

# **FOCUSED MANAGEMENT AND OPERATIONS AUDIT OF NEWTOWN ARTESIAN WATER COMPANY**

Prepared By The  
Pennsylvania Public Utility Commission  
Bureau of Audits  
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Docket No. D-2016-2559577



**NEWTOWN ARTESIAN WATER COMPANY  
FOCUSED MANAGEMENT AND OPERATIONS AUDIT**

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**NEWTOWN ARTESIAN WATER COMPANY  
FOCUSED MANAGEMENT AND OPERATIONS AUDIT**

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## I. INTRODUCTION

In accordance with the Pennsylvania Public Utility Commission's (PUC or Commission) program to identify improvements in the management and operations of fixed utilities under its jurisdiction, it was determined that a focused management and operations audit should be conducted of Newtown Artesian Water Company (NAWC or Company). Management and operational reviews, which are required of certain utility companies pursuant to 66 Pa.C.S. § 516(a), come under the Commission's general administrative power and authority to supervise and regulate all public utilities in the Commonwealth, under 66 Pa.C.S. § 501(b). More specifically, the Commission can investigate and examine the condition and management of any public utility, under 66 Pa.C.S. § 331(a).

This report represents the written product of the focused management and operations audit and contains the resulting findings and recommendations for improvement in the management and operations of NAWC. The findings presented in the report identify areas and aspects where weaknesses or deficiencies exist. In all cases, recommendations have been offered to improve, correct, or eliminate these conditions. The final and most important step in the management audit process is to initiate actions toward implementation of the recommendations.

### A. **Objectives and Scope**

The objectives of this focused management and operations audit were:

- To provide the Commission, NAWC, and the public with an assessment of the efficiency and effectiveness of the Company's operations, management methods, organization, practices and procedures.
- To identify opportunities for improvement and develop recommendations to address those opportunities.
- To provide an information base for future regulatory and other inquiries into the management and operations of NAWC.

The scope of this audit was limited to certain areas of the Company as explained in Section B, Audit Approach.

## **B. Audit Approach**

This focused management and operations audit was performed by the Management Audit Staff of the PUC's Bureau of Audits (Audit Staff). The audit process began with a pre-field work analysis as outlined below:

- A five-year internal trend analysis (see Appendices I, II, III, and IV) was completed using financial and operational data obtained from the Company, Commission, and other available sources.
- Input was solicited from Commission Bureaus and Offices, certain external parties, and the Company regarding any concerns or issues they would like to have addressed during the course of our review.
- Prior management and operations audits, follow-up management efficiency investigations, implementation plans, implementation plan progress reports, other Commission-conducted audits, annual diversity reports, and other available documents were reviewed.

Information from the above steps was used to initially focus the Audit Staff's work efforts in the field. Specifically, the following areas or functions were selected for an in-depth analysis and are included in this report:

- Corporate Governance
- Financial Management
- Water Operations
- Emergency Preparedness
- Customer Service

The pre-field work analysis should not be construed as a comprehensive evaluation of the management or operations in the functional areas not selected for in-depth examination. If we had conducted a thorough review of those areas, weaknesses or deficiencies may have come to our attention that were not identified in the limited pre-field work review.

Fieldwork began on September 28, 2016 and continued intermittently through December 15, 2016. The principal components of the fact gathering process included:

- Interviews with Company personnel and other Commission Bureaus.
- Analysis of records, documents, and reports of a financial and operational nature. This analysis focused primarily on the period 2011-2015, as well as 2016 as available.
- Visits to the main office building, water production and storage facilities, and observation of selected work practices, etc.

**C. Functional Area Ratings**

For the functions or areas of the Company that were selected for in-depth examination, the Audit Staff rated the actual operating or performance level relative to the expected performance level at the time of the audit. This expected performance level is the state at which each area or function should be operating given the Company’s resources and general operating environment. Expected performance is not a “cutting edge” operating condition; rather, it is management of an area or function such that it produces reasonably expected operating results.

Presented below are the evaluative categories utilized to rate each function or area’s actual operating or performance level relative to its expected performance level:

- Meets Expected Performance Level
- Minor Improvement Necessary
- Moderate Improvement Necessary
- Significant Improvement Necessary
- Major Improvement Necessary

Our ratings for each function or area reviewed in-depth can be found in Exhibit I-1.

**Exhibit I-1  
Newtown Artesian Water Company  
Focused Management and Operations Audit  
Functional Rating Summary**

Functional Area	Meets Expected Performance Level	Minor Improvement Necessary	Moderate Improvement Necessary	Significant Improvement Necessary	Major Improvement Necessary
Corporate Governance			X		
Financial Management		X			
Water Operations			X		
Emergency Preparedness		X			
Customer Service		X			

## D. Benefits

Where possible, the Audit Staff attempts to quantify the potential savings that would be expected from effectively implementing the recommendations made in this report. However, for the majority of recommendations, it is not possible or practical to estimate quantitative benefits as the benefits are of a qualitative nature or insufficient data was available to measure the impact. For example, it is difficult to estimate the actual benefit in areas where new management practices or procedures are recommended and where such practices or procedures did not previously exist. Similarly, changes in work flow processes or implementation of good business practices will result in improved effectiveness and efficiency of a specific function but cannot be easily quantified.

The Company will have various options for implementing the recommendations and, accordingly, the Audit Staff has not estimated the implementation cost where no savings were quantified. However, it should be noted that the cost of implementing certain recommendations could be significant.

## E. Recommendation Summary

Chapters III through VII provide findings, conclusions, and recommendations for each function or area of significant review. Exhibit I-2 summarizes the recommendations with the following priority assessments for implementation:

- INITIATION TIME FRAME – Estimated time frame on how quickly the Company should be able to initiate its implementation efforts given the Company’s resources and general operating environment. The time necessary to complete implementation is expected to vary based on the nature of the recommendation and the scope of the efforts necessary and resources available to effectively implement the recommendation.
- BENEFITS – Net quantifiable benefits are provided where they could be estimated as discussed in Section D - Benefits. Our estimated overall level of benefits rankings are not solely based on dollars but rather the Audit Staff’s assessment of the potential overall impact of the recommendation on the efficiency and/or effectiveness of the Company and/or the services it provides.
  - HIGH BENEFITS – Implementation of the recommendation would result in major service improvements, substantial improvements in management practices and performance, and/or significant cost savings.
  - MEDIUM BENEFITS – Implementation of the recommendation would result in important service improvements, meaningful improvements in management practices and performance, and/or meaningful cost savings.

- LOW BENEFITS – Implementation of the recommendation is likely to result in service improvements, management practices and performances, and/or enhance cost controls.



**Newtown Artesian Water Company  
Focused Management and Operations Audit  
Summary of Recommendations**

Rec. No.	Recommendation	Page No.	Initiation Time Frame	Benefits (including \$ estimates)
<b>Chapter III – Corporate Governance</b>				
III-1	Document the Company’s operating policies and procedures and provide access to appropriate employees.	16	0-6 months	High
III-2	Maintain the Board fees at the current level until they more closely reflect the fees of similar size utilities.	16	Ongoing	Medium
III-3	Ensure the external accounting firm rotates its engagement partner and/or audit team every five years.	16	0-6 months	Medium
<b>Chapter IV – Financial Management</b>				
IV-1	Reduce billing lag to more appropriate levels as efficiencies are gained from full implementation of AMR.	20	12+ months	Medium
IV-2	Address all outstanding and future management letter recommendations in a timely manner.	20	0-6 months	Medium
<b>Chapter V – Water Operations</b>				
V-1	Strive to test all commercial and industrial backflow devices annually.	34	0-6 months	Medium
V-2	Test new residential meters in accordance with regulations.	34	0-6 months	Medium
V-3	Establish a critical valve list and strive to exercise critical valves on an annual basis.	34	12+ months	Medium
V-4	Strive to use the GIS mapping system for all distribution system activities and ensure accurate records of all assets.	34	12+ months	High
V-5	Reduce cast iron and asbestos cement mains in a more aggressive time frame.	34	12+ months	High
V-6	Perform regular pressure surveys of the distribution system.	34	12+ months	Low
V-7	Perform a service life study of all plant assets periodically.	34	12+ months	Low
V-8	Develop a comprehensive safety manual that includes all relevant safety procedures.	34	6-12 months	Medium
V-9	Expedite the removal of all lead services in the distribution system.	34	0-12 months	High

Newtown Artesian Water Company  
Focused Management and Operations Audit  
Summary of Recommendations

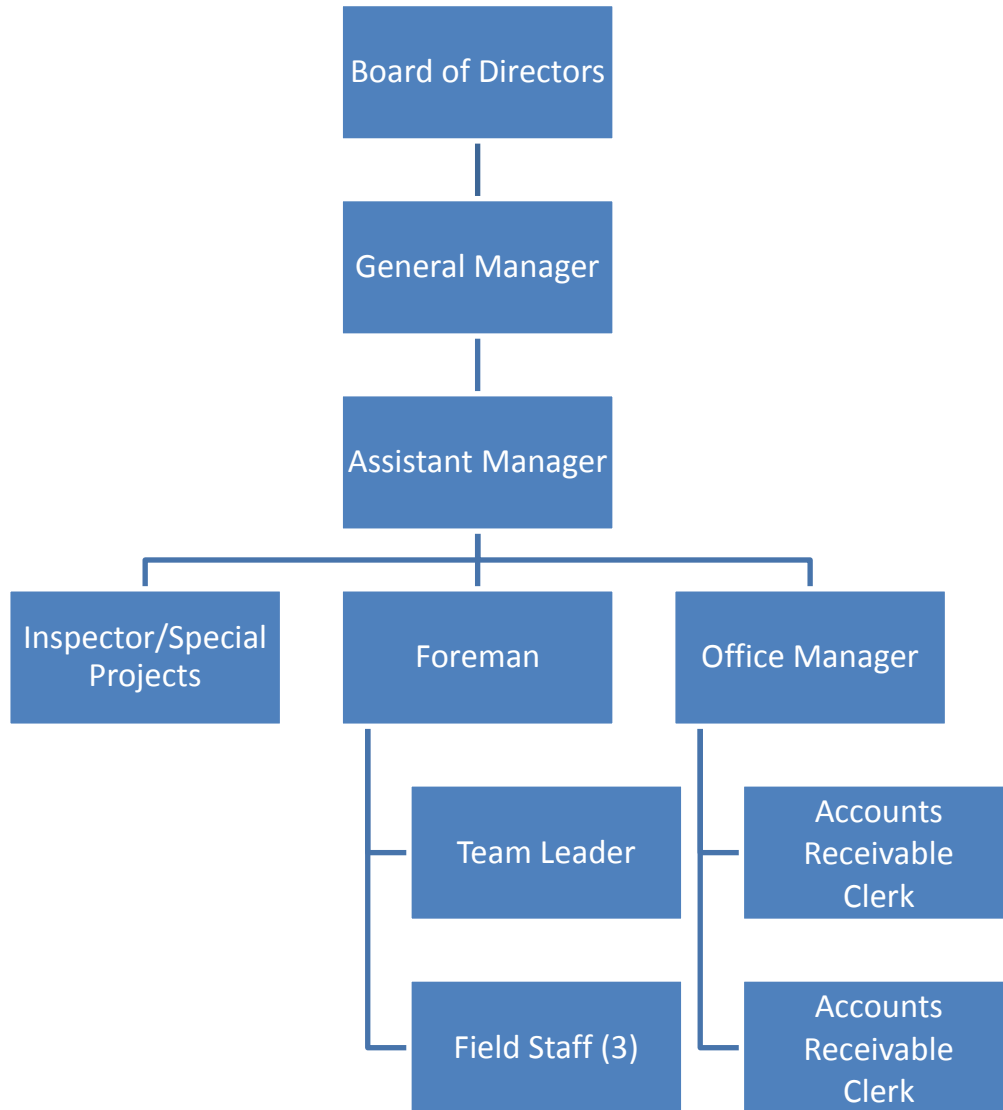
Rec. No.	Recommendation	Page No.	Initiation Time Frame	Benefits (including \$ estimates)
<b>Chapter V – Water Operations (continued)</b>				
V-10	Conduct a manpower planning study including a process review of prescribed maintenance tasks to assess optimizing internal resources and employing contractors to strategically address workload levels.	35	6-12 months	High
<b>Chapter VI – Emergency Preparedness</b>				
VI-1	Test emergency preparedness plans, or portions of it, on an annual basis.	38	6-12 months	High
VI-2	Correct minor deficiencies in physical security at all affected facilities.	38	0-12 months	High
<b>Chapter VII – Customer Service</b>				
VII-1	Conduct more frequent targeted customer satisfaction surveys at least every three years.	41	0-6 months	Medium

## II. BACKGROUND

Newtown Artesian Water Company (NAWC or Company) was incorporated in Pennsylvania in 1888 and serves approximately 10,400 customers in Newtown Borough, Newtown Township, and the northern portion of Middletown Township, Bucks County. The water distribution system is supplied by five groundwater sources located throughout the NAWC service territory and through interconnections with the Bucks County Water and Sewer Authority (BCWSA) and Pennsylvania American Water Company (PAWC). Under the current purchase agreement with BCWSA, the Company is required to purchase a minimum of 1 million gallons per day (mgd) at a specified rate, but may not exceed 2 mgd. Under the current purchase agreement with PAWC, NAWC is required to purchase a minimum of 200,000 gallons per day up to a maximum daily purchase of 300,000 gallons. NAWC's wells supply approximately 39% of the Company's total supply with BCWSA and PAWC supplying the remainder at 49.5% and 11.5% respectively. See Chapter V – Water Operations for additional information about NAWC's water distribution system.

The Company's organization structure, as shown in Exhibit II-1, is comprised of eleven full-time employees and a six-member Board of Directors (Board). Three Board members also serve as the corporate officers (i.e., President, Vice President and Treasurer/Secretary) with the President and Treasurer/Secretary receiving additional compensation (see Chapter III – Corporate Governance for additional information about salaries and fees paid to the Board). The General Manager (GM) directs the day-to-day operations of the Company and reports to the Board of Directors. The GM supervises the Assistant General Manager, who oversees the Office Manager, Foreman, and Inspector/Special Projects.

**Exhibit II-1  
Newtown Artesian Water Company  
Employee Organization Chart  
As of April 6, 2016**



Source: Data Request CG-9

Exhibit II-2 summarizes the Company's number of customers, usage, and revenues by customer class. Residential customers comprise approximately 91% of the overall customer base, 68% of the usage, and 66% of the revenue. Commercial customers comprise approximately 6% of the customer base, 17% of the usage, and 15% of the revenue. Industrial customers comprise less than one percent of the customer base, 11% of the usage, and 9% of the revenue. NAWC's remaining customer base in 2015 was comprised of public and private fire protection services that collectively accounted for 11% of the total revenue.

**Exhibit II-2**  
**Newtown Artesian Water Company**  
**Customer Base Statistics**  
**As of December 31, 2015**

Customer Class	No. of Customers	% of Customers	Gallons Sold (1,000)	% of Gallons Sold	Revenues	% of Revenues
Residential	9,517	91.2%	488,115	68.0%	\$3,671,270	65.8%
Commercial	632	6.1%	124,985	17.4%	\$813,742	14.6%
Industrial	45	0.4%	75,488	10.5%	\$473,917	8.5%
Other	241	2.3%	29,514	4.1%	\$622,603	11.1%
<b>Totals</b>	<b>10,435</b>	<b>100.0%</b>	<b>718,102</b>	<b>100.0%</b>	<b>\$5,581,532</b>	<b>100.0%</b>

Note: Other includes public and fire protection customers.

Source: 2015 PUC Annual Report

### III. CORPORATE GOVERNANCE

#### **Background**

Newtown Artesian Water Company (NAWC or the Company) operates with a six-member<sup>1</sup> Board of Directors (Board). Three directors also serve as corporate officers (i.e., President, Vice President, and Treasurer/Secretary) overseeing the management and operations of the Company. The Board meets regularly on the second and fourth Wednesday of each month. The Board operates through the use of the following committees:

- Budget
- Long Range Planning
- Maintenance
- Compensation and Personnel
- Insurance
- Audit
- Corporate Governance

All directors are considered members of each Board committee with the exception of the Audit and Corporate Governance Committees, which consist of two independent<sup>2</sup> Board members. The committees meet at the discretion of the Chairman of the respective committee<sup>3</sup>. The Audit and Corporate Governance Committees are governed by their respective written charters whereas the other committees operate on an ad hoc basis. The Audit Committee meets at least quarterly and is responsible for oversight of the quality and integrity of the accounting, reporting and auditing practices of the Company. The Corporate Governance Committee meets at least annually and is responsible for shaping the corporate governance of the Company. As shown in Exhibit III-1, each director receives an annual fee for their service and the Board members who serve as President and Treasurer/Secretary receive a nominal annual salary.

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<sup>1</sup> The Board temporarily added a sixth member for succession planning due to the imminent retirement of a current Board member; the Company expects to return to a five-member Board in 2017.

<sup>2</sup> These directors are not salaried nor officers of the Company.

<sup>3</sup> Because the Chairman of each committee is a subject matter expert, they typically formulate their own ideas and conduct research externally, which is then presented to the full Board during its meetings.

**Exhibit III-1  
Newtown Artesian Water Company  
Board of Directors Salaries and Fees  
As of December 31, 2015**

Director	Salary	Fees	Total Compensation
President/Chairman	\$24,000	\$49,650	\$73,650
Treasurer/Secretary	30,600	41,500	72,100
Vice President		41,500	41,500
Counsel		41,500	41,500
Director		41,500	41,500
Director		41,500	41,500
Totals	\$54,600	\$257,150	\$311,750

Source: Data Request CG-3

As a privately held company, NAWC is not subject to regulation by the Securities and Exchange Commission (SEC), and therefore is not required to comply with the corporate governance requirements outlined in the Sarbanes-Oxley Act of 2002 (SOX) or the corporate governance rules of the New York Stock Exchange (NYSE). However, the Company has demonstrated its intent to follow the spirit of SOX when practical, for example, by maintaining an Audit Committee Charter.

NAWC uses established competitive bid procedures for major purchases. NAWC solicits at least three bids for capital projects (i.e., main installations and replacements, paving, etc.), vehicle acquisitions, and major equipment purchases with the bid awarded to the lowest qualified bidder. The Company also secures price quotes periodically for on-going services such as accounting, legal, banking, insurance, etc. to gauge whether services are being obtained in a cost effective manner.

NAWC has a Code of Ethics (Code) that applies to all directors, officers, and employees, which details the Company's policies and guidelines on legal and ethical standards. Topics covered within the Code include: confidential information, conflict of interest, and improper use of corporate position or property. The Chairman of the Board is responsible for administration of the Code. The Code was disseminated to all current employees once and they were required to sign a form acknowledging receipt of the Code at that time. New employees are provided a copy of the Code at orientation where they are required to sign a form acknowledging receipt of the Code.

**Diversity**

The Pennsylvania Public Utility Commission (PUC or Commission) has encouraged utilities to proactively improve diversity in their workforce and purchasing efforts for more than two decades. In March 1992, the Commission issued a Secretarial letter directing all jurisdictional utilities affected by Section 516 of the Public Utility Code (i.e., utilities whose plant-in-service exceeds \$10 million) to file quarterly diversity status reports with the Commission. In May 1994, the Commission issued an Order directing

Section 516 utilities to file diversity status reports semi-annually rather than quarterly, to submit EEO plans annually, and to file certain diversity procurement data. In February 1995, the Commission adopted Chapter 69 regulations which encouraged utilities to include diversity efforts as a component of their business strategy. Later, in March 1997, the Commission's diversity filing requirements changed from semi-annual to annual.

NAWC filed annual diversity reports with the PUC for each year covered by this Audit period (reports filed in 2013 through 2016 for the years ended 2012 through 2015). Included in its diversity report are sections pertaining to the Company's diversity policies related to human resources and procurement. The Company's diversity report filing also contains a copy of its Code of Ethics with additional policies related to anti-harassment in its Employee Handbook. No formal training has been provided to employees on diversity matters at the Company.

### **Findings and Conclusions**

Our examination of the corporate governance function included a review of Company ethics and conflict of interest policies; Board of Directors organization including committee structure and charters; Directors' responsibilities, salary and fee structure; price solicitation and bid policies; etc. Based on our review, the Audit staff recommends that the Company initiate or devote additional efforts to improving the efficiency and/or effectiveness of its corporate governance practices by addressing the following:

#### **1. NAWC has not fully established documented policies or procedures governing its operating practices.**

The Company indicated that it had few documented policies and procedures within Customer Service, Financial Management, etc. Moreover, the Audit Staff noted deficiencies related to existing policies and procedures including:

- Lack of a centralized location to maintain policies and procedures
- Outdated, inaccurate references
- Undocumented informal policies

For example, the Company's capitalization policy was found to have been documented within the Company's Board meeting minutes. While it is appropriate for the Board minutes to include this information, it does not allow for effective documentation of policies and is not readily accessible to employees.

The Audit Staff recognizes that NAWC's small staff size, diverse workload among employees, and the lack of apparent benefit makes documenting policies and procedures a low priority for NAWC. However, it is a sound business practice for a utility to maintain up-to-date documented policies and procedures to prevent inconsistencies or lack of direction among employees. Additionally as workforce turnover occurs, undocumented procedures and best practices may be lost thereby



making it more difficult to train new employees and substantially increases the risk for operating practices to deviate from standards.

**2. Board of Director fees are high compared to similar-sized utilities.**

The General Manager, a full-time employee, is responsible for the Company’s daily operations. The six-member Board of Directors handles overall management responsibilities of the Company. As shown in Exhibit III-1 on page 12, total compensation per director (salaries and fees) for 2015 ranged from \$41,500 to \$73,650. Total director compensation includes salaries for two directors who participate in Company operations on a part-time basis and serve as Company officers in the capacity of President and Treasurer/Secretary.

As part of the compensation review, board fees of four other small utilities under the Commission’s jurisdiction were analyzed (see Exhibit III-2). Based on a six-member Board and total director fees of \$257,150 for 2015, the average fee per meeting attended was \$2,074. Furthermore, NAWC’s 2015 total Board fees of \$257,150 are \$149,948 or 139% higher than the average of \$107,202 for four other small Pennsylvania utilities, and the Company’s fee per meeting of \$2,074 is \$845 or 68% higher than the panel average of \$1,229. While salaries paid to Board members also serving as Company officers appear reasonable, Board fees and average fees paid per meeting are high compared to the panel average of other similar-sized Pennsylvania utilities.

**Exhibit III-2  
Small Pennsylvania Utilities  
Board of Director Fees  
As of December 31, 2015**

<b>Name of Company</b>	<b>Total Annual Board Fees</b>	<b>Average Annual Directors Fees</b>	<b>Aggregate No. of Meetings Reported</b>	<b>Average Fee per Meeting</b>
Wellsboro Electric Company	\$68,275	\$7,586	101	\$676
Citizens' Electric Company	\$73,700	\$8,189	61	\$1,208
Columbia Water Company	\$63,410	\$10,568	69	\$919
York Water Company	\$223,421	\$22,342	118	\$1,893
Panel Average	\$107,202	\$12,171	87	\$1,229
Newtown Artesian Water Company	\$257,150	\$42,858	124	\$2,074

Source: 2015 PUC Annual Reports

The directors assert that the current fees are justifiable due to the Company's lack of full-time corporate officers and the directors' active involvement in the Company's day-to-day operations. It was also noted that NAWC's Board fees per Director have not increased since the 2010 Management Audit, which presented the same recommendation.

While Board members should receive compensation commensurate to the levels of responsibility and time spent on Company business, the Audit Staff questions the cost effectiveness of utilizing Board members for day-to-day operations. Although this practice may allow NAWC to minimize its employee management structure, it may not be the most efficient use of resources. Instead, the Company could use existing employees or hire a new employee to help prepare Board documents and research proposals that would reduce the time and fees Board members would need to spend on "day to day" operations. Consequently, NAWC should explore ways to align total director compensation with similar-sized Pennsylvania utilities with similar levels of responsibility.

### **3. The same audit manager and staff accountant have been assisting with Company's annual audit for longer than five years.**

While NAWC is not required to comply with SOX or other SEC regulations, the Audit Bureau encourages all public utilities to follow the spirit of the corporate governance rules required of publicly traded companies. Section 203 of SOX requires registered public accounting firms to rotate (1) the partner having primary responsibility for the audit and (2) the partner responsible for reviewing the audit every five years. The main purpose of audit partner rotation is to bring a "fresh look" to the audit engagement while maintaining firm continuity and overall audit quality.

As of 2016, the external accounting firm that audits NAWC's financial statements annually has been in place for at least 20 years. In addition, the same audit manager and staff accountant have been assisting with the annual audit for at least five years. The Company is not aware of a policy requiring periodic rotation of personnel at the external accounting firm nor does the Company have its own procedures in place to ensure the personnel conducting the audit are periodically rotated.

When the same firm or assigned staff repeatedly develops the overall audit approach and performs the annual audit steps for an extended number of years, complacency can develop in the audit effort thus lessening the objectivity or independence of the audit. It is a best practice for utilities to ensure that the audit firm rotates the management overseeing the annual audit every 5 to 10 years. Such actions would indicate an effort to promote auditor independence in a fashion similar to its public company peers and maintain the spirit of the SOX and NYSE Rules.

## **Recommendations**

- 1. Document the Company's operating policies and procedures and provide access to appropriate employees.**
- 2. Continue to maintain the Board fees at the current level until they more closely reflect the fees of similar size utilities.**
- 3. Ensure the external accounting firm rotates its engagement partner and/or audit team every five years.**

## IV. FINANCIAL MANAGEMENT

### **Background**

Newtown Artesian Water Company (NAWC or Company) employs an office staff that consists of the office manager and two full-time accounts receivable clerks. Office personnel are responsible for billing, accounts receivable, accounts payable, bank deposits, customer service, and general office and accounting duties. The office manager oversees all office administrative functions. The Company's external accounting firm performs the annual audit, reviews the quarterly financial statements, and provides the annual certified financial statements.

Annually, the Company prepares a one-year operating budget, one-year capital budget, and a five-year capital improvement plan. The office manager and General Manager (GM) prepare the operating budget with input from NAWC's Treasurer. The operating budget provides a forecast of individual income statement accounts including: operating revenues, water treatment expenses, distribution system expenses, customer accounting expenses, administrative and general expenses, other income and other expenses. The capital budget is compiled by the GM with input from the Assistant General Manager. The capital budget identifies main replacement projects, equipment purchases and capital improvement projects that are anticipated to be completed during the year. The capital improvement plan includes total and individual costs for capital projects expected to occur within the current year or subsequent five years. The capital projects are presented within three categories: Supply/Treatment Improvements, Pumping/Storage Improvements and Distribution Improvements (Distribution System Improvement Charge Eligible). The Board of Directors (Board) reviews the budgets and approves them during December.

Monthly operating budget variance reports are reviewed by management and the Board which compare month-to-date and year-to-date actual spend from the current year to the amounts budgeted for year-to-date, total annual budget and prior year actual spend. Percentages are shown for actual spend compared to the annual budget as well as the year-to-date budget. Monthly, the Board requests explanations from the office manager for large variances in the operating and capital budgets. On an annual basis, the Company maintains a spreadsheet showing variances between its capital budget and actual spend.

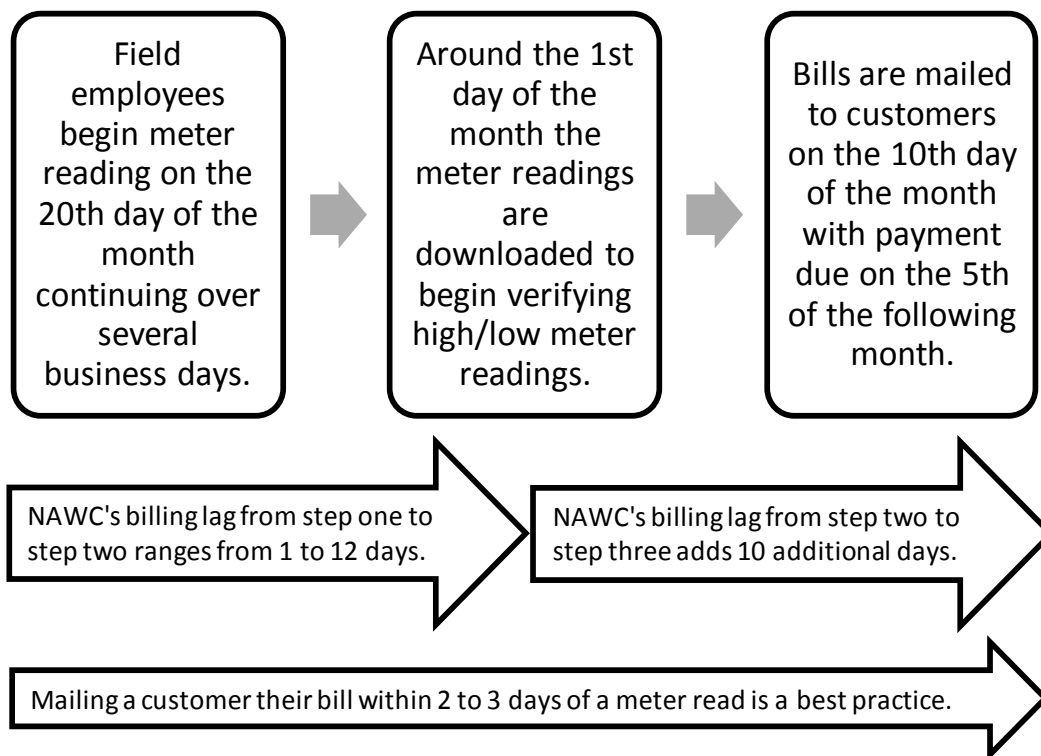
### **Findings and Conclusions**

Our examination of the financial management function focused primarily on a review of accounting policies and procedures, budget process, variance reporting, billing lag, etc. Based on our review, the Audit staff recommends that the Company initiate or devote additional efforts to improving the efficiency and/or effectiveness of its financial management by addressing the following:

**1. The Company's billing lag could be improved upon full implementation of its Automated Meter Reading System.**

NAWC begins reading meters around the 20<sup>th</sup> of each month continuing over several business days. After the meter readings in that cycle are acquired, the readings are downloaded into the customer billing system to generate an invoice register. The invoice register is checked to identify anomalies (i.e., high/low reads, etc.) prior to mailing the bills to customers on the 10<sup>th</sup> day of the subsequent month. Customer payments are due the 5<sup>th</sup> of the following month. As shown in Exhibit IV-1 the billing lag ranged from 11 to 22 days in 2016, with an average lag of 17 days.

**Exhibit IV-1  
Newtown Artesian Water Company  
Illustration of a Sample Month's Billing Cycle and  
Resultant Billing Lag  
2016**



Source: Data Request CS-5 and Interview CS-1

Sound business practice dictates that customers should be billed as soon as possible after service has been provided, or in the case of water utilities, a bill should be mailed to customers within two to three days after an account is read. In addition, it would be beneficial for the Company to read its largest volume customers (industrial and commercial accounts) and send out the bills immediately afterward. The Company

bills commercial or industrial customers with three-inch service lines or larger monthly<sup>4</sup>.

As discussed within the Customer Service and Water Operations Chapters within this report, NAWC is in the process of implementing Automated Meter Reading (AMR) technology. AMR will allow the Company to read customers' meters more quickly and efficiently by using radio frequency handheld devices to read the meters instead of touch pad devices. As shown in the exhibit above, reducing the billing lag would improve cash flow by enabling the Company to have access to its funds in a timelier manner. Interest earnings realized from increased cash flow would be relatively small due to the current economic environment, but would still reduce the need for working capital. Furthermore, aligning the billing date closer to the read date aligns customer payments more closely with water consumption and provides customers with more real-time information on their water use.

## **2. The Company has not addressed management letter recommendations issued by its accounting firm in a timely manner.**

As noted in the Background section of this chapter, NAWC's outside accounting firm conducts an annual audit of the Company's financial statements that includes a review of the controls and procedures related to the accounting and financial reporting system. After completing the audit, the accounting firm provides the Company's management with findings it identified during the audit along with recommendations to improve financial and procedural efficiency; these recommendations are intended to be promptly addressed. Audit Staff reviewed management letters resulting from audits for the years ended December 31, 2013, 2014, and 2015. Several recommendations made by the accounting firm also appeared as recommendations during subsequent years as noted below:

- Recommendations regarding construction work in process and segregation of duties resulting from the 2013 audit year were made as recurring recommendations in audit years ended December 31, 2014 and 2015.
- Recommendations regarding inventory counts, work order system, and accrual of vacation time were made as recurring recommendations in each audit year and noted as such as part of the PUC Audit Staff's 2013 Management Efficiency Investigation.

While NAWC has completely addressed some management letter recommendations that the accounting firm made during the current and prior audit years, progress has been slow in the implementation of several recurring recommendations. Company management indicated that a contributing factor to this was the period of time the Assistant General Manager position was left vacant. The General Manager took on additional responsibilities leaving a deficit in the time available to perform tasks beyond typical daily responsibilities. By not implementing recommendations in a timely manner, financial transactions and operating procedures could lack proper documentation and clarity.

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<sup>4</sup> There are also some two-inch service line customers that are billed monthly.

## **Recommendations**

- 1. Reduce billing lag to more appropriate levels as efficiencies are gained from full implementation of AMR.**
- 2. Address all outstanding and future management letter recommendations in a timely manner.**

## V. WATER OPERATIONS

### Background

The Newtown Artesian Water Company (NAWC or Company) provides water service to approximately 10,300 customers in Newtown Borough, Newtown Township and the northern portion of Middletown Township located in Bucks County, Pennsylvania.

NAWC provides water service within a fully integrated, three-pressure zone distribution system. The three pressure zones are identified as the “low service system”, the “high service system” and the “Durham Road boosted service system”. The low service system is supplied by five wells and two purchased water supply interconnections. The high service system receives its supply from the low service system via the high service pumping station. The Durham Road boosted service system receives its water supply from the high service system via the Durham Road pumping station. The Company’s distribution system consists of four storage tanks with a total storage capacity of 4.4 million gallons. The low service system consists of a 0.54 million gallon standpipe and a 2.36 million gallon ground storage reservoir whereas the high service system includes two elevated tanks with capacities of 1.0 and 0.50 million gallons, respectively.

The two purchased water supply interconnections are from Bucks County Water and Sewer Authority (BCWSA) and the Pennsylvania American Water Company (PAWC). The water purchased from BCWSA is surface water originating from the Delaware River and treated at the Forest Park Water Treatment Plant. In accordance with the Wholesale Water Agreement between BCWSA and NAWC dated October 26, 2011 and valid for a period of 30 years, the Company is required to purchase 1.0 million gallons per day (mgd) with a maximum capacity of 2.0 mgd available to the system. The water purchased from PAWC is a mixture of groundwater and surface water originating from the Delaware River and treated at the Yardley Water Treatment Plant. NAWC is required to purchase a daily minimum of 200,000 gallons per day and a maximum of 300,000 gallons per day via the interconnection agreement with PAWC. The agreement between NAWC and PAWC is dated March 4, 2011 and is valid for a period of ten years.

As of December 20, 2016, the average daily system demand was 2.08 million gallons per day (mgd). The wells supplied 39% of the total supply and the purchased water provided 61% of the total supply with BCWSA providing 49.5% and PAWC providing the other 11.5%. The chemical treatment at all wells consists of sodium hypochlorite for disinfection and zinc orthophosphate for corrosion control. The Delaware River Basin Commission (DRBC) currently permits the Company’s well system for a monthly maximum withdrawal of 44.81 million gallons or 1.49 mgd.

Among other responsibilities, the Company’s General Manager (GM) oversees all water operation activities. NAWC hired an Assistant General Manager in June 2015 to assist the GM in supervising the day-to-day water operations. The Company has six



field employees with three certified as Department of Environmental Protection (DEP) Certified Water Operators and one employee working towards certification. The field employees are responsible for all distribution operation activities such as valve inspection and maintenance, residential meter testing, line locating, main/service repair, painting fire hydrants, pump station maintenance, tank inspection, meter reading, etc. Due to various constraints on time, expertise and resources, NAWC outsources for several services related to major construction, commercial/industrial meter testing, leak detection, engineering, service line and hydrant installations, main replacements, etc. For construction work and new installations, NAWC uses a pre-approved list of contractors.

The Company hires a consultant to perform annual system-wide leak surveys of its distribution system. Leak surveys conducted in 2015 and 2016 resulted in the detection of three leaks (one main and two service leaks) in 2015 and four leaks (one main and three service leaks) in 2016. In addition to the annual leak surveys performed by an outside consultant, the Company has acoustic equipment that it uses to perform in-house leak detection on an as-needed basis. Furthermore, the Company is planning to install several data loggers throughout its distribution system in 2017 to execute nighttime leak detection.

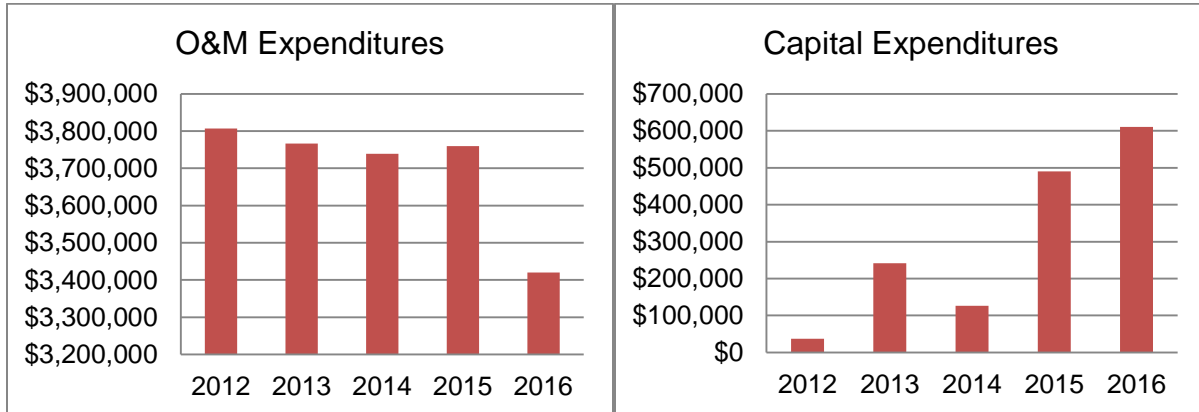
The Company reads its production meters on a daily basis and its residential/commercial meters on a quarterly basis. Large meters (3" and above) and all source meters are tested annually by an outside contractor. Further discussion on meter testing can be found in Finding and Conclusion No. 2 within this chapter. The vast majority of meters are read manually; however, in 2015, the Company began an initiative to install meters with automatic meter reading (AMR) capability. As of the end of fieldwork in December 2016, NAWC had approximately 1,400 AMR capable meters with a proposed ten-year meter replacement plan to replace all of its meters by 2025.

NAWC's operations & maintenance (O&M) and capital expenditures for the years 2012 through November 30, 2016 are shown in Exhibit V-1. The Company's O&M expenditures primarily include labor, power, materials and supplies, treatment and other<sup>5</sup> expenses. Capital expenditures have been increasing from 2012 through 2016, with the exception of 2014. The Company did not have any main replacement activity that year. Projects scheduled to be completed in 2014 were delayed due to township funding issues.

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<sup>5</sup> Other expenses include contractual services, insurance expense, director's fees, office expenditures, etc.

**Exhibit V-1**  
**Newtown Artesian Water Company**  
**Operations and Maintenance (O&M) and Capital Expenditures**  
**For the years January 1, 2012 through November 30, 2016\***



\* Eleven months  
Source: Data Requests WO-23 and WO-24

The Company's non-revenue water (NRW) data is shown in Exhibit V-2. NAWC has done well in maintaining minimal water losses and has kept its NRW under 10% over the last five years. NRW is the difference between water supplied and billed authorized consumption (or water sold).

**Exhibit V-2**  
**Newtown Artesian Water Company**  
**Non-Revenue Water (Gallons)**  
**For the years January 1, 2012 through November 30, 2016\***

	2012	2013	2014	2015	2016*
Water Supplied	786,751,000	777,414,000	768,883,000	784,520,000	713,573,000
Billed Authorized Consumption	732,467,000	716,433,000	724,880,000	714,024,000	660,229,000
Unbilled Authorized Consumption	9,834,000	9,718,000	9,611,000	9,807,000	8,920,000
Apparent Losses	9,866,000	9,680,000	3,734,000	3,746,000	13,489,000
Real Losses	34,584,000	41,583,000	30,657,000	56,943,000	30,935,000
NRW (Gallons)	54,284,000	60,981,000	44,002,000	70,496,000	53,344,000
NRW (%)	6.9%	7.8%	5.7%	9.0%	7.5%

\* Eleven Months  
Source: Data Request WO-7

The Audit Staff noted that all five of the Company's wells have experienced increased hardness<sup>6</sup> content in recent years, with three of the five wells experiencing excessive hardness. Although the quality of the water from these wells could be improved by installing water softening treatment, the measures are considered cost prohibitive. Consequently, the Company has addressed this issue by blending hard well water with water purchased from BCWSA.

## **Findings and Conclusions**

Our examination of the Water Operations function included a review of policies and procedures, drought contingency planning, engineering and construction, maintenance, production, main replacement, non-revenue water, damage prevention, the cross-connection control program, etc. Based on our review, the Audit staff recommends that NAWC devote additional efforts to improve the effectiveness of its water production and distribution operations by addressing the following:

### **1. The Company is not compliant with its cross-connection control program.**

NAWC maintains a comprehensive cross-connection control manual that was most recently updated in 2016. The cross-connection control manual includes documentation on public notification, testing frequency, recordkeeping, testing and maintenance forms, sample notices of testing, etc. The manual also includes a description of methods and procedures to be used, legal authority for implementation of the program, approved backflow prevention devices, inspection and maintenance requirements and program violations.

Despite the comprehensive set of policies and procedures, the Company has not issued, as per its program manual provisions, backflow device test notices to its industrial and commercial customers since 2012. Although customer responses and test results were tracked and maintained by the Company prior to 2013, no such records are currently maintained. The Company has sporadically received test results from approximately 3% of its commercial and industrial customer base annually since 2013 but the results are not tracked.

In accordance with Pennsylvania DEP regulations at Title 25 § 109.709, a cross-connection control program should include, among other things, a description of methods, procedures and backflow devices to be used, a time schedule for inspection of nonresidential customers' premises with appropriate recordkeeping, and provisions for discontinuance of water service, after reasonable notice. The Company's management acknowledged that the cross-connection control program has been neglected in recent years citing a lack of manpower and resources as the primary reason. The Company plans to resume mailing testing notices in 2017 and maintain test results for its commercial and industrial customers.

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<sup>6</sup> Hardness is a measure of certain dissolved solids within water such as iron, calcium, manganese, etc. While hardness usually does not hinder human consumption or taste, it can affect homeowner plumbing and appliances.

Backflow or backsiphonage of non-potable water into a water utility's distribution system due to a failed backflow device could lead to serious health issues. For example, in 2013, an apartment complex within NAWC's service territory detected Legionella in its water system and upon extensive testing by NAWC, it was determined that the bacteria was bred in the customer's potable water system due to a faulty backflow preventer on its Heating, Ventilation and Air-Conditioning (HVAC) system. Although the faulty backflow preventer in question was not under the purview of NAWC, the distribution system was protected from contamination by a properly working backflow preventer at the metered water connection governed under the provisions of the Company's cross connection control program. Consequently, testing backflow devices at high-risk connections (i.e., industrial and commercial customers) is paramount to ensure such conditions are not prevalent to allow contamination of the distribution system. Moreover, tracking such test results and maintaining an updated database provides management with the necessary information to monitor and remediate any issues with respect to the affected devices. By adhering to a comprehensive cross-connection control program, the Company will not only comply with regulations, but will also be taking the necessary steps to ensure that it is providing safe, potable water to its customers.

## **2. The Company has not been compliant with PUC meter testing regulations.**

NAWC uses a contractor to test all of its production and larger commercial and industrial meters; however, residential and smaller commercial customers are tested in-house at its main office<sup>7</sup>. However, in 2012, the Company began experiencing residential meter testing issues associated with AMR meters and ceased testing new residential meters. Furthermore, in 2015, the Company began a ten-year meter replacement initiative to replace all 7,500 of its existing manually-read touchpad meters with radio-read or AMR compatible meters and concurrently install meter transceiver units that allow the meter to be read by a radio frequency handheld device or a vehicle mounted receiver. In absence of testing new residential AMR meters, the Company has relied solely upon the manufacturer testing and certification of its test results.

However, the PUC meter testing regulations at 52 Pa. Code § 65.8(d)(1) state in part, ".....in the case of a new meter or a meter reconditioned by a manufacturer, the test results of the manufacturer may be accepted as the installation test if the utility has verified the manufacturer's reported results by testing the greater of 10% or ten meters of a shipment of meters."

Subsequent to inquiry by Audit Staff, the Company in recognition of the non-compliance issue remediated its meter testing protocol deficiency and plans to resume new residential meter testing in the future.

In the process of validating its new residential meter testing protocol, the Company verified the accuracy of new residential AMR meters installed in late 2016.

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<sup>7</sup> The test bench is certified annually.

Additionally, the Company sampled data from AMR meters installed between 2013 and 2016 and found that the meters were consistent with the customers' past usage. Although the new AMR meters are tested and calibrated at the factory, shipped with quality assurance/quality control verification information, and a 20-year material and accuracy warranty, the Audit Staff recommends that the Company begin testing the new residential meters immediately in accordance with regulations. In addition, a sample of meters placed in service between 2013 and 2016 should be tested in accordance with the regulations to ensure accuracy within the threshold of +/-2%.

**3. The Company has not operated in accordance with its distribution valve inspection/exercise program; maintains an outdated manual; and has not established a critical valve list.**

The American Water Works Association (AWWA) recommends all water utilities initiate a valve exercise program that requires all distribution valves to be inspected and operated on a regular basis. Distribution valves that are 16 inches in diameter or larger should be inspected annually if possible. The frequency at which smaller distribution valves should be inspected depends on several factors such as valve criticality, location of the valve (i.e., near high impact customers or at major intersections), etc.

NAWC has a comprehensive valve inspection and maintenance manual developed by a consultant in 2005. Furthermore, the Company has a valve inspection and maintenance program comprised of a valve inventory database, valve exerciser and controller/data logger. When field personnel exercise the valves, the valve exerciser logs the valve operating information into the controller/data logger which is then uploaded into the valve inventory database.

Although the Company maintains a comprehensive manual, it has not been updated since 2005. Consequently, information within the manual does not properly reflect the number of distribution valves maintained in the system as shown in Exhibit V-3.

**Exhibit V-3**  
**Newtown Artesian Water Company**  
**Number of Distribution Valves**  
**As of September 30, 2016\***

Size	Number of Valves
4"	69
6"	234
8"	775
10"	147
12"	341
14"	2
16"	57
20"	8
Unknown	14
Total	1,647

\* Nine months  
Source: Data Request WO-11

The number of valves exercised by the Company from January 1, 2011 through September 30, 2016 is shown in Exhibit V-4. NAWC did not exercise any valves in 2012 and 2013 due to resource constraints, and exercised approximately 9% of its valves in 2014 and only about 2% as of September 30, 2016. The Company plans to exercise valves at the current level for the remainder of 2016.

According to the Company's valve inspection and maintenance manual, the Company is to inspect and exercise its valves on a two to five-year cycle. Therefore, the Company is not inspecting and maintaining its valves according to its procedures or AWWA recommendations. Furthermore, the Audit Staff asserts that the Company should update its valve inspection manual with the most up to date information such as number of valves, inspection goals, etc.

**Exhibit V-4**  
**Newtown Artesian Water Company**  
**Number of Distribution Valves Exercised**  
**For the years January 1, 2012 through September 30, 2016\***

	2012	2013	2014	2015	2016*
Valves Exercised	0	0	147	82	38

\* Nine Months  
Source: Data Request WO-11

Over the last five years, NAWC has inspected an average of 53 valves annually. Based on the 1,647 valves in its distribution system, the Company is exercising its valves on a 31-year inspection cycle. The Company contends that it does not have enough manpower to exercise all of its valves on an annual basis. Moreover, the Company maintains that some of the valves are very old and attempting to exercise these older valves could cause them to break.

The Audit Staff recognizes the challenges of a valve inspection program, particularly with older infrastructure. However, it is more prudent to discover a faulty valve during inspection than in an emergency. Accordingly, the Company should identify and establish a list of critical valves, and then strive to inspect the most critical valves on at least a biannual basis. The priority of valves could be based upon several factors such as size, critical customers, redundancy, location, etc. Exercising valves, specifically critical valves, on a prescribed schedule would assure that valves are in good working condition to respond to emergencies such as main breaks, emergency main repair, etc. Among other things, an effective valve exercising program is essential to improving customer service, ensuring system isolation capability, and helping provide distribution system reliability. The Company could then exercise other non-critical valves on a more protracted schedule or as needed.

#### **4. The Company has not fully reconciled miles of ductile iron main recorded in its GIS mapping system.**

The Geographic Information System (GIS) stores the Company's asset information such as mains, services, hydrants, valves, pump stations and storage facilities and also serves as the mapping system. The field personnel use the GIS to locate facilities when performing O&M activities such as hydrant flushing, valve inspection, main repair, etc. Although the GIS is the primary tool to identify and locate assets, the field personnel also utilize paper maps occasionally under special circumstances. Furthermore, the Company initiated several GIS tasks in 2016, such as developing and testing a hydrant flushing application; developing a general map viewer allowing staff to edit and manage field assets; linking valve information to GIS; and generating over 12,000 GIS lateral and curb stop asset data points using existing customer service endpoints. Moreover, the Company has also planned several initiatives for 2017, such as scanning and linking as-built construction drawings and valve cards and re-surveying all above ground assets such as hydrants, pumps and valves followed by a spatial adjustment of distribution mains and laterals to improve accuracy.

The miles of main provided from the GIS are based on underground assets that have been loaded into the mapping system using as-built construction drawings and legacy maps. However, approximately 75 of the 122 miles or 61% of the ductile iron pipe loaded into the GIS mapping system were estimated due to paper-based mapping issues.

If used properly, the GIS is a very useful tool. By entering accurate pipe information in the GIS mapping system, the Company would have precise knowledge of

the material and location of the type of pipe in the ground and other assets such as hydrants, valves, etc. Accurate information is required to support main replacement programs, line locates, system flow studies, etc. to avoid or mitigate risks associated with line hits, failing infrastructure, inadequate restoration times, water quality issues, etc. Consequently, the Audit Staff believes that reconciliation of the estimated ductile iron main assets should be performed to validate the integrity of the GIS information.

**5. The Company is not replacing its cast iron and asbestos cement mains in a timely manner.**

As of September 30, 2016, NAWC had approximately 132 miles of main in its distribution system. The vast majority of the system main (i.e., ductile iron main) had been installed post 1975, while the remaining 11 miles of cast iron and asbestos cement main was installed prior to 1975 with portions installed prior to 1900.

Main replacement activity for the years January 1, 2013 through August 31, 2016 is shown in Exhibit V-5. On average, the Company primarily replaced approximately 0.1534 miles of cast iron and asbestos cement main annually during this time period, which equates to a replacement rate of approximately 72 years.

**Exhibit V-5  
Newtown Artesian Water Company  
Main Replacement Activity  
For the years January 1, 2013 through August 31, 2016\***

	2013	2014	2015	2016*
Actual (\$)	\$117,927	\$0	\$385,856	\$293,557
Actual (miles)	0.146	0	0.295	0.172

\* Eight Months

Source: Data Request WO-3

Main replacement activity budgeted for the years 2017 through 2021 is highlighted in Exhibit V-6. On average, NAWC plans on replacing approximately 0.17 miles of primarily cast iron or asbestos cement annually over the next five years or at a rate of approximately 64 years.



**Exhibit V-6**  
**Newtown Artesian Water Company**  
**Proposed Main Replacement Activity**  
**For the years January 1, 2017 through December 31, 2021**

	2017	2018	2019	2020	2021
Budget (\$)	\$715,000	\$1,025,000	\$375,000	\$0	\$2,395,000
Miles*	0.13	0.19	0.07	0	0.45

\* Mileage estimated based on \$1,000/foot  
Source: Data Request WO-29

Cast iron and asbestos cement mains are typically more prone to leaks and breaks as the pipes age. More specifically, cast iron pipe is susceptible to pitting and graphitic corrosion while asbestos cement pipe is vulnerable to degradation from internal corrosion. Consequently, given the current replacement rate, the existing cast iron and asbestos cement main will likely exceed its useful life thereby increasing the risk of service interruptions, water quality integrity, and damages/repairs associated with the rising probability of breaks. Therefore, the Audit Staff believes it would be prudent for NAWC to accelerate its cast iron and asbestos cement main replacement activity to ensure reliability of the distribution system.

**6. The Company has not performed a pressure survey in over a decade.**

In 2003, the Company began using hydraulic modeling software to process data gathered from pressure surveys. The hydraulic modeling software is also used to identify system deficiencies, conduct facility sizing, perform fire flow analyses, etc. to accommodate any system design changes as part of its capital planning process.

In 2015, the Company performed a water supply study to project future supply and demand based on the past and present trends in population growth and demand per connection. As part of this study, the Company updated its hydraulic modeling data with respect to pipes, demand rates, flow tests, pressure recalibration and customer consumption information. Calibration of the modeling software was confirmed through hydrant flow testing conducted in July 2015. The Supervisory Control and Data Acquisition (SCADA) system is also used to monitor pressures across its distribution system; however, the pressures monitored are typically limited to existing facilities (i.e., pump stations, storage tanks, and treatment plants) using conventional pressure monitoring sample rates.

In accordance with Pa. Code § 65.6(d), “at regular intervals, but not less than once per year, each utility shall make a survey of pressures in its distribution system of sufficient magnitude to indicate the pressures maintained at representative points in the system. Records of these surveys shall show the date and time of beginning and end of the test and the location at which the test was made. Records of these pressure surveys shall be maintained by the utility for a period of at least three years and shall be

made available to representatives, agents, or employees of the Commission upon request.”

Pressure surveys, an integral component of a pressure management program, is an effective tool to periodically monitor pressures at critical points throughout the distribution system thus ensuring pressure requirements have been satisfied to meet fire flow, emergency, minimum, and maximum allowable pressure specifications. This allows the Company to assess any pressure anomalies and potential impacts to the associated pipeline so that remedial action can be taken in a timely manner. By performing pressure surveys in accordance with 52 Pa. Code § 65.6(d), the Company would not only be fulfilling its regulatory obligation but also ensuring that critical points within the distribution system have been adequately pressure monitored. Furthermore, pressure surveys could potentially help reduce NRW real losses, improve energy efficiency, and reduce operation and maintenance costs.

**7. The Company has not performed a service life study of its assets since 1995.**

Service life studies are based upon the same historical data used in annual depreciation reports. Service life studies are used extensively when filing rate cases with the Commission and are the basis for the service lives used to calculate the annual accrual rates of plant and assets. Moreover, service life studies are used to develop survivor curves and average service lives for assets such as mains, services, meters, hydrants, valves, etc.

In accordance with 52 Pa. Code § 73.5(a), a public utility with annual gross intrastate revenues in excess of \$20 million providing electric, gas or water service, is required to file a service life study report every five years. Further, public utilities are required to include pertinent information in the service life study report, such as explanation of methods used in selecting average service lives and survivor curves, graphs and exhibits showing depreciation calculations, projected plant data, etc. Although NAWC only had gross intrastate revenues of approximately \$6 million in 2015, the Audit Staff believes though not required that periodically conducting a study allows the Company to appropriately reassess the useful service life of its assets for regulatory purposes.

**8. The Company does not maintain a standalone employee safety manual.**

NAWC updated its Employee Handbook in October 2016 to incorporate “Safety Code” material that addresses safety related items such as personal protective equipment, driving and abuse of company vehicles, improper lifting techniques, etc. However, the “Safety Code” only outlines safety policies, but does not address procedures. A comprehensive Employee Safety Manual should, at a minimum, include:

- A company safety policy letter
- First aid procedures
- Safety meetings and self-inspections requirements
- A safety disciplinary policy
- Electrical and ladder safety procedures
- Motorized vehicles and equipment safety procedures
- Personal protective equipment requirements
- Safety training mandatory and optional programs

The “Safety Code” was prepared to make employees aware of the Company safety policies but it does not comprehensively address all the safety concerns relevant to water utilities. For example, the field employees perform excavation and trenching work; however, the Company does not have detailed safety procedures on trenching and excavation even though the Occupational Safety and Health Administration (OSHA) has rules governing trenching or excavation work. Ideally, an Employee Safety Manual should incorporate these types of procedures.

A comprehensive safety manual would help the Company develop and manage a workplace safety program. An effective safety manual will help reduce and control job-related illness and injury, as well as, provide personal and economic benefits, such as ensuring that employees go home safe, reduced worker compensation costs, accident costs, etc.

## **9. The Company has lead services in its distribution system.**

Reportedly, as of November 30, 2016, the Company had 59 lead services in its distribution system. Most of these lead services are associated with cast iron main installed from the late 1800’s and early 1900’s and have been targeted for replacement as discussed previously in Finding and Conclusion No. 5. In addition to replacing the Company’s side of the lead services, which typically extend from the main to the curb valve, the Company is planning to notify customers who own lead service lines. Consequently, NAWC has drafted an official letter that will be mailed to its customers whom they believe have lead services, so that the customer can replace their side of the service (i.e., from the curb valve to the meter).

The Safe Drinking Water Act of 1974 reduced the maximum allowable lead content in pipes, pipefittings, plumbing fittings, fixtures, solder and flux. Furthermore, the Environmental Protection Agency (EPA) is planning to develop several changes to the Lead and Copper rule which can be found at 40 CFR Part 141 Subpart I. In 2016, NAWC performed a lead/copper test per the DEP requirements<sup>8</sup>. During the test, the Company took 33 samples over a four-month period resulting in one elevated reading that exceeded the action level. An action level exceedance is not a violation but can trigger other requirements such as water quality parameter monitoring, corrosion control

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<sup>8</sup> DEP’s Lead and Copper Rule establishes an action level (AL) of 0.015 mg/L for lead and 1.3 mg/L for copper based on the 90<sup>th</sup> percentile level of tap water samples.

treatment, source water monitoring/treatment, public education and lead service line replacement.

Lead can leach into drinking water when lead service pipes corrode due to high acidity or low mineral content levels. Moreover, even at small doses lead levels pose a health threat, especially for pregnant women and young children. Consequently, the Company should strive to accelerate main replacement and target removal of associated lead service lines consistent with Finding and Conclusion V-5.

**10. The Company has not performed a manpower planning study to address its ability to effectively meet annual workload requirements including using contractors to supplement its workforce.**

The Company’s six field personnel currently perform all Operation and Maintenance (O&M) tasks such as curb box repairs, meter replacement, water sampling, valve maintenance, hydrant maintenance, repairing main breaks and service leaks, new installation inspections, leak detection, line locating, etc. Exhibit V-7 lists the estimated 2016 O&M workload that still needed to be completed as of September 30<sup>th</sup>. Some of these tasks are needed to remain compliant with regulations (i.e., cross-connection control) while others ensure that the Company is providing clean, reliable service to its customers. Certain tasks like valve exercising can be deferred for short periods of time but eventually may lead to operational or emergency response problems (See Finding and Conclusion V-3 for more information on valve exercises). NAWC hired the Assistant General Manager in June 2015 to provide additional resources for the Company and as a successor to the General Manager who may retire in the next few years. However, it’s important to note that in addition to the GM potentially two more field employees could retire in the next five years.

**Exhibit V-7  
Newtown Artesian Water Company  
Estimated Incomplete O&M Workload  
As of September 30, 2016\***

<b>Task</b>	<b>Workload</b>	<b>Timeframe</b>
Curb box repairs	3,000 – 6,000	One-time
Valve Exercising	500	Annually
Meter Replacement	1,000	Annually
Leak detection (miles)	40	Annually

\* Nine Months  
Source: Data Request WO-34

Overtime levels can be used to assess not only how effective workload is managed but also serve as an indicator of asset health in terms of responding to unplanned system maintenance issues. Field personnel overtime hours as shown in Exhibit V-8 have steadily increased since 2012. While some emergency type work is captured in Exhibit V-8, Company management indicated that the increase was primarily due to routine planned work (i.e., valve maintenance and meter replacement work) shifted to the weekends. Although the overtime levels have doubled from 2012 to 2015, the Audit Staff concedes that overtime is still within reasonable levels. However, increasing overtime levels can be an indicator that work load, work priority, and staffing may not be optimal.

**Exhibit V-8  
Newtown Artesian Water Company  
Overtime Hours  
For the Years January 1, 2012 through September 30, 2016\***

	2012	2013	2014	2015	2016*
Hours	276	331	517	546	328

\* Nine Months

Source: Data Request WO-20

Given the workload constraints, the deficiencies identified within the previous Findings and Conclusions in this chapter, and rising overtime levels, the Company may need to consider deferring certain O&M tasks, conduct a process review to optimize workforce efficiency, and reassess utilization of both internal and external resources to meet workload requirements. Therefore, the Company should consider performing a manpower planning study to determine whether the current complement of field employees is adequate to perform the prescribed operation and maintenance tasks. Specifically, the Company should consider reprioritizing work, efficiency gains in performing work tasks, potential outsourcing, and internal resource commitments to manage overtime costs effectively to meet its workload commitments.

**Recommendations**

1. **Strive to test all commercial and industrial backflow devices annually.**
2. **Test new residential meters in accordance with regulations.**
3. **Establish a critical valve list and strive to exercise critical valves on an annual basis.**
4. **Strive to use the GIS mapping system for all distribution system activities and ensure accurate records of all assets.**

- 5. Reduce cast iron and asbestos cement mains in a more aggressive time frame.**
- 6. Perform regular pressure surveys of the distribution system.**
- 7. Perform a service life study of all plant assets periodically.**
- 8. Develop a comprehensive safety manual that includes all relevant safety procedures.**
- 9. Expedite the removal of all lead services in the distribution system.**
- 10. Conduct a manpower planning study including a process review of prescribed maintenance tasks to assess optimizing internal resources and employing contractors to strategically address workload levels.**

## VI. EMERGENCY PREPAREDNESS

### Background

Effective June 2005, Public Utility Commission (PUC or Commission) regulations at 52 Pa. Code § 101 (Chapter 101) require jurisdictional utilities to develop and maintain written physical security, cyber security, emergency response, and business continuity plans so as to protect the infrastructure within the Commonwealth of Pennsylvania and ensure safe, continuous and reliable utility service. Along with the requirement to establish these “emergency preparedness” plans, a utility is required to annually file a Self Certification Form to the Commission documenting compliance with Chapter 101. This form, available on the PUC website, is comprised of 13 questions as shown in Exhibit VI-1.

### Exhibit VI-1 Pennsylvania Public Utility Commission Public Utility Security Planning and Readiness Self Certification Form

Item No.	Classification	Response (Yes–No–N/A*)
1	Does your company have a physical security plan?	
2	Has your physical security plan been reviewed in the last year and updated as needed?	
3	Is your physical security plan tested annually?	
4	Does your company have a cyber security plan?	
5	Has your cyber security plan been reviewed in the last year and updated as needed?	
6	Is your cyber security plan tested annually?	
7	Does your company have an emergency response plan?	
8	Has your emergency response plan been reviewed in the last year and updated as needed?	
9	Is your emergency response plan tested annually?	
10	Does your company have a business continuity plan?	
11	Does your business continuity plan have a section or annex addressing pandemics?	
12	Has your business continuity plan been reviewed in the last year and updated as needed?	
13	Is your business continuity plan tested annually?	

\* Attach a sheet with a brief explanation if N/A is supplied as a response to a question.

Source: Public Utility Security Planning and Readiness Self-Certification Form, as available on the PUC website at [http://www.puc.state.pa.us/general/onlineforms/pdf/Physical\\_Cyber\\_Security\\_Form.pdf](http://www.puc.state.pa.us/general/onlineforms/pdf/Physical_Cyber_Security_Form.pdf).

During the course of our fieldwork, the Audit Staff reviewed the most recent (i.e., 2015) Self Certification Forms submitted by Newtown Artesian Water Company (NAWC or Company) to determine the status of its responses. Our examination of NAWC’s emergency preparedness included a review of physical security plans, cyber security plans, emergency response plans (ERP), business continuity plans, and associated security measures. Furthermore, the Audit Staff performed inspections at a sample of the Company’s facilities; including the main office, well houses, pump stations, and storage tanks. Due to the sensitive nature of the information reviewed, any specific

information is not revealed in this report but rather the generalities of the information reviewed are summarized.

The Company maintains a well-documented ERP which includes relevant emergency response documentation such as a customer and general public notification plan for emergencies, and emergency contact information for employees, media, regulatory agencies, etc. To supplement the ERP, the Company developed a Crisis Communication Plan in 2008 to identify a crisis management team and formulate strategies to address specific situations (i.e., terrorism, natural disasters, etc.).

The Company's physical security plan includes documentation for all of its facilities such as well houses, pumping stations, interconnects, storage tanks, etc. In addition to the physical security plan, the Company hired a consultant in 2004 to perform a Vulnerability Assessment (VA) for all of its facilities. NAWC has a continuity of operations plan in lieu of the business continuity plan. The continuity of operations plan includes an overview of the system and identifies various vulnerabilities such as loss of water supply, loss of administrative facilities, etc. and outlines contingencies for vulnerabilities. NAWC also developed a cyber security plan in May 2011 which includes several elements related to security and safeguarding of its computer network.

## **Findings and Conclusions**

Our examination of NAWC's Emergency Preparedness included a review of the physical security plan, cyber security plan, emergency response plan, business continuity plan, vulnerability assessment and all associated security measures. Based on our review of NAWC's emergency preparedness efforts, the Audit staff recommends that the Company should initiate or devote additional efforts to improving its security planning and preparedness procedures by addressing the following:

### **1. The Company is not testing its emergency preparedness plans, or portions of it, on an annual basis.**

As mentioned in the Background, the Company has developed and maintained several emergency preparedness plans such as the physical security plan, continuity of operations plan, crisis communication plan, cyber security plan and the emergency response plan. In September 2012, NAWC hired a consultant to test the Company's ERP and conduct a table top exercise at a cost of approximately \$12,000. Moreover, the Company plans to perform an active shooter exercise in 2017 with local law enforcement personnel.

Although the Company indicated in its 2015 Self Certification form filed with the Commission that it tests its business continuity, physical security and cyber security plans annually, the Audit Staff did not find any evidence that such tests were being performed. Since the table top exercise in 2012, the Company has not performed any live business continuity drills or exercises which could help provide guidance on system restoration during emergencies, disasters and mobilization. Without conducting such



tests, the Company may not be fully prepared to respond to emergency situations and is not compliant with Commission Regulations. Regulations at Chapter 101.3 (b) and (c) require a jurisdictional utility to review and update the plans annually and maintain and implement an annual testing schedule of these plans.

Company Management indicated that it does not have the resources to test its plans annually and hiring consultants is too expensive. The Audit Staff contends that the Company could perform these exercises in-house or test portions of its plans annually. For example, the Company could test parts of its cyber security plan by performing penetration tests of its wireless devices in a given year and perform Supervisor Control and Data Acquisition security testing the following year. Furthermore, federal, state or other agencies such as the Environmental Protection Agency, American Water Works Association, Federal Emergency Management Agency, Department of Homeland Security, etc. offer several tabletop tools and free resources that the Company could utilize. In addition to providing free resources, these federal agencies provide training for exercise planning at individual facilities. The Audit Staff also recommends that the Company strive to work with its local and county emergency responders and its regional Emergency Task Force in particular by either hosting or participating in annual tabletop exercises held by these governing bodies. Furthermore, any test should be documented and include an after action review.

## **2. Minor deficiencies in physical security were noted during inspection of NAWC's facilities.**

The four principles of perimeter security are deter, detect, delay and respond. Deterrence is the first and the only proactive standard of perimeter security. Typically, a good deterrence measure such as a fence with barbed wire or a well secured and lighted building will be enough to keep the malefactors at bay. Moreover, physical security is a dynamic activity and should be continuously addressed and any deficiencies requiring remediation addressed in a timely and appropriate manner.

The Audit Staff performed random inspections of several facilities at NAWC focusing on compliance with its physical security plan and identification of vulnerabilities. As inspections were performed, the Audit Staff noted several minor deficiencies in physical security. Most of the deficiencies were due to facility age, weather, oversight or general wear and tear. Minor deficiencies in physical security could potentially allow for possible points of entry at NAWC's facilities. The Company should strive to correct these minor deficiencies as soon as possible and conduct periodic reviews of its physical security in and around facilities.

### **Recommendations**

- 1. Test emergency preparedness plans, or portions of it, on an annual basis.**
- 2. Correct minor deficiencies in physical security at all affected facilities.**

## VII. CUSTOMER SERVICE

### Background

Newtown Artesian Water Company's (NAWC or Company) customer service function is performed at its business office in Newtown, PA. The customer service function is staffed by two accounts receivable Clerks. Their duties include answering customer service calls, making payment agreements, processing customer complaints, preparing customer bills, and processing walk-in payments. The General Manager and Office Manager also assist with customer service issues. After business hours (8:00am-4:00pm), calls are forwarded to an answering service that in turn pages the designated employee on call.

Customer meters are read quarterly by field service personnel using handheld meter readers. The Company uses three billing cycles with approximately one-third of residential, commercial, and industrial customer's meters read each month. In contrast, customers with three inch diameter meters or larger are read and billed monthly. In 2013, NAWC began converting from handheld meter reading technology to an Automated Meter Reading (AMR) system. (See Chapter V – Water Operations for more information about the AMR conversion.) After the monthly meter reads have been collected, they are downloaded into the customer billing system which automatically generates an invoice register. The invoice register indicates exceptions (i.e., high/low read, etc.) which are then researched and cleared before the system generates the customer invoice. In 2015, the Company began utilizing a third-party to print and mail its bills to customers around the 10<sup>th</sup> of each month.

The majority of customer payments are remitted by mail or made in person at the business office. For no fee, customers may arrange with NAWC to direct debit their payment from their checking account or utilize the online banking feature of their checking account to have the payment sent to NAWC. NAWC accepts credit card payments via a third-party that charges the customer a transaction fee. Customer payments are posted to the customer billing system and deposited daily into the Company's bank account.

NAWC's collection efforts for delinquent accounts begin by sending a late payment notice to customers when accounts are 45 days in arrears. If payment is not received within 10 business days, a 10-day shut-off letter is mailed. If no payment is received after the 10-day shut-off letter, the customer receives a telephone call notification that water service will be shut-off in three days. A second telephone call is made on the day prior to scheduled water service shut-off if payment has not been received. The Company does not use any collection agencies to pursue collections for delinquent accounts, but rather relies primarily upon setting up payment arrangements with delinquent customers. Exhibit VII-1 shows that the customer accounts receivables have remained fairly steady with the majority of customers (85%) remaining current with their payments.

**Exhibit VII-1  
Newtown Artesian Water Company  
Customer Accounts Receivables Aging Trends  
For the Years January 1, 2012 through 2015**

	2012	2013	2014	2015
<b>Current</b>	84%	85%	85%	84%
<b>Over 30 days</b>	10%	10%	10%	11%
<b>60 days and over</b>	6%	5%	5%	5%

Source: Data Request CS-2 and NAWC's Annual Reports filed with the PUC

**Findings and Conclusions**

Our examination of the Customer Service function included a review of the Company's policies and procedures, staffing, meter reading and billing, and collection policies and procedures. Based on our review, the Audit staff recommends that the Company should initiate or devote additional efforts to improving the efficiency and/or effectiveness of its customer service function by addressing the following:

**1. NAWC has not conducted a customer satisfaction survey since 2011.**

In 2011, NAWC mailed a customer satisfaction survey to approximately 90% of its customers with a response rate of approximately 25%. The survey asked the customer to rate their satisfaction with respect to quality of service, water quality (i.e., taste, odor, clarity, etc.), system reliability (i.e., pressure, flow, etc.), billing, field/office staff, customer service accessibility, customer service staff responsiveness, and overall company rating. The majority of the responses rated the Company as "excellent" or "good" and based on customer survey feedback, the Company made efforts to address customer taste/odor concerns. The Company indicated that because the initial survey was the first of its kind for NAWC's customers, many customers made inquiries to the office staff about the survey.

In 2012, the Company indicated it had planned to conduct customer satisfaction surveys every five years. However, as of November 2016 the Company had not conducted a subsequent customer satisfaction survey. The Audit Staff as part of the 2013 Management Efficiency Investigation at Docket No. D-2012-2327611 had recommended that NAWC consider surveying a portion of its customers at least every three years. However, the Company alluded to the fact that they are working towards conducting a satisfaction survey of its entire customer base.

Customer satisfaction surveys should be conducted periodically to assess customer service levels and identify areas of improvement. By waiting in excess of three years between surveys, the Company delays valuable feedback. By surveying a mix of customers randomly selected and targeting customers that make contact with the Company, NAWC could elicit feedback without the substantial work a full system-wide survey entails, while providing the Company with real-time opportunities to improve its

customer service. Random customer surveys should feature survey questions applicable to all customer types and could target inquiry/complaint handling process, customer billing, service calls, reason for a customer's inquiry, specific customer class concerns, etc. Full-scale customer satisfaction surveys offer beneficial customer feedback; however, the substantial effort and cost can be prohibitive and relatively long periods between surveys can make them largely ineffective. Therefore, more narrowly focused short surveys that occur more frequently can provide a more cost effective and informative mechanism.

### **Recommendation**

- 1. Conduct more frequent targeted customer satisfaction surveys at least every three years.**

## **VII. ACKNOWLEDGEMENTS**

We wish to express our appreciation for the cooperation and assistance given to us during the course of this Focused Management and Operations Audit by the officers and staff of Newtown Artesian Water Company.

This audit was conducted by Krystle Daugherty and Porus Irani of the Management Audit Staff of the Bureau of Audits.

## **IX. APPENDICES**

Appendix I	Newtown Artesian Water Company Income Statement
Appendix II	Newtown Artesian Water Company Balance Sheet
Appendix III	Newtown Artesian Water Company Utility Plant Data
Appendix IV	Newtown Artesian Water Company Customer Related Data by Classification

**NEWTOWN ARTESIAN WATER COMPANY**  
**INCOME STATEMENT DATA**  
**FOR THE YEARS ENDED DECEMBER 31, 2011-2015**

Category	2011	2012	2013	2014	2015	Compound Growth
<b>WATER REVENUES</b>						
Residential	\$3,441,322	\$3,722,455	\$3,559,372	\$3,677,707	\$3,671,270	1.6%
Commercial	\$831,473	\$951,563	\$775,870	\$859,871	\$813,742	-0.5%
Industrial	\$418,246	\$429,392	\$450,337	\$418,197	\$473,917	3.2%
Public	\$44,147	\$49,833	\$194,318	\$187,382	\$186,161	43.3%
Fire Protection	\$355,617	\$388,640	\$399,291	\$394,025	\$412,451	3.8%
Other	\$102,281	\$107,659	\$113,341	\$119,396	\$124,043	4.9%
<b>Total Water Revenues</b>	<b>\$5,193,086</b>	<b>\$5,649,542</b>	<b>\$5,492,529</b>	<b>\$5,656,578</b>	<b>\$5,681,584</b>	<b>2.3%</b>
<b>WATER OPERATING EXPENSES</b>						
Salaries and Wages	\$760,391	\$708,387	\$635,106	\$640,270	\$684,911	-2.6%
Pension & Benefits	\$183,426	\$182,522	\$145,955	\$138,266	\$143,084	-6.0%
Purchased Water	\$1,501,218	\$1,548,743	\$1,536,862	\$1,529,410	\$1,605,003	1.7%
Purchased Power	\$142,310	\$123,859	\$101,824	\$117,797	\$120,941	-4.0%
Fuel For Power Production	\$6,147	\$10,868	\$6,777	\$22,903	\$5,282	-3.7%
Chemicals	\$110,446	\$101,584	\$78,220	\$56,493	\$62,342	-13.3%
Materials and Supplies	\$179,196	\$153,693	\$202,682	\$181,392	\$254,598	9.2%
Contractual Services	\$182,399	\$169,795	\$224,294	\$307,203	\$265,305	9.8%
Rental of Building/Real Property	\$0	\$0	\$0	\$0	\$0	0.0%
Rental Equipment	\$142	\$167	\$117	\$150	\$23	-36.6%
Transportation	\$40,080	\$36,009	\$33,067	\$29,614	\$24,549	-11.5%
Insurance	\$117,974	\$128,665	\$105,396	\$119,203	\$119,588	0.3%
Advertising	\$0	\$0	\$0	\$0	\$0	0.0%
Regulatory	\$167,109	\$242,893	\$242,844	\$172,820	\$32,421	-33.6%
Water Resource Conservation	\$0	\$1,023	\$0	\$0	\$0	0.0%
Bad Debt	\$116	\$1,061	\$126	\$574	\$0	-100.0%
Miscellaneous	\$384,545	\$397,456	\$452,867	\$446,237	\$441,890	3.5%
<b>Total Water Operating Expenses</b>	<b>\$3,775,499</b>	<b>\$3,806,725</b>	<b>\$3,766,137</b>	<b>\$3,762,332</b>	<b>\$3,759,937</b>	<b>-0.1%</b>
<b>OPERATING INCOME</b>	<b>\$1,417,587</b>	<b>\$1,842,817</b>	<b>\$1,726,392</b>	<b>\$1,894,246</b>	<b>\$1,921,647</b>	<b>7.9%</b>

Source: Form PUC 244, Annual Report to the PA PUC

**NEWTOWN ARTESIAN WATER COMPANY**  
**BALANCE SHEET DATA**  
**FOR THE YEARS ENDED DECEMBER 31, 2011-2015**

Category	2011	2012	2013	2014	2015	Compound Growth
<b>UTILITY PLANT</b>						
Total Utility Plant	\$42,156,153	\$42,551,354	\$42,889,798	\$43,263,337	\$45,013,863	1.7%
Construction Work in Progress	\$92,108	\$58,823	\$83,050	\$252,384	\$61,265	-9.7%
Plant Acquisition Adjustments	\$0	\$0	\$0	\$0	\$0	0.0%
Less: Accumulated Depreciation	(\$6,320,413)	(\$6,684,668)	(\$7,087,356)	(\$7,581,415)	(\$8,072,154)	6.3%
Net Utility Plant	\$35,927,848	\$35,925,509	\$35,885,492	\$35,934,306	\$37,002,974	0.7%
<b>INVESTMENT AND FUND ACCOUNTS</b>						
Other Physical Property	\$0	\$0	\$0	\$0	\$0	0.0%
Investments in Affiliated Companies	\$0	\$0	\$0	\$0	\$0	0.0%
Other Investments	\$0	\$0	\$0	\$0	\$0	0.0%
Sinking Funds	\$0	\$0	\$0	\$0	\$0	0.0%
Total Investment and Fund Accounts	\$0	\$0	\$0	\$0	\$0	0.0%
<b>CURRENT AND ACCRUED ASSETS</b>						
Cash	\$35,741	\$63,385	\$73,985	\$104,845	\$19,771	-13.8%
Special Deposits	\$20,302	\$31,838	\$25,607	\$14,038	\$18,656	-2.1%
Working Funds	\$0	\$0	\$0	\$0	\$0	0.0%
Temporary Cash Investments	\$264,660	\$188,760	\$177,002	\$769,429	\$581,731	21.8%
Notes Receivable	\$0	\$0	\$0	\$0	\$0	0.0%
Accounts Receivable	\$382,058	\$447,933	\$383,718	\$390,284	\$431,543	3.1%
Accumulated Provision for Uncollectible Accounts Credit	\$0	\$0	\$0	\$0	\$0	0.0%
Receivable from Affiliated Companies	\$0	\$0	\$0	\$0	\$0	0.0%
Accrued Utility Revenues	\$871,890	\$903,738	\$917,319	\$940,364	\$947,008	2.1%
Materials and Supplies	\$83,319	\$117,045	\$127,101	\$121,995	\$233,391	29.4%
Prepayments	\$145,571	\$26,634	\$21,254	\$49,742	\$37,528	-28.7%
Other Current & Accrued Assets	\$0	\$0	\$0	\$0	\$0	0.0%
Total Current and Accrued Assets	\$1,803,541	\$1,779,333	\$1,725,986	\$2,390,697	\$2,269,628	5.9%
<b>DEFERRED DEBITS</b>	\$1,771,315	\$1,548,519	\$1,276,880	\$832,145	\$623,140	-23.0%
<b>Total Assets and Other Debits</b>	\$39,502,704	\$39,253,361	\$38,888,358	\$39,157,148	\$39,895,742	0.2%
<b>EQUITY CAPITAL</b>	\$5,169,374	\$5,263,098	\$5,231,874	\$5,369,689	\$5,587,338	2.0%
<b>LONG-TERM DEBT</b>						
Other Long-term Debt	\$5,221,022	\$4,955,146	\$4,667,716	\$4,350,637	\$4,017,111	-6.3%
<b>CURRENT AND ACCRUED LIABILITIES</b>						
Accounts Payable	\$162,584	\$215,146	\$168,908	\$157,994	\$312,599	17.8%
Notes Payable	\$2,655,310	\$2,507,310	\$2,319,310	\$2,109,310	\$2,026,310	-6.5%
Customers' Deposits	\$0	\$0	\$0	\$0	\$0	0.0%
Taxes Accrued	\$497	\$37,142	\$22,534	\$67,705	\$72,850	248.0%
Interest Accrued	\$0	\$0	\$0	\$0	\$0	0.0%
Accrued Dividends	\$0	\$0	\$0	\$0	\$0	0.0%
Other Current and Accrued Liabilities	\$39,944	\$38,358	\$36,937	\$38,412	\$35,479	-2.9%
Total Current and Accrued Liabilities	\$2,858,335	\$2,797,956	\$2,547,689	\$2,373,421	\$2,447,238	-3.8%
<b>DEFERRED CREDITS</b>	\$3,497,023	\$3,464,705	\$3,645,109	\$3,972,650	\$4,397,918	5.9%
<b>OPERATING RESERVES</b>	\$0	\$0	\$0	\$0	\$0	0.0%
<b>CONTRIBUTIONS IN AID OF CONSTRUCTION</b>	\$22,756,950	\$22,772,456	\$22,795,970	\$23,090,751	\$23,446,137	0.7%
<b>ACCUMULATED DEFERRED INCOME TAXES</b>	\$0	\$0	\$0	\$0	\$0	0.0%
<b>Total Liabilities and Other Credits</b>	\$39,502,704	\$39,253,361	\$38,888,358	\$39,157,148	\$39,895,742	0.2%

Source: Schedule 400, Form PUC 244, Annual Report to the PA PUC



