vendors as well as systems. The intention of slowing down the meter replacement program was to avoid locking the Department to a meter contract that may not be compatible with the eventual CIS and AMR systems selected. All meters will eventually be replaced via the AMR program.**

### **3. Meter Reading Verification Processes**

**Finding – Customer service staff was behind on tab re-reads of meters and back checks to confirm the readings.**

According to the Customer Service staff, tab re-reads, which were re-reads generated by internal exception reports, should be completed within one week after initial identification. The time required for back checks varied depending on their urgency.

We noted that Customer Service staff was unable to keep up with the re-reads and back checks according to their schedule. When the HRSD billing issues emerged, the field force staff workload increased to address the accuracy of water consumption through re-reads and back checks. If Customer Service staff could not keep up with the scheduled re-reads and back checks, the accuracy of water consumption would not be confirmed and could result in additional billing errors.

**Recommendation – Public Utilities should explore options that will allow the customer service staff to maintain their re-read and back check schedules.**

Public Utilities should continue to consider the AMR or AMI technology for more efficiency and effectiveness of the meter reading process. If funds are not available for the AMR or AMI technology, Public Utilities should develop alternative methodologies for maintaining the necessary schedules.

**Response – This function is subject to the influence of weather conditions and personnel. At the time of this review, we were experiencing a vacancy situation. Overtime is one tool at our disposal to catch up with the schedule. Due to vacancies, we are also employing temporary employees.**

In addition, two critical vacancies have recently been filled - the Crew Supervisor and the Crew Leader (Meter Reader Supervisor). These positions are critical to maintaining the established re-read and back check schedules. Currently our experience is that the number of corrected bills due to misreads vs. total number of bills issued total 0.52% per year.

#### **4. Timeliness of Deposits**

**Finding - While the tellers' cash drawers were balanced at the end of their business day, the funds collected were at times held in the office instead of being submitted to the Treasurer's Office in the afternoon.**

Daily receipts should be deposited with the City Treasurer on the same business day, but no later than the next business day. We observed cash handling operations of the Customer Service Division. Although the tellers' cash handling operations appeared to be functioning as intended, there was no standard operating procedure that required deposits to be made to the City Treasurer within two business days. Additionally, HRSD did not provide the Customer Service Supervisor with the authority to close out teller drawers using the HRSD tender control.

This situation occurred because the Department did not have a standard policy regarding timing of daily deposits to the Treasurer. Also, the Customer Service Supervisor responsible for making daily deposits was often dealing with customers and was unable to make the deposits at the end of the day. However, untimely deposits could lead to lost revenues due to stale checks and bad checks. Reconciliation of daily work and deposits could become difficult because of timing issues.

**Recommendation – Public Utilities should adhere to the City's Standard Operating Procedures that require all funds collected by tellers be deposited with the City Treasurer within the same business day, but no later than the next business day.**

Implementing these daily deposits procedures would prevent untimely deposits that could lead to lost revenues and difficult reconciliations. It would also help ensure greater accountability for those deposits.

Public Utilities should continue to work with HRSD to provide the Supervisor with the ability to close out a teller's drawers (in his or her absence) in HRSD's tender control using the Supervisor's system identification.

**Response – Deposits to the City Treasurer's Office are now made daily.**

## **5. Controls Over Department Safe**

**Finding - Public Utilities did not have adequate control processes to protect the contents of its safe.**

Access to the safe should be minimized to establish accountability. There should also be periodic review of the safe's contents, especially when the Department experiences a turnover in the staff responsible for the safe and its contents.

On November 20<sup>th</sup>, we requested an audit of the safe. We noted that access to the safe was not adequately controlled because more than one individual within the Department had the complete combination to the floor safe that housed the individual cash tills. The contents of the safe included:

- An overage fund of \$11.33
- A unidentified customer payment of \$240
- \$200 in checks from customers for meters dating from October 22 though November 13, 2008
- Various checks and money orders totaling \$245 dating from December 23, 1997 to October 6, 2003
- Old envelopes of overages dated back to 2005 totaling \$17.78 and another assortment of older checks and money orders totaling \$337.42.
- Old Christmas funds totaling \$9.42
- Tap fee check labeled "Do not deposit" dated back to April 30, 1981
- Various historical documents and contracts
- Keys for deposit bags and cars

When asked if there were any other places where funds were collected within the Department, we noted that HRSD fees were also collected by the Engineering Division. On November 20<sup>th</sup>, two checks from commercial businesses totaling \$4,685 were also kept in an unsecured zipper bag that would eventually be secured in the safe. Both checks were dated November 18, 2008. When asked why the checks had not been submitted to HRSD, the response was that those funds were routinely forwarded directly to HRSD on the 15<sup>th</sup> and 30<sup>th</sup> of each month.

This situation occurred because standard procedures were not established that required the following:

- a periodic inventory of the safe by designated staff,
- an audit of the safe, especially when there was turnover in the supervisory level responsible for the safe,
- daily deposits collected by the Engineering Division ,
- over/short account to be deposited with the City Treasurer.

Undeposited funds created the potential for lost revenues to the City. Past deposits not made by prior supervisors resulted in lost revenues to the City. Deposits not handled properly could result in lost revenue due to theft, loss, or stale checks.

**Recommendation - Public Utilities should develop adequate controls for the use of the safe.**

The Department should establish a dual access controls for the safe. We understand that the department is currently working with the Finance Division and the Treasurer to establish an over/short account. The Department should continue to pursue the establishment of this fund.

**Response – Proper safe procedures have been developed, stringent controls for access implemented, and a review of the contents is under way. An over/short account has been established.**

Several of the items found inside have been reviewed and the following is offered:

- ***Tap fee checks labeled “Do not deposit.” The check dated back to April 30, 1981-*** records for the address cited on the accompanying receipt indicate that a different builder later paid the same connection fees (in October 1981) for the same address. Apparently the first builder contacted our office and told them not to cash the check then never retrieved it.
- ***\$200 in checks from customers for meters dating from October 22 though November 13, 2008-*** These were eight checks (\$25 each) for meter testing fees. When a customer requests a meter test, they deposit \$25; if the meter tests accurate, the deposit pays toward the test; otherwise, the deposit is returned and the bill adjusted. At this writing, seven checks have been processed. One remains.
- ***Old envelopes of overages dated back to 2005 totaling \$17.78 and another assortment of older checks and money orders totaling \$337.42-*** These funds were found inside a drawer in the safe that is not used by the current staff. The dates and amounts were logged for the items but no explanation was listed as to why they were held.
- ***An unidentified customer payment of \$240-*** This was a cash overage from 2007 that was assumed to be an unapplied payment. The envelope was sealed, unmarked and undated. It has not been claimed; so the assumption may be in error.