Source Water Protection Plan

West Virginia American Water
Weston Water System

PWSID WV3302104
Lewis County

WVBPH Submittal
Public Version

June 2016

WEST VIRGINIA
AMERICAN WATER

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ACRONYMS

AST	Aboveground Storage Tank
DWMAPS	Drinking Water Mapping Application to Protect Source Waters
ERP	Emergency Response Plan
GAC	Granular Activated Carbon
GC/MS	Gas Chromatograph / Mass Spectrometer
GIS	Geographic Information System
GPD	Gallons Per Day
LEPC	Local Emergency Planning Committee
MG	Million Gallons
MGD	Million Gallons Per Day
NIMS	National Incident Management System
NPDES	National Pollutant Discharge Elimination System
NRW	Non-Revenue Water
ORSANCO	Ohio River Sanitation Commission
PSC	West Virginia Public Service Commission
PSSC	Potential Source of Significant Contamination
RCRA	Resource Conservation and Recovery Act
SDS	Safety Data Sheet
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System
SWAP	Source Water Assessment Program
SWPP	Source Water Protection Plan
TIERS	Tiered Incident / Event Reporting System
UFW	Unaccounted for Water
USEPA	United States Environmental Protection Agency
WSDA	Watershed Delineation Area
WTP	Water Treatment Plant
WVAW	West Virginia American Water
WVBPH	West Virginia Bureau for Public Health
WVDEP	West Virginia Department of Environmental Protection
WVDHHR	West Virginia Department of Health and Human Resources
WVDHSEM	Division of Homeland Security and Emergency Management
WVWARN	West Virginia Water/Wastewater Agency Response Network
ZCC	Zone of Critical Concern
ZPC	Zone of Peripheral Concern

1.0 INTRODUCTION

Source water protection is an important component of a multi-faceted approach – along with effective treatment, distribution, and monitoring – to provide high quality drinking water for the public. This Source Water Protection Plan (SWPP) has been developed in accordance with applicable regulations as part of an overall program to continue to provide reliable, quality drinking water for our customers. The program involves identifying potential risks that could affect the drinking water supply and seeking to manage those risks, when possible, to maintain supply quantity and quality.

Certain components of the plan cannot be shared publicly or are protected from public disclosure for safety and security purposes. These components are not included in the public SWPP; they will be submitted to West Virginia Bureau for Public Health (WVBPH) separately.

This public version of the SWPP includes program goals and objectives (Section 2.0), the regulatory framework (Section 3.0), specific plan components (Section 4.0), plan implementation and updates (Section 5.0), and stakeholder engagement activities (Section 6.0). The tables, figures, and appendices referenced throughout the plan text are included in later sections of the document.

2.0 PROGRAM GOALS

West Virginia American Water (WVAW) has established a mission and goals for source water protection that align with our Company vision of *clean water for life* and our commitment to our customers and the communities we serve.

Mission: We are dedicated to providing reliable, quality drinking water for our customers. We value source water protection as an important part of this process and are committed to be the industry leader in working with regulators and the community on efforts to sustain drinking water sources.

Goals: Our source water protection program goals are public protection, community leadership, resource stewardship, and operational efficiency. Each includes a series of objectives shown below.

PUBLIC PROTECTION

Identify and understand risks to source water
Monitor for potential contaminant impacts
Prepare for and respond to events

COMMUNITY LEADERSHIP

Promote public awareness and education
Engage stakeholders in source water protection
Collaborate to share ideas and practices

RESOURCE STEWARDSHIP

Promote sustainable use & quality of drinking water
Maintain excellent regulatory compliance record
Support environmental programs and activities

OPERATIONAL EFFICIENCY

Develop and implement cost-effective solutions
Manage operational risks related to water supply
Optimize treatment based on source conditions

3.0 REGULATORY FRAMEWORK

The Safe Drinking Water Act (SDWA) is the federal law passed in 1974 to protect public health by regulating public drinking water supplies. The original SDWA focused primarily on treatment to provide safe drinking water at the tap. The law was amended in 1986 and 1996 to include actions to protect drinking water at its sources. The amendments encourage states to establish a Source Water Assessment Program (SWAP) to delineate protection areas for each public water system, inventory potential contaminant sources, and establish susceptibility ratings.

In 1999, the WVBPH published the West Virginia Source Water Assessment and Protection Program, which was endorsed by the United States Environmental Protection Agency (USEPA). Over the next few years, WVBPH staff and contractors completed an assessment for all public water systems in West Virginia. The assessment for the Weston Water System was completed in April 2003 and is available upon request from the West Virginia Department of Health and Human Resources (WVDHHR).

In 2014, the West Virginia Legislature passed Senate Bill 373, which amended §16-1-9 of the West Virginia Code with specific requirements for public water utilities that draw water from a surface water source or a surface water influenced groundwater source.

The amended law requires public water utilities to complete a SWPP that includes specific components by July 1, 2016, and update the plan at least every three years or when there is a substantial change in the potential sources of significant contamination within the identified zone of critical concern. WVBPH has 180 days from receiving a SWPP to approve, reject or modify the plan and must consult with the local public health officer and conduct at least one public hearing when reviewing the plan.

Senate Bill 373 also included a preliminary Aboveground Storage Tank (AST) Act, which was later repealed and amended with the passage of Senate Bill 423 in March 2015. The revised version amended and reenacted §22-30 of the West Virginia Code with requirements for owners and operators of ASTs to register tanks and meet certain design and operation standards.

In the context of source water protection, AST owners and operators are required under §22-30-10 to provide notice ***directly*** to the public water system and to emergency response organizations of the type and quantity of fluid stored in regulated ASTs and the location of the safety data sheets (SDS) associated with the fluids in storage.

West Virginia Code §16-1-9c requires public water utilities to maintain information about the location, characteristics and approximate quantities of potential sources of significant contamination in a confidential manner. Senate Bill 625, which was passed on March 11, 2016 and became effective 90 days later, amends §16-1-9c to clarify that public disclosure of certain information regarding potential sources of contamination within a zone of critical concern is permitted to the extent it is in the public domain through a federal or state agency.

Table 1 provides the definitions of regulatory terms used throughout this SWPP.

4.0 PLAN COMPONENTS

The SWPP includes various components required by West Virginia Code §16-1-9c. These are presented by topic within this section.

4.1 System Operational Information

The Weston Water System is a regulated water utility that provides drinking water to the public from a surface water source. Table 2 provides information about the system including the population served, water treatment process, production statistics, storage capacities, and source of supply.

WVAW has reviewed production and storage capacity for the Weston Water System to evaluate the ability to provide drinking water and protect public health. The ability to utilize available storage to mitigate the impacts of a contamination event will vary depending on the actual amount of finished water in storage and system demand at the time an event occurs. Detailed analysis for the Weston Water System is included in the complete Alternate Supply Source Feasibility Report submitted to WVBPH.

Water loss is another factor to consider when evaluating operational conditions because it contributes to the total system demand. Unaccounted for Water (UFW) is defined by the Public Service Commission (PSC) as the volume of water introduced into the distribution system minus the total of all metered usage and reasonably estimated non-metered usage. The target UFW rate identified by the PSC is 15%.

Utilities typically account for known water main breaks by estimating the amount of water lost for annual PSC reports. They are therefore not included in the UFW rate.

Table 3 presents water loss calculations for the Weston Water System in 2015, including the total percentage of UFW as defined by the PSC as well as the combined percentage of UFW and water lost from main leaks. A description of measures that WVAW is actively taking to reduce the level of water loss experienced throughout the system is also included in Table 3.

4.2 Source Water Delineation and Characterization

Delineation is the process used to identify and map the area contributing water to the supply intake. Characterization involves describing conditions in the delineated areas that may impact water quantity and/or quality.

The delineation zones for surface water supplies are defined for regulatory purposes as the zone of critical concern (ZCC) and the zone of peripheral concern (ZPC). The watershed delineation area (WSDA) extends beyond these zones for planning purposes. See Table 1 for detailed definitions.

Figure 1 shows delineation zones for the Weston Water System based on map data provided by WVBPH. Table 4 summarizes characteristics of the watershed and delineated zones including size, land use, and description of watershed conditions.

4.3 Potential Sources of Significant Contamination

Potential sources of significant contamination (PSSCs) are facilities or activities that have the potential to release materials that could impact a drinking water supply. PSSCs can be identified by various methods such as regulatory data and local assessments.

WVBPH has provided PSSC data, working in cooperation with the West Virginia Department of Environmental Protection (WVDEP) and the Division of Homeland Security and Emergency Management (WVDHSEM), to public water utilities. WVAW has also identified additional PSSCs based on geographic information system (GIS) data, aerial imagery analysis, windshield surveys and local knowledge.

Some sources of data for this information are available to the public via federal and state databases. The USEPA has developed a tool called Drinking Water Mapping Application to Protect Source Waters (DWMAPS) available at https://www.epa.gov/sourcewaterprotection/dwmaps that allows users to select and view federal regulatory data for a given area on a map. WVDEP has a similar interface called the West Virginia Water Resources Management Plan available at http://tagis.dep.wv.gov/WVWaterPlan/ that shows state data for certain regulatory programs such as oil and gas, mining and discharge permits. This map also shows delineation zones for public water utilities across West Virginia.

Figures 2 and 3 show screen shots of federal (DWMAPS) and state (WVDEP) maps, respectively, for the area around the Weston Water System. Note that these maps are provided directly as shown on the respective websites and may be subject to change at any time.

The complete PSSC lists and maps for the Weston Water System include the location, characteristics and/or approximate quantities of contaminants that are not in the public domain and must therefore be maintained in a confidential manner. This information is included in the submittal to WVBPH but is not provided here to maintain confidentiality, as required by law.

Table 5 summarizes the types of PSSCs identified within the ZCC and ZPC based on the data provided by WVBPH and supplemental data sources. Table 5 also summarizes information about ASTs provided by both WVBPH and WVDEP. This includes the number of registered tanks by zone of concern as well as the number of different substances identified by type. WVDEP manages the AST program and maintains the regulatory data, which is currently restricted due to its sensitive nature and has not been released to the public.

PSSCs have been evaluated and prioritized based on proximity to the intake; size and type of facility or activity; and type of materials that may be present. WVAW referenced various sources of information, including data mentioned above and the assessments provided in WVBPH's Source Water Protection Plan and Supplemental Guides (2016), and sought input from stakeholders as part of this process.

Prioritization is not a formal risk assessment but is instead intended to guide development and implementation of focused management strategies. Identified priorities are PSSCs that warrant further investigation or action; they may not necessarily correlate directly with risk and may evolve over time as additional information becomes available or conditions change.

Table 6 provides an overview of the types of PSSCs identified as priorities for the Weston Water System. The names and locations of specific facilities and/or activities identified as priority PSSCs are considered confidential and are provided separately in the submittal to WVBPH.

4.4 Management Strategies

A management plan has been developed to identify specific activities that WVAW intends to pursue, in cooperation with appropriate agencies and emergency response organizations, to understand and mitigate potential impacts of contamination of the source water supply.

The management plan consists of five key strategies: source management, source water monitoring, contingency planning, outreach and education, and providing input on policies and regulations. These strategies include various activities identified to address priority PSSCs and prepare for emergency situations as well as to communicate with customers, regulators, and partner organizations.

Table 7 lists the management strategies and corresponding activities along with a brief description of cost type, responsibility, and schedule for each activity. The schedule is presented by time periods (e.g., monthly, annual, etc.) rather than specific dates because the action items are expected to be completed on an ongoing basis.

Section 5.0 provides additional information about implementation of the management plan.

4.5 Source Water Monitoring

WVAW has evaluated the technical and economic feasibility of implementing a source water monitoring system and submitted a report on these findings to the Joint Committee on Government and Finance in 2014 (WVAW, 2014).

During a USEPA workshop held in August 2014, federal regulators and water industry experts recommended online, multi-panel source water quality monitoring devices located at the intake as an effective option for detecting the presence of a variety of contaminants (USEPA, 2014).

This type of equipment establishes baseline water quality data and then alerts water plant operators to certain changes in water characteristics. These devices are not intended to identify specific contaminants but can alert water systems of a potential change in water quality, spurring further investigative testing.

WVAW has developed a source water monitoring approach that combines online water quality measurement devices at each of its water treatment plant intakes along with centralized internal analytical capability to test for volatile organic compounds and semi-volatile organic compounds on gas chromatograph / mass spectrometer (GC/MS) devices. The source water monitoring systems provide continuous water quality indicator data and advanced organics analyses to optimize treatment operations and to identify the presence of potential contaminants.

Table 8 provides additional information about our source monitoring capabilities and support network.

4.6 Communications and Contingency

WVAW has developed a communications plan that documents how we will, in cooperation with appropriate emergency response agencies, notify local health agencies and the public of a spill or contamination event. This includes provisions for initial notification to the public within thirty (30) minutes of WVAW becoming aware that the spill, release or potential contamination of the public water system poses a potential threat to public health and safety.

Table 9 presents a summary of communication team roles, methods, and alert levels according to the Tiered Incident / Event Reporting System (TIERS) method. The complete communications plan is included as Appendix B to this plan. Contact details for team members are listed in the Facility Emergency Response Plan.

A contingency plan has also been developed to document the planned response to contamination of the source water supply. It consists of a phased approach that meets State regulatory requirements for public notification and is consistent with National Incident Management System (NIMS) and United States Environmental Protection Agency (USEPA) guidance.

Table 10 provides an overview of the phases of a potential contamination event and typical considerations for investigating and responding to a threat. We take potential threats very seriously and work with a sense of urgency to investigate and address the situation. It is important to note that specific actions will depend on the circumstances and the severity of an event, and will be determined based on conditions as they occur.

The contingency plan summary in Table 10 also includes an evaluation of existing water and power supply capabilities as well as resources for additional support. Certain information is maintained as confidential for security reasons. For example, specific information about intake operations is not detailed here, but will be provided to WVBPH as part of the complete Alternate Source of Supply Feasibility Report.

WVAW's emergency response plan (Emergency Preparedness Manual) for the Weston Water System also includes specific details about emergency capabilities along with contacts for emergency services, coordination, and supplies. WVBPH has indicated that emergency response plans should be kept confidential and should **not** be submitted with SWPPs. A certification form is provided in Appendix C to confirm that WVAW has an emergency response plan in place that includes this information.

4.7 Alternate Sources of Supply

A feasibility report has been completed to evaluate alternate supply options for WVAW systems in accordance with West Virginia Code §16-1-9c. Table 11 presents an overview of options identified for the Weston Water System.

Each identified option was evaluated according to a ranking process that considers the comparative costs, risks and benefits of implementation. Results of this analysis are presented in the feasibility report summary included as Appendix D to this plan.

The total estimated cost to implement the alternatives with the highest benefit and/or benefit-to-cost ratio score for WVAW systems is expected to range from approximately $174M to $203M (million) based on preliminary engineering cost estimates. The corresponding rate increase would be between 15.5% and 18.1% for all WVAW customers. This represents the combined cost of alternatives for each system because WVAW has single tariff pricing that would impact all customers equally.

Ultimately, the feasibility of alternative supply options would be based on WVBPH and PSC approvals of a project sponsored by the company. The company has not made a final determination at this time to seek such approvals.

5.0 PLAN IMPLEMENTATION

SWPP implementation is an important consideration for the overall effectiveness of the source water protection program. This is an ongoing process that includes completion and documentation of action items; identifying and addressing implementation challenges; and periodically evaluating and updating the plan.

5.1 Implementation Progress

WVAW intends to track progress on management activities on a regular basis to document implementation of action items. The documentation will be maintained in a tabular format similar to that shown in the management plan (Table 7) to indicate the specific task, date, personnel involved, and notes for follow up actions.

Documentation will also include a chemical list, as identified in the management plan, which includes available information about PSSC materials. This information is currently linked with the GIS tool so that it can be viewed along with a site report for a given location as well as independently by searching for the name of a substance. The database includes available data from various sources (e.g., regulatory data, Tier II reports, direct communications, etc.) including the material's physical properties, fate and transport, detection methods, treatability, health effects, and toxicity. The location and contact information for reference materials (e.g., SDS, permits, laboratories, sampling protocols, etc.) can be linked to a specific material and/or site for additional information.

Historically, public water utilities were able to attain substantial implementation by addressing at least three of the recommendations listed in the WVBPH Source Water Assessment Report or Source Water Protection Plan, and/or locally defined protective measures approved by the WVDHHR SWAP Program. The Weston Water System did so.

Going forward, WVAW proposes to consider implementation status based on the documented progress on individual tasks for each activity identified in the management plan, once approved, using the following indicators: on track (green), requires additional support (yellow), off track (red), or not applicable (gray).

5.2 Implementation Challenges

Certain challenges and/or limitations exist that may affect SWPP implementation. The following issues were discussed in stakeholder meetings (see Section 6.0). WVAW has identified possible strategies to address these issues throughout the plan development and implementation process.

Issue: It is difficult to share information and obtain feedback about PSSCs with local groups (including emergency responders) and the public due to confidentiality restrictions.

Strategy: Engage emergency responders one-on-one to discuss types of available information and work together to identify gaps. Engage the public by sharing links to federal and state data sources and encouraging them to provide any additional information they have.

Issue: Watersheds and protection zones often cross multiple jurisdictions that may have access to different types of information (e.g., Tier II) and/or use that information differently.

Strategy: Work with each jurisdiction to understand how they access and use information. Identify opportunities for collaboration between jurisdictions and encourage them to coordinate through joint meetings and/or exercises.

Issue: Very few AST owners and operators have provided the information required by West Virginia Code §22-30-10 directly to public water utilities and emergency responders.

Strategy: WVAW notified WVDEP in 2015 that we have not received the required information. Send direct communications to AST owners and operators requesting them to send information about AST contents and safety data sheets as required by law.

Issue: There is no regulatory requirement for owners and operators of PSSCs other than ASTs to communicate directly with public water utilities; this is entirely a voluntary effort.

Strategy: Communicate with owners and operators of PSSCs to educate them about the importance of sharing information regarding their operations and materials with us directly. Notify appropriate regulatory agencies where significant information gaps exist.

Although these represent some of the significant challenges that exist at this time, additional issues may arise as implementation progresses and will be communicated to WVBPH accordingly.

5.3 Plan Evaluation and Updates

In accordance with West Virginia Code §16-1-9c-(f), this SWPP will be updated and submitted to WVBPH at least every three years or when there is a substantial change in the PSSCs within the ZCC. The management plan provided in Table 7 includes annual review of available information regarding PSSCs to identify whether substantial changes have occurred that may warrant a plan update.

WVAW will notify WVBPH and the public when full three-year SWPP updates are underway and provide information for how the public can provide input during the update process.

6.0 STAKEHOLDER ENGAGEMENT

We recognize that stakeholder engagement is an important part of source water protection planning and are committed to informing and engaging the public, local governments, local emergency planners, local health departments and area residents throughout the planning process.

WVBPH guidance includes the concept of a source water protection team, where the role of protection team members is 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 plan. Stakeholders that may be involved in these activities include representatives from local agencies, emergency response organizations, and the public.

WVAW developed a phased outreach approach to engage various groups in this capacity, which included hosting a series of meetings to seek input and recommendations for the plans.

In February 2016, we invited public officials and representatives from state and local health agencies and emergency response organizations (e.g., fire, emergency services, LEPC) to participate in a group meeting for the Weston Water System. Agenda topics included an overview of SWPP concepts and specific discussion of PSSCs and contingency and communication plan coordination.

We then held two public meetings in March 2016 for the Weston Water System to provide an open forum for members of the public to review draft components of the plans, ask questions and provide feedback. The public meetings were advertised for several weeks prior to the event through various methods such as bill inserts, news releases, and social media.

Written comments submitted to WVAW through May 2, 2016 are included as provided in Appendix A, along with a document providing answers to various questions asked at the public meetings. Table 12 provides the timing and description of engagement activities conducted to involve stakeholders in planning efforts.

We encourage those who have further feedback and/or who would like to support implementation activities to submit their comments and contact information to us directly on our website at www.westvirginiaamwater.com under the Water Quality and Stewardship > Source Water Protection > Provide Input Online menu. Comments may also be submitted in writing to West Virginia American Water, Attn: Source Water Protection Manager, 1600 Pennsylvania Ave., Charleston, WV 25302.

7.0 REFERENCES

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Tables

Table 1:
Regulatory Definitions

WEST VIRGINIA AMERICAN WATER

AST	**Aboveground Storage Tank**	***West Virginia Code §22-30-3***

A device made to contain an accumulation of more than 1,320 gallons of fluids that are liquid at standard temperature and pressure, which is constructed primarily of non-earthen materials, including concrete, steel, plastic or fiberglass reinforced plastic, which provide structural support, more than 90% of the capacity of which is above the surface of the ground, and includes all ancillary pipes and dispensing systems up to the first point of isolation. The term includes stationary devices which are permanently affixed, and mobile devices which remain in one location on a continuous basis for 365 or more days.

PSSC	**Potential Source of Significant Contamination**	***West Virginia Code §16-1-2***

A facility or activity that stores, uses or produces substances or compounds with potential for significant contaminating impact if released into the source water of a public water supply.

WSDA	**Watershed Delineation Area**	***WVDHHR Legislative Rule §64-3-14***

The WSDA includes the entire watershed area upstream from a public water utility intake structure, up to the boundary of the state borders, a topographic boundary and is the perimeter of the catchment area that provides water to the water supply intake.

ZCC	**Zone of Critical Concern**	***West Virginia Code §16-1-2, §64-3-14***

A corridor along streams within a watershed that warrants detailed scrutiny due to its proximity to the surface water intake and the intake's susceptibility to potential contaminants within that corridor. The zone of critical concern is determined using a mathematical model that accounts for stream flows, gradient and area topography. The length of the zone of critical concern is based on a 5-hour time of travel of water in the streams to the water intake, plus an additional ¼-mile below the water intake. The width of the zone of critical concern is 1,000 feet measured horizontally from each bank of the principal stream and 500 feet measured horizontally from each bank of the tributaries draining into the principal stream.

Exception: Ohio River ZCC delineations are based on ORSANCO guidance and extend 25 miles above the intake and ¼-mile below the intake, with a lateral extent ¼-mile on both sides of the river (WVBPH).

ZPC	**Zone of Peripheral Concern**	***West Virginia Code §22-30-3***

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 zone of peripheral concern 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 5-hour time of travel of water in the streams beyond the perimeter of the zone of critical concern, which creates a protection zone of 10 hours above the water intake. The width of the zone of peripheral concern is 1,000 feet measured horizontally from each bank of the principal stream and 500 feet measured horizontally from each bank of the tributaries draining into the principal stream.

Table 2:
Water System Information

WEST VIRGINIA AMERICAN WATER

System Name	Weston Water System	**PWSID**	WV3302104
Address	1243 US Highway 19 S, Weston, WV 26452	**County**	Lewis
Service Connections	4,805 residential	**Phone**	304-269-2006
Population Served Directly	11,484 (estimated)	**Type**	Community
Total Population Served	12,758 (estimated)		

Bulk Water Purchasers	**System Name**	**PWSID**	**Population**
	Jane Lew PSD	WV3302103	1,274

Note: The population served directly is calculated based on the number of residential service connections multiplied by the average number of persons per household in the county served (2.39). The total population served includes the populations of bulk water purchaser systems as reported in SDWIS (October 2015).

Water Treatment Process	The Weston Water Treatment Plant has a rated treatment capacity of 2.0 million gallons per day (MGD) and includes the following processes (in order): oxidation, coagulation, flocculation, sedimentation, filtration, chlorination, corrosion control and fluoridation. The plant also has the capability to add powdered activated carbon.

Avg Hours Operation	24 hours (2015)	**Avg Quantity Produced***	1.1 MGD (2015)
Min Hours Operation	21 hours (2015)	**Min Quantity Produced***	0.7 MGD (2015)
Max Hours Operation	24 hours (2015)	**Max Quantity Produced***	1.5 MGD (2015)
Number of Storage Tanks	7	**Raw Water Storage**	0
Treated Water Storage	1.8 million gallons (excluding clearwell)		
Capacity for 5-Yr Demand	The plant has sufficient production capacity to meet demand over the next five years based on population projections, but there is no guarantee of an uninterrupted supply.		

** Refers to the amount of water pumped through the high service pumps*

Intake ID	Intake Name	Intake Description	Water Source	Date Constructed	Frequency of Use	Activity Status
IN001	Weston Intake	Concrete intake structure with screened pipe	West Fork River	1998	Primary	Active

Table 3:
Water Loss Information

Total Water Pumped (gal)		401,353,000
Total Water Purchased (gal)		0
Total Water Pumped and Purchased (gal)		401,353,000
Water Loss Accounted for Except Main Leaks	**Operational Use (gal)**	2,081,000
	Fire Department (gal)	829,000
Total Water Loss Accounted for Except Main Leaks (gal)		2,910,000
Water Lost from Main Leaks (gal)		24,285,000
Total Amount of Water Sold (gal)		316,380,000
Total Unaccounted for Water (gal)		57,778,000
Total % Unaccounted for Water (%)		14.4%
Total Unaccounted for Water + Water Lost from Main Leaks (gal)		82,063,000
Total % Unaccounted for Water + Water Lost from Main Leaks (%)		20.4%

Note: The values provided above for this system were included in the 2015 totals reported to the PSC. The PSC defines unaccounted for water as the volume of water introduced into the distribution system minus the total of all metered usage and reasonably estimated non-metered usage. Unaccounted for water and known water main leaks are reported separately to the PSC in annual reports.

Measures to Reduce Water Loss

West Virginia American Water expends significant effort and resources to identify and correct issues leading to water loss. Our strategy focuses on leak prevention, pressure management, leak detection, metering programs, district metering zones, accounting for un-metered usages, and pipeline management. A standardized action plan and tracking mechanisms have been implemented to evaluate progress across all operational districts in the company. Each district utilizes a non-revenue water (NRW) activity report which tracks progress of practices and non-revenue usages. The following practices are generally implemented and tracked:

- Leak survey – manual and logger
- AMI and automatic leak detection
- Crossings/rights-of-way checked for leakage
- Pressure management for surge control
- Industrial site audits
- Customer large meter testing
- Efforts to reduce unauthorized water use and theft
- Replacement of leaking services
- Replacement of regulatory periodic meter changes
- System delivery meter testing/monitoring
- Retirement of parallel mains and service changeovers

In 2015, we reduced the overall unaccounted for water rate in our systems statewide by approximately 6% to an average of 22%. The target unaccounted for water rate is 15% as identified by the Public Service Commission.

Table 4:
Watershed Delineations

WEST VIRGINIA AMERICAN WATER

Watershed Name (8-digit HUC)	West Fork (5020002)
Number of Source Water Protection Area(s)	1
Method of Delineation for Groundwater Sources	Not applicable; system only has surface water source(s)
Area of Wellhead Protection Area	Not applicable

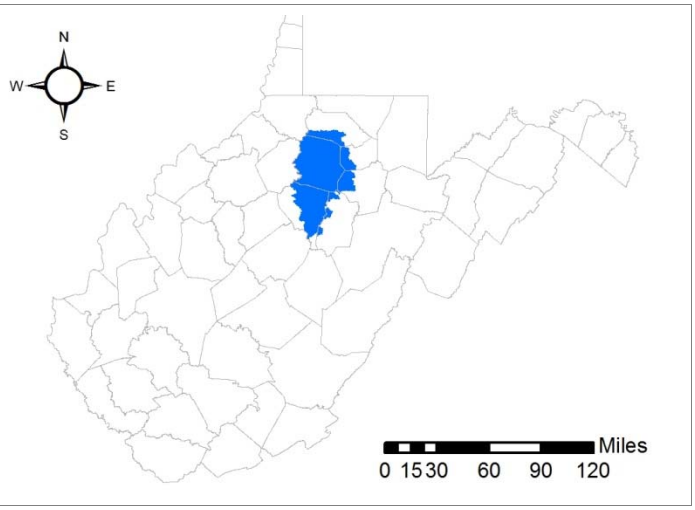
Intake	Size of ZCC	Size of ZPC	Size of WSDA
West Fork Intake	14,126 acres (22.1 sq mi)	27,477 acres (42.9 sq mi)	105 sq mi

ZCC – Zone of Critical Concern; ZPC – Zone of Peripheral Concern; WSDA – Watershed Delineation Area

Watershed Description

The West Fork River Watershed contains all, or portions, of six counties (Barbour, Harrison, Lewis, Marion, Taylor and Upshur). Harrison and Lewis comprise 75% of the total area of the watershed. The watershed has 1,888 miles of streams and rivers and contains the headwaters of the West Fork River. The West Fork River begins from its headwaters in Upshur County and flows north through the city of Clarksburg to its confluence with the Tygart River near the City of Fairmont. The major tributaries include Elk Creek, Simpson Creek and Tenmile Creek.

Excerpt from West Virginia Watersheds: A Closer Look, WVDEP Water Use Section, November 2013



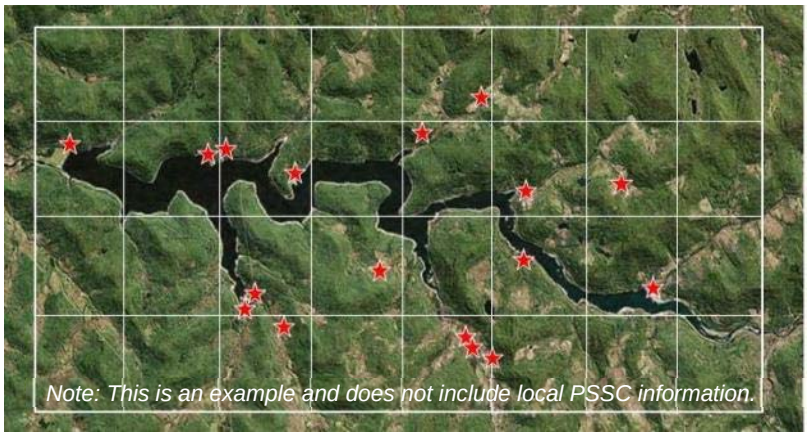
Land Use	ZCC	ZPC	WSDA
Barren Land	0.7%	0.8%	0.6%
Developed Land	11.1%	10.6%	6.3%
Forest / Shrub / Grass	69.0%	68.4%	81.2%
Pasture / Hay / Crops	7.3%	12.2%	8.5%
Wetlands	0.1%	0.1%	0.0%
Water	11.8%	8.0%	3.3%

Note: Land use calculated based on analysis of the latest available National Land Cover Dataset (Homer et al, 2015).

Table 5:
PSSC Inventory

WEST VIRGINIA AMERICAN WATER

State regulations require water utilities to maintain specific details about PSSCs in a confidential manner, including the location, characteristics, and approximate quantities of contaminants within the zone of concern. We have received PSSC information from the West Virginia Bureau for Public Health (WVBPH) and Department of Environmental Protection (WVDEP) and have performed additional work to gather information about PSSCs upstream of the water supply.



Dynamic GIS Tools for Source Assessment

We have partnered with Corona Environmental Consulting and the Water Research Foundation to pioneer a new and innovative method to compile contaminant source information. This consists of a Geographic Information System (GIS) map-based tool that collects information about potential sources of contamination from various data sources and pulls it into a single contaminant information database for a defined area of concern. This information can be updated on a regular basis to include the latest information available and has dynamic search and reporting capabilities.

The following summarizes the types of PSSCs identified in the Zone of Critical Concern (ZCC) and Zone of Peripheral Concern (ZPC) for this water system. Note that this does not necessarily represent the number of individual facilities, as a single location or facility may contain more than one type of PSSC.

Source Water Assessment Program and Regulated Data Provided by WVBPH

PSSC Type	ZCC	ZPC
Abandoned Mine Lands	14	27
Aboveground Storage Tanks	88	151
Oil and Gas Wells	324	574
Other Sites	3	3
Permitted Discharge (NPDES) Sites	53	156
Regulated Waste Handling (RCRA) Sites	4	10
Source Water Assessment Program Sites	18	22

Note: Other sites may include landfills, remediation or reclamation areas, and/or other activities that are regulated but do not fall within one of the main PSSC categories; NPDES – National Pollutant Discharge Elimination System; RCRA – Resource Conservation and Recovery Act.

Table 5:
PSSC Inventory

WEST VIRGINIA AMERICAN WATER

Supplemental Company Data Sources

PSSC Type	ZCC	ZPC
Material Storage	96	134
Other Sites	4	5
Transportation	2	3
Tier II Facilities	2	4

Note: Some supplemental data points may overlap or duplicate regulatory data.

Aboveground Storage Tanks (ASTs)

West Virginia Code §22-30 requires owners and operators of Aboveground Storage Tanks (ASTs) capable of storing more than 1,320 gallons, with certain exclusions, to register tanks and provide information about their contents to public water utilities and the Department of Environmental Protection. The following summarizes information that we have received from WVBPH and/or WVDEP about ASTs registered through December 2015.

Description	ZCC	ZPC
Registered ASTs containing fuels, oils, and/or brine mixtures	89	151
Registered ASTs containing water treatment chemicals	3	0
Registered ASTs containing other substances	3	6
Total number of registered ASTs	**95**	**157**
Number of different substances identified – fuels, oil, brine mixtures	7	8
Number of different substances identified – water treatment chemicals	2	0
Number of different substances identified – other substances	3	6
Total number of substances identified in registered ASTs	**12**	**14**

Table 6:
Priority PSSCs

WEST VIRGINIA AMERICAN WATER

The following summarizes the types of PSSCs identified as priorities based on proximity to the intake; size and type of facility or activity; and type of materials that may be present. Priority PSSCs warrant further investigation or action; they do not necessarily indicate a specific level of risk.

Priority PSSC Type	Description and Considerations *(in alphabetical order)*
Mining Operations	• Includes a mining area with revoked permit and abandoned mine lands • WVDEP manages abandoned mine reclamation program to protect the public and restore lands impacted by mining • Underground mines in some areas may be used for disposal of waste and/or oil and gas development fluids – drainage of disposed materials and/or acidic water could impact source water over time
Municipal Facilities	• Includes state and local facilities with fueling operations and/or storage of potentially hazardous materials • Regulatory permits may include wastewater and/or stormwater discharges (NPDES) • Some municipal facilities may use and store substances such as petroleum hydrocarbons and deicing compounds that could impact source water if a release occurs
Oil & Gas Development	• Extensive oil and gas development throughout area including wells and/or fluid storage and transport • Regulatory permits required for well drilling and operation and/or wastewater discharges (NPDES/UIC) • Oil & gas operations may include multiple locations with storage and transport of substances such as crude oil, brine mixtures, and other fluids that could impact source water if a release occurs
Oil & Gas (Abandoned)	• Abandoned wells flooded by lake may or may not be properly sealed • Regulated under WV Abandoned Well Act which requires plugging of abandoned wells by permit • Materials associated with historical oil and gas operations such as oil, condensate, and brine could impact source water if releases occur through improperly plugged or abandoned wells
Recreation	• Includes marina and associated recreational facilities on Stonewall Jackson Lake • Regulatory permits may include wastewater and/or stormwater discharges (NPDES) for commercial recreation facilities • Spills from recreational activities and/or fuel releases from marinas and boats could potentially impact source water
Transportation	• Includes roads, railroads, pipelines, and boat traffic throughout the area • Various potentially hazardous materials may be transported through the area at any given time • Potential for a spill due to a transportation accident exists and is difficult to predict timing or location

Note: We considered municipal wastewater discharges in prioritizing PSSCs and found that these systems do not generally pose a significant threat because water treatment plants are designed to effectively treat normal municipal wastewater.

Table 7:
Management Plan

The following tables identify specific management activities to pursue, in cooperation with appropriate agencies and emergency response organizations, to mitigate potential impacts of contamination of the source water supply. Action items will be documented and tracked on an ongoing basis.

PSSC Type	Management Activity	Cost Type	Responsibility	Schedule	Comments
Source Management					
Priority PSSCs	Communicate with identified PSSC facilities to understand their operations, materials used, and potential impacts to water system	O&M	Plant Team / SWP Manager	Phased	Prioritized based on proximity to intake, size, and type of materials
	Compile list of chemicals and identify sources of information for detection and treatment as well as information gaps and/or concerns	O&M	Plant Team / SWP Manager	Phased	Potential limitations based on data availability addressed in following action item
	Communicate any significant gaps and/or concerns identified with regulators	O&M	WQ Manager / SWP Manager	As Needed	Subsequent actions, if appropriate, to be identified and coordinated by regulators
Company-Owned ASTs	Continue responsible management of treatment chemicals in internal operations	O&M	Plant Team	Ongoing	
Transportation	Request and review updated information about materials transported through area	O&M	Plant Team / SWP Manager	Annual	
Various	Perform annual review of available info and update priority list as appropriate	O&M	Plant Team / SWP Manager	Annual	

Table 7:
Management Plan

PSSC Type	Management Activity	Cost Type	Responsibility	Schedule	Comments
Source Water Monitoring					
Various	Continue process monitoring to identify changes in treatment characteristics	O&M	Plant Team	Daily	
Various	Continue source water quality indicator monitoring to identify significant changes	O&M	Plant Team	Daily	
Bromide	Continue monthly bromide sampling and evaluate trends over time	O&M	Plant Team	Monthly	
HABs (Algae)	Maintain centralized capability to perform analyses for harmful algal bloom toxins	O&M	WQ Manager / SWP Manager	Ongoing	
Organics	Maintain centralized capability to perform advanced organics analyses	O&M	WQ Manager / SWP Manager	Ongoing	
Various	Partner with existing watershed monitoring networks to understand conditions	O&M	WQ Manager / SWP Manager	Ongoing	
Contingency Planning					
Various	Review and update contact information in emergency response plan	O&M	Plant Team / Management	Annual	
Various	Conduct review and/or training exercise of emergency response procedures	O&M	Plant Team / Management	Annual	
Various	Maintain relationship with local emergency responders and/or LEPC	O&M	Plant Team / Management	Ongoing	

Table 7:
Management Plan

Management Activity	Cost Type	Responsibility	Schedule	Comments
Outreach and Education				
Include information about source water protection program in annual Consumer Confidence Report (CCR)	Included in annual budget	WQ Manager / SWP Manager	Annual	
Develop and distribute educational materials to customers on source water protection practices	O&M	External Affairs / SWP Manager	Ongoing	Print, website, social media
Communicate contact information and good practices with upstream facilities with PSSCs	O&M	External Affairs / SWP Manager	Phased	Prioritized as described under source management
Provide ongoing mechanism for customer input on source water protection program activities	O&M	External Affairs / SWP Manager	Ongoing	
Continue to offer plant tours and/or open house events for local emergency responders, agencies, and the public	O&M	Plant Team / External Affairs	Ongoing	
Coordinate with educators to include source water and watershed management concepts in school curricula	O&M	External Affairs	Ongoing	
Encourage employees to participate in local activities and highlight the importance of clean water	O&M	External Affairs	Ongoing	
Establish source water collaborative to share ideas and practices with other water utilities and industry	O&M	Management Team	Ongoing	
Support watershed organizations through grants, awards and participation in community outreach events	O&M / Grants	Management Team	Ongoing	

Table 7:
Management Plan

Management Activity	Cost Type	Responsibility	Schedule	Comments
Input on Policies / Regulations				
Review and provide feedback on applicable permits and proposed regulations of interest or concern	O&M	WQ Manager / SWP Manager	Ongoing	
Support state and local measures for policies and regulations that balance watershed management with economic growth	O&M	Management Team	Ongoing	
Provide input to the Public Water System Supply Study Commission as appropriate	O&M	Management Team	Ongoing	

Note: Operation and maintenance (O&M) costs to perform these activities are included in customer rates; SWP – Source Water Protection; WQ – Water Quality.

Table 8:
Source Water Monitoring

The following provides information related to the source water monitoring program that is currently implemented at our water treatment facilities.

Source Water Monitoring Program Overview

- Continuous raw water quality monitoring with online, multi-parameter devices
- Availability of advanced organics analyses with gas chromatograph / mass spectrometer (GC/MS)

Online Monitoring Equipment Installed

- Selected based on reliability, location, purchase price, operation and maintenance
- Measures seven (7) parameters: pH, temperature, conductivity, oxidation-reduction potential (ORP), turbidity, dissolved oxygen (DO), and dissolved organic carbon (DOC) via the UV254 method

Online Monitoring Data Management and Analysis

- Data stored locally on data recorder and transmitted real-time to cloud system for backup and analysis
- Partnering with international experts on an advanced event detection system capable of identifying statistical changes in water characteristics from baseline water quality
- Baseline period of 12+ months to understand seasonal variations in water quality parameters

Process to Determine Credibility of Contamination Event

- Review data in context of conditions (e.g., equipment calibration and maintenance, weather, stream flow, etc.)
- Evaluate other information sources for signs of contamination (e.g., spill notifications, complaints, etc.)
- See Contingency Plan for additional details related to investigating and confirming contamination events

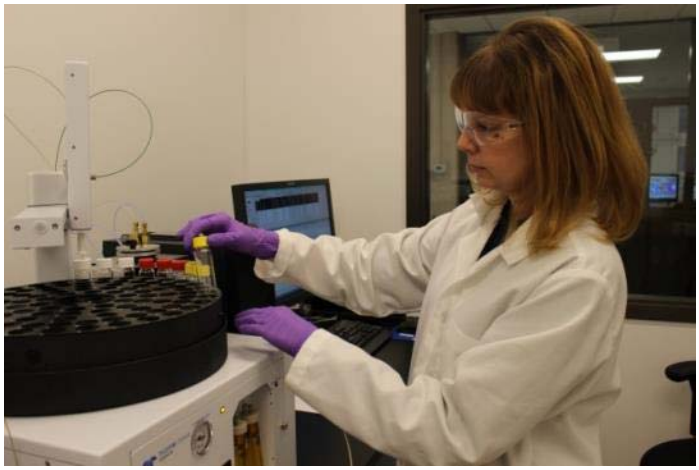
Internal Laboratory Analytical Capabilities

- Two GC/MS units at Kanawha Valley Treatment plant to test for volatile and semi-volatile organic compounds
- GC/MS unit at Huntington Treatment Plant integrated into ORSANCO network for volatile organics analyses

Monitoring System Component	Capital Investment	Est. Annual O&M
Online Monitoring Equipment (per facility)	$34,500	$6,700
Laboratory Equipment (at central location)	$400,000	$116,700

Table 8:
Source Water Monitoring

WEST VIRGINIA AMERICAN WATER



Technician operating GC/MS equipment at the Kanawha Valley Treatment Plant

Standard configuration for online monitoring equipment instrument bench at our facilities

Laboratory Support	• American Water Central Laboratory • REI Consultants (REIC) • Reliance Laboratories • Eurofins Eaton Analytical
Spill Notifications	• Direct contact from agency representatives and/or emergency responders • WVDEP spill notifications (via WVDHHR District Office) • Upstream public water systems
Monitoring / Support Networks	• ORSANCO • WVRAIN • Other West Virginia American Water facilities

Note: Contact information for support resources is maintained in the emergency response plan.

Table 9:
Communications Plan Summary

TIERS - Tiered Incident / Event Reporting System (WVDHHR)		
A	Announcement	Announcement about an incident or event that may pose a threat to the public
B	Boil Water Advisory	System users advised to boil water for drinking or cooking
C	Cannot Drink	System users should not drink or cook with water until further notice
D	Do Not Use	Water should only be used for flushing commodes and fire protection
E	Emergency	Water should not be used for any purpose until further notice

Initial notification will be issued within 30 minutes of determination that a potential threat to public health and safety exists.

Role	Organization	Title
Designated Spokesperson	West Virginia American Water	External Affairs Manager
Supporting Team Member	West Virginia American Water	Area Operations Manager
Supporting Team Member	West Virginia American Water	Community Relations
Regulatory Health Agency	WVDHHR - State	Office of Environmental Health Services Director
Regulatory Health Agency	WVDHHR - District	Supervising Engineer

Note: Additional partner agency contact details are listed in the emergency response plan.

Designated location to disseminate information to media	• Primary: WVAW Corporate Office, Charleston, WV • Alternate: To be determined based on situation
Potential methods of contacting affected customers (based on situation)	• CodeRED emergency notification system (phone, email, text) • Local media (press release, press conference, updates) • County emergency alert system where available • Website and social media (Facebook, Twitter) • Door-to-door/door hangers • Publicly posted notices
Media and other external contacts	• Company email list for media, public officials, emergency response, health department and other key contacts: WVAW – Kanawha Valley Updates – External • The Media Center (satellite news services)
Staff responsible for maintaining confidential contaminant information & releasing to emergency responders	• Primary: Source Water Protection Program Manager Jennifer Heymann, jennifer.heymann@amwater.com • Alternate: Water Quality and Environmental Compliance Manager Billie Suder, billie.suder@amwater.com

Table 10:
Contingency Plan Summary

We have developed a phased approach to respond to contamination of the surface water supply source for each of our water systems that meets the State regulatory requirements for public notification and is consistent with National Incident Management System (NIMS) and United States Environmental Protection Agency (USEPA) guidance.

The following provides an overview of the event response phases and various considerations that may be incorporated into the response. However, specific actions will depend on the circumstances and the severity of the event, and will be determined based on conditions as they occur.

Note: Additional information related to communication during an event is presented in the Communications Plan.

Initial Notification	• Company receives information about a potential contamination threat
Possible Phase	• Conduct initial investigation to evaluate threat and whether it poses a risk to public • Consider plans for operational response and communications • Communicate with appropriate agencies and notify the public within 30 minutes of determination that a threat to public health and safety exists
Credible Phase	• Continue investigation to characterize and confirm threat • Consider operational response • Determine whether threat can be confirmed through sampling or other evidence • Communicate updates to appropriate agencies and the public
Confirmed Phase	• Implement operational actions and support remedial actions to mitigate impacts • Consider resource needs and availability and seek support if appropriate • Determine whether threat continues to pose a risk to the public • Communicate updates to appropriate agencies and the public
Return to Normal	• Threat has been reduced or eliminated; return system to normal operations • Continue to monitor situation and modify course if appropriate • Communicate updates to appropriate agencies and the public

Typical Threat Investigation and Operational Response Considerations	
• Location of incident • Type and quantity of material(s) involved • Potential for the material(s) to move or migrate • Stream flow and weather conditions • Level of potential risk to public health and safety • Verification of threat from other information sources • Sampling and laboratory analysis results	• Current and predicted system conditions (e.g., demand, available storage, flow, etc.) • Contamination isolation or diversion • Treatment chemical or process adjustments • Alternative power and water supply options • Staff availability and scheduling • Resource availability and scheduling

Table 10:
Contingency Plan Summary

The following describes existing capabilities and support arrangements to consider in the case of a contamination event with potential impacts to the water supply. Certain details and contacts are considered confidential for security reasons and are addressed elsewhere, as indicated.

Water Supply

- Intake located on West Fork River
- Total finished water storage capacity is approximately 1.8 million gallons
- Average and maximum daily system demands in 2015 were 1.1 and 1.5 million gallons per day (MGD)
- The ability to utilize storage to mitigate impacts of a contamination event will vary depending on the actual amount of finished water in storage and system demand at the time an event occurs

The following information is provided to summarize intake capabilities. Additional details related to operations are included in the Alternate Source of Supply Feasibility Report.

- Ability to isolate or divert contaminated waters from the surface water intake: None
- Ability to close the intake in response to a contamination event: Typically yes. The amount of time that it can remain closed depends on system conditions.
- Ability to switch to an alternative source: None currently available

Power Supply

- Single power feed from Mon Power
- Standby / mobile generators available to supply power to plant and booster stations
- Maintenance is performed according to manufacturer recommendations by local personnel and approved vendors
- Standby generators are automatically tested on a routine basis

The following information is included in emergency response plans:

- Specific generator capabilities, connections, and on-hand fuel storage
- Local generator and fuel suppliers

Mutual Aid Agreements	• WVWARN • ORSANCO
Additional Support	• American Water Works Service Company and other affiliated companies

Table 11:
Alternative Sources of Supply

The following table provides an overview of alternative supply options specific to this water system. A feasibility report was prepared to evaluate each option based on comparative costs, risks and benefits of implementation. Results of this analysis are included in the summary presented in Appendix D.

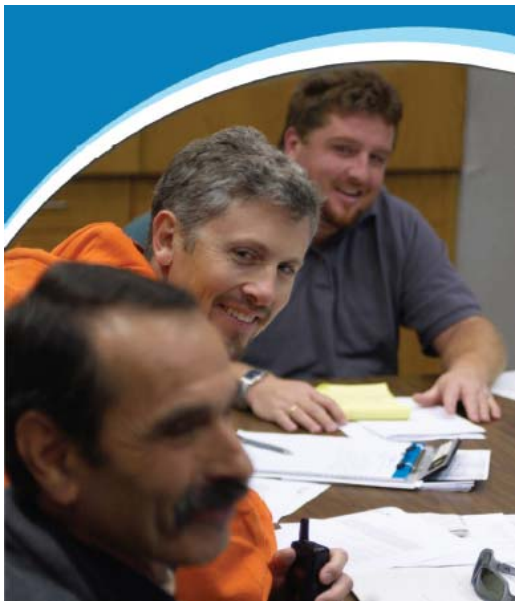
The total estimated cost to implement the alternatives with the highest benefit and/or benefit-to-cost ratio for all West Virginia American Water systems combined ranges from approximately $174 to $203 million (M) based on assumptions identified in preliminary engineering studies. Ultimately, the feasibility of alternative supply options would be based on WVBPH and PSC approvals of a project sponsored by the company. The company has not made a final determination at this time to seek such approvals.

Type	Description	Est. Capital Cost	Considerations
Secondary Intake	Stonecoal Lake	$21.4M	• Assumes suitable water quality for treatment process • Discharges to lake have not been identified • Requires available property for intake and pump station • Requires permitting and approvals • Construction and traffic control required • Unknown recharge of lake and supply reliability
Raw Water Storage	20 MG reservoir – 5-day storage at plant capacity	$25.3M	• Requires available property for reservoir • Requires permitting and approvals for reservoir • Limited supply capacity
Interconnections	City of Buckhannon	$34.5M	• Sufficient water may not be available to meet demand • Capacity and condition of City's water treatment plant and distribution system is unknown
Other (Groundwater)	Deep groundwater wells	$26.9M	• Requires available property for well fields • Variable groundwater quality / yield • Limited information until field research is conducted to evaluate groundwater conditions
	Shallow groundwater wells	$31.4M	

Table 12:
Stakeholder Engagement

WEST VIRGINIA AMERICAN WATER

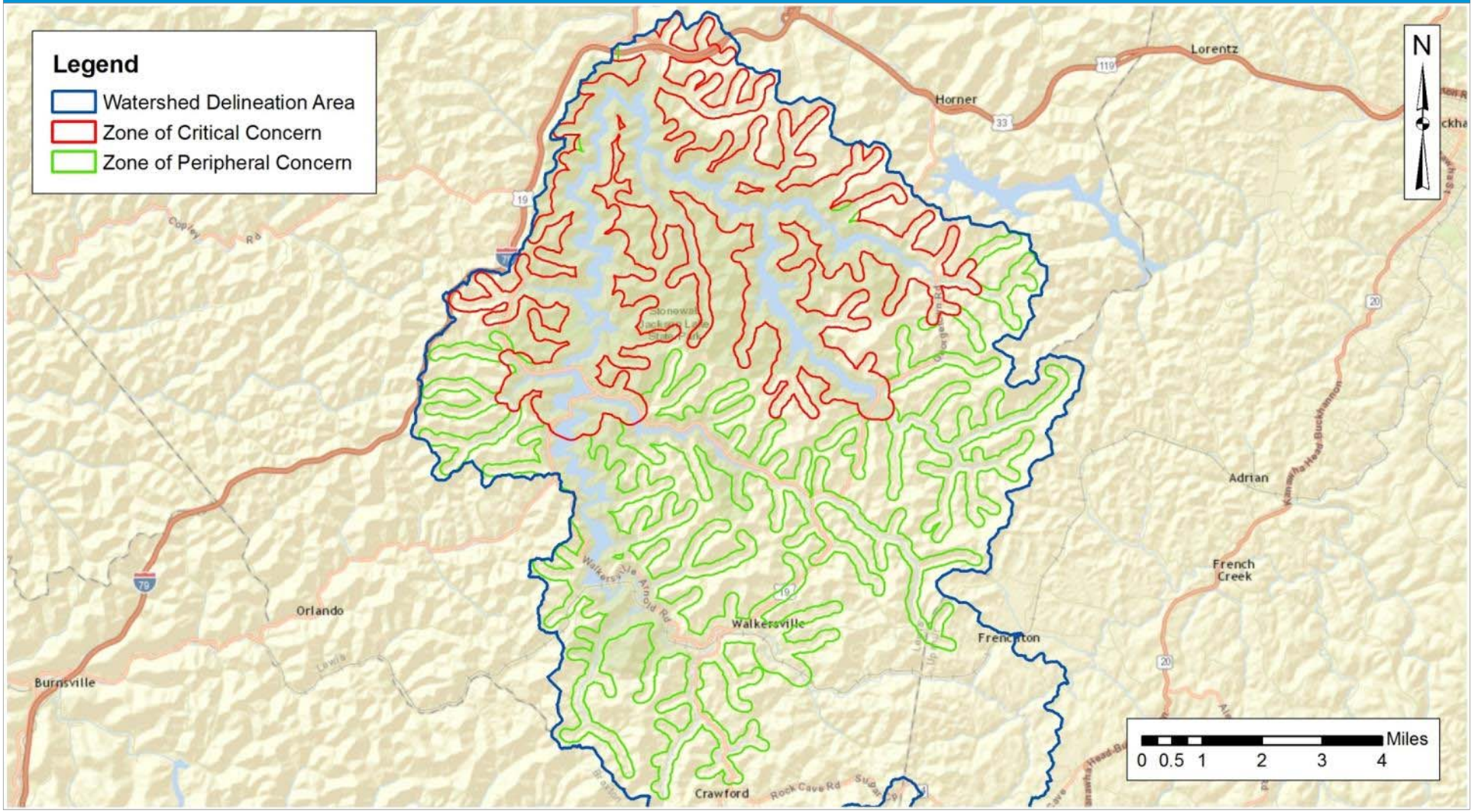
Type	Date	Description of Stakeholder Engagement Activity
Website	November 2015	Added a new section to our website under *Water Quality & Stewardship* > *Source Water Protection* that provides information about the program, community resources, and ways to provide input
Bill Insert	November 2015	Included educational material about *Protecting Our Watersheds* in monthly customer bills with tips for the community on how to protect, restore and improve our watersheds
Bill Insert	February 2016	Included information in monthly customer bills about how to get involved in the planning process and provide input on source water protection both online and in person at public meetings
Stakeholder Meeting	February 2016	Invited local officials, emergency planners, health departments, and other agency / organization representatives for focused discussion, including potential contaminant sources and communications
Public Meetings	March 2016	Hosted facilitated meetings open to the public to provide feedback on draft source water protection plans with a comment period to extend through May 2, 2016
Social Media	Various / Ongoing	Education and outreach related to source water protection activities and opportunities for community involvement posted via West Virginia American Water Facebook and Twitter accounts



Figures

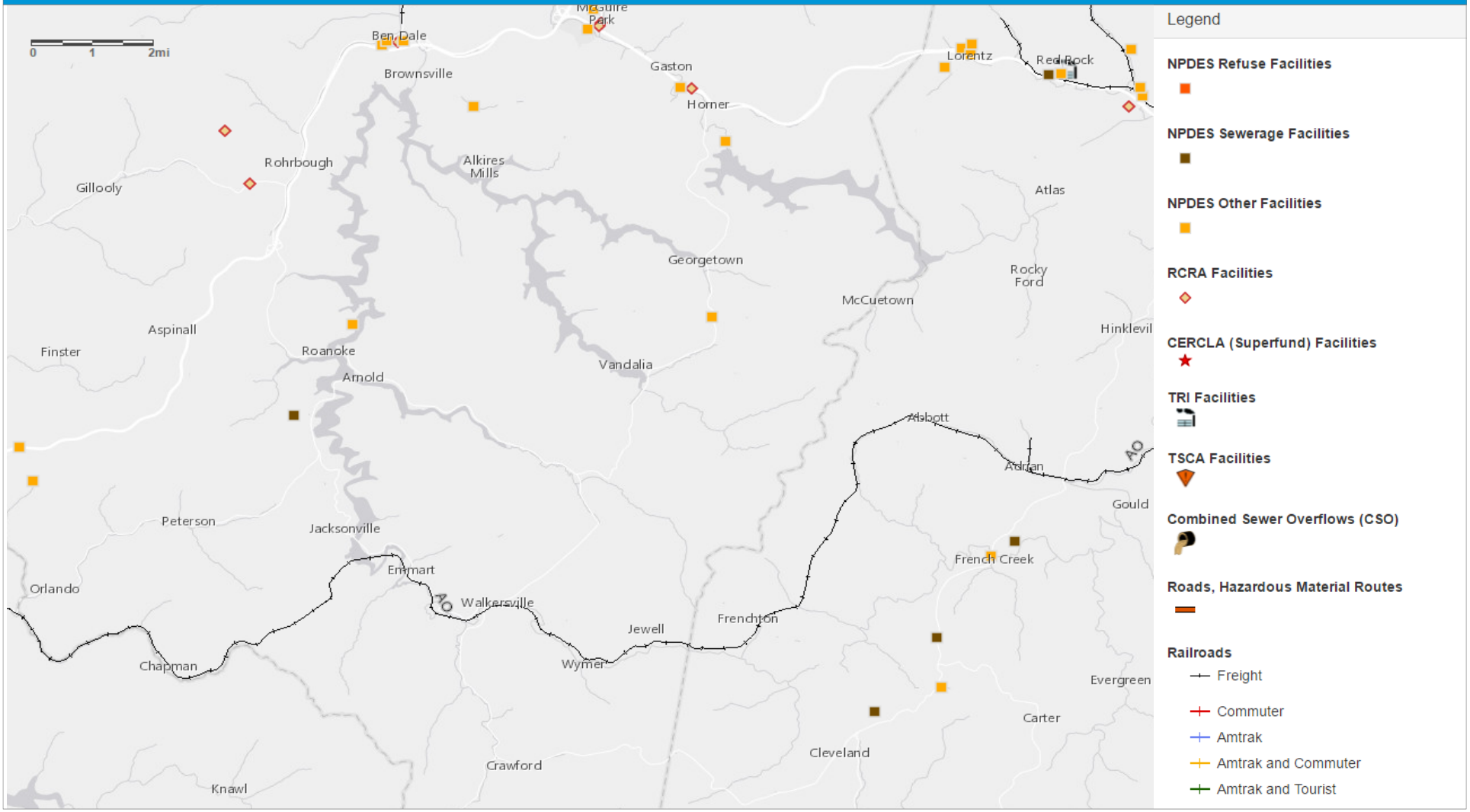
Figure 1:
Mapped Delineation Zones

WEST VIRGINIA
AMERICAN WATER



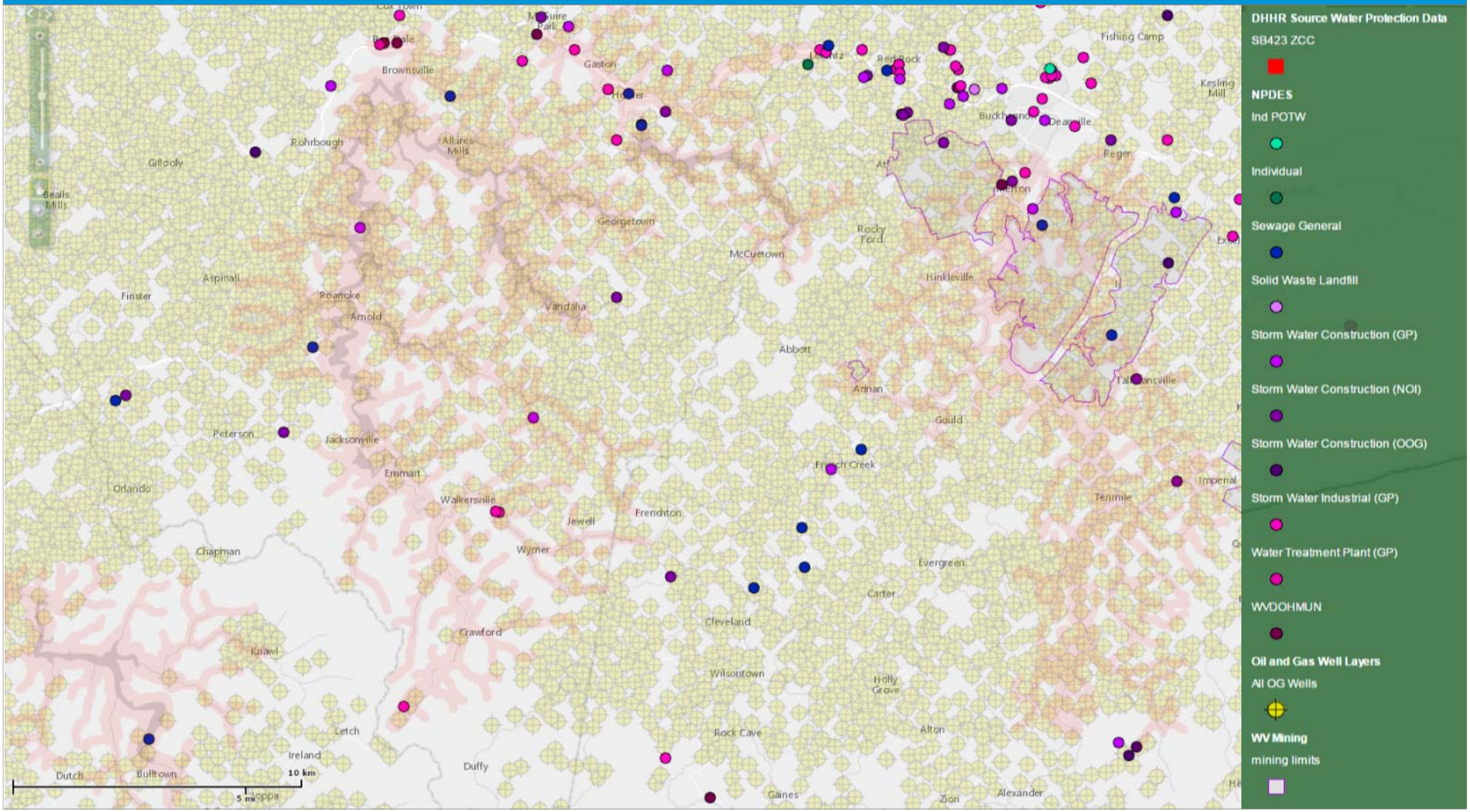
Basemap Source: Esri World Street Map. Delineation zones were provided by WVBPH.

Figure 2:
Federal PSSC Data (DWMAPS)



Source: Screen shot accessed from https://epamap37.epa.gov/dwmaps/ on June 6, 2016.

Figure 3:
State PSSC Data (WVDEP)



Source: Screen shot accessed from http://tagis.dep.wv.gov/WVWaterPlan/ on June 6, 2016. Note: Map also shows ZCCs for other nearby water systems.

Appendices

Appendix A

Public Comments and Q&A

APPENDIX A

No written public comments were received for the draft version of this plan.

The following questions and answers are general in nature and apply to all West Virginia American Water (WVAW) systems.

Question: How do the State of West Virginia requirements under Senate Bill 373 differ from federal requirements under the Safe Drinking Water Act?

Answer: SB373 requires public water ***utilities*** that draw and treat water from a surface water supply source or a surface water influenced groundwater supply source to prepare and submit a source water protection plan (SWPP). SB373 also identifies specific items that must be included in each SWPP. The 1996 amendments to the federal Safe Drinking Water Act established the requirement for each ***state*** to conduct source water assessments to identify significant potential sources of contamination. Source water protection efforts aside from the initial state assessment are considered voluntary and not regulated at the federal level. Links to additional information about the State and Federal requirements are provided in the resource section below.

Question: How is this SWPP different from previous assessments/plans?

Answer: This SWPP was prepared to satisfy the requirements of Senate Bill 373, which amended West Virginia Code §16-1-2 and §16-1-9, effective June 2014. It was prepared by WVAW with input from stakeholders, and includes an assessment of potential sources of contamination as well as operational information, management activities, contingency and communication plans, and feasibility studies required by SB373. Previous assessments/plans were developed by contractors working with the State on programs established in accordance with the federal Safe Drinking Water Act.

Question: How does WVAW intend to keep its SWPPs up to date? How can the public be involved in this process?

Answer: Senate Bill 373 requires plan updates "at least every three years or when there is a substantial change in the potential sources of significant contamination within the identified zone of critical concern." We intend to monitor available data sources for PSSC changes on a routine basis and notify WVBPH if substantial changes occur, indicating a plan update is warranted. We will notify the public when Source Water Protection Plan updates are underway and provide information for how the public can provide input during the update process. In the interim, we encourage those who have input on the plan or information about PSSCs to contact us anytime directly on our website at www.westvirginiaamwater.com under the Water Quality and Stewardship > Source Water Protection > Provide Input Online menu.

Question: Will WVAW make public comments on the SWPPs available online?

Answer: Yes. Comments submitted in writing prior to May 2nd, 2016 will be included in the public version of the associated SWPP, which will be posted online.

Question: What is the WVBPH's role in soliciting public feedback prior to approval of SWPPs?

Answer: Senate Bill 373 requires WVBPH to review SWPPs within 180 days of submittal and "conduct at least one public hearing when reviewing the plan."

Question: What is a source water protection planning team? How can stakeholders get involved?

Answer: WVBPH guidance indicates that the role of a source water protection team is 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." WVAW hosted a series of stakeholder and public meetings to seek input on the plans and will continue to engage stakeholders in implementation on an ongoing basis. We encourage those who have further feedback and/or would like to support implementation activities to submit comments and contact information to us directly on our website at www.westvirginiaamwater.com under the Water Quality and Stewardship > Source Water Protection > Provide Input Online menu.

Question: How is WVAW working with emergency responders to coordinate and share information such as Tier II reports and transportation data?

Answer: We invited emergency response organizations to participate in stakeholder meetings and to share this type of information during plan development. We intend to continue working with them on an ongoing basis by meeting at least annually to discuss specific details related to Tier II reporting, transportation studies, aboveground storage tank data, and other information pertinent to emergency planning and response.

Question: How does WVAW plan to address Senate Bill 625 in the SWPP?

Answer: Senate Bill 625, which was passed on March 11, 2016 and became effective 90 days later, clarifies that "public disclosure of certain information regarding potential sources of significant contamination within a zone of critical concern is permitted to the extent it is in the public domain through a federal or state agency." We reviewed many data sources to evaluate PSSCs, some of which are already publicly available through federal or state databases, and others which are not. We have included maps and links to the publicly available federal and state data in the public version of the SWPP. Links to additional information about SB625 and publicly available databases are provided in the resource section below.

Question: What does WVAW do with information provided by the public about potential sources of significant contamination?

Answer: We consider any information provided to us about PSSCs and evaluate whether the PSSC could pose a potential threat and/or if additional information is needed. We may then add it to the priority list, if appropriate, and take further action to understand and mitigate risk.

Question: Has WVAW considered PSSCs that are outside the zones of concern but may still impact the source water if released?

Answer: Yes. We have identified priority PSSCs beyond the zones of critical and peripheral concern based on distance, size, and type of materials potentially stored or transported.

Question: How does the GIS system that WVAW is using work? Does it include non-point sources?

Answer: The Geographic Information System (GIS) map-based tool we are using collects information about potential sources of contamination from various data sources (e.g., federal, state, local, and private) and pulls it into a single contaminant information database for a defined area. We are able to zoom into an area and select a feature to pull up available information that can be used to evaluate and prioritize PSSCs. These features include various land use types and facilities that could contribute to non-point source pollution.

Question: How will the GIS information be incorporated into the plan? Will the data be made available to the public?

Answer: We have summarized the GIS data in the SWPP and developed a priority PSSC list to follow up on as described in the management plan. The GIS data includes information that is not otherwise publicly available and will therefore not be published. However, we have included maps and links to publicly available federal and state data in the public version of the SWPP. Links to these databases are also provided in the resource section below.

Question: How often will WVDEP's list of aboveground storage tanks (ASTs) be updated?

Answer: At this time, WVDEP has not made AST data available to the public and we do not know how often they will provide updates to water utilities. We intend to request the latest information for the areas that we serve on an annual basis, at least.

Question: How are PSSCs prioritized and addressed in the management plan?

Answer: PSSCs are prioritized based on the distance, size, and/or type of materials that may be present. Facilities that are near the intake with a large quantity of unknown or potentially hazardous materials would typically rank as a higher priority than those further away with materials that may not pose as great a concern. The priorities do not strictly represent a level of risk, but are rather identified for further investigation activities as outlined in the management plan.

Question: How will implementation progress be documented?

Answer: We intend to document SWPP management activities on an ongoing basis as they are conducted. Documentation will be maintained to track overall progress in a tabular format similar to that shown in the management plan with additional columns for the specific activity, date, personnel involved, and notes for follow up actions.

Question: Will the PSSC inventory and priority list be complete by July 1, 2016?

Answer: Yes, the inventory and prioritization of PSSCs is complete and included with the submittal to WVBPH. The public version of the SWPP includes a count of PSSCs within the zones of critical and peripheral concern, a summary of the PSSC types identified as priorities, and maps and links to publicly available databases. Although the inventory is considered complete at the time of this submittal, it is worth noting that conditions are constantly changing. We will continue to evaluate PSSCs and gather additional information, if available, on an ongoing basis.

Question: How does the schedule indicated on the management plan relate to the July 1, 2016 plan submission date? When will the action items be completed?

Answer: The schedule for activities identified in the management plan is established to follow plan approval. However, many of these activities are already underway and will continue throughout the plan review and approval process. The schedule includes periods (e.g., monthly, annual, etc.) as opposed to specific dates because the action items will be completed on an ongoing basis. We intend to conduct the PSSC communication activities with “phased” schedules according to priority, with the highest being first, recognizing that these are activities that depend on others to willingly participate.

Question: How did WVAW select the source water monitoring parameters? Are the existing monitoring systems capable of detecting specific identified potential contaminants?

Answer: Based on recommendations from federal regulators and water industry experts, we selected a panel of parameters that would be capable of identifying changes in water quality characteristics as an indicator of potential source water contamination. The online source water equipment is not intended to identify specific substances but rather to monitor for a broad range of physical characteristics of the different chemical classes identified in West Virginia Code §24-2G-2. WVAW has developed additional internal capability to perform advanced analyses for specific organic compounds.

Question: What are the requirements for the owners or operators of PSSCs to provide notification if a spill occurs?

Answer: In the event of a release, owners or operators are required to contact WVDEP at 1-800-642-3074 no later than twenty-four (24) hours after becoming aware of a spill.

Question: How will WVAW communicate measures it is taking to protect the public in case of potential pollution of its source water?

Answer: We will communicate measures taken during a contamination event that poses a potential risk to the public via methods outlined in the communications plan (e.g., CodeRED, news releases, etc.) and provide progress updates as the situation evolves. A link to additional information about the CodeRED system is provided in the resources section below.

Question: What is the process for the 30-minute determination of risk during a potential contamination event?

Answer: Once WVAW becomes aware that a contamination event poses a potential threat to public health and safety, we will communicate that information with appropriate agencies (e.g., health department, emergency response organizations, public officials, etc.) for a coordinated response. WVAW will provide notification to its customers within 30 minutes of the initial determination via methods outlined in the communications plan (e.g., CodeRED, news releases, etc.). Notifications will include as much available information as possible about the nature of the threat and recommended actions. Information updates will be provided to the public as investigation continues and additional information becomes available.

Question: What is the sense of urgency for determining the credibility of a contamination event?

Answer: We consider the safety of our customers and employees a top priority, so it is important to determine the credibility of a potential contamination event as quickly as possible. The actual amount of time it would take to determine that a credible threat to public health and safety exists varies depending on the situation based on the information available. For example, it may take longer to make a risk determination for a small spill that may or may not have entered the water supply than an accident with multiple witnesses where a known quantity of a specific hazardous material has spilled. Regardless of the scenario, we take potential threats very seriously and recognize that time is of the essence in investigating and addressing them.

Question: What is the difference between water lost from main leaks and unaccounted for water? How are these numbers reported in the SWPP?

Answer: The Public Service Commission defines unaccounted for water as the volume of water pumped to the distribution system minus the total of all metered usage and non-metered usage that can be reasonably accurately estimated. The amount of water lost from main leaks is accounted for as a separate line item on Public Service Commission reports. The SWPP includes both the percentage of unaccounted for water and the combined percentage of unaccounted for water and water lost from main leaks.

Question: What efforts are being made to locate and address water loss? What is WVAW's target unaccounted for water rate?

Answer: We expend significant effort and resources to identify and correct issues leading to water loss. Table 3 of the SWPP provides an overview of strategies and practices that we generally implement and track to reduce water loss in our service areas. The Public Service Commission has identified 15% as a target rate for unaccounted for water.

Question: What actions does WVAW take to address and educate the public about lead in drinking water? Is this considered for alternate sources of supply?

Answer: We sample for lead on a routine basis in accordance with regulatory requirements, and our systems continue to be in compliance. We also provide the appropriate corrosion control to ensure compliance with lead and copper limits established by USEPA and WVBPH. WVAW has posted a fact sheet to educate customers about how to assess and minimize exposure to lead. A link to the fact sheet is provided in the resource section below. Corrosivity and corresponding treatment are important considerations for alternate sources of supply and would be evaluated as part of the regulatory process for selected options.

Question: Why are the costs for alternate sources of supply presented as the total cost of the WVAW systems combined?

Answer: The total cost and rate impact of the alternate sources of supply is presented for the highest ranked options for all WVAW systems combined due to the Company's single tariff rate structure. This means that all WVAW customers pay the same rate for water regardless of their location.

Question: What is the process and timeline for making the final determination of the technical, economic, and environmental feasibility of options for alternate sources of supply?

Answer: We have evaluated the feasibility of alternate sources of supply for each of our water systems and prepared a report that presents the highest ranking options as part of the SWPP submittal for each system. Ultimately, the feasibility of alternative supply options would be based on WVBPH and PSC approvals of a project sponsored by the Company. The Company has not made a final determination at this time to seek such approvals.

Federal and State Laws

Federal Safe Drinking Water Act (SDWA)
https://www.epa.gov/sdwa

WV Senate Bill 373
http://www.legis.state.wv.us/bill_status/bills_history.cfm?INPUT=373&year=2014&sessiontype=RS

WV Senate Bill 423
http://www.legis.state.wv.us/bill_status/bills_history.cfm?INPUT=423&year=2015&sessiontype=RS

WV Senate Bill 625
http://www.legis.state.wv.us/bill_status/bills_history.cfm?INPUT=625&year=2016&sessiontype=RS

Regulatory References

USEPA Drinking Water Mapping Application to Protect Source Waters (DWMAPS)
https://epamap37.epa.gov/dwmaps/

USEPA Third Unregulated Contaminant Monitoring Rule (UCMR3)
https://www.epa.gov/dwucmr/third-unregulated-contaminant-monitoring-rule

USEPA Drinking Water Health Advisories for PFOA and PFOS
https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos

WVDEP West Virginia Water Resources Management Plan Mapping Tool
http://tagis.dep.wv.gov/WVWaterPlan/

West Virginia American Water References

CodeRED Bill Insert
http://www.amwater.com/files/WV%20-%20CodeRED%20-%206%20panel%20-%2001-2016.pdf

Environmental Grant Program
http://www.amwater.com/wvaw/water-quality-and-stewardship/environmental-grants-programs.html

Lead Fact Sheet
http://www.amwater.com/files/Lead%20-%20WV%20-%2005-2016.pdf

Source Water Protection
http://www.amwater.com/wvaw/water-quality-and-stewardship/source-water-protection/index.html

Appendix B

Communications Plan

B-1 INTRODUCTION

B-1.1 Purpose

This plan provides guidance for West Virginia American Water (also referred to as "Company") to communicate with agencies and the public in case of a spill, contamination event, or other situation that poses a potential threat to public health and safety.

The procedures and responsibilities described in this plan apply to all West Virginia American Water public water systems. Specific contact details for individual systems are provided in the corresponding Facility Emergency Response Plan.

B-1.2 Regulatory Requirements

West Virginia Code §16-1-9c requires public water systems to develop a "communications 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 source water supply or the system's drinking water supply, with an initial notification to 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."

The West Virginia Bureau for Public Health (WVBPH) clarified this requirement through rulemaking (§64-3-14.6) for "initial notification to the public to occur in any event 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***."

On July 1, 2002, the WVBPH adopted the federal public notice rule, which requires "…notice to the public for violations and other situations with significant potential to have serious adverse effects on human health as a result of short-term exposure." The West Virginia Department of Health and Human Resources has developed the following guidelines in the Manual of Environmental Health Procedures for public notification:

- DW-23: Boil Water Notices for Public Water Systems
- DW-37: Public Notices for Public Water Systems

In general, public notices are required for three types of situations: (1) acute violations or violations of water quality standards that are of an immediate concern; (2) other water quality violations; and (3) monitoring and/or reporting violations. The method and timing of public notification varies by situation, as detailed in DW-37. Procedure DW-23 provides specific guidance for Boil Water Notices (BWN) and Do Not Use (DNU) water notices.

B-2 ROLES AND RESPONSIBILITIES

The communication team listed in the attached summary for each water system will be responsible for working cooperatively with the Company management team and partner agencies to notify the public in a situation that poses a potential threat to public health and safety. The team will also provide updated information related to the situation as appropriate.

B-2.1 Designated Spokesperson

The Designated Spokesperson (or Designee) serves as the Public Information Officer (PIO) for the Company and is authorized to speak on behalf of the Company to partner agencies, the public, and the news media. The Company President or Designated Spokesperson may authorize and/or direct others to issue information that has been approved by the management team.

Additional responsibilities include:

- Announce risk level (using Tiers system) that applies to public notifications
- Issue news releases, updates, and other information regarding the incident/event using appropriate information venues (e.g., emergency notification systems, local news outlets, social media, website, etc.)
- Ensure that news releases are sent to local health agencies and the local news media in the affected area
- Respond to questions from the news media and others regarding the incident / event
- Participate in news conferences and interviews to provide information and updates, as available and appropriate

B-2.2 Supporting Roles

Other members of the communication team are expected to be familiar with the plan and provide support throughout the public notification and event response process, including coordinating with the management team to:

- Collect information needed to investigate, analyze, and characterize the incident / event
- Provide information to the management staff to support response decisions and actions
- Assist the management staff in handling event response and communication duties

Supporting team members are not authorized to speak on behalf of the Company unless designated by the Designated Spokesperson or President.

B-2.3 Interagency Coordination

The Designated Spokesperson, President and other members of the communication team will coordinate with PIOs from other agencies on statements, updates, joint press conferences, etc. as needed. Message coordination between emergency response agencies, health agencies and water utilities is important when responding to an incident/event.

B-3 COMMUNICATION PROCEDURES

B-3.1 TIERS Reporting System

West Virginia American Water intends to use the *Tiered Incident / Event Reporting System* (TIERS) as established by WVBPH for communicating with agencies and the public in situations 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 incident or event. The five-tiered **A-B-C-D-E** risk-based incident response communication format is summarized in the following table.

TIERS Reporting Categories

Tier	Category	Risk Level	Tier Summary
A	**A**nnouncement	Low	The water system is issuing an announcement to the public and public agencies about an incident or event that may pose a threat to public health and safety. Additional information will be provided as it becomes available.
B	**B**oil Water Advisory	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.
C	**C**annot Drink	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. More information on this notice will be provided as soon as it is available.
D	**D**o Not Use	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.
E	**E**mergency	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.

The terminology used in the above table is based on that used by WVBPH. Risk levels for each TIERS category are general in nature and do not represent the actual risk level for a specific incident. Communication templates for each TIERS category are attached and discussed in Section 3.3.

B-3.2 Communication Flow Chart

The attached flow chart illustrates how the Company plans to respond when it receives a report that a spill, release, or other contamination event may have occurred.

Upon initial notification of the incident/event, managers and operators will collect information and verify the need for further investigation. If there is an indication that the incident/event poses a risk to public health and safety, and the initial facts about the incident support it, the Company will issue a public notification consistent with the threat level based on available information. The initial notification will be provided by the Designated Spokesperson (or Designee) to the public and local health agencies within thirty (30) minutes of determining that the incident/event poses a potential risk to public health and safety.

In addition to issuing a notice, Company personnel and partner agencies will continue to investigate and characterize the threat and communicate updates as appropriate. Several iterative cycles may occur after the initial threat assessment including further investigation, response actions, and elimination or mitigation of the threat resulting in a return to normal operations. Communication activities during this period will include:

- Initial notification using TIERS advisory levels
- Notification to the Company's source water protection and communication teams
- Periodic information updates for agencies and the media/public as information becomes available
- Modifications to the applicable advisory tier, as necessary

After the threat level is reduced and operations return to normal, the Company will review communications regarding the incident/event and modify the plan, if appropriate.

B-3.3 Core Messages and Actions

Clear, consistent, and timely messages are important for effectively communicating information about an incident/event with the public. These messages should include only relevant information and clear actions presented in positive terms (e.g., "stay calm" instead of "don't panic"). Repeating a message often helps the audience retain the information.

<u>Message Development</u>

- What happened? (who, what, where, why, when, how)
- What is being done to address it?
- What are the health impacts, if any?
- What are customers instructed to do, if anything?
- When and where will information updates be available?
- When will the problem be resolved?

WVBPH has developed a series of templates for developing messages associated with each TIERS advisory level. The Center for Disease Control (CDC) has also developed a template that can be used in any type of emergency and includes guidelines for risk communication principles and message components. These templates are attached for reference; however, messages will be developed based on the circumstances present at the time.

Message coordination between emergency response agencies, health agencies and water utilities is important when responding to an incident/event. As often as possible, announcements and updates should be made jointly by the Company and its local, regional, state and/or federal partners.

Key points when communicating during an incident/event include the following:

- The health and safety of our customers and our employees is our number one priority.
- We appreciate the patience of our customers as we work to understand and resolve the situation.
- Our team is working on the matters we have identified so far, with the information available to us at this time.
- Our source water protection team and our employees are working very hard to investigate the situation and will help provide possible resolutions to matters we find during the investigation.
- We are working with our partners at the local, state, and federal level to resolve the situation as quickly and as safely as we can.
- We are focused on dealing with the situation based on the facts available to us at this time; we are not in a position to speculate about a variety of possible scenarios that do not exist presently.
- We welcome any information people may have on the situation we are investigating today.

B-3.4 Communication Methods

Communications with the public may be provided by several different methods depending on the situation. The Company will notify customers potentially affected by an incident/event using one or more of the following options:

- CodeRED emergency notification system (phone, text and email)
- Local media (press release, press conference, updates)
- County emergency alert system where available
- Website and social media (Facebook, Twitter)
- Door-to-door/door hangers
- Posted notices

Primary and alternate designated locations for media interviews and/or press conferences are identified in the attached summary for each water system. The location(s) selected may vary based on the circumstances of an incident/event and will be communicated to the media as a situation develops.

B-4 ACRONYMS

BWN	Boil Water Notice
CDC	Center for Disease Control
DNU	Do Not Use
PIO	Public Information Officer
TIERS	Tiered Incident / Event Reporting System
WVBPH	West Virginia Bureau for Public Health

B-5 ATTACHMENTS

The following attachments to this Communications Plan provide additional resources:

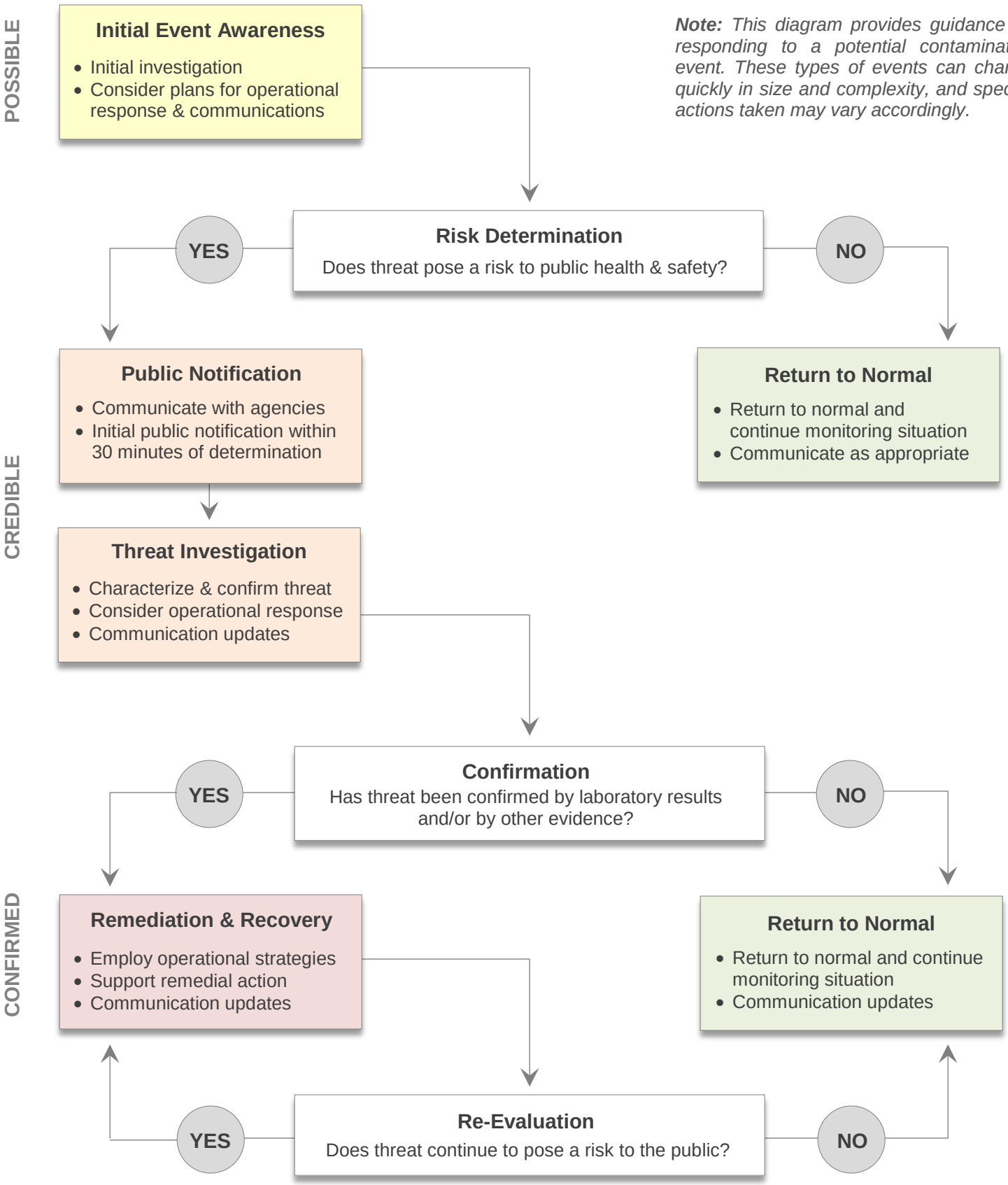
- Attachment B-1: Event Response Flow Chart
- Attachment B-2: Core Message Templates

Communications Plan Attachment B-1

EVENT RESPONSE FLOW CHART

WEST VIRGINIA AMERICAN WATER

Note: *This diagram provides guidance for responding to a potential contamination event. These types of events can change quickly in size and complexity, and specific actions taken may vary accordingly.*



Communications Plan Attachment B-2

PUBLIC NOTIFICATION PHONE MESSAGE SCRIPT

The following is an important message from West Virginia American Water about a potential contamination event that poses a potential threat to your local water system. West Virginia American Water was notified of a [description of incident] that has entered the [source water name], which is the source of your local water supply. Due to recent changes in state law, public water systems are required to notify the public within 30 minutes after determining that the incident poses a risk to public health and safety. We are working with [emergency responders/state health officials/agency names] to gather critical information needed to determine the risk to the water system and the appropriate response actions, if necessary. We will provide an update as soon as more information is available. No drinking water advisories have been issued at this time. Thank you for your attention to this message as we work to ensure the quality of your water. No additional information is available at our customer service center at this time.

Communications Plan Attachment B-2

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: _____

Reference: TIERS Advisory Templates, WVDHHR, January 2016

Communications Plan Attachment B-2

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.

State Water System ID# _____ Date Distributed: _____

Reference: TIERS Advisory Templates, WVDHHR, January 2016

Communications Plan Attachment B-2

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.

State Water System ID# _____ Date Distributed: _____

Reference: TIERS Advisory Templates, WVDHHR, January 2016

Communications Plan Attachment B-2

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.

State Water System ID# _____ Date Distributed: _____

Reference: TIERS Advisory Templates, WVDHHR, January 2016

Communications Plan Attachment B-2

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.

State Water System ID# _____ Date Distributed: _____

Reference: TIERS Advisory Templates, WVDHHR, January 2016

Communications Plan Attachment B-2

Message Development for Communication

First, consider the following:

Audience:	Purpose of Message:	Method of delivery:
❑ Relationship to event ❑ Demographics (age, language, education, culture) ❑ Level of outrage (based on risk principles)	❑ Give facts/update ❑ Rally to action ❑ Clarify event status ❑ Address rumors ❑ Satisfy media requests	❑ Print media release ❑ Web release ❑ Through spokesperson (TV or in-person appearance) ❑ Radio ❑ Other (e.g., recorded phone message)

Six Basic Emergency Message Components:

1. **Expression of empathy:** _____

_____

2. **Clarifying facts/Call for Action:**

Who _____

What _____

Where _____

When _____

Why _____

How _____

3. **What we do not know:** _____

4. **Process to get answers:** _____

5. **Statement of commitment:** _____

6. **Referrals:** _____

For more information _____

Next scheduled update _____

Finally, check your message for the following:

Positive action steps Honest/open tone Applied risk communication principles Test for clarity Use simple words, short sentences	Avoid jargon Avoid judgmental phrases Avoid humor Avoid extreme speculation

Reference: Center for Disease Control, Crisis and Emergency Risk Communications, Version 15.0908

Appendix C

Emergency Response Plan Certification

WEST VIRGINIA
AMERICAN WATER

Emergency Response Plan
Certification Statement

I certify that the West Virginia American Water Weston Water System (PWSID WV3302104) has an emergency response plan[1] in place in accordance with the Public Health Security Bioterrorism Preparedness & Response Act of 2002 that was last updated in January 2016.

The plan covers the following areas identified by WVBPH: emergency response team, emergency communications, list of sensitive populations, list of major users, personnel and property protection measures, training, resource inventory, repair and supply providers, and procedures for specific emergency incidents.

Signature of Responsible Party or Designee	Jeffrey L. McIntyre Name of Authorized Signatory
June 29, 2016 Date Signed	President Title of Authorized Signatory

[1] West Virginia American Water refers to this document as an Emergency Preparedness Manual.

Appendix D

Summary of Alternate Source of Supply Feasibility Report

APPENDIX D SUMMARY OF ALTERNATE SOURCE OF SUPPLY FEASIBILITY REPORT

On March 8, 2014, West Virginia's Senate passed Senate Bill No. 373 which was an act to amend and reenact sections under Chapter 16 of the Code of West Virginia which deals with Public Health. West Virginia American Water (WVAW) solicited the support of American Water's Business Services Engineering group in meeting some of the requirements in the Bill, specifically the following sections:

§16-1-9c. Required update or completion of source water protection plans.

(a) On or before July 1, 2016, each existing public water utility which draws and treats water from a surface water supply source or a surface water influenced groundwater supply source shall submit to the commissioner an updated or completed source water protection plan for each of its public water system plants with such intakes to protect its public water supplies from contamination. Every effort shall be made to inform and engage the public, local governments, local emergency planners, local health departments and affected residents at all levels of development of the protection plan.

(b) The completed or updated plan for each affected plant, at a minimum, shall include the following:

2) An examination and analysis of the public water system's ability to isolate or divert contaminated waters from its surface water intake or groundwater supply, and the amount of raw water storage capacity for the public water system's plant;

3) An examination and analysis of the public water system's existing ability to switch to an alternative water source or intake in the event of contamination of its primary water source;

4) An analysis and examination of the public water system's existing ability to close its water intake in the event the system is advised that its primary water source has become contaminated due to a spill or release into a stream, and the duration of time it can keep that water intake closed without creating a public health emergency;

5) The following operational information for each plant receiving water supplies from a surface water source:

A. The average number of hours the plant operates each day, and the maximum and minimum number of hours of operation in one day at that plant during the past year; and

B. The average quantities of water treated and produced by the plant per day, and the maximum and minimum quantities of water treated and produced at that plant in one day during the past year;

6) An analysis and examination of the public water system's existing available storage capacity on its system, how its available storage capacity compares to the public water system's normal daily usage and whether the public water system's existing available storage capacity can be effectively utilized to minimize the threat of contamination to its system;

9) If the 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 plan shall also include an examination and analysis of the technical and economic feasibility of each of the following options 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:

   A. Constructing or establishing a secondary or backup intake which would draw water supplies from a substantially different location or water source;

   B. Constructing additional raw water storage capacity and/or treated water storage capacity, to provide at least two days of system storage, based on the plant's maximum level of production experienced within the past year;

   C. Creating or constructing interconnections between the public water system with other plants on the public water utility system or another public water system, to allow the public water utility to receive its water from a different source of supply during a period its primary water supply becomes unavailable or unreliable due to contamination, release, spill event or other circumstance;

   D. Any other alternative which is available to the public water utility to secure safe and reliable alternative supplies during a period its primary source of supply is unavailable or negatively impacted for an extended period; and

   E. If one or more alternatives set forth in paragraphs (A) through (D) of this subdivision is determined to be technologically or economically feasible, the public water utility shall submit an analysis of the comparative costs, risks and benefits of implementing each of the described alternatives.

The requirements described above were evaluated for each of the following WVAW systems:

- Kanawha Valley
- Huntington
- New River
- Bluestone
- Bluefield
- Weston
- Webster Springs
- Gassaway

Note that §16-1-9c-(b)-(1), (7), (8), and (10) through (13) are not included here because these sections are addressed separately in the source water protection plan.

Responses to §16-1-9c-(b)-(2) through (6) for each system include specific operational information that is considered confidential for security reasons. These details are not included in this summary but will be submitted to WVBPH. In general, each WVAW system can typically prevent contamination from reaching the water treatment plants by closing valves on intake pipes and/or shutting off the raw water pumps. The duration of time that the water intake could be closed before the system would run out of clean water depends on the amount of finished water storage available in each system at the time of a plant shutdown. The actual amount of storage that may be used at any given time can vary based on location, water quality conditions, and other operational considerations.

In response to the requirements under §16-1-9c-(b)-(9), an analysis of alternative sources of supply was conducted for each system. In general, each system was evaluated to determine if there were feasible alternatives for the following supply sources:

- Alternate intake;
- Interconnection with nearby water systems;
- Raw water storage; and
- Groundwater.

For the raw water storage evaluation, the feasibility of installing sufficient raw water storage to be able to supply five (5) days of plant capacity to the treatment plant was assessed instead of the two days required by §16-1-9c. This approach was taken due to the potential amount of time that a plant could be out of service in the event of a chemical spill or catastrophic event. In general, finished water storage was not considered in the evaluation due to the amount of storage this would entail and the water quality concerns associated with a high water detention time of finished water in the system.

For each system, a high level preliminary design was developed for each alternative, when feasible. Over the past several years, WVAW has been considering interconnecting the Bluestone system with the Bluefield system and retiring the Ada WTP which serves the Bluefield system. Similarly, the interconnection of the Weston system with the Webster Springs system and retirement of the Webster Springs WTP has been under consideration. These projects have multiple benefits to the company and its customers. Therefore, for the purposes of the alternative supply analysis, it was assumed that these systems would be interconnected as noted and the alternative supply was sized to be sufficient to supply both interconnected systems.

The preliminary design included sizing calculations for equipment and pipes, identification of potential locations for new facilities, and layouts for potential pipeline routes. Conceptual level capital and O&M cost estimates were prepared for each alternative.

The alternatives were then ranked using a quantitative evaluation method developed by American Water. The purpose of this evaluation process was to rank the available alternatives against each other, not necessarily to identify a single feasible solution. Criteria for the evaluation were selected to evaluate each alternative based on the West Virginia Department of Health and Human Resources

(WVDHHR) Feasibility Study Guidance Document and American Water's prior experience with alternatives evaluations.

A pair-wise comparison was performed to develop a weighting from 1 to 10 for each criterion with 10 being the most important. For each system, each potentially feasible alternative was given a score from 1 to 5 for each criterion with 5 representing the most favorable rating. The score was multiplied by the weight for each criterion and these were added together to develop a benefit score for each alternative. It should be noted that the benefit score does not include cost of the project. Each benefit score was then divided by an annualized life cycle cost to determine the benefit/cost score for each alternative. The advantage of this method of evaluation is that it allows for the alternatives with the highest benefits to be identified without the bias of costs.

The alternatives with the highest benefit and/or benefit/cost score for each system are presented in Attachment D-1 along with the estimated costs and the benefits and risks associated with the selected alternative. For the Huntington and Gassaway systems, two alternatives are presented because the feasibility of implementing the lowest cost alternative for each is unknown.

Attachment D-1 also shows the rate impact as a percentage of rate increase to customers for each of the selected alternatives based on WVAW's 2016 rate structure. Since WVAW has single tariff pricing the impact of the projects were evaluated together to determine the impact to customers. If all of the projects that are discussed in the table were to be implemented, this would result in an estimated rate increase between 15.5% and 18.1% for all WVAW customers.

Attachment D-1: Summary of Alternative Supply Analysis

System	Alternative with Highest Feasibility or Benefit/Cost Score	Estimated Capital Cost (millions)	Estimated O&M Cost (annual)	Rate Impact (%)	Benefits	Risks
Bluestone and Bluefield[1]	37.5 MG Raw Water Storage	$38.8	$42,200	3.4%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Land appears to be available near the Bluestone WTP for reservoir so minimal environmental and customer impacts	• Land identified for raw water storage may not be available for use • Higher water table than anticipated could add to the costs for dewatering and/or elevation of the tanks • Limited supply capacity (5 days) with limited capability of expansion
Gassaway	3.9 MG Raw Water Storage	$8.3	$16,100	0.7%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Land appears to be available at Gassaway WTP for raw water storage so minimal environmental and customer impacts • Low safety risk since tank will be on plant site	• Higher water table than anticipated could add to the costs for dewatering and/or elevation of the tanks • Limited supply capacity (5 days) with limited capability of expansion
	Develop Groundwater Wells	$1.0	$14,800	0.1%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Land appears to be available at Gassaway WTP for wells so minimal environmental and customer impacts • Low safety risk since wells will be on plant site	• Groundwater availability is unknown without extensive groundwater investigations • Long term availability of supply is not known • Permitting for groundwater allocation may be a lengthy process
Huntington	New Intake on Guyandotte River	$31.2	$98,000	2.8%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Low safety risk • Minor environmental impacts • Fully redundant supply with opportunity for capacity expansion • Guyandotte River was approved for temporary supply in 2015	• Outfalls and other obstacles along river bank not identified; may require additional time and cost to avoid conflicts • Survey of the river bottom was not yet completed for this feasibility study • Availability of property for intake and raw water pump station could affect the cost of this alternative • Upgrades may be required if the source water is not found to be suitable for treatment at the existing WTP
	Industrial Intake	$9.3	$0	0.8%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Low safety risk • Minor environmental impacts • Relatively low customer impact during construction • Guyandotte River was approved for temporary supply in 2015	• Owner of intake may not be amenable to a connection with their intake and pump station or agreement for use may become invalid if ownership changes hands in the future • Existing raw water pumps may not be sufficient for transferring water to the Huntington WTP • Alternate pipeline route may be required due to construction or permitting issues • Owner of intake may require the use of their intake during the time it is needed by WVAW • Upgrades may be required if the source water is not found to be suitable for treatment at the existing WTP • Intake not owned by WVAW so may not be expandable if additional supply is needed in the future

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Attachment D-1: Summary of Alternative Supply Analysis

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System	Alternative with Highest Feasibility or Benefit/Cost Score	Estimated Capital Cost (millions)	Estimated O&M Cost (annual)	Rate Impact (%)	Benefits	Risks
Kanawha Valley	Intake on Kanawha River	$56.0	$375,400	5.1%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Low safety risk • Minor environmental impacts • Fully redundant supply with opportunity for capacity expansion • Sampling program is underway to assess water quality	• Outfalls and other obstacles along river bank not identified; may require additional time and cost to avoid conflicts • Survey of the river bottom was not yet completed for this feasibility study • Availability of property for intake and raw water pump station could affect the cost of this alternative • Significant traffic control may be required for the microtunneling trench excavations • Kanawha River sediment may be contaminated; dredging and barge traffic may disturb the sediment and release it into the river • Upgrades may be required if the source water is not found to be suitable for treatment at the existing WTP
New River	20 MG Raw Water Storage	$22.6	$69,000	2.0%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required	• Land identified for raw water storage may not be available for use • Higher water table than anticipated could add to the costs for dewatering and/or elevation of the tanks • Limited supply capacity (5 days) with limited capability of expansion
Weston and Webster Springs[2]	20 MG Raw Water Storage	$46.5	$28,400	4.1%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Land appears to be available near the Weston WTP for reservoir so minimal environmental and customer impacts	• Land identified for raw water storage may not be available for use • Higher water table than anticipated could add to the costs for dewatering and/or elevation of the tanks • Limited supply capacity (5 days) with limited capability of expansion
Total Estimated Cost[3]		$174.2 to $203.4	$529,800 to $629,100	15.5% to 18.1%		

Notes:
1 – Cost includes interconnection of Bluestone and Bluefield systems
2 – Cost includes interconnection of Weston and Webster Springs systems
3 – Cost represents range with two alternatives for Gassaway and Huntington because the feasibility of implementing the lowest cost alternative for each is unknown