

# **DRAFT**

# **Source Water Protection Plan**

# **Town of Pocahontas**

PWSID WV3302852

Mercer County

May 2016

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In cooperation with Town of Pocahontas  
WV Bureau for Public Health, Source Water Assessment and Protection Program  
Region I Planning and Development Council  
The Thrasher Group



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**Preparer's Name**

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**Name of Contractor(s)/Consultant(s)**

**I certify the information in the source water protection plan is complete and accurate to the best of my knowledge.**

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**Signature of responsible party or designee authorized to sign for water utility:**

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**Print Name of Authorizing Signatory (see instructions):**

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**Title of Authorizing Signatory:**

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**Date of Submission (mm/dd/yyyy):**

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## TABLE OF CONTENTS

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<b>1.0 PURPOSE</b> .....	<b>1</b>
1.1 What are the benefits of preparing a Source Water Protection Plan? .....	1
<b>2.0 BACKGROUND: WV SOURCE WATER ASSESSMENT AND PROTECTION PROGRAM</b> .....	<b>2</b>
<b>3.0 STATE REGULATORY REQUIREMENTS</b> .....	<b>3</b>
<b>4.0 SYSTEM INFORMATION</b> .....	<b>4</b>
<b>5.0 WATER TREATMENT AND STORAGE</b> .....	<b>5</b>
<b>6.0 DELINEATIONS</b> .....	<b>7</b>
<b>7.0 PROTECTION TEAM</b> .....	<b>9</b>
<b>8.0 POTENTIAL SOURCES OF SIGNIFICANT CONTAMINATION</b> .....	<b>11</b>
8.1 Confidentiality of PSSCs.....	11
8.2 Local and Regional PSSCs .....	11
8.3 Prioritization of Threats and Management Strategies .....	13
<b>9.0 IMPLEMENTATION PLAN FOR MANAGEMENT STRATEGIES</b> .....	<b>14</b>
<b>10.0 EDUCATION AND OUTREACH STRATEGIES</b> .....	<b>18</b>
<b>11.0 CONTINGENCY PLAN</b> .....	<b>21</b>
11.1 Response Networks and Communication .....	21
11.2 Operation During Loss of Power.....	22
11.3 Future Water Supply Needs .....	23
11.4 Water Loss Calculation.....	24
11.5 Early Warning Monitoring System .....	25
<b>12.0 SINGLE SOURCE FEASIBILITY STUDY</b> .....	<b>27</b>
<b>13.0 COMMUNICATION PLAN</b> .....	<b>28</b>
<b>14.0 EMERGENCY RESPONSE</b> .....	<b>29</b>
<b>15.0 CONCLUSION</b> .....	<b>30</b>

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## LIST OF TABLES

---

Table 1. Population Served by Town of Pocahontas .....	4
Table 2. Town of Pocahontas Water Treatment Information .....	5
Table 3. Town of Pocahontas Surface Water Sources .....	6
Table 4. Town of Pocahontas Groundwater Sources .....	6
Table 5. Watershed Delineation Information .....	8
Table 6. Protection Team Member and Contact Information .....	10
Table 7. Locally Identified Potential Sources of Significant Contamination .....	12
Table 8. Priority PSSCs or Critical Areas .....	15
Table 9. Priority PSSC Management Strategies .....	15
Table 10. Education and Outreach Implementation Plan .....	19
Table 11. Town of Pocahontas Water Shortage Response Capability .....	21
Table 12. Generator Capacity .....	22
Table 13. Future Water Supply Needs for Town of Pocahontas.....	23
Table 14. Water Loss Information .....	24
Table 15. Early Warning Monitoring System Capabilities .....	25

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## APPENDICES

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- Appendix A. Figures
- Appendix B. Early Warning Monitoring System Forms
- Appendix C. Communication Plan Template
- Appendix D. Single Source Feasibility Study
- Appendix E. Supporting Documentation

## SOURCE WATER PROGRAM ACRONYMS

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<b>AST</b>	Aboveground Storage Tank
<b>BMP</b>	Best Management Practices
<b>ERP</b>	Emergency Response Plan
<b>GWUDI</b>	Ground Water Under the Direct Influence of Surface Water
<b>LEPC</b>	Local Emergency Planning Committee
<b>OEHS/EED</b>	Office of Environmental Health Services/Environmental Engineering Division
<b>PE</b>	Professional Engineer
<b>PSSCs</b>	Potential Source of Significant Contamination
<b>PWSU</b>	Public Water System Utility
<b>RAIN</b>	River Alert Information Network
<b>RPDC</b>	Regional Planning and Development Council
<b>SDWA</b>	Safe Drinking Water Act
<b>SWAP</b>	Source Water Assessment and Protection
<b>SWAPP</b>	Source Water Assessment and Protection Program
<b>SWP</b>	Source Water Protection
<b>SWPA</b>	Source Water Protection Area
<b>SWPP</b>	Source Water Protection Plan
<b>WARN</b>	Water/Wastewater Agency Response Network
<b>WHPA</b>	Wellhead Protection Area
<b>WHPP</b>	Wellhead Protection Program
<b>WSDA</b>	Watershed Delineation Area
<b>WVBPH</b>	West Virginia Bureau for Public Health
<b>WVDEP</b>	West Virginia Department of Environmental Protection
<b>WVDHHR</b>	West Virginia Department of Health and Human Resources
<b>WVDHSEM</b>	West Virginia Division of Homeland Security and Emergency Management
<b>ZCC</b>	Zone of Critical Concern
<b>ZPC</b>	Zone of Peripheral Concern

## 1.0 PURPOSE

The goal of the West Virginia Bureau of Public Health (WVBPH) source water assessment and protection (SWAP) program is to prevent degradation of source waters which may preclude present and future uses of drinking water supplies to provide safe water in sufficient quantity to users. The most efficient way to accomplish this goal is to encourage and oversee source water protection on a local level. Many aspects of source water protection may be best addressed by engaging local stakeholders.

The intent of this document is to describe what Town of Pocahontas has done, is currently doing, and plans to do to protect its source of drinking water. Although this water system treats the water to meet federal and state drinking water standards, conventional treatment does not fully eradicate all potential contaminants and treatment that goes beyond conventional methods is often very expensive. By completing this plan, Town of Pocahontas acknowledges that implementing measures to minimize and mitigate contamination can be a relatively economical way to help ensure the safety of the drinking water.

### 1.1 WHAT ARE THE BENEFITS OF PREPARING A SOURCE WATER PROTECTION PLAN?

- Fulfilling the requirement for the public water utilities to complete or update their source water protection plan.
- Identifying and prioritizing potential threats to the source of drinking water; and establishing strategies to minimize the threats.
- Planning for emergency response to incidents that compromise the water supply by contamination or depletion, including how the public, state, and local agencies will be informed.
- Planning for future expansion and development, including establishing secondary sources of water.
- Ensuring conditions to provide the safest and highest quality drinking water to customers at the lowest possible cost.
- Providing more opportunities for funding to improve infrastructure, purchase land in the protection area, and other improvements to the intake or source water protection areas.

## 2.0 BACKGROUND: WV SOURCE WATER ASSESSMENT AND PROTECTION PROGRAM

Since 1974, the federal Safe Drinking Water Act (SDWA) has set minimum standards on the construction, operation, and quality of water provided by public water systems. In 1986, Congress amended the SDWA. A portion of those amendments were designed to protect the source water contribution areas around ground water supply wells. This program eventually became known as the Wellhead Protection Program (WHPP). The purpose of the WHPP is to prevent pollution of the source water supplying the wells.

The Safe Drinking Water Act Amendments of 1996 expanded the concept of wellhead protection to include surface water sources under the umbrella term of Source Water Protection. The amendments encourage states to establish SWAP programs to protect all public drinking water supplies. As part of this initiative states must explain how protection areas for each public water system will be delineated, how potential contaminant sources will be inventoried, and how susceptibility ratings will be established.

In 1999, the WVBPH published the West Virginia Source Water Assessment and Protection Program, which was endorsed by the United States Environmental Protection Agency. Over the next few years, WVBPH staff completed an assessment (i.e., delineation, inventory and susceptibility analysis) for all of West Virginia's public water systems. Each public water system was sent a copy of its assessment report. Information regarding assessment reports for Town of Pocahontas can be found in **Table 1**.

### 3.0 STATE REGULATORY REQUIREMENTS

On June 6, 2014, §16 1 2 and §16 1 9a of the Code of West Virginia, 1931, was reenacted and amended by adding three new sections, designated §16 1 9c, §16 1 9d and §16-1-9e. The changes to the code outlines specific requirements for public water utilities that draw water from a surface water source or a surface water influenced groundwater source.

Under the amended and new codes each existing public water utility using surface water or ground water influenced by surface water as a source must have completed or updated a source water protection plan by July 1, 2016, and must continue to update their plan every three years. Existing source water protection plans have been developed for many public water utilities in the past. If available, these plans were reviewed and considered in the development of this updated plan. Any new water system established after July 1, 2016 must submit a source water protection plan before they start to operate. A new plan is also required when there is a significant change in the potential sources of significant contamination (PSSC) within the zone of critical concern (ZCC).

The code also requires that public water utilities include details regarding PSSCs, protection measures, system capacities, contingency plans, and communication plans. Before a plan can be approved, the local health department and public will be invited to contribute information for consideration. In some instances, public water utilities may be asked to conduct independent studies of the source water protection area and specific threats to gain additional information.

## 4.0 SYSTEM INFORMATION

Town of Pocahontas is classified as a state regulated public utility and operates a community public water system. A community public water system is a system that regularly supplies drinking water from its own sources to at least 15 service connections used by year round residents of the area or regularly serves 25 or more people throughout the entire year. For purposes of this source water protection plan, community public water systems are also referred to as public water utilities. Information on the population served by this utility is presented in **Table 1** below.

**Table 1. Population Served by Town of Pocahontas**

<b>Administrative office location:</b>	300 Centre Street, Pocahontas, VA 24635		
<b>Is the system a public utility, according to the Public Service Commission rule?</b>	Yes		
<b>Date of Most Recent Source Water Assessment Report:</b>	April 2003		
<b>Date of Most Recent Source Water Protection Plan:</b>	July 2011		
<b>Population served directly:</b>	490 residential customers		
<b>Bulk Water Purchaser Systems:</b>	<b>System Name</b>	<b>PWSID Number</b>	<b>Population</b>
	N/A		
<b>Total Population Served by the Utility:</b>	1,195 people		
<b>Does the utility have multiple source water protection areas (SWPAs)?</b>	No		
<b>How many SWPAs does the utility have?</b>	1		

Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D.

## 5.0 WATER TREATMENT AND STORAGE

As required, Town of Pocahontas has assessed their system (e.g., treatment capacity, storage capacity, unaccounted for water, contingency plans) to evaluate their ability to provide drinking water and protect public health. **Table 2** contains information on the water treatment methods and capacity of the utility. Information about the surface sources from which Town of Pocahontas draws water can be found in **Table 3**. If the utility draws water from any groundwater sources to blend with the surface water the information about these ground water sources can be found in **Table 4**.

**Table 2. Town of Pocahontas Water Treatment Information**

<b>Water Treatment Processes (List All Processes in Order)</b>	Sedimentation, Filtration, Post Chlorination, Clear Wells, High Service Pumps, Tanks
<b>Current Treatment Capacity (gal/day)</b>	500,000
<b>Current Average Production (gal/day)</b>	349,000
<b>Maximum Quantity Treated and Produced (gal)</b>	456,000
<b>Minimum Quantity Treated and Produced (gal)</b>	200,000
<b>Average Hours of Operation</b>	15 hours per day
<b>Maximum Hours of Operation in One Day</b>	24 hours per day
<b>Minimum Hours of Operation in One Day</b>	0 hours per day
<b>Number of Storage Tanks Maintained</b>	2
<b>Total Gallons of Treated Water Storage (gal)</b>	250,000
<b>Total Gallons of Raw Water Storage (gal)</b>	0

Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D.

**Table 3. Town of Pocahontas Surface Water Sources**

Intake Name	SDWIS #	Local Name	Describe Intake	Name of Water Source	Date Constructed / Modified	Frequency of Use (Primary/ Backup/ Emergency)	Activity Status (Active/ Inactive)
Pocahontas Water Treatment Plant		Abbs Valley Creek	Screened Pipe	Abbs Valley Creek	1960s	Primary	Active

Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D.

**Table 4. Town of Pocahontas Groundwater Sources**

Does the utility blend with groundwater?					No				
Well/Spring Name	SDWIS #	Local Name	Date Constructed/ Modified	Completion Report Available (Yes/No)	Well Depth (ft)	Casing Depth (ft)	Grout (Yes/No)	Frequency of Use (Primary/ Backup/ Emergency)	Activity Status (Active/ Inactive)
N/A									

## 6.0 DELINEATIONS

For surface water systems, delineation is the process used to identify and map the drainage basin that supplies water to a surface water intake. This area is generally referred to as the source water protection area (SWPA). All surface waters are susceptible to contamination because they are exposed at the surface and lack a protective barrier from contamination. Accidental spills, releases, sudden precipitation events that result in overland runoff, or storm sewer discharges can allow pollutants to readily enter the source water and potentially contaminate the drinking water at the intake. The SWPA for surface water is distinguished as a Watershed Delineation Area (WSDA) for planning purposes; and the Zone of Peripheral Concern (ZPC) and Zone of Critical Concern (ZCC) are defined for regulatory purposes.

The WSDA includes the entire watershed area upstream of the intake to the boundary of the State of West Virginia border, or a topographic boundary. The ZCC for a public surface water supply is a corridor along streams within the watershed that warrants more detailed scrutiny due to its proximity to the surface water intake and the intake's susceptibility to potential contaminants within that corridor. The ZCC is determined using a mathematical model that accounts for stream flows, gradient and area topography. The length of the ZCC is based on a five-hour time-of-travel of water in the streams to the water intake, plus an additional one-quarter mile below the water intake. The width of the zone of critical concern is one thousand feet measured horizontally from each bank of the principal stream and five hundred feet measured horizontally from each bank of the tributaries draining into the principal stream.

The ZPC for a public surface water supply source and for a public surface water influenced groundwater supply source is a corridor along streams within a watershed that warrants scrutiny due to its proximity to the surface water intake and the intake's susceptibility to potential contaminants within that corridor. The ZPC is determined using a mathematical model that accounts for stream flows, gradient and area topography. The length of the zone of peripheral concern is based on an additional five-hour time-of-travel of water in the streams beyond the perimeter of the zone of critical concern, which creates a protection zone of ten hours above the water intake. The width of the zone of peripheral concern is one thousand feet measured horizontally from each bank of the principal stream and five hundred feet measured horizontally from each bank of the tributaries draining into the principal stream. Ohio River ZCC delineations are based on ORSANCO guidance and extend 25 miles above the intake and one-quarter mile below the intake. The Ohio River ZCC delineations include 1,320 feet (one-quarter mile) measured from the bank of the main stem of the Ohio River and 500 feet on tributary.

For groundwater supplies there are two types of SWPA delineations: 1) wellhead delineations and 2) conjunctive delineations, which are developed for supplies identified as groundwater under the direct influence of surface water, or GWUDIs. A wellhead protection area is determined to be the area contributing to the recharge of the groundwater source (well or spring), within a five year time of travel. A conjunctive delineation combines a wellhead protection area for the hydrogeologic recharge and a connected surface area contributing to the wellhead.

Information and maps of the WSDA, ZCC, ZPC and Wellhead Protection Area for this public water supply were provided to the utility and are attached to this report. See **Appendix A. Figures**. Other information about the WSDA is shown in **Table 5**.

**Table 5. Watershed Delineation Information**

<b>Size of WSDA (Indicate units)</b>	5,873 acres
<b>River Watershed Name (8-digit HUC)</b>	Upper New River (05050002)
<b>Size of Zone of Critical Concern (Acres)</b>	471
<b>Size of Zone of Peripheral Concern (Acres) (Include ZCC area)</b>	364
<b>Method of Delineation for Groundwater Sources</b>	N/A
<b>Area of Wellhead Protection Area (Acres)</b>	N/A

## 7.0 PROTECTION TEAM

One important step in preparing a source water protection plan is to organize a source water protection team who will help develop and implement the plan. The legislative rule requires that water utilities make every effort to inform and engage the public, local government, local emergency planners, the local health department and affected residents at all levels of the development of the protection plan. WVBPH recommends that the water utility invite representatives from these organizations to join the protection team, which will ensure that they are given an opportunity to contribute in all aspects of source water protection plan development. Public water utilities should document their efforts to engage representatives and provide an explanation if any local stakeholder is unable to participate. In addition, other local stakeholders may be invited to participate on the team or contribute information to be considered. These individuals may be emergency response personnel, local decision makers, business and industry representatives, land owners (of land in the protection area), and additional concerned citizens.

The administrative contact for Town of Pocahontas is responsible for assembling the protection team and ensuring that members are provided the opportunity to contribute to the development of the plan. The acting members of the Protection Team are listed in **Table 6**.

The role of the protection team members will be to contribute information to the development of the source water protection plan, review draft plans and make recommendations to ensure accuracy and completeness, and when possible contribute to implementation and maintenance of the protection plan. The protection team members are chosen as trusted representatives of the community served by the water utility and may be designated to access confidential data that contains details about the local PSSCs. The input of the protection team will be carefully considered by the water utility when making final decisions relative to the documentation and implementation of the source water protection plan.

Town of Pocahontas will be responsible for updating the source water protection plan and rely upon input from the protection team and the public to better inform their decisions. To find out how you can become involved as a participant or contributor, visit the utility website or call the utility phone number, which are provided in **Table 6**.

**Table 6. Protection Team Member and Contact Information**

Name	Representing	Title	Phone Number	Email
Benjamin Gibson	Town of Pocahontas	<b>Mayor</b>	(304) 887 5387	BENJAMIN.GIBSON@POCAHONTASVA.ORG
Donald Morgan	Town of Pocahontas	<b>Chief Operator</b>	(304) 887 5387	
<b>Date of first protection Team Meeting</b>				
<b>Efforts made to inform and engage local stakeholders (public, local government, local emergency planners, local health department, and affected residents) and explain absence of recommended stakeholders:</b>				

## 8.0 POTENTIAL SOURCES OF SIGNIFICANT CONTAMINATION

Source water protection plans should provide a complete and comprehensive list of the PSSCs contained within the ZCC based upon information obtained from the WVBPH, working in cooperation with the West Virginia Department of Environmental Protection (WVDEP) and the West Virginia Division of Homeland Security and Emergency Management (WVDHSEM). A facility or activity is listed as a PSSC if it has the potential to release a contaminant that could potentially impact a nearby public water supply, and it does not necessarily indicate that any release has occurred.

The list of PSSCs located in the SWPA is organized into two types: 1) SWAP PSSCs, and 2) Regulated Data. SWAP PSSCs are those that have been collected and verified by the WVBPH SWAP program during previous field investigations to form the source water assessment reports and source water protection plans. Regulated PSSCs are derived from federal and state regulated databases, and may include data from WVDEP, US Environmental Protection Agency, WVDHSEM, and out-of-state data sources.

### 8.1 CONFIDENTIALITY OF PSSCS

A list of the PSSCs contained within the ZCC should be included in the source water protection plan. However, the exact location, characteristics and approximate quantities of contaminants shall only be made known to one or more designees of the public water utility and maintained in a confidential manner. In the event of a chemical spill, release or other related emergency, information pertaining to the contaminant shall be immediately disseminated to any emergency responders reporting to the site. The designees for Town of Pocahontas are identified in the communication planning section of the source water protection plan.

PSSC data from some agencies (ex. WVDHSEM, WVDEP, etc.) may be restricted due to the sensitive nature of the data. Locational data will be provided to the public water utility. However, to obtain specific details regarding contaminants, (such as information included in Tier II reports), water utilities should contact the local emergency planning commission (LEPC) or agencies, directly. While the maps and lists of the PSSCs and regulated sites are to be maintained in a confidential manner, these data are provided in **Appendix A. Figures** for internal review and planning uses only.

### 8.2 LOCAL AND REGIONAL PSSCS

For the purposes of this source water protection plan, local PSSCs are those that are identified by the water utility and local stakeholders and are not already identified in the PSSCs lists distributed by the WVBPH and other agencies. Local stakeholders may identify local PSSCs for two main reasons. The first is that it is possible that threats exist from unregulated sources and land uses that have not already been inventoried and do not appear in regulated databases. For this reason each public water utility should investigate their protection area for local PSSCs. A PSSC inventory should identify all contaminant sources and land uses in the delineated ZCC. The second reason local PSSCs are identified is because public water utilities may consider expanding the PSSC inventory effort outside of the ZCC into the ZPC and WSDA if necessary to properly identify all threats that could impact the drinking water source. As the utility considers threats in the watershed they may consider collaborating with upstream communities to identify and manage regional PSSCs.

When conducting local and regional PSSC inventories, utilities should consider that some sources may be obvious like above ground storage tanks, landfills, livestock confinement areas, highway or railroad right of ways, and sewage treatment facilities. Others are harder to locate like abandoned cesspools, underground tanks, French drains, dry wells, or old dumps and mines.

Town of Pocahontas reviewed intake locations and the delineated SWPAs to verify the existence of PSSCs provided by the WVBPH and identify new PSSCs. If possible, locations of regulated sites within the SWPA were confirmed. Information on any new or updated PSSCs identified by Town of Pocahontas and not already appearing in datasets from the WVBPH can be found in **Table 7**.

**Table 7. Locally Identified Potential Sources of Significant Contamination**

PSSC Number	Map Code	Site Name	Site Description	Relative Risk Score	Comments
none					

## 8.3 PRIORITIZATION OF THREATS AND MANAGEMENT STRATEGIES

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Once the utility has identified local concerns, they must develop a management plan that identifies specific activities that will be pursued by the public water utility in cooperation and concert with the WVBPH, local health departments, local emergency responders, LEPC and other agencies and organizations to protect the source water from contamination threats.

Depending on the number identified, it may not be feasible to develop management strategies for all of the PSSCs in the SWPA. The identified PSSCs can be prioritized by potential threat to water quality, proximity to the intake(s), and local concern. The highest priority PSSCs can be addressed first in the initial management plan. Lower ranked PSSCs can be addressed in the future as time and resources allow. To assess the threat to the source water, water systems should consider confidential information about each PSSC. This information may be obtained from state or local emergency planning agencies, Tier II reports, facility owner, facility groundwater protection plans, spill prevention response plans, results of field investigations, etc.

In addition to identifying and prioritizing PSSCs within the SWPA, local source water concerns may also focus on critical areas. For the purposes of this source water protection plan, a critical area is defined as an area that is identified by local stakeholders and can lie within or outside of the ZCC. Critical areas may contain one or more PSSCs which would require immediate response to address a potential incident that could impact the source water.

A list of priority PSSCs was selected and ranked by the Town of Pocahontas Protection Team. This list reflects the concerns of this specific utility and may contain PSSCs not previously identified and not within the ZCC or ZPC. **Table 8** contains a description of why each critical area or PSSC is considered a threat and what management strategies the utility is either currently using or could use in the future to address each threat.

## 9.0 IMPLEMENTATION PLAN FOR MANAGEMENT STRATEGIES

Town of Pocahontas reviewed the recommended strategies listed in their previous source water protection plan, to consider if any of them should be adopted and incorporated in this updated plan. **Table 9** provides a brief statement summarizing the status of the recommended strategies. **Table 9** also lists strategies from a previous plan that are being incorporated in this plan update

When considering source management strategies and education and outreach strategies, this utility has considered how and when the strategies will be implemented. The initial step in implementation is to establish responsible parties and timelines to implement the strategies. The water utility, working in conjunction with the Protection Team members, can determine the best process for completing activities within the projected time periods. Additional meetings may be needed during the initial effort to complete activities, after which the Protection Team should consider meeting annually to review and update the Source Water Protection Plan. A system of regular updates should be included in every implementation plan.

Proposed commitments and schedules may change but should be well documented and reported to the local stakeholders. If possible, utilities should include cost estimates for strategies to better plan for implementation and possible funding opportunities. Town of Pocahontas has developed an implementation plan for priority concerns listed in **Table 8**. The responsible team member, timeline, and potential cost of each strategy are presented in **Table 9**. Note: Because timelines may change, future plan updates should describe the status of each strategy and explain the lack of progress.

**Table 8. Priority PSSCs or Critical Areas**

PSSC or Critical Area	Priority Number	Reason for Concern
Residential Area	1	Homes, businesses, and other facilities may collectively introduce contaminants into surface water at high enough concentration to cause concern. Storm water runoff, care of public grounds, maintenance of city and county vehicles at garages, residents activities in and outside their homes can contribute to contamination of the source water including: fertilizers, pesticides, oils, paints, cleaning agents, etc.
Agricultural Land Use	2	Pesticides and other chemicals used for farm operations can migrate into the water supply. Areas used for disposal of animal waste or burying dead livestock can also cause contamination of the source water.

**Table 9. Priority PSSC Management Strategies**

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/ Schedule	Comments	Estimated Cost
Previous Plan Status	There were three areas of concern for which management strategies were recommended in the existing plan. Two of these continue to be of concern and are included below.				
Source Water Protection Area	The utility is required to update the Source Water Protection Plan at least every 3 years and continue to monitor any ongoing or new activities that occur in the watershed.	Pocahontas Protection Team	Ongoing every 3 years. Next update in 2019		
Concentrated Residential Area	Raise residents' awareness of the source water.	Staff and/or operator	As needed	-	See below.

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/ Schedule	Comments	Estimated Cost
	Note: Refer to the Education and Outreach Strategies below for activities.				
Agricultural Land Use	Contact farmers in the watershed to communicate the SWPA boundaries. Provide copies of fact sheets covering BMPs for nutrient management, pesticide use, pest management, waste oil disposal, safe chemical handling and/or safe chemical storage.	Staff and/or operator	As needed	-	Minimal cost associated with staff time.
Yearly Windshield Survey	The utility's staff will perform a yearly "windshield survey" of the zone of critical concern. They will note changes in land use, water quality, and other developments that may have occurred since the previous year's survey. These changes will be documented and reflected in future source water protection plan updates.	Water utility staff	Yearly, next survey in 2017	-	Minimal cost associated with staff time
Regular Coordination with Emergency Managers	Local emergency planners have access to confidential chemical contaminant information in Tier II reports from facilities in the SWPA. The utility should coordinate with the local emergency planners to gain an understanding of potential contaminants to better prepare for a spill event. Utility staff will continue to communicate with these emergency services groups on a regular basis, especially when there is not an ongoing emergency.	Water utility staff emergency personnel	Engage local emergency planners immediately and communicate on a regular basis.	-	Minimal cost associated with staff time

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/ Schedule	Comments	Estimated Cost
	They will invite the local emergency planners to meet yearly as part of the Source Water Protection Team.				
Yearly Source Water Protection Team Meetings	The utility's staff will invite the protection team to meet on a yearly basis to discuss any changes that might have occurred within the watershed or to find replacements for members who can no longer participate.	Source Water Protection Team	Yearly, next meeting in 2017	-	Minimal cost associated with staff time

## 10.0 EDUCATION AND OUTREACH STRATEGIES

The goal of education and outreach is to raise awareness of the need to protect drinking water supplies and build support for implementation strategies. Education and outreach activities will also ensure that affected citizens and other local stakeholders are kept informed and provided an opportunity to contribute to the development of the source water protection plan. Town of Pocahontas has created an Education and Outreach plan that describes activities it has either already implemented or could implement in the future to keep the local community involved in protecting their source of drinking water. This information can be found in **Table 10**.

**Table 10. Education and Outreach Implementation Plan**

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status/Schedule	Comments	Estimated Cost
Public Meeting	Hold a public meeting to discuss the source water protection plan.	Mayor/Town Council/Operator	As necessary	The system may have future public meetings to continue to inform the public of important source water issues.	Minimal. Staff time to attend meetings.
Consumer Confidence Report	Include information on source water protection plan in CCR. Also include in CCR information on pharmaceuticals and how to properly dispose of them.	PWS Chief Operator and Staff	Ongoing. Annually.	The utility publishes a Consumer Confidence Report (CCR) annually, as required by the Safe Drinking Water Act, which is sent to all water customers. Information is included in the CCR about the source of drinking water.	Minimal.
Educational Brochure	Educational Brochure (Visit <a href="http://www.yourwateryourdecision.org">http://www.yourwateryourdecision.org</a> for a brochure building tool that can save effort. This brochure building tool was prepared by the Source Water Collaborative, a partnership between local, state and federal drinking water organizations and regulatory entities including USEPA.)	-	-	-	-
Plant Tours	Conduct plant tours for school groups and interested members of the public.	PWS Chief Operator and Staff	Upon request.	-	-

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status/Schedule	Comments	Estimated Cost
School Curricula	Classroom displays to teach source water protection concepts can be borrowed from WVDHHR BPH.	Utility Board Member	As requested or desired.	Investigate having information about source water protection—especially as it applies to the utility—included in the local middle and high school science curricula. A letter to school board requesting that teachers introduce the concept of where drinking water comes from would be appropriate; this can be taught to school children across many age groups.	-

## 11.0 CONTINGENCY PLAN

The goal of contingency planning is to identify and document how the utility will prepare for and respond to any drinking water shortages or emergencies that may occur due to short and long term water interruption, or incidents of spill or contamination. During contingency planning, utilities should examine their capacity to protect their intake, treatment, and distribution system from contamination. They should also review their ability to use alternative sources and minimize water loss, as well as their ability to operate during power outages. In addition, utilities should report the feasibility of establishing an early warning monitoring system and meeting future water demands.

Isolating or diverting any possible contaminant from the intake for a public water system is an important strategy in the event of an emergency. One commonly used method of diverting contaminants from an intake is establishing booms around the intake. This can be effective, but only for contaminants that float on the surface of the water. Alternatively, utilities can choose to pump floating contaminants from the water or chemically neutralize the contaminant before it enters the treatment facility.

Public utilities using surface sources should be able to close the intake by one means or another. However, depending upon the system, methods for doing so could vary greatly and include closing valves, lowering hatches or gates, raising the intake piping out of the water, or shutting down pumps. Systems should have plans in place in advance as to the best method to protect the intake and treatment facility. Utilities may benefit from turning off pumps and, if possible, closing the intake opening to prevent contaminants from entering the piping leading to the pumps. Utilities should also have a plan in place to sample raw water to identify the movement of a contaminant plume and allow for maximum pumping time before shutting down an intake (See Early Warning Monitoring System). The amount of time that an intake can remain closed depends on the water infrastructure and should be determined by the utility before an emergency occurs. The longer an intake can remain closed in such a case, the better.

Raw and treated water storage capacity also becomes extremely important in the event of such an emergency. Storage capacity can directly determine how effectively a water system can respond to a contamination event and how long an intake can remain closed. Information regarding the water shortage response capability of Town of Pocahontas is provided in **Table 11**.

### 11.1 RESPONSE NETWORKS AND COMMUNICATION

Statewide initiatives for emergency response, including source water related incidents, are being developed. These include the West Virginia Water/Wastewater Agency Response Network (WV WARN, see <http://www.wvwarn.org/>) and the Rural Water Association Emergency Response Team (see <http://www.wvrwa.org/>). Town of Pocahontas has analyzed its ability to effectively respond to emergencies and this information is also provided in **Table 11**.

**Table 11. Town of Pocahontas Water Shortage Response Capability**

<b>Can the utility isolate or divert contamination from the intake or groundwater supply?</b>	No
<b>Describe the utility’s capability to isolate or divert potential contaminants:</b>	N/A
<b>Can the utility switch to an alternative water source or intake that can supply full capacity at any time?</b>	Yes
<b>Describe in detail the utility’s capability to switch to an alternative source:</b>	The Pocahontas Water Treatment Plant can switch to Tazewell PSA.

<b>Can the utility close the water intake to prevent contamination from entering the water supply?</b>	Yes
<b>How long can the intake stay closed?</b>	The intake can stay closed as long as Tazewell PSA can supply water.
<b>Describe the process to close the intake:</b>	Closing gate valves
<b>Describe the treated water storage capacity of the water system:</b>	The Pocahontas Water Treatment Plant has two storage tanks totaling 250,000 gallons of treated water storage.
<b>Is the utility a member of WVRWA Emergency Response Team?</b>	Yes
<b>Is the utility a member of WV-WARN?</b>	Yes
<b>List any other mutual aid agreements to provide or receive assistance in the event of an emergency:</b>	No

Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D.

## 11.2 OPERATION DURING LOSS OF POWER

Town of Pocahontas analyzed its ability to operate effectively during a loss of power. This involved ensuring a means to supply water through treatment, storage, and distribution without creating a public health emergency. Information regarding the utility’s capacity for operation during power outages is summarized in **Table 12**.

**Table 12. Generator Capacity**

<b>What is the type and capacity of the generator needed to operate during a loss of power?</b>	25 kW portable generator
<b>Can the utility connect to generator at intake/wellhead? If yes, select a scenario that best describes system.</b>	No; the generator would need to be able to connect to a quick connect.
<b>Can the utility connect to generator at treatment facility? If yes, select a scenario that best describes system.</b>	No; the generator would need to be able to connect and run the required water treatment equipment. This is not suggested because the water treatment is scheduled to be decommissioned.
<b>Can the utility connect to a generator in distribution system? If yes, select a scenario that best describes system.</b>	No; the system would need an upgrade for quick connect power connections to provide power service and a 25 kW portable generator would need to be purchased.
<b>Does the utility have adequate fuel on hand for the generator?</b>	No

What is your on-hand fuel storage and how long will it last operating at full capacity?		Gallons	Hours
		N/A	N/A
Provide a list of suppliers that could provide generators and fuel in the event of an emergency:	Supplier		Phone Number
	Generator	Caterpillar	(304) 949-6400
	Generator	Cummins	(304) 769-1012
	Fuel	RT Rogers	(304) 466-1733
Does the utility test the generator(s) periodically?		N/A	
Does the utility routinely maintain the generator?		N/A	
If no scenario describing the ability to connect to generator matches the utility's system or if utility does not have ability to connect to a generator, describe plans to respond to power outages:		After reviewing the backup power system alternatives a 25 kW generator would be required.	

Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D.

### 11.3 FUTURE WATER SUPPLY NEEDS

When planning for potential emergencies and developing contingency plans, a utility needs to not only consider their current demands for treated water but also account for likely future needs. This could mean expanding current intake sources or developing new ones in the near future. This can be an expensive and time consuming process, and any water utility should take this into account when determining emergency preparedness. Town of Pocahontas has analyzed its ability to meet future water demands at current capacity, and this information is included in **Table 13**.

**Table 13. Future Water Supply Needs for Town of Pocahontas**

<p><b>Is the utility able to meet water demands with the current production capacity over the next 5 years? If so, explain how you plan to do so.</b></p>	<p>Yes; the Town of Pocahontas water system is in the process of being purchased by the Tazewell PSA. The sale of the water system should be completed by November 2016.</p> <p>Tazewell PSA has treatment capacity of 2.6 MGD and produces 1.3 MGD on average. Adding Pocahontas customers would increase total demand to 1.65 MGD, which is well within Tazewell PSA's capacity.</p> <p>According to US Census Data, a small decline in population in the region is expected. Because the population is not expected to increase, Tazewell PSA is expected to have capacity to serve its customers over the next 5 years.</p>
---	---

<b>If not, describe the circumstances and plans to increase production capacity:</b>	N/A
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## 11.4 WATER LOSS CALCULATION

In any public water system there is a certain percentage of the total treated water that does not reach the customer. Some of this water is used in treatment plant processes such as back washing filters or flushing piping, but there is usually at least a small percentage that goes unaccounted for. To measure and report on this unaccounted for water, a public utility must use the method described in the Public Service Commission’s rule, *Rules for the Government of Water Utilities*, 150CSR7, section 5.6. The rule defines unaccounted for water as the volume of water introduced into the distribution system less all metered usage and all known non-metered usage which can be estimated with reasonable accuracy.

To further clarify, metered usages are most often those that are distributed to customers. Non-metered usages that are being estimated include usage by fire departments for fires or training, un-metered bulk sells, flushing to maintain the distribution system, and water used for backwashing filters and cleaning settling basins. By totaling the known metered and non-metered uses the utility calculates unaccounted for water. Note: To complete annual reports submitted to the PSC, utilities typically account for known water main breaks by estimating the amount of water lost. However, for the purposes of the source water protection plan, any water lost due to leaks, even if the system is aware of how much water is lost at a main break, is not considered a use. Water lost through leaks and main breaks cannot be controlled during a water shortages or other emergencies and should be included in the calculation of percentage of water loss for purposes of the source water protection plan. The data in **Table 14** is taken from the most recently submitted Town of Pocahontas PSC Annual Report.

**Table 14. Water Loss Information**

<b>Total Water Pumped (gal)</b>		76,434,000
<b>Total Water Purchased (gal)</b>		0
<b>Total Water Pumped and Purchased (gal)</b>		76,434,000
<b>Water Loss Accounted for Except Main Leaks (gal)</b>	<b>Mains, Plants, Filters, Flushing, etc.</b>	0
	<b>Fire Department</b>	4,800,000
	<b>Back Washing</b>	60,000,000
	<b>Blowing Settling Basins</b>	0
<b>Total Water Loss Accounted For Except Main Leaks</b>		64,800,000
<b>Water Sold- Total Gallons (gal)</b>		76,434,000
<b>Unaccounted For Lost Water (gal)</b>		0
<b>Water lost from main leaks (gal)</b>		0

<b>Total gallons of Unaccounted for Lost Water and Water Lost from Main Leaks (gal)</b>	0
<b>Total Percent Unaccounted For Water and Water Lost from Main Leaks (gal)</b>	85%
<b>If total percentage of Unaccounted for Water is greater than 15%, please describe any measures that could be taken to correct this problem:</b>	Conduct more inspections and replace older lines

\* Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D.

## 11.5 EARLY WARNING MONITORING SYSTEM

Public water utilities are required to provide an examination of the technical and economic feasibility of implementing an early warning monitoring system. Implementing an early warning monitoring system may be approached in different ways depending upon the water utility’s resources and threats to the source water. A utility may install a continuous monitoring system that will provide real time information regarding water quality conditions. This would require utilities to analyze the data to establish what condition is indicative of a contamination event. Continuous monitoring will provide results for a predetermined set of parameters. The more parameters that are being monitored, the more sophisticated the monitoring equipment will need to be. When establishing a continuous monitoring system, the utility should consider the logistics of placing and maintaining the equipment, and receiving output data from the equipment.

Alternately, or in addition, a utility may also pull periodic grab samples on a regular basis, or in case of a reported incident. The grab samples may be analyzed for specific contaminants. A utility should examine their PSSCs to determine what chemical contaminants could pose a threat to the water source. If possible, the utility should plan in advance how those contaminants will be detected. Consideration should be given to where samples will be collected, the preservations and hold times for samples, available laboratories to analyze samples, and costs associated with the sampling event. Regardless of the type of monitoring (continuous or grab), utilities should collect samples for their source throughout the year to better understand the baseline water quality conditions and natural seasonal fluctuations. Establishing a baseline will help determine if changes in the water quality are indicative of a contamination event and inform the needed response.

Every utility should establish a system or process for receiving or detecting chemical threats with sufficient time to respond to protect the treatment facility and public health. All approaches to receiving and responding to an early warning should incorporate communication with facility owners and operators that pose a threat to the water quality, with state and local emergency response agencies, with surrounding water utilities, and with the public. Communication plays an important role in knowing how to interpret data and how to respond.

Town of Pocahontas has analyzed its ability to monitor for and detect potential contaminants that could impact its source water. Information regarding this utility’s early warning monitoring system capabilities is provided in **Table 15** and in **Appendix B**.

**Table 15. Early Warning Monitoring System Capabilities**

<b>Does your system currently receive spill notifications from a state agency, neighboring water system, local emergency responders, or other facilities? If yes, from whom do you receive notices?</b>	Yes; The utility receives spill notifications from the WV Health Department.
<b>Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?</b>	No

<b>Are you prepared to detect potential contaminants if notified of a spill?</b>		Yes
<b>List laboratories (and contact information) on whom you would rely to analyze water samples in case of a reported spill.</b>	<b>Laboratories</b>	
	<b>Name</b>	<b>Contact</b>
	REI Consultants	(304) 255-2500
	WV Office of Lab Services	(304) 558-3530
<b>Do you have an understanding of baseline or normal conditions for your source water quality that accounts for seasonal fluctuations?</b>		Yes
<b>Does your utility currently monitor raw water (through continuous monitoring or periodic grab samples) at the surface water intake or from a groundwater source on a regular basis?</b>		No
<b>Provide or estimate the capital and O&amp;M costs for your current or proposed early warning system or upgraded system.</b>	<b>Monitoring System</b>	<b>Hach sc1000 (B-2)</b>
	<b>Capital</b>	\$50,000
	<b>Yearly O &amp; M</b>	\$750
<b>Do you serve more than 100,000 customers? If so, please describe the methods you use to monitor at the same technical levels utilized by ORSANCO.</b>		No

Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D.

## 12.0 SINGLE SOURCE FEASIBILITY STUDY

If a public water utility's water supply plant is served by a single-source intake to a surface water source of supply or a surface water influenced source of supply, the submitted source water protection plan must also include an examination and analysis of the technical and economic feasibility of alternative sources of water to provide continued safe and reliable public water service in the event that its primary source of supply is detrimentally affected by contamination, release, spill event or other reason. These alternatives may include a secondary intake, two days of additional raw or treated water storage, an interconnection with neighboring systems, or other options identified on a local level. Note: a suitable secondary intake would draw water supplies from a substantially different location or water source.

To accomplish this requirement, utilities should examine all existing or possible alternatives and rank them by their technical, economic, and environmental feasibility. To have a consistent and complete method for ranking alternatives, WVBPB has developed a feasibility study guide. This guide provides several criteria to consider for each category, organized in a Feasibility Study Matrix. By completing the Feasibility Study Matrix, utilities will demonstrate the process used to examine the feasibility of each alternative and document scores that compare the alternatives. The Feasibility Study matrix and summary of the results are presented in an alternatives feasibility study attached as **Appendix D**.

## 13.0 COMMUNICATION PLAN

The Town of Pocahontas has also developed a Communication Plan that documents the manner in which the public water utility, working in concert with state and local emergency response agencies, shall notify the local health agencies and the public of the initial spill or contamination event and provide updated information related to any contamination or impairment of the system's drinking water supply. The initial notification to the public will occur in any event no later than thirty minutes after the public water system becomes aware of the spill, release, or potential contamination of the public water system. A copy of the source water protection plan and the Communication Plan has been provided to the local fire department. Town of Pocahontas will update the Communication Plan as needed to ensure contact information is up to date.

Procedures should be in place to effectively react to the kinds of catastrophic spills that can reasonably be predicted at the source location or within the SWPA. The chain-of-command, notification procedures and response actions should be known by all water system employees.

The WVBPH has developed a recommended communication plan template that provides a tiered incident communication process to provide a universal system of alert levels to utilities and water system managers. The comprehensive Communication Plan for Town of Pocahontas is attached as **Appendix C** for internal review and planning purposes only.

The West Virginia Department of Environmental Protection is capable of providing expertise and assistance related to prevention, containment, and clean-up of chemical spills. The West Virginia Department of Environmental Protection Emergency Response 24-hour Phone is 1-800-642-3074. The West Virginia Department of Environmental Protection also operates an upstream distance estimator that can be used to determine the distance from a spill site to the closest public water supply surface water intake.

## 14.0 EMERGENCY RESPONSE

A public water utility must be prepared for any number of emergency scenarios and events that would require immediate response. It is imperative that information about key contacts, emergency services, and downstream water systems be posted and readily available in the event of an emergency. Elements of this source water protection plan, such as the contingency planning and communication plan, may contain similar information to the utility's emergency response plan. However, the emergency response plan is to be kept confidential and is not included in this source water protection plan. An Emergency Short Form is included in **Appendix C** to support the Communicate Plan by providing quick access to important information about emergency response and are to be used for internal review and planning purposes only.

## 15.0 CONCLUSION

This report represents a detailed explanation of the required elements of Town of Pocahontas' Source Water Protection Plan. Any supporting documentation or other materials that the utility considers relevant to their plan can be found in **Appendix E**.

This source water protection plan is intended to help prepare community public water systems all over West Virginia to properly handle any emergencies that might compromise the quality of the system's source water supply. It is imperative that this plan is updated as often as necessary to reflect the changing circumstances within the water system. The protection team should continue to meet regularly and continue to engage the public whenever possible. Communities taking local responsibility for the quality of their source water is the most effective way to prevent contamination and protect a water system against contaminated drinking water. Community cooperation, sufficient preparation, and accurate monitoring are all critical components of this source water protection plan, and a multi-faceted approach is the only way to ensure that a system is as protected as possible against source water degradation.

## APPENDIX A. FIGURES

Watershed Delineation Area (WSDA Map)

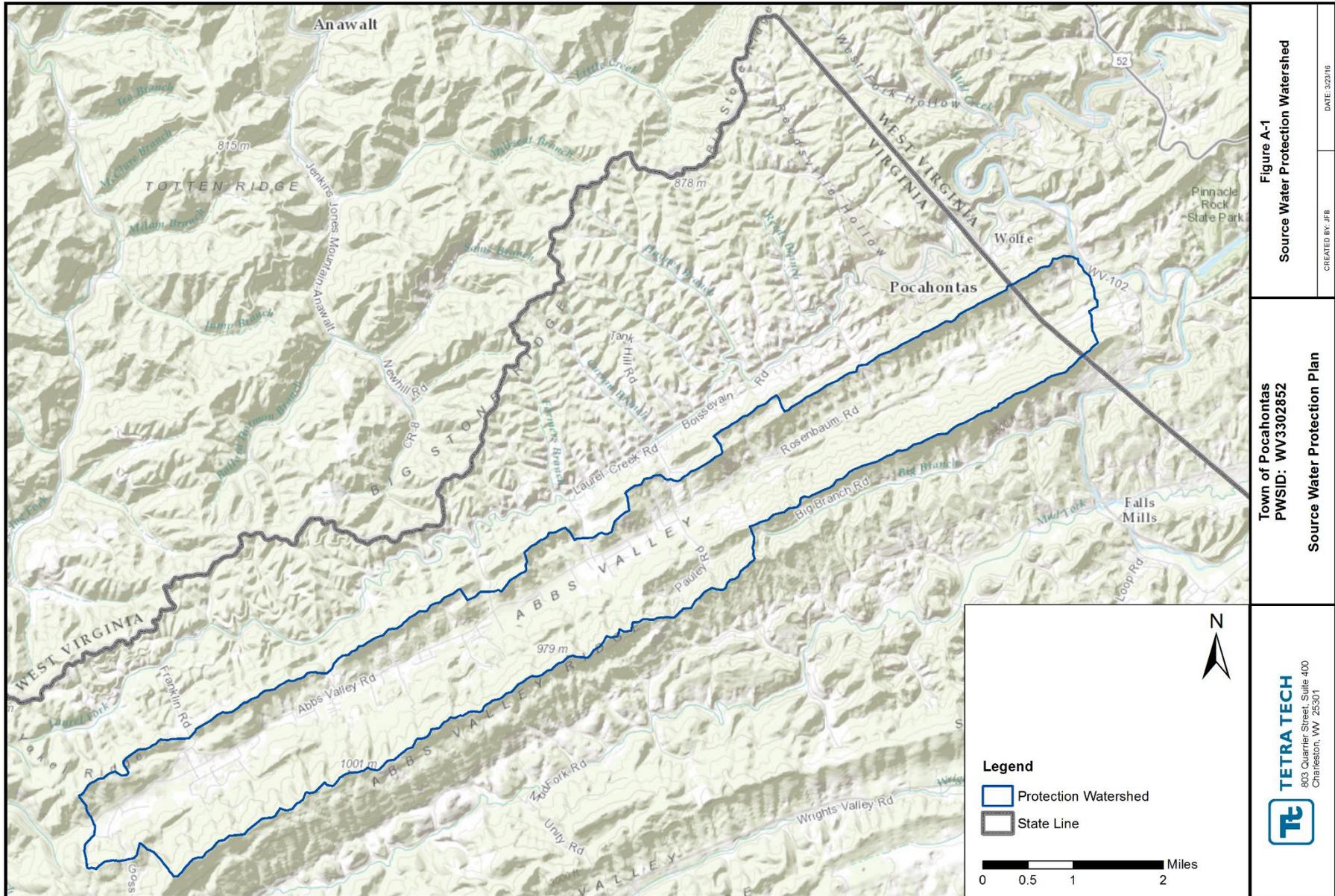


Figure A-1  
Source Water Protection Watershed

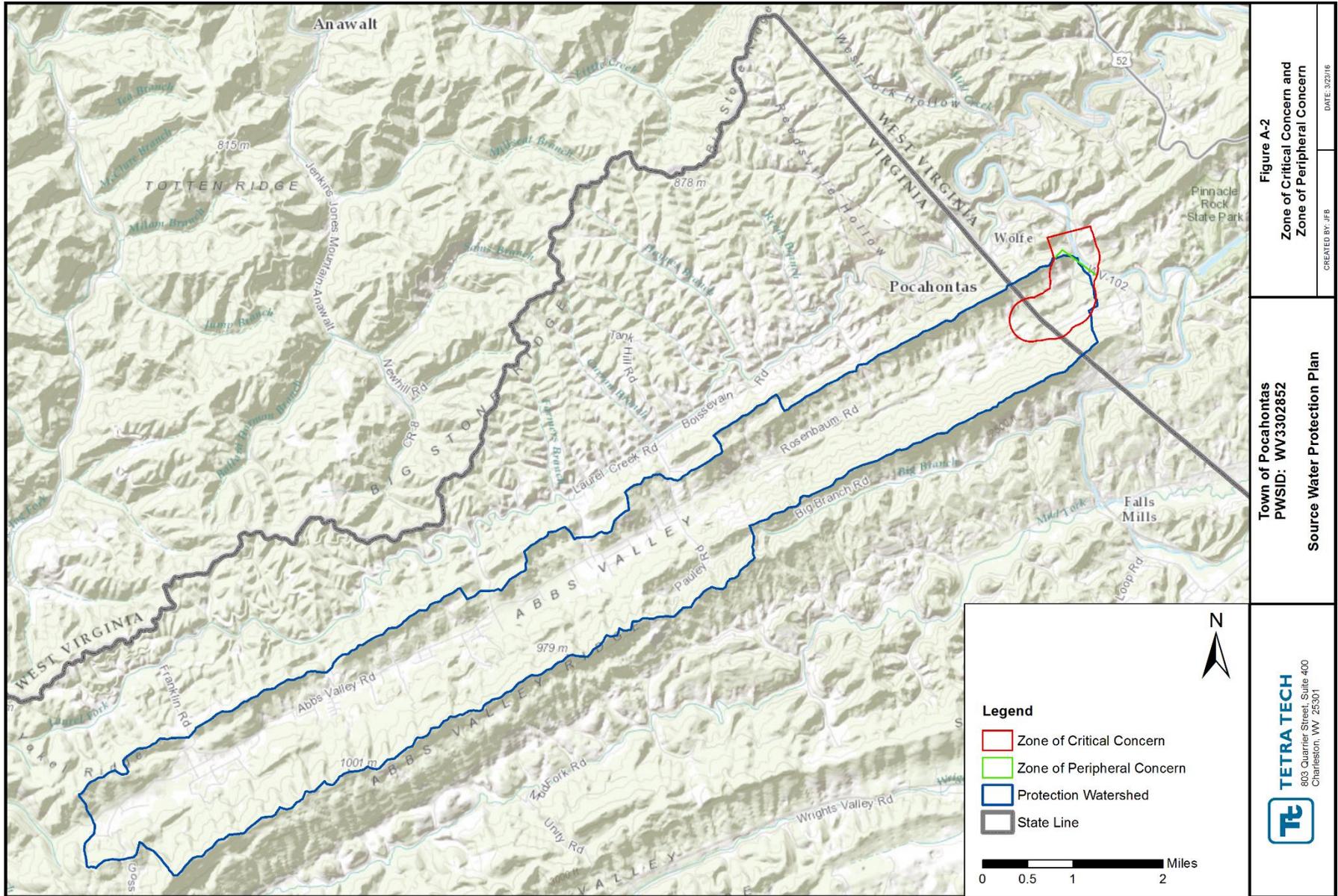
CREATED BY: JFB  
DATE: 3/23/16

Town of Pocahontas  
PWSID: WV302852  
Source Water Protection Plan

**TETRA TECH**  
803 Quarrier Street, Suite 400  
Charleston, WV 25301



Zone of Critical Concern (ZCC) and Zone of Peripheral Concern (ZPC) Map(s)



**List of Locally Identified and Regulated PSSCs**

PCS No.	Site Name	Site Description	Comments
1	Residential (single family homes)	Residential Area	PCS incorrectly identified in old survey as pasture
2	Residential (single family homes)	Residential Area	PCS incorrectly identified in old survey as drinking water plant
3	Pasture	Fenced cattle farm with rolling pasture	none
4	Pasture	Unfenced pasture	Cattle have access to the stream.
R-1	School	Abbs Valley Elementary School	Registry ID 110020668375
R-2	Stream Monitoring Site	Mid-Vol Coal Sales, Inc.	WVDEP Permit ID WV1018574

Map of Locally Identified and Regulated PSSCs

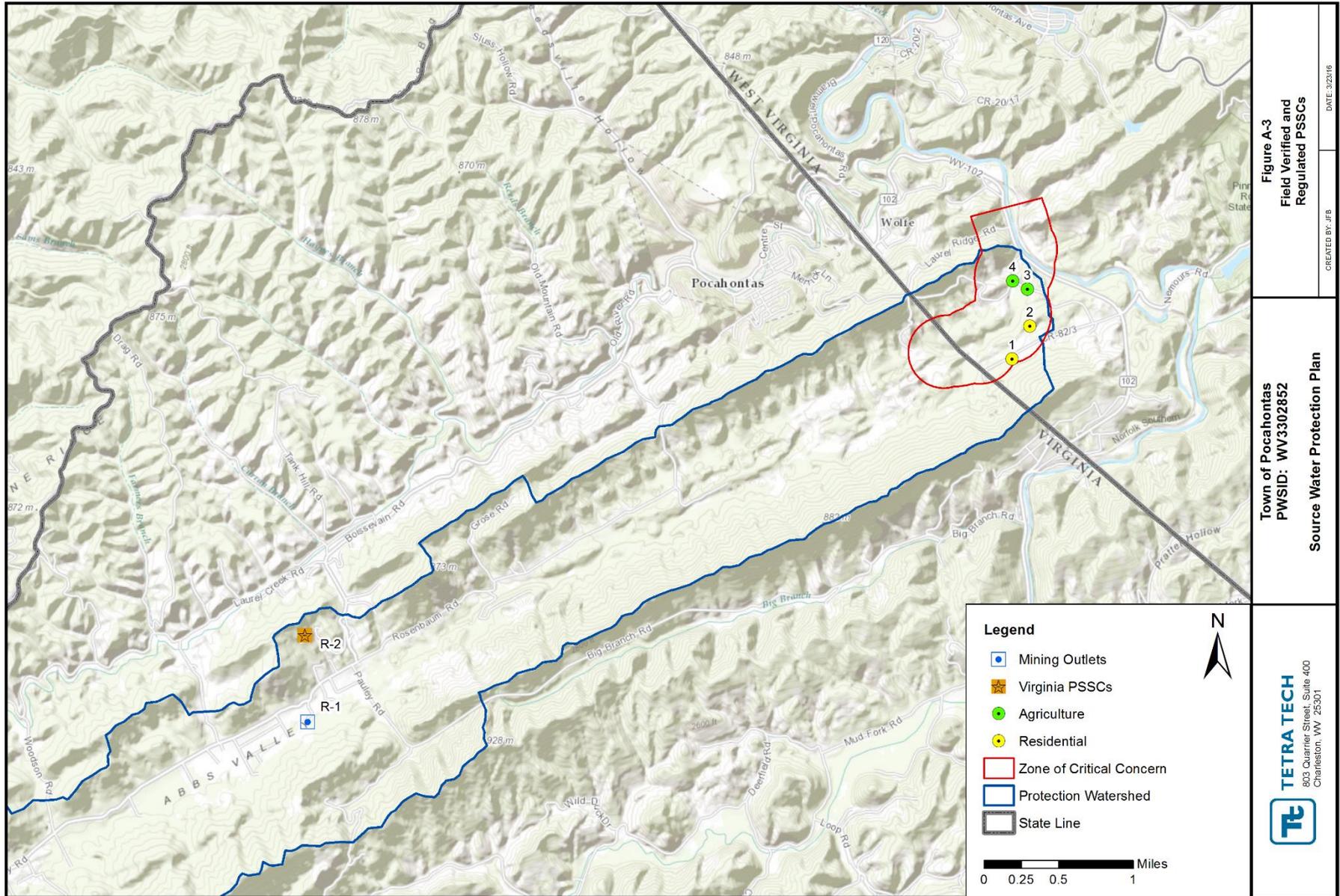


Figure A-3  
Field Verified and  
Regulated PSSCs

DATE: 3/22/16  
CREATED BY: JFB

Town of Pocahontas  
PWSID: WV3302852

Source Water Protection Plan

**TETRA TECH**  
803 Quarrier Street, Suite 400  
Charleston, WV 25301

## APPENDIX B. EARLY WARNING MONITORING SYSTEM FORMS

### **Select and Attach the Appropriate Form for Your System**

**Form A-**Complete if you currently have an early warning monitoring system installed for a surface water source

**Form B-**If you do not currently have an early warning monitoring system installed for a surface water intake or are planning to upgrade or replace your current system, complete this form.

**Form C-**Complete if you currently have an early warning monitoring system for a groundwater source.

**Form D-** If you do not currently have an early warning monitoring system installed for a groundwater source or are planning to upgrade or replace your current system, complete this form.

**Note:** You may need to fill out and attach more than one form to your Protection Plan, depending on your current situation.

**Appendix B-Form B**

Proposed Early Warning Monitoring System Worksheet- Surface Water Source

<b>Describe the type of early warning detection equipment that could be installed, including the design.</b>
The early warning detection equipment that could be installed includes a level controller, display module, back panel, level & trough (see cost estimate by Hach Company in Appendix D, "Supporting Documentation") along with conductivity, oil-in-water, ORP, and pH sensors.
<b>Where would the equipment be located?</b>
Early warning monitoring systems would be located on the raw water intake line where Bluestone River would enter the laboratory in the water treatment facility.
<b>What would the maintenance plan for the monitoring equipment entail?</b>
The proposed maintenance plan for the monitoring equipment shall consist of annual cleaning and/or exchanging of the probe(s) for the controller. Periodic calibration of the unit may also be required.
<b>Describe the proposed sampling plan at the monitoring site.</b>
Sampling of water quality data occurs every fifteen (15) minutes. The PWS would need to retrieve data from the "History" of the controller data collector twice per month.
<b>Describe the proposed procedures for data management and analysis.</b>
Data management for the early warning monitoring system consists of data points (up to 500 points or approximately six months per probe) being recorded in the "History" of the controller data collector. To access the "History", the probe has to be plugged into the controller. Data is able to be removed via USB or through a local SCADA system.

# APPENDIX C. COMMUNICATION PLAN TEMPLATE

## Town of Pocahontas

PWSID: \_\_\_\_\_ District: \_\_\_\_\_

Certified Operator: \_\_\_\_\_

Contact Phone Number: \_\_\_\_\_

Contact Email Address: \_\_\_\_\_

Plan Developed On: \_\_\_\_\_ Plan Update Due On: \_\_\_\_\_

### ACKNOWLEDGMENTS:

This plan was developed by [insert name, title of person completing plan, and who they work for] to meet certain requirements of the Source Water and Assessment Protection Program (SWAPP) and the Wellhead Protection Program (WHPP) for the State of West Virginia, as directed by the federal Safe Drinking Water Act (SDWA) and state laws and regulations.

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## TABLE OF CONTENTS

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<b>INTRODUCTION.....</b>	<b>1</b>
<b>TIERS REPORTING SYSTEM .....</b>	<b>1</b>
<b>COMMUNICATION TEAM.....</b>	<b>2</b>
<b>COMMUNICATION TEAM DUTIES .....</b>	<b>3</b>
<b>INCIDENT / EVENT COMMUNICATION PROCEDURE .....</b>	<b>3</b>
<b>TIERS FLOW CHART .....</b>	<b>5</b>
<b>EMERGENCY SHORT FORMS .....</b>	<b>6</b>
<b>EMERGENCY CONTACT INFORMATION.....</b>	<b>9</b>
<b>PRESS RELEASE ATTACHMENTS .....</b>	<b>ERROR! BOOKMARK NOT DEFINED.</b>

## INTRODUCTION

Legislative Rule 64CSR3 requires public water systems to develop a Communication Plan that documents how public water suppliers, working in concert with state and local emergency response agencies, shall notify state and local health agencies and the public in the event of a spill or contamination event that poses a potential threat to public health and safety. The plan must indicate how the public water supplier will provide updated information, with an initial notification to the public to occur no later than thirty minutes after the supplier becomes aware that the spill, release or potential contamination of the public water system poses a potential threat to public health and safety.

The public water system has responsibility to communicate to the public, as well as to state and local health agencies. This plan is intended to comply with the requirements of Legislative Rule 64CSR3, and other state and federal regulations.

## TIERS REPORTING SYSTEM

This water system has elected to use the *Tiered Incident / Event Reporting System* (TIERS) for communicating with the public, agencies, the media, and other entities in the event of a spill or other incident that may threaten water quality. TIERS provides a multi-level notification framework, which escalates the communicated threat level commensurate with the drinking water system risks associated with a particular contamination incident or event. TIERS also includes a procedural flow chart illustrating key incident response communication functions and how they interface with overall event response / incident management actions. Finally, TIERS identifies the roles and responsibilities for key people involved in risk response, public notification, news media and other communication.

TIERS provides an easy-to-remember five-tiered **A-B-C-D-E** risk-based incident response communication format, as described below. Table 1 provides also associated risk levels.

**A = Announcement.** The water system is issuing an announcement to the public and public agencies about an incident or event that may pose a threat to water quality. Additional information will be provided as it becomes available. As always, if water system customers notice anything unusual about their water, they should contact the water system

**B = Boil Water Advisory.** A boil water advisory has been issued by the water system. Customers may use the water for showering, bathing, and other non-potable uses, but should boil water used for drinking or cooking.

**C = Cannot Drink.** The water system asks that users not drink or cook with the water at this time. Non-potable uses, such as showering, bathing, cleaning, and outdoor uses are not affected.

**D = Do Not Use.** An incident or event has occurred affecting nearly all uses of the water. Do not use the water for drinking, cooking, showering, bathing, cleaning, or other tasks where water can come in contact with your skin. Water can be used for flushing commodes and fire protection.

**E=Emergency.** Water cannot be used for any reason.

Tier	Tier Category	Risk Level	Tier Summary
A	Announcement	Low	The water system is issuing an announcement to the public and public agencies about an incident or event that could pose a threat to public health and safety. Additional information will be provided as it becomes available.

<b>B</b>	<b>Boil Water Advisory</b>	Moderate	Water system users are advised to boil any water to be used for drinking or cooking, due to possible microbial contamination. The system operator will notify users when the boil water advisory is lifted.
<b>C</b>	<b>Cannot Drink</b>	High	System users should not drink or cook with the water until further notice. The water can still be used for showering, bathing, cleaning, and other tasks.
<b>D</b>	<b>Do Not Use</b>	Very High	The water should only be used for flushing commodes and fire protection until further notice. More information on this notice will be provided as soon as it is available.
<b>E</b>	<b>Emergency</b>	Extremely High	The water should not be used for any purpose until further notice. More information on this notice will be provided as soon as it is available.

## COMMUNICATION TEAM

The Communication Team for the water system is listed in the table below, along with key roles. In the event of a spill or other incident that may affect water quality, the water system spokesperson will provide initial information, until the team assembles (if necessary) to provide follow-up communication.

Water system communication team members, organizations, and roles.

<b>Team Member Name</b>	<b>Organization</b>	<b>Phone</b>	<b>Email</b>	<b>Role</b>
Benjamin Gibson		(304) 887 5387	benjamin.gibson@pocahontasva.org	Primary Spokesperson
Donald Morgan		(304) 887 5387		Secondary Spokesperson
				Member

In the event of a spill, release, or other incident that may threaten water quality, members of the team who are available will coordinate with the management staff of the local water supplier to:

- Collect information needed to investigate, analyze, and characterize the incident/event
- Provide information to the management staff, so they can decide how to respond
- Assist the management staff in handling event response and communication duties
- Coordinate fully and seamlessly with the management staff to ensure response effectiveness

## COMMUNICATION TEAM DUTIES

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The communication team will be responsible for working cooperatively with the management staff and state and local emergency response agencies to notify local health agencies and the public of the initial spill or contamination event. The team will also provide updated information related to any contamination or impairment of the source water supply or the system's drinking water supply.

**According to Legislative Rule 64CSR3, the initial notification to the public will occur no later than thirty minutes after the public water system becomes aware that the spill, release or potential contamination of the public water system poses a potential threat to public health and safety.**

As part of the group implementing the Source Water Protection Plan, team members are expected to be familiar with the plan, including incident/event response and communication tasks. Specifically, team members should:

- Be knowledgeable on elements of the Source Water Protection Plan and Communication Plan
- Attend team meetings to ensure up-to-date knowledge of the system and its functions
- Participate in periodic exercises that “game out” incident response and communication tasks
- Help to educate local officials, the media, and others on source water protection
- Cooperate with water supplier efforts to coordinate incident response communication
- Be prepared to respond to requests for field investigations of reported incidents
- Not speak on behalf of the water supplier unless designated as the system’s spokesperson

The primary spokesperson will be responsible for speaking on behalf of the water system to local agencies, the public, and the news media. The spokesperson should work with the management staff and the team to ensure that all communication is clear, accurate, timely, and consistent. The spokesperson may authorize and/or direct others to issue news releases or other information that has been approved by the system’s management staff. The spokesperson is expected to be on call immediately when an incident or event which may threaten water quality occurs. The spokesperson will perform the following tasks in the event of a spill, release, or other event that threatens water quality:

- Announce which risk level (A, B, C, D, or E) will apply to the public notifications that are issued
- Issue news releases, updates, and other information regarding the incident/event
- Use the news media, email, social media, and other appropriate information venues
- Ensure that news releases are sent to local health agencies and the public
- Respond to questions from the news media and others regarding the incident/event
- Appear at news conferences and interviews to explain incident response, etc.

## INCIDENT / EVENT COMMUNICATION PROCEDURE

---

The flow chart in this section illustrates how the water system will respond when it receives a report that a spill, release, or other contamination event may have occurred. Key elements of the flow chart are described below.

### **Communication with agencies, the public, and the media during threat incidents**

Upon initial notification of the incident/event, system managers and staff will collect information and verify the need for further investigation. If further investigation is warranted, and the initial facts support it, the water system spokesperson will issue a public communication statement consistent with the threat level. In addition, water system personnel and partners will be dispatched to conduct reconnaissance, a threat assessment, and a threat characterization, if present. This work may include:

- Verification of the incident/event type (spill, release, etc.)
- Location of incident/event
- Type of material(s) involved in spill, release, etc.
- Quantity of material involved
- Potential of the material to move, migrate, or be transported
- Relevant time factor(s) in the risk assessment (e.g., downstream movement rate)

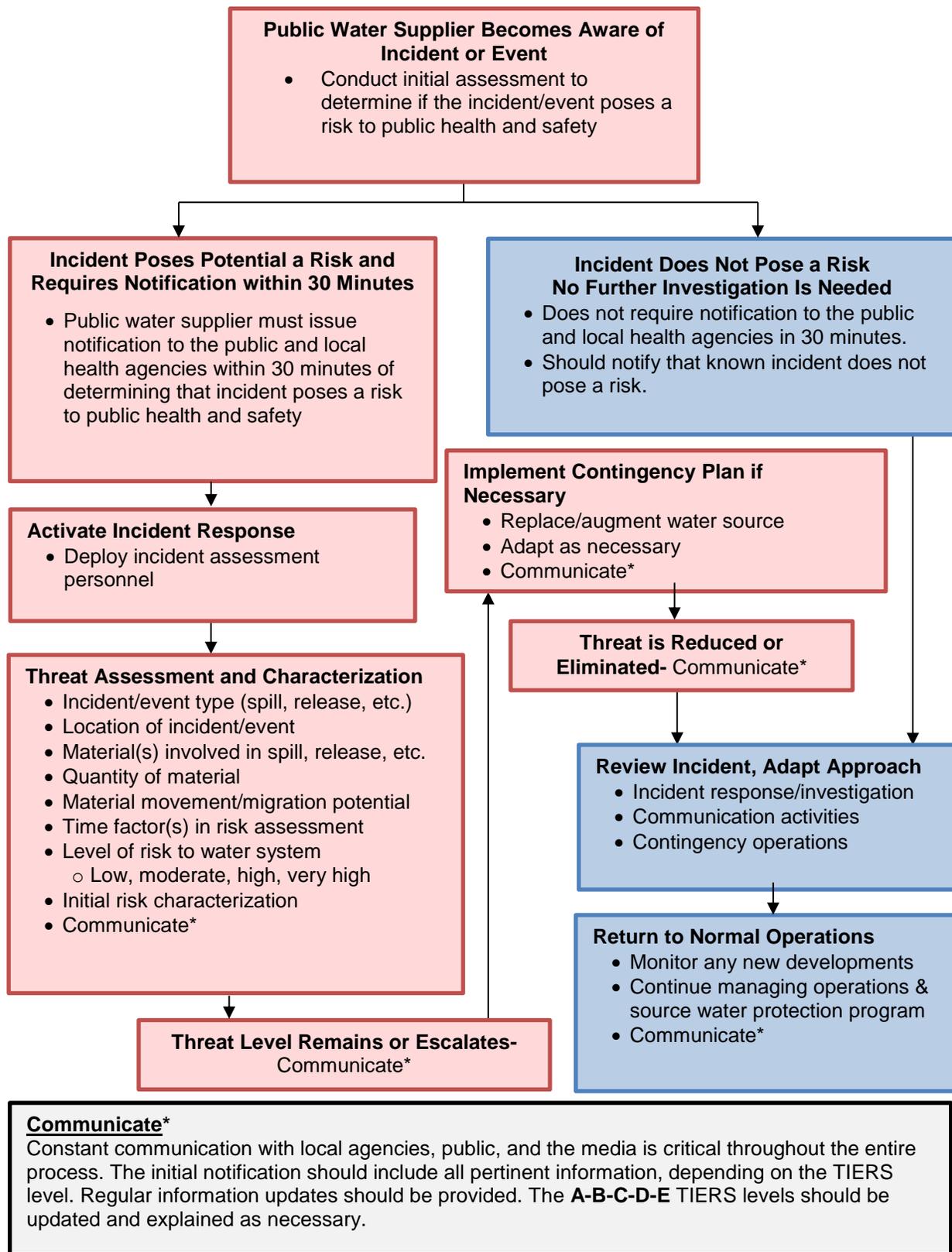
- Overall level of risk to water system, whether low, moderate, high, or very high
- Development of the initial risk characterization

As the flow chart indicates, several iterative cycles will occur after the initial threat assessment, including communication with local agencies and the public, further investigation of the incident, possible implementation of the water system's contingency plan, and eventual elimination of the threat and a return to normal operations. Communication activities during this period will include:

- The initial release (i.e., **A**nnouncement, **B**oil Water Advisory, **C**annot Drink, **D**o Not Use, or **E**mergency)
  - Sent to local health agencies, the public, and the news media within 30 minutes
- Notification of the local water system's source water protection and communication teams
  - If warranted by initial findings regarding the spill, release, or incident
- Notification of the WV Bureau of Public Health
  - As required
- Periodic information updates, as incident response information is received
- Updates to the applicable A-B-C-D-E advisory tier, as necessary

After the threat level is reduced, and operations return to normal, the water system staff, the communication and source water protection teams, and their partners will conduct a post-event review and assessment. The purpose of the review is to examine the response to the incident, relevant communication activities, and overall outcomes. Plans and procedures may be updated, altered, or adapted based on lessons learned through this process.

# TIERS FLOW CHART



## EMERGENCY SHORT FORMS

### Emergency Communication Information

	Name	Phone Number	Email	
<b>Designated spokesperson:</b>	Benjamin Gibson	(304) 887 5387	benjamin.gibson@pocahontasva.org	
<b>Alternate spokesperson:</b>	Donald Morgan	(304) 887 5387		
<b>Designated location to disseminate information to media:</b>	Townhall			
<b>Methods of contacting affected residents:</b>	<b>Word of mouth</b>		<b>Posted notices</b>	
	<b>Door-to-door canvassing</b>		<b>Radio</b>	X
	<b>Newspaper</b>	X	<b>Other</b>	
<b>Media contacts:</b>	Name	Title	Phone Number	Email
	Radio Station WHAJ 104.5. TV stations WVVA Channel 6, WVNS Channel 59.			

### Emergency Services Contacts

	Name	Emergency Phone	Alternate Phone	Email
<b>Local Police</b>	Mercer County Sheriff	911	304-487-8364	
<b>Local Fire Department</b>	Pocahontas Volunteer Fire Department	911	276-945-9599	
	Bramwell Volunteer Fire Department	911	304-248-7161	

<b>Local Ambulance Service</b>				
<b>Hazardous Material Response Service</b>	Bramwell Volunteer Fire Department	911	304-248-7161	
	Bluewell Volunteer Fire Department	911	304-589-5212	

### Sensitive Populations

<b>Other communities that are served by the utility:</b>	NA			
<b>Major user/sensitive population notification:</b>	<b>Name</b>	<b>Emergency Phone</b>	<b>Alternate Phone</b>	
	Unknown			
<b>EED District Office Contact:</b>	<b>Name</b>	<b>Phone</b>	<b>Email</b>	
	John Stafford	304-256-6666  (Alternate-EED Central Office-304-558-2981) Answering service will notify appropriate individuals in case of emergency.	John.PB.Stafford@wv.gov	
<b>OEHS Readiness Coordinator</b>	Warren Von Dollen	304-356-4290 (main) 304-550-5607 (cell)	warren.r.vondollen@wv.gov	
<b>Downstream Water Contacts:</b>	<b>Water System Name</b>	<b>Contact Name</b>	<b>Emergency Phone</b>	<b>Alternate Phone</b>
	WVAW-Bluestone Plant	John Pentasuglia, Jr	304-466-3365	

<b>Are you planning on implementing the TIER system?</b>	Unknown
--	---------

**Key Personnel**

	Name	Title	Phone	Email
<b>Key staff responsible for coordinating emergency response procedures?</b>	Benjamin Gibson	Mayor	(304) 887 5387	benjamin.gibson@pocahontasva.org
	Donald Morgan	Operator	(304) 887 5387	
<b>Staff responsible for keeping confidential PSSC information and releasing to emergency responders:</b>	Benjamin Gibson	Mayor	(304) 887 5387	benjamin.gibson@pocahontasva.org
	Donald Morgan	Operator	(304) 887 5387	

**Emergency Response Information**

	Name	Phone
<b>List laboratories available to perform sample analysis in case of emergency:</b>	REI Consultants	(304) 255-2500
	WV Office of Lab Services	(304) 558-3530
	Unknown	
<b>Has the utility developed a detailed Emergency Response Plan in accordance with the Public Health Security Bioterrorism Preparedness and Response Act of 2002 that covers the following areas?</b>	Unknown	
<b>When was the Emergency Response Plan developed or last updated?</b>	Unknown	

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## EMERGENCY CONTACT INFORMATION

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**State Emergency Spill Notification**

1-800-642-3074

**Office of Emergency Services**

<http://www.wvdhsem.gov/>  
Charleston, WV- (304) 558-5380

**WV Bureau for Public Health Office of Environmental Health Services (OEHS)**

[www.wvdhhr.org/oehs](http://www.wvdhhr.org/oehs)

Readiness Coordinator- Warren Von Dollen

Phone; 304-356-4290

Cell; 304-550-5607

E-mail: [warren.r.vondollen@wv.gov](mailto:warren.r.vondollen@wv.gov)

Environmental Engineering Division Staff

Charleston, Central Office (304) 558-2981

Beckley, District 1 (304) 256-6666

St. Albans, District 2 (304) 722-0611

Kearneysville, District 4 (304) 725-9453

Wheeling, District 5 (304) 238-1145

Fairmont, District 6 (304) 368-2530

**National Response Center - Chemical, Oil, & Chemical/Biological Terrorism**

1-800-424-8802

**WV State Fire Marshal's Office**

1-800-233-3473

**West Virginia State Police**

1-304-746-2100

**WV Watch – Report Suspicious Activity**

1-866-989-2824

**DEP Distance Calculator**

<http://tagis.dep.wv.gov/pswicheck/>

**PRESS RELEASE ATTACHMENTS**

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**TIERS Levels A, B, C, D, and E**

**UTILITY ISSUED NOTICE – LEVEL A  
PUBLIC WATER SYSTEM ANNOUNCEMENT  
A WATER SYSTEM INVESTIGATION IS UNDERWAY**

On \_\_\_\_\_ at \_\_\_\_:\_\_\_\_ AM/PM, the \_\_\_\_\_ Water System began investigating an incident that may affect local water quality.

The incident involves the following situation at this location:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

There are no restrictions on water use at this time. As always, if water system customers notice anything unusual about their water – such as abnormal odors, colors, sheen, etc. – they should contact the water system at \_\_\_\_\_.

At this time there is no need for concern if you have consumed or used the water.

Regular updates will be provided about this Announcement as water system staff continue their investigation. Again, there are no restrictions on water use at this time.

State Water System ID# \_\_\_\_\_ Date Distributed: \_\_\_\_\_

**UTILITY ISSUED NOTICE – LEVEL B**

**BOIL WATER ADVISORY**

**A BOIL WATER ADVISORY IS IN EFFECT**

On \_\_\_\_\_ at \_\_\_\_:\_\_\_\_ am/pm, a water problem occurred causing contamination of your water. The areas that are affected are as follows:

Entire Water System or  Other: \_\_\_\_\_

CONDITIONS INDICATE THERE IS A HIGH PROBABILITY THAT YOUR WATER IS CONTAMINATED. TESTING HAS NOT OCCURRED TO CONFIRM OR DENY THE PRESENCE OF CONTAMINATION IN YOUR WATER.

**What should I do?**

- **DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST.** Bring all water to a boil, let it boil for one minute, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes, bathing, and food preparation **until further notice**. Boiling kills bacteria and other organisms in the water.

**What happened?**

- The problem is related to \_\_\_\_\_

**What is being done?**

- The water system is taking the following action: \_\_\_\_\_

**What should a customer do if they have consumed or used the water?**

- \_\_\_\_\_

We will inform you when you no longer need to boil your water. We anticipate resolving the problem within \_\_\_\_\_ hours/days. For more information, please contact \_\_\_\_\_ at \_\_\_\_\_ or \_\_\_\_\_ at \_\_\_\_\_.

General guidelines on ways to lessen the health risk are available from the EPA Safe Drinking Water Hotline at 1 (800) 426-4791.

*Please share this information others who use this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice was distributed by \_\_\_\_\_

State Water System ID# \_\_\_\_\_ Date Distributed: \_\_\_\_\_

**UTILITY ISSUED NOTICE – LEVEL C**  
**“CANNOT DRINK” WATER NOTIFICATION**  
**A LEVEL C WATER ADVISORY IS IN EFFECT**

On \_\_\_\_\_ at \_\_\_\_:\_\_\_\_ am/pm, a water problem occurred causing contamination of your water. The areas that are affected are as follows:

Entire Water System    or     Other: \_\_\_\_\_

CONDITIONS INDICATE THERE IS A HIGH PROBABILITY THAT YOUR WATER IS CONTAMINATED. TESTING HAS NOT OCCURRED TO CONFIRM OR DENY THE PRESENCE OF CONTAMINATION IN YOUR WATER.

**What should I do?**

- **DO NOT DRINK THE WATER.** You can’t drink the water, but you can use it for showering, bathing, toilet-flushing, and other non-potable purposes.
- **BOILING WILL NOT PURIFY THE WATER.** Do not drink the water, even if it is boiled. The type of contamination suspected is not removed by boiling.

**What happened?**

- The problem is related to \_\_\_\_\_

**What is being done?**

- The water system is taking the following action: \_\_\_\_\_

**What should a customer do if they have consumed or used the water?**

- \_\_\_\_\_

We will inform you when the water is safe to drink. We anticipate resolving the problem within \_\_\_\_\_ hours/days. For more information – or to report unusual water conditions such as abnormal odors, colors, sheen, etc. – please contact \_\_\_\_\_ at \_\_\_\_\_ or \_\_\_\_\_ at \_\_\_\_\_.

*Please share this information others who use this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice was distributed by \_\_\_\_\_

State Water System ID# \_\_\_\_\_ Date Distributed: \_\_\_\_\_

**UTILITY ISSUED NOTICE – LEVEL D**  
**“DO NOT USE” WATER NOTIFICATION**  
**A LEVEL D WATER ADVISORY IS IN EFFECT**

On \_\_\_\_\_ at \_\_\_\_:\_\_\_\_ am/pm, a water problem occurred causing contamination of your water. The areas that are affected are as follows:

Entire Water System    or     Other: \_\_\_\_\_

CONDITIONS INDICATE THERE IS A HIGH PROBABILITY THAT YOUR WATER IS CONTAMINATED. TESTING HAS NOT OCCURRED TO CONFIRM OR DENY THE PRESENCE OF CONTAMINATION IN YOUR WATER.

**What should I do?**

- **DO NOT DRINK THE WATER.** The water is contaminated.
- **DO NOT SHOWER OR BATHE IN THE WATER.** You can't use the water for drinking, showering, or bathing. It can be used for toilet flushing and firefighting.
- **BOILING WILL NOT PURIFY THE WATER.** Do not use the water, even if it is boiled. The type of contamination suspected is not removed by boiling.

**What happened?**

- The problem is related to \_\_\_\_\_

**What is being done?**

- The water system is taking the following action: \_\_\_\_\_

**What should a customer do if they have consumed or used the water?**

- \_\_\_\_\_

We will inform you when the water is safe to drink. We anticipate resolving the problem within \_\_\_\_\_ hours/days. For more information – or to report unusual water conditions such as abnormal odors, colors, sheen, etc. – please contact \_\_\_\_\_ at \_\_\_\_\_ or \_\_\_\_\_ at \_\_\_\_\_.

*Please share this information others who use this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice was distributed by \_\_\_\_\_

State Water System ID# \_\_\_\_\_ Date Distributed: \_\_\_\_\_

**UTILITY ISSUED NOTICE – LEVEL E  
EMERGENCY WATER NOTIFICATION  
A LEVEL E WATER ADVISORY IS IN EFFECT**

On \_\_\_\_\_ at \_\_\_\_:\_\_\_\_ am/pm, a water problem occurred causing contamination of your water. The areas that are affected are as follows:

Entire Water System    or     Other: \_\_\_\_\_

CONDITIONS INDICATE THERE IS A HIGH PROBABILITY THAT YOUR WATER IS CONTAMINATED. TESTING HAS NOT OCCURRED TO CONFIRM OR DENY THE PRESENCE OF CONTAMINATION IN YOUR WATER.

**What should I do?**

- **DO NOT DRINK THE WATER.** The water is contaminated.
- **DO NOT USE THE WATER FOR ANY PURPOSE!** You can't use the water for drinking, showering, or bathing, or any other use – not even for toilet flushing.
- **BOILING WILL NOT PURIFY THE WATER.** Do not use the water, even if it is boiled. The type of contamination suspected is not removed by boiling.

**What happened?**

- The problem is related to \_\_\_\_\_

**What is being done?**

- The water system is taking the following action: \_\_\_\_\_

**What should a customer do if they have consumed or used the water?**

- \_\_\_\_\_

We will inform you when the water is safe to drink. We anticipate resolving the problem within \_\_\_\_\_ hours/days. For more information – or to report unusual water conditions such as abnormal odors, colors, sheen, etc. – please contact \_\_\_\_\_ at \_\_\_\_\_ or \_\_\_\_\_ at \_\_\_\_\_.

*Please share this information others who use this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice was distributed by \_\_\_\_\_

State Water System ID# \_\_\_\_\_ Date Distributed: \_\_\_\_\_

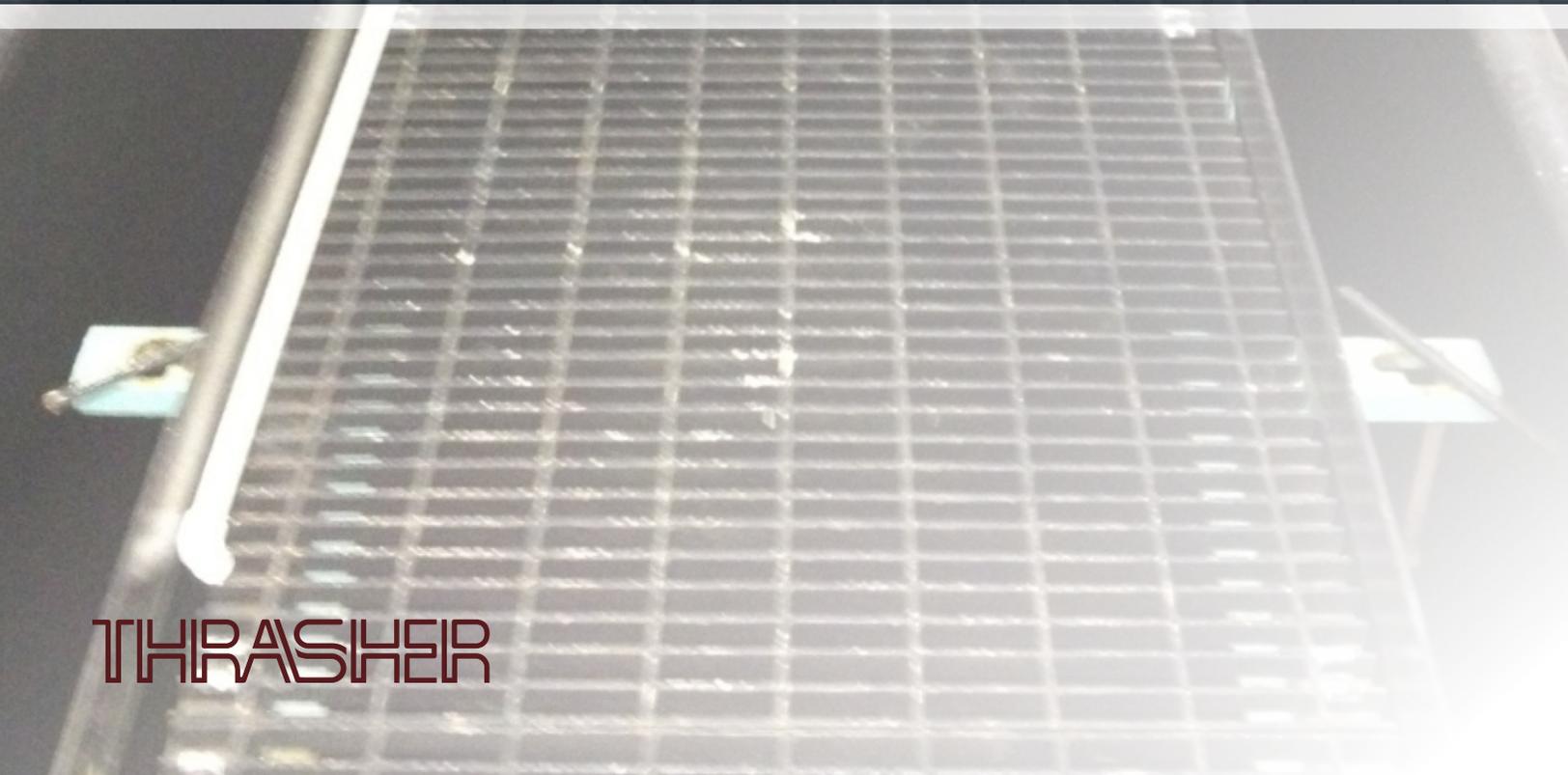
## APPENDIX D. SINGLE SOURCE FEASIBILITY STUDY



# *Source Water Protection Contingency Plan* **Town of Pocahontas**

**Mercer County, West Virginia**  
**Tazewell County, Virginia**  
**August 2015**

*“This program is being presented with financial assistance as a grant from the West Virginia Department of Health and Human Resources.”*



**THRASHER**

Title of Preparer:  
Project Engineer

---

Name of Contractor(s)/Consultant(s) (if used):  
The Thrasher Group, Inc.

---

I certify the information in the source water protection plan is complete and accurate to the best of my knowledge.

---

Signature of responsible party or designee authorized to sign for water utility:

---

Print Name of Authorizing Signatory (see instructions):

---

Title of Authorizing Signatory:

---

Date of Submission:  
09/30/2015

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# **TABLE OF CONTENTS**

<b>EXECUTIVE SUMMARY</b> .....	4
<b>PURPOSE</b> .....	5
What are the benefits of preparing a Source Water Protection Plan? .....	5
<b>BACKGROUND: WV SOURCE WATER ASSESSMENT AND PROTECTION PROGRAM</b> .....	5
<b>STATE REGULATORY REQUIREMENTS</b> .....	6
<b>SYSTEM INFORMATION</b> .....	6
Table 1 – Population Served by the Pocahontas Water Treatment Plant .....	7
<b>WATER TREATMENT AND STORAGE</b> .....	8
Table 2 – Pocahontas Water System Water Treatment Information .....	10
Table 3 – Pocahontas Water System Surface Water Sources .....	11
Table 4 – Pocahontas Water System Groundwater Sources .....	11
Response Networks and Communication .....	12
Table 5 – Pocahontas Water System Water Shortage Response Capability .....	12
Operation During Loss of Power .....	13
Table 6 – Generator Capacity .....	13
Future Water Supply Needs .....	14
Table 7 – Future Water Supply Needs for the ocahontas Water System .....	15
Water Loss Calculation .....	15
Table 8 – Water Loss Information .....	16
Early Warning Monitoring System .....	17
Table 9 – Early Warning Monitoring System Capabilities .....	18
<b>SINGLE SOURCE FEASIBILITY STUDY</b> .....	19
<b>CONCLUSION &amp; RECOMMENDATION</b> .....	19
<b>APPENDIX A – EARLY WARNING MONITORING SYSTEM FORMS</b> .....	21
<b>APPENDIX B – FEASIBILITY STUDY MATRIX</b> .....	25
<b>APPENDIX C – ALTERNATIVES ANALYSIS</b> .....	27
<b>APPENDIX D – SUPPORTING DOCUMENTATION</b> .....	32

## **EXECUTIVE SUMMARY**

This Source Water Protection Contingency Plan (SWPCP) is being developed for the Town of Pocahontas, VA Water System (PWS), and is to be included as a portion of the complete SWPCP being completed by other parties (per the West Virginia Bureau for Public Health).

The PWS is a state regulated public utility and operates a public water system serving the areas of Pocahontas, Virginia; Nemours, West Virginia and Wolfe, West Virginia. Pocahontas Water Treatment Plant serves 490 residential customers as reported in the 2014 Public Service Commission (PSC) annual report.

The water treatment plant for Pocahontas obtains surface water from Bluestone River raw water intake. The plant has a treatment capacity of 500,000 gallons per day and pumps approximately 15 hours per day on average. The plant currently produces an average of 349,000 gallons per day. The PWS maintains two (2) treated water storage tanks totaling 250,000 gallons of treated water and does not have any raw water storage tanks. Currently, the water system is experiencing 85% unaccounted for water; however, the PWS is conducting leak detection and making necessary repairs to reduce unaccounted for water. The PWS currently does not have a backup source of power.

The PWS is in the process of being purchased by the Tazewell PSA. The sale of the PWS should be completed by November 2016. Once the sale of the PWS is complete the water treatment plant will be decommissioned.

The alternative with the highest final score of feasibility is the existing interconnection with Tazewell PSA. The PWS currently has sufficient alternative water source in place. It is not recommend for the PWS to install an early warning monitoring system since the water treatment is schedule to be decommissioned. Further explanations of the costs are provided in Appendix D, "Supporting Documentation".

### Backup Intake

The PWS currently uses the Bluestone River intake as their primary source of surface water. Pinnacle Rock Lake has adequate supply to provide the average water demand of the plant. The backup intake would be located on Pinnacle Rock Lake approximately 7,920 feet east of the plant and will require 7,920 feet of 8" raw water line from the intake to the water treatment facility.

### Interconnection

The PWS is currently interconnected with the Tazewell Public Service (PSA) system. After analysis of treatment capacities and average production amounts of Tazewell PSA systems it was concluded that the Tazewell PSA treatment facility would be able to provide 100 percent of water capacity demands to all areas of PWS.

### Treated Water Storage

The water system currently has 250,000 gallons of treated water storage available. To satisfy the minimum required storage capacity by Senate Bill 373, the PWS needs 912,000 gallons of storage. The system did not meet the minimum required treated water storage capacity. The construction of a treated water storage tank was considered in the feasibility analysis.

### Raw Water Storage

The PWS currently has no raw water storage available. To satisfy the minimum required storage capacity, the PWS needs 912,000 gallons of storage. The system did not meet the minimum required raw water storage capacity. The construction of a raw water storage tank was considered in the feasibility analysis.

This SWPCP describes in detail the aforementioned aspects of the PWS, analyzes alternatives for sources of water supply, and compares alternatives in a feasibility matrix to determine the most suitable and feasible alternative for the PWS. The recommended alternative suggested for the PWS is the interconnect with Tazewell PSA. Further detail of the selection of this alternative is provided in the “Conclusion and Recommendation” section of this report.

## **PURPOSE**

The goal of the West Virginia Bureau for Public Health (WV BPH) Source Water Assessment and Protection (SWAP) program is to prevent degradation of source waters which may preclude present and future uses of drinking water supplies to provide safe water in sufficient quantity to users. The most efficient way to accomplish this goal is to encourage and oversee source water protection on a local level. Every aspect of source water protection is best addressed by engaging local stakeholders.

The intent of this document is to describe what the PWS has done, is currently doing, and plans to do to protect its source of drinking water. Although this water system treats the water to meet federal and state drinking water standards, conventional treatment does not fully eradicate all potential contaminants, and treatment that goes beyond conventional methods is often very expensive. By completing this plan, the PWS acknowledges that implementing measures to prevent contamination can be a relatively economical way to help ensure the safety of the drinking water.

### **What are the benefits of preparing a Source Water Protection Plan?**

- Fulfills the requirement for the public water utilities to complete or update their source water protection plan.
- Identifies and prioritizes potential threats to the source of drinking water; and establishes strategies to minimize the threats.
- Plans for emergency responses to incidents that compromise the water supply by contamination or depletion, including how the public, state, and local agencies will be informed.
- Plans for future expansion and development, including establishing secondary sources of water.
- Ensures conditions to provide the safest and highest quality drinking water to customers at the lowest possible cost.
- Provides more opportunities for funding to improve infrastructure, purchase land in the protection area, and other improvements to the intake or source water protection areas.

## **BACKGROUND: WV SOURCE WATER ASSESSMENT AND PROTECTION PROGRAM**

Since 1974, the federal Safe Drinking Water Act (SDWA) has set minimum standards on the construction, operation, and quality of water provided by public water systems. In 1986, Congress amended the SDWA. A portion of those amendments was designed to protect the source water contribution areas around groundwater supply wells. This program eventually became known as the Wellhead Protection Program (WHPP). The purpose of the WHPP is to prevent pollution of the source water supplying the wells.

The Safe Drinking Water Act Amendments of 1996 expanded the concept of wellhead protection to include surface water sources under the umbrella term of “Source Water Protection”. The amendments encourage states to establish SWAP programs to protect all public drinking water supplies. As part of this initiative, states must explain how protection areas for each public water system will be delineated, how potential contaminant sources will be inventoried, and how susceptibility ratings will be established.

In 1999, the WVBPH published the West Virginia Source Water Assessment and Protection Program, which was endorsed by the United States Environmental Protection Agency. Over the next few years, WVBPH staff completed an assessment (i.e., delineation, inventory and susceptibility analysis) for all of West Virginia’s public water systems. Each public water system was sent a copy of its assessment report. Information regarding assessment reports for the Pocahontas Water Treatment Plant can be found in **Table 1**.

## **STATE REGULATORY REQUIREMENTS**

On June 6, 2014, §16.1.2 and §16.1.9a of the Code of West Virginia (1931) was reenacted and amended by adding three new sections designated §16.1.9c, §16.1.9d and §16.1.9e. The changes to the code outline specific requirements for public water utilities that draw water from a surface water source or a groundwater source influenced by surface water (GUIDI).

Under the amended and new codes, each existing public water utility using surface water or ground water influenced by surface water as a source must have completed or updated a source water protection plan by July 1, 2016, and must continue to update their plan every three years. Existing source water protection plans have been developed for many public water utilities in the past. If available, these plans were reviewed and considered in the development of this updated contingency plan. Any new water system established after July 1, 2016 must submit a source water protection plan before they begin operation. A new plan is also required when there is a significant change in the potential sources of significant contamination (PSSC) within the zone of critical concern (ZCC).

The code also requires that public water utilities include details regarding PSSCs, protection measures, system capacities, contingency plans, and communication plans. Before a plan can be approved, the local health department and public will be invited to contribute information for consideration. In some instances, public water utilities may be asked to conduct independent studies of the source water protection area and specific threats to gain additional information.

## **SYSTEM INFORMATION**

The PWS is classified as a state regulated public utility and operates a public water system serving the areas of Pocahontas VA, Nemours WV, and Wolfe WV. A public water system is defined as

“any water supply or system which regularly supplies or offers to supply water for human consumption through pipes or other constructed conveyance, if serving at least an average of twenty-five individuals per day for at least sixty days per year, or which has at least fifteen service connections, and shall include i) any collection, treatment, storage and distribution facilities under the control of the owner or operator of the system and used primarily in connection with the system; and ii) any collection or pretreatment storage facilities not under such control which are used primarily in connection with the system.” A public water utility is defined as “a public water system which is regulated by the West Virginia Public Service Commission.” For purposes of this source water protection plan, public water systems are also referred to as public water utilities. Information on the population served by this utility is presented in **Table 1** below.

**Table 1 – Population Served by the Pocahontas Water Treatment System**

<b>Administrative office location:</b>		300 Centre Street Pocahontas , VA 24635	
<b>Is the system a public utility, according to the Public Service Commission rule?</b>		Public	
<b>Date of Most Recent Source Water Assessment Report:</b>		June 25, 2003 By Bureau for Public Health	
<b>Date of Most Recent Source Water Protection Plan:</b>		April 2003	
<b>Population served directly:</b>		490 Residential; 0 Commercial, 0 Public Authorities <b>490 Total Customers</b>	
<b>Bulk Water Purchaser Systems:</b>	<b>System Name</b>	<b>PWSID Number</b>	<b>Population</b>
	N/A	N/A	N/A
	N/A	N/A	N/A
<b>Total Population Served by the Utility:</b>		1,195	
<b>Does the utility have multiple source water protection areas (SWPAs)?</b>		Yes	
<b>How many SWPAs does the utility have?</b>		1 – Bluestone River	

## **WATER TREATMENT AND STORAGE**

As required, the PWS has assessed their system (e.g., treatment capacity, storage capacity, unaccounted for water, contingency plans) to evaluate their ability to provide drinking water and protect public health.

**Table 2** contains information on the water treatment methods and capacity of the utility. Information about the surface water sources from which the PWS draws water can be found in **Table 3**. If the utility draws water from any groundwater sources to blend with the surface water, the information about these ground water sources can be found in **Table 4**.

**Table 2 – Pocahontas Water Treatment System Water Treatment Information**

<b>Water Treatment Process (List in order)</b>	River/Raw Water Source ↓ Sedimentation ↓ Filtration ↓ Post Chlorination ↓ Clear Wells ↓ High Service Pumps ↓ Tanks
<b>Current Treatment Capacity (gal/day)</b>	500,000 GPD
<b>Current Average Production (gal/day)</b>	349,000 GPD
<b>Maximum Quantity Treated and Produced (gal)</b>	456,000 GPD
<b>Minimum Quantity Treated and Produced (gal)</b>	200,000 GPD
<b>Average Hours of Operation</b>	15 hours per day
<b>Maximum Hours of Operation in One Day</b>	24 hours per day
<b>Minimum Hours of Operation in One Day</b>	0 hours per day
<b>Number of Storage Tanks Maintained</b>	2
<b>Total Gallons of Treated Water Storage (gal)</b>	250,000 GAL
<b>Total Gallons of Raw Water Storage (gal)</b>	N/A

**Table 3 – Pocahontas Water Treatment Plant Surface Water Sources**

<b>Intake Name</b>	<b>SDWIS #</b>	<b>Local Name</b>	<b>Describe Intake</b>	<b>Name of Water Source</b>	<b>Date Constructed/ Modified</b>	<b>Frequency of Use (Primary/ Backup/ Emergency)</b>	<b>Activity Status (Active/ Inactive)</b>
<b>Pocahontas Water Treatment Plant</b>	-	Bluestone River	Screened Pipe	Bluestone River	1960's	Primary	Active

**Table 4 – Pocahontas Water Treatment Plant Groundwater Sources**

<b>Does the utility blend with groundwater?</b>	No
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## Response Networks and Communication

Statewide initiatives for emergency response, including source water related incidents, are being developed. These include the West Virginia Water/Wastewater Agency Response Network (WV WARN, see <http://www.wvwarn.org/>) and the Rural Water Association Emergency Response Team (see <http://www.wvrwa.org/>). The Pocahontas Water Treatment Plant has analyzed its ability to effectively respond to emergencies and this information is provided in **Table 5**.

**Table 5 – Pocahontas Water Treatment System Water Shortage Response Capability**

<b>Can the utility isolate or divert contamination from the intake or groundwater supply?</b>	No
<b>Describe the utility’s capability to isolate or divert potential contaminants:</b>	N/A
<b>Can the utility switch to an alternative water source or intake that can supply full capacity at any time?</b>	Yes
<b>Describe in detail the utility’s capability to switch to an alternative source:</b>	The Pocahontas Water Treatment Plant can switch to Tazewell PSA.
<b>Can the utility close the water intake to prevent contamination from entering the water supply?</b>	Yes
<b>How long can the intake stay closed?</b>	The intake can stay closed as long as Tazewell PSA can supply water. (See Note Below)
<b>Describe the process to close the intake:</b>	Closing gate valves.
<b>Describe the treated water storage capacity of the water system:</b>	The Pocahontas Water Treatment Plant has two (2) storage tanks totaling 250,000 gallons of treated water storage.
<b>Is the utility a member of WVRWA Emergency Response Team?</b>	Yes
<b>Is the utility a member of WV-WARN?</b>	Yes
<b>List any other mutual aid agreements to provide or receive assistance in the event of an emergency:</b>	No

Note: In the event the primary source is contaminated, it is recommended that the Utility evaluate the water storage on hand at that time and determine that the alternative source is sufficient to sustain the water system for the duration of shutdown.

It is suggested that, if the utility does not have the capability to divert contamination from the surface water intake, pre-cast concrete bases are constructed around the raw water intake to drop booms into the water and physically divert surface contaminants from entering the raw water intake.

### Operation During Loss of Power

This utility analyzed and examined its ability to operate effectively during a loss of power. This involved ensuring a means to supply water through treatment, storage, and distribution without creating a public health emergency. Information regarding the utility’s capacity for operation during power outages is shown in **Table 6**. The utility’s standby capacity would have the capability to provide power to the system as if normal power conditions existed. The utility’s emergency capacity would have the capability to provide power to only the essential equipment and treatment processes to provide water to the system. Information regarding the emergency generator capacity for each utility was calculated by the WV BPH and can be found in Appendix D, “Supporting Documentation”.

**Table 6 – Generator Capacity**

<p><b>What is the type and capacity of the generator needed to operate during a loss of power?</b></p>	<p>25 kW portable generator</p>	
<p><b>Can the utility connect to generator at intake/wellhead? If yes, select a scenario that best describes system.</b></p>	<p>No; the generator would need to be able to connect to a quick connect.</p>	
<p><b>Can the utility connect to generator at treatment facility? If yes, select a scenario that best describes system.</b></p>	<p>No; the generator would need to be able to connect and run the required water treatment equipment. This is not suggested since the water treatment plant will be decommissioned.</p>	
<p><b>Can the utility connect to a generator in distribution system? If yes, select a scenario that best describes system.</b></p>	<p>No; the system would need an upgrade for quick connect power connections to provide power service and a 25 kw portable generator would need to be purchased.</p>	
<p><b>Does the utility have adequate fuel on hand for the generator?</b></p>	<p>No</p>	
<p><b>What is your on-hand fuel storage and how long will it last operating at full capacity?</b></p>	<p><b>Gallons</b></p>	<p><b>Hours</b></p>
	<p>N/A</p>	<p>N/A</p>

Provide a list of suppliers that could provide generators and fuel in the event of an emergency:	Supplier		Contact Name	Phone Number
	Generator	Caterpillar	Walker-CAT	(304) 949-6400
	Generator	Cummins	Crosspoint	(304) 769-1012
	Fuel	RT Rogers		(304) 466-1733
	Fuel	N/A	N/A	N/A
Does the utility test the generator(s) periodically?			N/A	
Does the utility routinely maintain the generator?			N/A	
If no scenario describing the ability to connect to generator matches the utility's system or if utility does not have ability to connect to a generator, describe plans to respond to power outages:			After reviewing the backup power system alternatives an 25 kW generator would be required.	

If a portable generator is available through the respective county's 911 or Emergency Center, it is assumed the generator is available **only** for the utility for which this source water protection contingency plan is prepared. If more than one utility in the county uses the portable generator during power outages, it is suggested that each utility procure a generator specifically to protect their system during a power outage.

### Future Water Supply Needs

When planning for potential emergencies and developing contingency plans, a utility needs to not only consider their current demands for treated water but also account for likely future needs. This could mean expanding current intake sources or developing new ones in the near future. This can be an expensive and time consuming process, and any water utility should take this into account when determining emergency preparedness. The PWS has analyzed its ability to meet future water demands at current capacity and this information is included in **Table 7**.

**Table 7 – Future Water Supply Needs for the Pocahontas Water Treatment System**

<p><b>Is the utility able to meet water demands with the current production capacity over the next 5 years? If so, explain how you plan to do so.</b></p>	<p>Yes, The Town of Pocahontas Virginia is in the process of being purchased by the Tazewell PSA. The Tazewell PSA has additional capacity and with a small decline in population from the US Census Data the Tazewell PSA will have capacity over the next 5 years.</p>
<p><b>If not, describe the circumstances and plans to increase production capacity:</b></p>	<p>N/A</p>

**Water Loss Calculation**

In any public water system, there is a certain percentage of the total treated water that does not reach the customer distribution system. Some of this water is used in treatment plant processes such as backwashing filters or flushing piping, but there is usually at least a small percentage unaccounted. To measure and report on this unaccounted for water, a public utility must use the same method used in the Public Service Commission’s rule, *Rules for the Government of Water Utilities*, 150CSR7, Section 5.6. The rule defines unaccounted for water as “the volume of water introduced into the distribution system less all metered usage and all known non-metered usage which can be estimated with reasonable accuracy.”

To further clarify, metered usages are most often those that are distributed to customers. Non-metered usages estimated include water used by fire departments for fires or training, un-metered bulk sales, flushing to maintain the distribution system, backwashing filters, and cleaning settling basins. By totaling the metered and non-metered uses, the utility calculates unaccounted for water. Note: To complete annual reports submitted to the PSC, utilities typically account for known water main breaks by estimating the amount of water lost. However, for the purposes of the source water protection plan, any water lost due to leaks – even if the system is aware of how much water is lost at a main break – is not considered a use. Water lost through leaks and main breaks cannot be controlled during water shortages or other emergencies and should be included in the calculation of percentage of water loss for purposes of the source water protection plan. The data in **Table 8** is taken from the most recently submitted Pocahontas Water Treatment Plant PSC Annual Report.

**Table 8 – Water Loss Information**

<b>Total Water Pumped (gal)</b>		76,434,000
<b>Total Water Purchased (gal)</b>		0
<b>Total Water Pumped and Purchased (gal)</b>		76,434,000
<b>Water Loss Accounted for Except Main Leaks (gal)</b>	<b>Mains, Plants, Filters, Flushing, etc.</b>	0
	<b>Fire Department</b>	4,800,000
	<b>Back Washing</b>	60,000,000
	<b>Blowing Settling Basins</b>	0
<b>Total Water Loss Accounted For Except Main Leaks</b>		64,800,000
<b>Water Sold- Total Gallons (gal)</b>		76,434,000
<b>Unaccounted For Lost Water (gal)</b>		0
<b>Water lost from main leaks (gal)</b>		0
<b>Total gallons of Unaccounted for Lost Water and Water Lost from Main Leaks (gal)</b>		0
<b>Total Percent Unaccounted For Water and Water Lost from Main Leaks (%)</b>		<b>85 %</b>
<b>If total percentage of Unaccounted for Water is greater than 15%, please describe any measures that could be taken to correct this problem:</b>		More inspections are taking place and older lines are being replaced.

## Early Warning Monitoring System

Public water utilities are required to provide an examination of the technical and economic feasibility of implementing an early warning monitoring system. Implementing an early warning monitoring system may be approached in different ways depending upon the water utility's resources and threats to the source water. A utility may install a continuous monitoring system that will provide real-time information regarding water quality conditions. This would require utilities to analyze the data in order to establish what condition is indicative of a contamination event. Continuous monitoring will provide results for a predetermined set of parameters. The more parameters being monitored, the more sophisticated the monitoring equipment will be. When establishing a continuous monitoring system, the utility should consider the logistics of placing and maintaining the equipment and receiving output data from the equipment.

Alternately, or in addition, a utility may also pull periodic grab samples on a regular basis or in case of a reported incident. The grab samples may be analyzed for specific contaminants. A utility should examine their PSSCs to determine what chemical contaminants could pose a threat to the water source. If possible, the utility should plan in advance how those contaminants will be detected. Consideration should be given for where samples will be collected, the preservations and hold times for samples, available laboratories to analyze samples, and costs associated with the sampling event. Regardless of the type of monitoring (continuous or grab), utilities should collect samples for their source throughout the year to better understand the baseline water quality conditions and natural seasonal fluctuations. Having a baseline will help determine if changes in the water quality are indicative of a contamination event and inform the needed response.

Every utility should establish a system or process for receiving or detecting chemical threats with sufficient time to respond to protect the treatment facility and public health. All approaches to receiving and responding to an early warning should incorporate communication with facility owners and operators that pose a threat to the water quality, state and local emergency response agencies, surrounding water utilities, and the public. Communication plays an important role in knowing how to interpret data and how to respond.

The PWS has analyzed its ability to monitor for and detect potential contaminants that could impact its source water. Information regarding this utility's early warning monitoring system capabilities can be found in **Table 9** and in **Appendix A**.

**Table 9 – Early Warning Monitoring System Capabilities**

<p><b>Does your system currently receive spill notifications from a state agency, neighboring water system, local emergency responders, or other facilities? If yes, from whom do you receive notices?</b></p>	<p>Yes; The utility receives spill notifications from the WV Health Department.</p>	
<p><b>Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?</b></p>	<p>No</p>	
<p><b>Are you prepared to detect potential contaminants if notified of a spill?</b></p>	<p>Yes</p>	
<p><b>List laboratories (and contact information) on which you would rely to analyze water samples in case of a reported spill.</b></p>	<p><b>Laboratories</b></p>	
	<p><b>Name</b></p>	<p><b>Contact</b></p>
	<p>REI Consultants</p>	<p>(304) 255-2500</p>
	<p>WV Office of Lab Services</p>	<p>(304) 558-3530</p>
	<p></p>	<p></p>
<p><b>Do you have an understanding of baseline or normal conditions for your source water quality that accounts for seasonal fluctuations?</b></p>	<p>Yes</p>	
<p><b>Does your utility currently monitor raw water (through continuous monitoring or periodic grab samples) at the surface water intake or from a groundwater source on a regular basis?</b></p>	<p>No</p>	
<p><b>Provide or estimate the capital and O&amp;M costs for your current or proposed early warning system or upgraded system.</b></p>	<p><b>Capital</b></p>	<p>\$ 50,000</p>
	<p><b>Yearly O&amp;M</b></p>	<p>\$ 750</p>
<p><b>Do you serve more than 100,000 customers? If so, please describe the methods you use to monitor at the same technical levels utilized by ORSANCO.</b></p>	<p>No</p>	
<p><b>Note: Complete appropriate Early Warning Monitoring form for your system in Appendix A (Line 71). WVAWC maybe a viable option to expedite the testing of water samples.</b></p>		

## **SINGLE SOURCE FEASIBILITY STUDY**

If a public water utility's water supply plant is served by a single-source intake to a surface water source of supply or a surface water influenced source of supply, the submitted source water protection plan must also include an examination and analysis of the technical and economic feasibility of alternative sources of water to provide continued safe and reliable public water service in the event its primary source of supply is detrimentally affected by contamination, release, spill event or other reason. These alternatives may include a secondary intake, two days of raw or treated water storage, interconnections with neighboring systems, or other options identified on a local level. Note: a secondary intake would draw water supply from a substantially different location or water source.

In order to accomplish this requirement, utilities should examine all existing or possible alternatives and rank them by their technical, economic, and environmental feasibility. In order to have a consistent method for ranking alternatives, WV BPH has developed a feasibility study guide. This guide provides several criteria to consider for each category, organized in a scoring matrix. By completing the Feasibility Study, utilities will demonstrate the process used to examine the feasibility of each alternative. The Feasibility Study matrix is attached as **Appendix B**. Those alternatives that are ranked highest and deemed to be most feasible will then be the subject of a second, more in-depth, study to analyze the comparative costs, risks, and benefits of implementing each of the described alternatives. An alternatives analysis report providing these details is attached as **Appendix C**.

## **CONCLUSION & RECOMMENDATION**

This report represents a detailed explanation of the required elements of the PWS Source Water Protection Plan. Any supporting documentation or other materials that the utility considers relevant to their plan can be found in **Appendix D**.

This source water protection plan is intended to help prepare community public water systems all over West Virginia to properly handle any emergencies that might compromise the quality of the system's source water supply. It is imperative that this plan is updated as often as necessary to reflect the changing circumstances within the water system. The protection team should continue to meet regularly and continue to engage the public whenever possible. Communities taking local responsibility for the quality of their source water are the most effective way to prevent contamination and protect a water system against contaminated drinking water. Community cooperation, sufficient preparation, and accurate monitoring are all critical components of this source water protection plan, and a multi-faceted approach is the only way to ensure that a system is as protected as possible against source water degradation.

Based from the evaluation of the existing water system, the PWS has an alternative water source in place that can fully sustain the water demands in the event that Bluestone River is contaminated. As shown in the Feasibility Matrix in Appendix B, the alternative with the highest final score of feasibility is the interconnection with Tazewell PSA. The recommendation for the PWS is interconnection with Tazewell PSA. It is not recommend for the PWS to install an early

warning monitoring system, since the water treatment plant is scheduled to be decommissioned in 2016.

The interconnection with Tazewell PSA can supply all the PWS water supply needs for prolonged periods. Therefore, there are no recommendations, improvements or contingency plans for the PWS. Further explanations of the costs are provided in Appendix D, "Supporting Documentation".

***ASSUMPTIONS: Tazewell PSA will take over the Pocahontas Water Treatment System.***

## **APPENDIX A – EARLY WARNING MONITORING SYSTEM FORMS**

**Select and Attach the Appropriate Form for Your System.**

**Form A** – Complete if you currently have an early warning monitoring system installed for a surface water source.

**Form B** – If you do not currently have an early warning monitoring system installed for a surface water intake or plan to upgrade or replace your current system, complete this form.

**Form C** – Complete if you currently have an early warning monitoring system for a groundwater source.

**Form D** – If you do not currently have an early warning monitoring system installed for a groundwater source or plan to upgrade or replace your current system, complete this form.

**Note: You may need to fill out and attach more than one form to your Protection Plan, depending on your current situation.**

## Appendix A – Form B

### Proposed Early Warning Monitoring System Worksheet- Surface

<b>Describe the type of early warning detection equipment that could be installed, including the design.</b>
The early warning detection equipment that could be installed includes a level controller, display module, back panel, level & trough (see cost estimate by Hach Company in Appendix D, “Supporting Documentation”) along with conductivity, oil-in-water, ORP, and pH sensors.
<b>Where would the equipment be located?</b>
Early warning monitoring systems would be located on the raw water intake line where Bluestone River would enter the laboratory in the water treatment facility.
<b>What would the maintenance plan for the monitoring equipment entail?</b>
The proposed maintenance plan for the monitoring equipment shall consist of annual cleaning and/or exchanging of the probe(s) for the controller. Periodic calibration of the unit may also be required.
<b>Describe the proposed sampling plan at the monitoring site.</b>
Sampling of water quality data occurs every fifteen (15) minutes. The PWS would need to retrieve data from the “History” of the controller data collector twice per month.
<b>Describe the proposed procedures for data management and analysis.</b>
Data management for the early warning monitoring system consists of data points (up to 500 points or approximately six months per probe) being recorded in the “History” of the controller data collector. To access the “History”, the probe has to be plugged into the controller. Data is able to be removed via USB or through a local SCADA system.

*Literature related to the development and design of early warning systems is provided on the following pages, courtesy of the American Water Works Association.*

## **APPENDIX B – FEASIBILITY STUDY MATRIX**

Feasibility Matrix

Town of Pocahontas

PWSID:

[PWSID #]

Date: 7/27/15 5/2015

Completed by:

Project Engineer - The Thrasher Group, Inc.

Alternative Strategy Description	Economic Criteria				Technical Criteria							Environmental Criteria						Final Score	Total Capital Cost	Comments	
	Operation & Maintenance Costs	Capital Costs	Total	Total %	Weighted Total	Permitting	Flexibility	Resilience	Institutional Requirements	Total	Total %	Weighted Total	Environmental Impacts	Aesthetic Impacts	Stakeholder Issues	Total	Total %				Weighted Total
Backup Intake	3.0	3.0	6.0	100.0%	40.0%	2.6	3.0	3.0	3.0	11.6	96.7%	38.7%	3.0	2.0	2.3	7.3	81.5%	16.3%	95.0%	\$2,016,300.00	Backup Intake on Pinnacle Rock Lake
Interconnect	3.0	3.0	6.0	100.0%	40.0%	3.0	3.0	3.0	3.0	12.0	100.0%	40.0%	3.0	3.0	3.0	9.0	100.0%	20.0%	100.0%	\$0.00	Interconnection with Tazewell PSA
Treated Water Storage	3.0	3.0	6.0	100.0%	40.0%	2.6	3.0	3.0	3.0	11.6	96.7%	38.7%	3.0	2.0	2.0	7.0	77.8%	15.6%	94.2%	\$868,250.00	The Town of Pocahontas does not minimum requirements.
Raw Water Storage	3.0	3.0	6.0	100.0%	40.0%	2.6	3.0	3.0	3.0	11.6	96.7%	38.7%	3.0	2.0	2.0	7.0	77.8%	15.6%	94.2%	\$0.00	The Town of Pocahontas does not minimum requirements.
Other (Specify)	0.0	0.0	0.0	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0%	0.0%	0.0%	\$0.00	

Scoring:

- 0 - Not feasible. Criterion cannot be met by this alternative and removes the alternative from further consideration.
- 1 - Feasible but difficult. Criterion represents a significant barrier to successful implementation but does not eliminate it from consideration.
- 2 - Feasible. Criterion can be met by the alternative.
- 3 - Very Feasible. Criterion can be easily met by the alternative.

## **APPENDIX C – ALTERNATIVES ANALYSIS**

## **ANALYSIS OF ALTERNATIVES**

The PWS water treatment plant currently has one alternative source of water supply in the event that the primary water source becomes contaminated. The Tazewell PSA interconnection can provide long term backup to the primary source of supply as described below.

### **1. Backup Intake**

There is one sources of water supply large enough to supply sufficient capacity to the PWS Pinnacle Rock Lake. The construction of a backup intake located on Pinnacle Rock Lake is approximately 7,920 feet east of the Pocahontas Water Treatment Plant including 7,920 feet of 8” raw water line from the intake to the water treatment facility will be considered during the feasibility analysis. A cost analysis is provided in Appendix D, “Supporting Documentation”.

### **2. Interconnection**

The PWS is currently interconnected with the Tazewell PSA via an 8” water line. On average, the Tazewell PSA plant produces 1,300,000 gallons per day. The current treatment capacity of the plant is 2,600,000 gallons per day. If the PWS were to fully rely on the Tazewell PSA treatment facility for water supply, the PWS would contribute an additional 349,000 gallons per day on average to the Tazewell PSA.

Therefore, bringing the total amount of water treated at the Tazewell PSA treatment facility to:

$$1,300,000 \text{ GPD} + 349,000 \text{ GPD} = 1,649,000 \text{ GPD}$$

The total treated amount of 1,649,000 gallons per day is below the treatment capacity of 2,600,000 gallons per day; meaning, the Tazewell PSA would be able to provide to all areas of the PWS in the event that the PWS would be fully reliant on the Tazewell PSA for water supply.

### **3. Treated Water Storage**

The treated water storage was reviewed and with 250,000 gallons of storage presently the PWS has a less than one (1) day of storage. The maximum amount of water produced by the water treatment facility in a twenty four (24) hour period from April 2014 to April 2015 was 456,000 gallons per day, according to monthly operating reports provided by MWWP.

Senate Bill 373 requires utilities to maintain a minimum required treated storage capacity equal to two (2) days of system storage based on the plant’s maximum level of production experienced within the past year. The minimum required treated water storage capacity for the system would be:

The minimum required treated water storage capacity for the system would be:

$$456,000 \text{ gallons per day} * 2 \text{ days} = 912,000 \text{ gallons}$$

Therefore, the system currently does not meet the minimum required treated water storage capacity. The remaining minimum required treated water storage capacity for the system would be:

$$912,000 \text{ gallons} - 250,000 \text{ gallons} = 662,000 \text{ gallons}$$

Since water storage tanks is constructed in standard sizes a 691,000 gallon treated water storage tank will be considered during the feasibility analysis. A cost analysis is provided in Appendix D, "Supporting Documentation".

#### **4. Raw Water Storage**

The Pocahontas Water Treatment Plant does not have any raw water storage capacity for the system. As mentioned above, the water treatment facility produces 349,000 gallons per day on average and has a maximum production of 456,000 gallons per day.

The minimum required raw water storage capacity is equal to two (2) days of system storage based on the plant's maximum level of production over a twenty-four (24) hour period experienced within the past year.

The minimum required raw water storage capacity for the system would be:

$$456,000 \text{ gallons per day} * 2 \text{ days} = 912,000 \text{ gallons}$$

Since storage tanks come in standard sizes a 948,000 gallon raw water storage tank is recommended for this alternative. A cost analysis is provided in Appendix D, "Supporting Documentation".

Feasibility Matrix		Town of Pocahontas		PWSID: [PWSID #]		Date:		Completed by:		Project Engineer - The Thrasher Group, Inc.	
Criteria	Question	Backup Intake	Feasibility	Interconnect	Feasibility	Treated Water Storage	Feasibility	Raw Water Storage	Feasibility	Other (Specify)	Feasibility
<b>Economic Criteria</b>											
What is the total current budget year cost to operate and maintain the PWSU (current budget year)?		\$295,097.00		\$295,097.00		\$295,097.00		\$295,097.00		\$295,097.00	
O and M Costs	Describe the major O&M cost requirements for the alternative?	Labor, power and materials for maintenance	3	Labor, power and materials for maintenance	3	Labor and materials for maintenance	3	Labor and materials for maintenance	3		0
	What is the incremental cost (\$/gal) to operate and maintain the alternative?	0	3	0	3	0	3	0	3	0	0
	Cost comparison of the incremental O&M cost to the current budgeted costs (%)	0	3	0.00%	3	0.00%	3	0.00%	3	0.00%	0
<b>O and M-Feasibility Score</b>			<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>0.0</b>
Describe the capital improvements required to implement the alternative.		Construction of a secondary intake, raw water pump and approximately 7,920 LF of 8" intake line	0	Completed		Construction of a new 691,000 gallon treated water storage tank.		Construction of a new 948,000 gallon raw water storage tank.			
Capital Costs	What is the total capital cost for the alternative?	\$2,016,300.00	3	\$0.00	3	\$868,250.00	3	\$0.00	3	\$0.00	0
	What is the annualized capital cost to implement the alternative, including land and easement costs, convenience tap fees, etc. (\$/gal)	0	3	\$0.00	3	\$0.00	3	\$0.00	3	#DIV/0!	0
	Cost comparison of the alternatives annualized capital cost to the current budgeted costs (%)	0.00%	3	0.00%	3	294.23%	3	0.00%	3	0.00%	0
<b>Capital Cost-Feasibility Score</b>			<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>0.0</b>
<b>Technical Criteria</b>											
Permitting	Provide a listing of the expected permits required and the permitting agencies involved in their approval.	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	2	Completed	3	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	2	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	2		0
	What is the timeframe for permit approval for each permit?	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WV DOH (90 days) and County Floodplain (90 days)	2	Completed	3	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WV DOH (90 days) and County Floodplain (90 days)	2	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WV DOH (90 days) and County Floodplain (90 days)	2		0
	Describe the major requirements in obtaining the permits (environmental impact studies, public hearings, etc.)	Environmental impact studies.	3	Completed	3	Environmental impact studies.	3	Environmental impact studies.	3		0
	What is the likelihood of successfully obtaining the permits?	Good	3	Completed	3	Good	3	Good	3		0
	Does the implementation of the alternative require regulatory exceptions or variances?	No	3	Completed	3	No	3	No	3		0
<b>Permitting-Feasibility Score</b>			<b>2.6</b>		<b>3.0</b>		<b>2.6</b>		<b>2.6</b>		<b>0.0</b>
Flexibility	Will the alternative be needed on a regular basis or only used intermittently?	Intermittently	3	Completed	3	Intermittently	3	Intermittently	3		0
	How will implementing the alternative affect the PWSU's current method of treating and delivering potable water including meeting Safe Drinking Water Act regulations? (ex. In the case of storage, will the alternative increase the likelihood of disinfection byproducts?)	No impact	3	Completed	3	The alternative will add 691,000 gallons of treated water storage to the system, and will not have any other impact.	3	The alternative will add 948,000 gallons of raw water storage to the system, and will not have any other impact.	3		0
<b>Flexibility-Feasibility Score</b>			<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>0.0</b>

Criteria	Question	Backup Intake	Feasibility	Interconnect	Feasibility	Treated Water Storage	Feasibility	Raw Water Storage	Feasibility	Other (Specify)	Feasibility
Resilience	Will the alternative provide any advantages or disadvantages to meeting seasonal changes in demand?	Yes	3	Yes	3	Yes	3	Yes	3		0
	How resistant will the alternative be to extreme weather conditions such as drought and flooding?	Drought may limit the availability of water.	3	Drought may limit the availability of water.	3	Drought may limit the availability of water.	3	Drought may limit the availability of water.	3		0
	Will the alternative be expandable to meet the growing needs of the service area?	Yes	3	Yes	3	Yes	3	Yes	3		0
<b>Resilience-Feasibility Score</b>			<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>0.0</b>
Institutional Requirements	Identify any agreements or other legal instruments with governmental entities, private institutions or other PWSU required to implement the alternative.	None	3	An agreement with Tazewell PSA will be required.	3	None	3	None	3		0
	Are any development/planning restrictions in place that can act as a barrier to the implementation of the alternative.	No	3	No	3	No	3	No	3		0
	Identify potential land acquisitions and easements requirements.	Easements (permanent and temporary) may be required for the construction of the intake line.	3	Completed	3	Property acquisition would be required for the tank.	3	Property acquisition would be required for the tank.	3		0
<b>Institutional Requirements-Feasibility Score</b>			<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>0.0</b>
<b>Environmental Criteria</b>											
Environmental Impacts	Identify any environmentally protected areas or habitats that might be impacted by the alternative.	None are known.	3	None are known.	3	None are known.	3	None are known.	3		0
<b>Environmental Impacts-Feasibility Score</b>			<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>0.0</b>
Aesthetic Impacts	Identify any visual or noise issues caused by the alternative that may affect local land uses?	Fencing and a control panel for the pump station would be constructed, and construction would cause temporary noise issues.	2	Completed	3	Construction would cause temporary noise issues, and some visual impact would be made by the tank.	2	Construction would cause temporary noise issues, and some visual impact would be made by the tank.	2		0
	Identify any mitigation measures that will be required to address aesthetic impacts?	The construction would need to be as quick as possible.	2	Completed	3	The construction would need to be as quick as possible.	2	The construction would need to be as quick as possible.	2		0
<b>Aesthetic Impacts-Feasibility Score</b>			<b>2.0</b>		<b>3.0</b>		<b>2.0</b>		<b>2.0</b>		<b>0.0</b>
Stakeholder Issues	Identify the potential stakeholders affected by the alternative.	Water customers and land owners.	2	Completed	3	Water customers and land owners.	2	Water customers and land owners.	2		0
	Identify the potential issues with stakeholders for and against the alternative.	A rate increase may be required to implement construction, and possible land ownership issues may arise.	2	Completed	3	A rate increase may be required to implement construction, and possible land ownership issues may arise.	2	A rate increase may be required to implement construction, and possible land ownership issues may arise.	2		0
	Will stakeholder concerns represent a significant barrier to implementation (or assistance) of the alternative?	No	3	No	3	No	2	No	2		0
<b>Stakeholder Issues-Feasibility Score</b>			<b>2.3</b>		<b>3.0</b>		<b>2.0</b>		<b>2.0</b>		<b>0.0</b>
<b>Comments</b>		Backup Intake on Pinnacle Rock Lake		Interconnection with Tazewell PSA		The Town of Pocahontas does not minimum requirements.		The Town of Pocahontas does not minimum requirements.		OR No comment	

## Matrix Explanation

The alternative analysis matrix evaluates the utility's ability to implement each of the additional sources outlined. Alternative sources are evaluated for economic, technical and environmental feasibility. The matrix uses a 0-3 rating system, with 3 being very feasible and 0 being not feasible. Each category has sub questions to develop an average for the alternative. Once all areas are evaluated, a final feasibility score is given for each of the alternatives for use in determining which option will best suit the utility needs.

Economic factors evaluated in the matrix include all information needed to fund the alternative source. The matrix considers the current utility budget available per the latest (2014) annual report, operation and maintenance costs for each alternative, and the capital needed to construct each alternative. Supporting documentation is included in Appendix D of the report which provides a breakdown of costs for each alternative that are used as capital costs in the matrix. The economic feasibility of each alternative is compared on a cost per gallon ratio. This ratio is determined by dividing the capital cost of the improvements by the total number of gallons of water produced per year. An average of the economic feasibility factors is then calculated and entered into the overall feasibility matrix found in Appendix B.

Technical criteria evaluated include permitting, flexibility, institutional and resilience factors. Permitting costs are included in all supporting documentation for each alternative source. The permitting factors included the permits that would be needed to construct the alternative source for the utility. An additional environmental factor is the feasibility of obtaining each permit. Permits were rated from 3 to 0 based on the difficulty of obtaining the permits for the project. Depending on the project area, some permits may be very difficult and costly to obtain. Flexibility factors evaluate the ability of the alternative to be used as a permanent source of water or if it can only be used on a temporary basis. The intake and interconnections can be used as both temporary and permanent sources. The alternatives' ability to help the utility during seasonal or population increases is also evaluated in the resilience factors. The alternatives that can produce additional water were rated as 3, or very feasible. Additional criteria evaluated are easements and right of ways that will need to be acquired to construct the alternative source. For interconnections and intakes right of way would be needed to lay the new waterline. The feasibility of attaining the right of way was evaluated. All technical criteria was averaged and also entered into the feasibility summary in Appendix B.

Environmental aspects for each alternative include impacts, aesthetics and stakeholders. Environmental impacts included any areas in the proposed alternative source area that are protected. Areas that are protected would have a low feasibility because the impacts could be large if the project were constructed. Aesthetics factors were noise, visual impacts and mitigation measures that could affect the projects feasibility. The aesthetic factors relate to the stakeholders factors. The stakeholders' portion of the environmental criteria involves the community and their acceptance of the new source alternative and the structures that will be constructed.

## **APPENDIX D – SUPPORTING DOCUMENTATION**

GPM of Existing Pump **750 GPM**

Intake Pricing Parameters	Cost per GPM
If the GPM needed is Greater than or Equal to 1,000 GPM (12" Pipe)	\$ 1,500.00
If the GPM needed is between 700 GPM to 999 GPM (8" Pipe)	\$ 1,750.00
If the GPM needed is less than 700 GPM (6" Pipe)	\$ 2,000.00
<b>Intake pricing includes acreage, pumps, screens, concrete, raw water well, electricity, etc.</b>	<b>\$ 1,312,500.00</b>

Additional Environmental Costs		
Mussel Survey	No	\$ -
Permits	Yes	\$ 7,500.00
		<b>\$ 7,500.00</b>

Piping Size	Cost per Foot	Footage	Totals
6" Pipe	\$ 34.00		\$ -
8" Pipe	\$ 37.00	7,920	\$ 293,040.00
12" Pipe	\$ 60.00		\$ -
			<b>\$ 293,040.00</b>

Totals	
Intake	\$ 1,312,500.00
Permitting	\$ 7,500.00
Piping	\$ 293,040.00
Additional Fees	\$ 403,260.00
<b>Total Cost</b>	<b>\$ 2,016,300.00</b>

Assumptions
Water will be taken from Pinnacle Lake. According to the WV DNR, Pinnacle Lake does not require a survey to be completed during permitting. Permits required would include WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain.
The piping route is included in the following page of supporting documentation.
Additional fees are predicted to be 25% of overall cost. The fees include legal, engineering and accounting needs.

Secondary Intake



<b>TREATED WATER TANK COST</b>				
<b>Gallons</b>	<b>Tank Dimension</b>	<b>Model Number</b>	<b>Cost</b>	<b>Cost Per Gallon</b>
105,000	25.17'dia. x 28.43' sidewall height	AQUASTORE tank Model 25 28 - SSWT	\$ 155,000	\$ 1.48
209,000	30.77'dia. x 37.59' sidewall height	AQUASTORE tank Model 31 38 - SSWT	\$ 225,000	\$ 1.08
297,000	39.16'dia. x 33.01' sidewall height	AQUASTORE tank Model 39 33 - SSWT	\$ 285,000	\$ 0.96
438,000	47.55'dia. x 33.01' sidewall height	AQUASTORE tank Model 48 33 - SSWT	\$ 345,000	\$ 0.79
491,000	50.35'dia. x 33.01' sidewall height	AQUASTORE tank Model 50 33 - SSWT	\$ 365,000	\$ 0.74
607,000	55.95'dia. x 33.01' sidewall height	AQUASTORE tank Model 56 33 - SSWT	\$ 425,000	\$ 0.70
691,000	64.34'dia. x 28.43' sidewall height	AQUASTORE tank Model 64 28 - SSWT	\$ 470,000	\$ 0.68
816,000	69.93'dia. x 28.43' sidewall height	AQUASTORE tank Model 70 28 - SSWT	\$ 510,000	\$ 0.63
948,000	69.93'dia. x 33.01' sidewall height	AQUASTORE tank Model 70 33 - SSWT	\$ 555,000	\$ 0.59
1,025,000	72.73'dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$ 595,000	\$ 0.58
1,260,000	72.73'dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$ 695,000	\$ 0.55
1,453,000	97.91'dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$ 790,000	\$ 0.54
1,601,000	97.91'dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$ 870,000	\$ 0.54
1,789,000	103.5'dia. x 28.43' sidewall height	AQUASTORE tank Model 104 28- SSWT	\$ 945,000	\$ 0.53
2,026,000	120.29'dia. x 23.84' sidewall height	AQUASTORE tank Model 120 24- SSWT	\$ 1,052,000	\$ 0.52

<b>COSTS OF ADDITIONAL ITEMS AND ASSUMPTIONS</b>	
<b>Access Road and Site Preparation</b>	\$ 75,000
<b>Yard Piping and Vault</b>	13%
<b>Bonds/Permits</b>	\$ 20,000
<b>Fencings</b>	\$ 35,000
<b>Engineering/Accounting/Legal Fees</b>	25%
<b>Level-Sensing and Measuring Equipment</b>	\$ 10,000
<b>Rock Excavation of Foundation (if encountered)</b>	5%
<b>ASSUMPTIONS:</b> Cost are based on a standpipe glass lined tank. Price include access roads and site preparation (assuming land would need to be purchased for the tank site), telemetry, excavation in rock (% of Tank Cost), valve vault and piping (13% of tank Cost), fencing (Lump Sum). Does not include additional waterline from site to water system. Fees for engineering, legal and accounting services will be 25 percent of the overall project cost.	

<b>TOTAL COST (INCLUDING ADDITIONAL ITEMS) OF TREATED WATER STORAGE</b>				
<b>Gallons</b>	<b>Tank Dimension</b>	<b>Model Number</b>	<b>Cost</b>	<b>Cost Per Gallon</b>
105,000	25.17'dia. x 28.43' sidewall height	AQUASTORE tank Model 25 28 - SSWT	\$ 403,625	\$ 3.84
209,000	30.77'dia. x 37.59' sidewall height	AQUASTORE tank Model 31 38 - SSWT	\$ 506,875	\$ 2.43
297,000	39.16'dia. x 33.01' sidewall height	AQUASTORE tank Model 39 33 - SSWT	\$ 595,375	\$ 2.00
438,000	47.55'dia. x 33.01' sidewall height	AQUASTORE tank Model 48 33 - SSWT	\$ 683,875	\$ 1.56
491,000	50.35'dia. x 33.01' sidewall height	AQUASTORE tank Model 50 33 - SSWT	\$ 713,375	\$ 1.45
607,000	55.95'dia. x 33.01' sidewall height	AQUASTORE tank Model 56 33 - SSWT	\$ 801,875	\$ 1.32
691,000	64.34'dia. x 28.43' sidewall height	AQUASTORE tank Model 64 28 - SSWT	\$ 868,250	\$ 1.26
816,000	69.93'dia. x 28.43' sidewall height	AQUASTORE tank Model 70 28 - SSWT	\$ 927,250	\$ 1.14
948,000	69.93'dia. x 33.01' sidewall height	AQUASTORE tank Model 70 33 - SSWT	\$ 993,625	\$ 1.05
1,025,000	72.73'dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$ 1,052,625	\$ 1.03
1,260,000	72.73'dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$ 1,200,125	\$ 0.95
1,453,000	97.91'dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$ 1,340,250	\$ 0.92
1,601,000	97.91'dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$ 1,458,250	\$ 0.91
1,789,000	103.5'dia. x 28.43' sidewall height	AQUASTORE tank Model 104 28- SSWT	\$ 1,568,875	\$ 0.88
2,026,000	120.29'dia. x 23.84' sidewall height	AQUASTORE tank Model 120 24- SSWT	\$ 1,726,700	\$ 0.85

<b>RAW WATER TANK COST</b>				
<b>Gallons</b>	<b>Tank Dimension</b>	<b>Model Number</b>	<b>Cost</b>	<b>Cost Per Gallon</b>
105,000	25.17'dia. x 28.43' sidewall height	AQUASTORE tank Model 25 28 - SSWT	\$ 155,000	\$ 1.48
209,000	30.77'dia. x 37.59' sidewall height	AQUASTORE tank Model 31 38 - SSWT	\$ 225,000	\$ 1.08
297,000	39.16'dia. x 33.01' sidewall height	AQUASTORE tank Model 39 33 - SSWT	\$ 285,000	\$ 0.96
438,000	47.55'dia. x 33.01' sidewall height	AQUASTORE tank Model 48 33 - SSWT	\$ 345,000	\$ 0.79
491,000	50.35'dia. x 33.01' sidewall height	AQUASTORE tank Model 50 33 - SSWT	\$ 365,000	\$ 0.74
607,000	55.95'dia. x 33.01' sidewall height	AQUASTORE tank Model 56 33 - SSWT	\$ 425,000	\$ 0.70
691,000	64.34'dia. x 28.43' sidewall height	AQUASTORE tank Model 64 28 - SSWT	\$ 470,000	\$ 0.68
816,000	69.93'dia. x 28.43' sidewall height	AQUASTORE tank Model 70 28 - SSWT	\$ 510,000	\$ 0.63
948,000	69.93'dia. x 33.01' sidewall height	AQUASTORE tank Model 70 33 - SSWT	\$ 555,000	\$ 0.59
1,025,000	72.73'dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$ 595,000	\$ 0.58
1,260,000	72.73'dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$ 695,000	\$ 0.55
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1,601,000	97.91'dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$ 870,000	\$ 0.54
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2,026,000	120.29'dia. x 23.84' sidewall height	AQUASTORE tank Model 120 24- SSWT	\$ 1,052,000	\$ 0.52

<b>COSTS OF ADDITIONAL ITEMS AND ASSUMPTIONS</b>	
<b>Access Road and Site Preparation</b>	\$ 75,000
<b>Yard Piping and Vault</b>	13%
<b>Bonds/Permits</b>	\$ 20,000
<b>Fencings</b>	\$ 35,000
<b>Engineering/Accounting/Legal Fees</b>	25%
<b>Level-Sensing and Measuring Equipment</b>	\$ 10,000
<b>Rock Excavation of Foundation (if encountered)</b>	5%
<b>ASSUMPTIONS:</b> Cost are based on a standpipe glass lined tank. Price include access roads and site preparation (assuming land would need to be purchased for the tank site), telemetry, excavation in rock (% of Tank Cost), valve vault and piping (13% of tank Cost), fencing (Lump Sum). Does not include additional waterline from site to water system. Fees for engineering, legal and accounting services will be 25 percent of the overall project cost.	

<b>TOTAL COST (INCLUDING ADDITIONAL ITEMS) OF RAW WATER STORAGE</b>				
<b>Gallons</b>	<b>Tank Dimension</b>	<b>Model Number</b>	<b>Cost</b>	<b>Cost Per Gallon</b>
105,000	25.17'dia. x 28.43' sidewall height	AQUASTORE tank Model 25 28 - SSWT	\$ 403,625	\$ 3.84
209,000	30.77'dia. x 37.59' sidewall height	AQUASTORE tank Model 31 38 - SSWT	\$ 506,875	\$ 2.43
297,000	39.16'dia. x 33.01' sidewall height	AQUASTORE tank Model 39 33 - SSWT	\$ 595,375	\$ 2.00
438,000	47.55'dia. x 33.01' sidewall height	AQUASTORE tank Model 48 33 - SSWT	\$ 683,875	\$ 1.56
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1,260,000	72.73'dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$ 1,200,125	\$ 0.95
1,453,000	97.91'dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$ 1,340,250	\$ 0.92
1,601,000	97.91'dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$ 1,458,250	\$ 0.91
1,789,000	103.5'dia. x 28.43' sidewall height	AQUASTORE tank Model 104 28- SSWT	\$ 1,568,875	\$ 0.88
2,026,000	120.29'dia. x 23.84' sidewall height	AQUASTORE tank Model 120 24- SSWT	\$ 1,726,700	\$ 0.85

## APPENDIX E. SUPPORTING DOCUMENTATION

*Do your part to keep  
contaminants out of our  
children's source water!*



## Contaminants

Cleaning Products

Automotive Products

Fuel Oil

Furniture Strippers

Oil-based Paints

Sewage

Lawn and Garden Products

Sediments

Pharmaceuticals

## Source Water Links

[www.wvdhhr.org/oehs/eed/swap/](http://www.wvdhhr.org/oehs/eed/swap/)  
[www.epa.gov/safewater/index.html](http://www.epa.gov/safewater/index.html)  
[www.epa.gov/watersense/](http://www.epa.gov/watersense/)  
<http://orsanco.org>

## For Kids

[www.epa.gov/safewater/kids/index.html](http://www.epa.gov/safewater/kids/index.html)  
[www.epa.gov/watersense/kids/index.html](http://www.epa.gov/watersense/kids/index.html)  
[www.groundwater.org/kids/](http://www.groundwater.org/kids/)



## Contacts

WV Department of Health and Human Resources  
Source Water Assessment and Protection Program  
350 Capitol Street, Room 313  
Charleston, WV 25301-3713  
phone: (304) 558-2981  
fax: (304) 558-4322  
e-mail: [EEDSourceWaterProtection@wv.gov](mailto:EEDSourceWaterProtection@wv.gov)

*Do Your Part  
Protect Your  
Source Water  
Protect Your  
Health*



Prepared by Tetra Tech  
In cooperation with the WVDHHR Source Water  
Assessment and Protection Program

*Drinking water is essential for life. Learn what you can do to protect your drinking water sources.*

*Making choices to protect and conserve the source of your drinking water will help keep you, your family, and neighbors safe and healthy now and in the future.*

### Do Your Part to Protect Source Water

- ✓ Recycle used oil and other automotive products at a service center. Don't pour them on the ground or down storm drains. Storm drains can lead directly to your source water.
- ✓ Fix leaks from your automobile and clean up spills.
- ✓ Apply fertilizers and pesticides as directed. Consider natural alternatives to chemicals.
- ✓ Don't flush pharmaceuticals. Dispose by mixing with coffee grounds or kitty litter, sealing in a container, and placing in the trash. Organize a collection day with a pharmacy and local police department.
- ✓ Take unwanted household chemical waste, such as cleaners, oils, and paints to proper waste collection sites. Don't dump down your sink, toilet, or storm drains. Consider organizing a collection day in your community.
- ✓ Check for leaks at heating fuel tanks and install pads to catch accidental leaks or spills.
- ✓ Report unused water wells to your utility or WVDHHR.
- ✓ Inspect your septic system regularly and pump every 5-10 years.



### Do Your Part to Conserve Source Water

- ✓ Turn off the water when you brush your teeth and take shorter showers.
- ✓ Wash full loads of clothes and dishes.
- ✓ Don't use your toilet to flush trash.
- ✓ Fix leaking faucets, toilets, and lines. Consider installing toilets, faucets, and appliances designed to save water.
- ✓ Water your lawn and garden in the morning. Consider installing a rain barrel at your downspouts to collect rain to water your lawn and garden, instead of using treated water.
- ✓ Use native plants in landscape that don't need extra watering. Use mulch to hold moisture.
- ✓ Don't let your garden hose run when washing your car.
- ✓ Don't panic if you are asked to conserve during a drought. Your utility will respond to water shortages based on your normal water use. Running extra water in your home during a drought will make it more difficult to respond to the water shortage.



*Conserving water saves on your monthly bill now. Protecting your source water will save on treatment costs later.*