

# **Source Water Protection Plan**

## **JEFFERSON UTILITIES, INC.**

### **WALNUT GROVE WATER TREATMENT PLANT (WTP)**



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**PWSID WV3301942**  
**JEFFERSON COUNTY**

12/30/2015  
06/20/2019 UPDATED  
Prepared by:

Jefferson Utilities, Inc. and Advanced Land and Water, Inc.

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**Name of Contractor(s)/Consultant(s) (if used):**

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

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

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

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**Title of Authorizing Signatory:**

Chief Operator      President      General Manager

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## Acronyms

**GWUDI** – Groundwater Under Direct Influence of Surface Water

**PSSC** – Potential Significant Source of Contamination

**PWS** – Public Water System

**SWAP Program** – Source Water Assessment and Protection Program

**SWAR** – Source Water Assessment Report

**SWPA** – Source Water Protection Area

**SWPP** – Source Water Protection Plan

**WHPA** – Wellhead Protection Area

**WSDA** – Watershed Delineation Area

**WTP** – Water Treatment Plant

**WVBPH** – West Virginia Bureau for Public Health

**WVDEP** – West Virginia Department of Environmental Protection

## Purpose

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

The intent of this document is to describe what the Walnut Grove Water Treatment Plant (WTP) has done, is currently doing, and plans to do to protect its source(s) of drinking water. Jefferson Utilities, Inc. (JUI) owns and operates the Walnut Grove Public Water System (PWS). Although this water system treats water to meet federal and state drinking water standards, conventional treatment does not fully eradicate all potential contaminants. Treatment that goes beyond conventional methods is often very expensive to implement, maintain and operate. By completing this plan, JUI acknowledges that implementing measures to prevent contamination of system water sources can be a relatively economical way to help protect drinking water in ways that it can continue to be provided to customers, reliably and safely.

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

- ☐ Fulfills the West Virginia state requirement for the public water utilities to complete or update their source water protection plan.
- ☐ Provides a means for identification and prioritization of potential threats to sources of drinking water; and the establishment of strategies to minimize the threats.
- ☐ Establishes plans for emergency response to incidents that may come to compromise the water supply source(s) by contamination or depletion, and includes the manner in which the public, state, and local agencies will be notified of such an occurrence.
- ☐ Evaluates and establishes plans for future expansion and development of water resources, including the need to identify secondary sources of water.
- ☐ Ensures optimal treatment conditions exist to provide the safest and highest quality drinking water to customers at the lowest possible cost.
- ☐ Provides opportunities for funding to improve water system infrastructure, purchase land in the protection area, and for other improvements to either the sources, or their associated source water protection areas.

## Background: WV Source Water Assessment and Protection (SWAP) Program

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

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

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

## State Regulatory Requirements

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

Under the amended and newly added codes, each existing public water utility operating surface water and/or GWUDI sources must have completed or updated a Source Water Protection Plan (SWPP) by July 1, 2016, and must continue to update their plan every three years. Existing SWPPs have been developed for many public water utilities in the past. If available, these SWPPs were reviewed and considered in the development of this updated plan. Any new water system established after July 1, 2016 must submit a SWPP before operations commence. A new plan is also required when there is a significant change in the Potential Sources of Significant Contamination (PSSC) within the Source Water Protection Area (SWPA).

The code also requires that public water utilities include details regarding PSSCs, protection measures, system capacities, contingency plans, and communication plans in their SWPP. Before a SWPP can be approved, the local health department and public will be invited to contribute information and provide comments for consideration. In some instances, public water utilities may be asked to conduct independent studies of the SWPA and specific threats within their SWPA to gain further insight about the origin of their water for the purpose of developing strategies to better protect these vital resources.

## System Information

The JUI Walnut Grove WTP is classified as a state regulated public utility and operates a community public water system. A community public water system is a system that regularly supplies drinking water from its own sources to at least 15 service connections used by year-round residents of the area or regularly serves 25 or more people throughout the entire year. Information on the population served by this utility is presented in **Table 1** below. **All data included in this report are current as of the end of 2018 Public Service Commission Report.**

*Table 1. Population Served by Walnut Grove WTP*

<b>Administrative office location:</b>		270 Industrial Blvd. Kearneysville, WV 25430	
<b>Is the system a public utility, according to the Public Service Commission rule?</b>		Yes	
<b>Date of Most Recent Source Water Assessment Report (SWAR):</b>		2002	
<b>Date of Most Recent Source Water Protection Plan (SWPP):</b>		2019	
<b>Population served directly:</b>		6,237	
<b>Bulk Water Purchaser Systems:</b>	<b>System Name</b>	<b>PWSID Number</b>	<b>Population</b>
	None	-	-
<b>Total Population Served by the Utility:</b>		6,237	
<b>Does the utility have multiple source water protection areas (SWPAs)?</b>		No	
<b>How many SWPAs does the utility have?</b>		1	

## Water Treatment and Storage

As required, JUI Walnut Grove WTP has assessed their system (e.g., treatment capacity, storage capacity, unaccounted for water, contingency plans) to evaluate their ability to provide drinking water and protect public health. **Table 2** contains information on the water treatment methods and capacity of the utility. As shown in **Table 3**, this utility does not operate any surface water sources at this time. Information about the groundwater sources from which the Walnut Grove WTP draws water can be found in **Table 4**.

Table 2. Walnut Grove WTP Water Treatment Information

Water Treatment Plant	TP01 Walnut Grove	TP02 Briar Run	TP03 Meadowbrook	TP04 Bardane	TP05 Burr	TP06 Shenandoah Junction	TP07 Woodland
Water Treatment Processes	Liquid Chlorine 12%	Liquid Chlorine 12%	Liquid Chlorine 12%	Liquid Chlorine 12%	Liquid Chlorine 12%	Liquid Chlorine 12%	Liquid Chlorine 6%
Current Treatment Capacity (gal/day)	750,000	308,200	578,900	164,100	144,000	316,800	57,600
Current Average Production (gal/day)	30830	181637	134260	43418	24716	86124	12619
Maximum Quantity Treated and Produced (gal)	139500	367800	248900	133100	166600	160000	25600
Minimum Quantity Treated and Produced (gal)	0	34000	100	0	0	0	5300
Average Hours of Operation	8.2	8.0	17.6	10.1	4.4	5.4	9.1
Maximum Hours of Operation in One Day	10.2	29.5	35.3	43.2	20.5	27.7	14.7
Minimum Hours of Operation in One Day	0	2.6	5.3	0	0	0	4.6
Number of Storage Tanks Maintained	1	1	1	1	2	1	1
Total Gallons of Treated Water Storage (gal)	30,000	510,000	250,000	30,000	22,400 500,000	20,000	2,000
Total Gallons of Raw Water Storage (gal)	0	0	0	0	0	0	0

Table 3. Surface Water Sources

Intake Name	SDWIS #	Local Name	Describe Intake	Name of Water Source	Date Constructed/Modified	Frequency of Use (Primary/Backup/Emergency)	Activity Status (Active/Inactive)
None	—	—	—	—	—	—	—

Table 4. The Walnut Grove WTP Groundwater Sources

Does the utility blend with groundwater?					This utility is served exclusively by groundwater sources.				
Well/Spring Name	SDWIS #	Local Name	Date Constructed/Modified	Completion Report Available (Yes/No)	Well Depth (ft.)	Casing Depth (ft.)	Grout (Yes/No)	Frequency of Use (Primary/Backup/Emergency)	Activity Status (Active/Inactive)
Well #1	TP1	Well #1	Circa 1850	No	42	N/A	No	Primary	Active
Well #6	TP1	Well #6	2002	No	500	Unknown	Yes	Primary	Inactive
Well #3	TP1	Well #3 (GWUDI)	Unknown	No	Unk	Unk	Unk_	Emergency	Inactive
Well #4	TP1	Well #4 (GWUDI)	1998	Yes	310	123	Yes	Emergency	Inactive

<b>Well/Spring Name</b>	<b>SDWIS #</b>	<b>Local Name</b>	<b>Date Constructed/ Modified</b>	<b>Completion Report Available (Yes/No)</b>	<b>Well Depth (ft.)</b>	<b>Casing Depth (ft.)</b>	<b>Grout (Yes/ No)</b>	<b>Frequency of Use (Primary/ Backup/ Emergency)</b>	<b>Activity Status (Active/ Inactive)</b>
Well #5	TP2	Well #5	1950 / 1999	Yes	293	63	Yes	Emergency	Inactive
Well #7	TP2	Well #7	2002	Yes	280	60	Yes	Primary	Active
Well #8	TP3	Well #8	1997	Yes	505	63	Yes	Primary	Active
Well #9	TP3	Well #9	1997	Yes	385	190	Yes	Primary	Active
Well #10	TP3	Well #10	2015	Yes	190	177	Yes	Primary	Active
Well #11	TP4	Well #11	1978	No	Unk	40	Yes	Primary	Active
Well #12	TP4	Well #12	1987	Yes	360	102	Yes	Primary	Active
Well#13	TP5	Burr (GWUDI)	1990	No	355	50	Yes	Primary	Active
Well #14	TP6	Well #14	1990	No	612	80	Yes	Emergency	Inactive
Well #15	TP6	Well #15	1960	No	420	Unknown	Yes	Primary	Active
Well #16	TP6	Railroad	Early 1900	No	80	Unknown	Unk	Primary	Active
Well #17	TP7	Well #17	Unknown	No	Unk	Unknown	Unk	Primary	Active
Well #18	TP7	Well #18	Unknown	No	Unk	Unknown	Unk	Primary	Active

## Delineations

For groundwater supplies, BPH makes use of two types of SWPA delineations: 1) wellhead delineations and 2) conjunctive delineations, which are developed for supplies identified as GWUDI sources. A Wellhead Protection Area (WHPA) is determined to be the area contributing to the recharge of the groundwater source (well or spring), within a five year time of travel. A conjunctive delineation combines a WHPA for the hydrogeologic recharge area (five year time of travel) and an additionally connected area surrounding a surface water body that contributes water to a groundwater source. Conjunctive delineations, therefore, have been created for GWUDI sources.

Information and maps of the WHPA, which will be referred to as the Source Water Protection Area (SWPA) in this document, for this public water supply were provided to the utility and are attached to this report. See figures provided in **Appendix A**. Other information pertaining to the SWPA is shown in **Table 5**.

*Table 5. Watershed Delineation Information*

<b>Size of WSDA (Acres)</b>	225,366
<b>River Watershed Name (8-digit HUC)</b>	Shenandoah (HUC 02070007) Conococheague – Opequon (HUC 02070004)
<b>Size of Zone of Critical Concern (Acres)</b>	N/A; this system does not have an active surface water intake
<b>Size of Zone of Peripheral Concern (Acres)</b>	N/A; this system does not have an active surface water intake
<b>Method of Delineation for Groundwater Sources</b>	The Walnut Grove PWS SWPA was defined in 2002 by RK&K engineers with the use of the Modflow groundwater modeling program along with a hydrogeologic boundary approach.
<b>Area of Wellhead Protection Area (Acres)</b>	3,705.6

## Protection Team

Communities with successful protection plans form a Protection Team to help develop and implement management and protection strategies presented within the SWPP. A Protection Team provides a broader level of oversight of the source water protection effort and includes individuals familiar with protective strategies. Active Protection Team members for the Walnut Grove WTP include: water supply staff (including the general manager and designated operator), a WVDEP representative and local government officials, including the director of the planning and zoning department for Jefferson County. A complete list of Protection Team members can be found in **Table 6**. Some government and business agencies were unable to participate in this iteration of the source water protection effort. Their participation will be sought in future iterations of the SWPP, which is updated at least every three years or as significant changes occur to PSSCs within the SWPA. JUI also plans to work with local emergency personnel (including OHSEM) over the next few months to discuss and pursue implementation of key travel network recommendations offered later herein.



The general manager for JUI took responsibility for assembling the Protection Team. Members were provided the opportunity to contribute to the development of the plan. The acting members of the Protection Team are listed in **Table 6**. The Protection Team reviewed the system's existing SWPP and Source Water Assessment Report (SWAR), included as **Appendix F-3** of this report, as well as newly collected PSSC data to make informed decisions on potential threats, protective measures, and implementation actions. The Protection Team will continue to be responsible for updating the SWPP continually and documenting their efforts to engage local stakeholders.

*Table 6. Protection Team Member and Contact Information*

<b>Name</b>	<b>Representing</b>	<b>Title</b>	<b>Phone Number</b>	<b>Email</b>
Stephanie Reel	Jefferson Utilities	<b>General Manager</b>	304-728-2077	sreel@juiwater.net
Jeff Pippel	Jefferson Utilities	<b>Chief Operator</b>	304-728-2077	jpippel@juiwater.net
Lee Snyder	Snyder Environmental Services	<b>President</b>	304-725-9140	lsnyder@snyderenv.com
Alana Hartman	West Virginia Department of Environmental Services	<b>Division of Water and Wastewater Management (Nonpoint Section)</b>	(304) 822-7266 ext. 3623	alana.c.hartman@wv.gov
Jennifer M. Brockman	Jefferson County Department of Planning and Zoning	<b>Director of Planning and Zoning</b>	304-728-3228	planningdepartment@jeffersoncountywv.org
<b>Date of Protection Team Meeting</b>		September 14, 2015		
<b>Efforts to engage local stakeholders and explain absence of required stakeholders:</b>		Representatives from JUI opted to invite potential protection team members themselves via email. A list of local stakeholders invited to join the Protection Team is provided in Appendix F-4		

## Potential Significant Sources of Contamination

This SWPP provides a comprehensive list of the Potential Sources of Significant Contamination (PSSC) contained within the Walnut Grove WTP SWPA, based upon information obtained from the Department of Environmental Protection (WVDEP), the WVBPH and the Division of Homeland Security and Emergency Management. A facility or activity is listed as a PSSC if it has the potential to release a contaminant that could potentially impact a nearby public water supply. This does not necessarily indicate that any release has occurred, presently or historically.

The database information that utilities received of PSSCs located in their SWPA is organized into two types: 1) SWAP PSSCs, and 2) Regulated Data. SWAP PSSCs are those that have been collected and verified by the WVBPH SWAP program during previous field investigations to form the SWARs and SWPPs. Typical means of identify and/or confirming the existence of previously identified PSSCs involves performing a “windshield survey,” in which a group performs a reconnaissance of potential hazards that can be identified from public rights of way, throughout the SWPA. This same method was used by ALWI to verify the presence of previously identified PSSCs, identify and record new PSSCs and/or change the details of facilities over time (e.g., when a gas station switches owners). Regulated PSSCs are derived from federal and state regulated databases, and may include data from WVDEP, US Environmental Protection Agency, Division of Homeland Security and Emergency Management, and out of state data sources. The presence of these PSSCs also was confirmed by ALWI field personnel to the degree feasible.

### Confidentiality of PSSCs

A list of the PSSCs contained within the SWPA is included in this SWPP. However, the exact location, characteristics and approximate quantities of contaminants only were made known to a specific designee of the utility. This designee has maintained, and will continue to maintain, this information in a confidential manner. In the event of a chemical spill, release or related emergency, information pertaining to such an event will immediately be disseminated to involved emergency responders. The designee(s) are identified in the communication plan section of this SWPP.

PSSC data from some agencies (e.g., Division of Homeland Security and Emergency Management, WVDEP, etc.) may be restricted due to the sensitive nature of the data. However geospatial data has been provided to the utility. To obtain specific details regarding contaminants, (such as information included on Tier II reports), JUI will continue to contact local emergency agencies, directly. Maps and lists of the SWAP and Regulated PSSCs are provided in **Appendix A**.

### Local and Regional PSSCs

For the purposes of this SWPP, local PSSCs are those that are identified by the Walnut Grove WTP Protection Team, consultants to JUI, or local stakeholders, in addition to the PSSCs lists distributed by the WVBPH and other agencies. Local PSSCs may be identified for two main reasons. The first is that it is possible that threats exist from unregulated sources and land uses that have not already been inventoried and do not appear in regulated databases. The second reason local PSSCs are identified is because public water utilities may consider expanding the PSSC inventory effort outside of the SWPA, if necessary, to properly identify threats that could impact their drinking water supply source(s). As the utility considers threats in the watershed, they also may consider collaborating with nearby communities to identify and manage regional PSSCs.

When conducting local and regional PSSC inventories, some sources are or may be obvious, such as above ground storage tanks, landfills, livestock confinement areas, highway or railroad right of ways, and sewage treatment facilities. Other potential hazards are more difficult to locate, such as abandoned cesspools, underground tanks, French drains, dry wells, or old dumps and mines.

ALWI investigated the Walnut Grove WTP SWPA by means of a “windshield survey”. The purpose of this survey was to verify the existence of previously identified PSSCs and to identify any new PSSCs. Completion of such a survey increases local knowledge of the presence of PSSCs not listed on the original inventory or in regulated databases. Information on any new or updated PSSCs can be found in **Table 7**. When possible, locations of regulated PSSCs within the SWPA were verified.

Table 7. Locally Identified Potential Significant Sources of Contamination

PSSC Number	Map Code	Site Name	Site Description	Comments
39-B	C-14	CONFIDENTIAL	Distribution Facility	Likely low impact. Significant impervious surface coverage and outdoor storage of transported goods. Recommend further inquiring/analyzing potential contaminate hazards related to facility.
31-B	C-53	CONFIDENTIAL	Facility has large bay doors, unknown storage / vehicle maintenance	Likely low threat level. Recommend JUI investigate materials stored on-site and vehicle maintenance practices.
37-B	C-31	CONFIDENTIAL	Small medical center with an ambulance	Spills, leaks or improper handling of x-ray, biological, chemical and radioactive wastes and other materials during transportation, use, storage and disposal may impact the drinking water supply.
32-B		CONFIDENTIAL	Small medical center	Spills, leaks or improper handling of x-ray, biological, chemical and radioactive wastes and other materials. The use, storage and disposal may impact the drinking water supply
33-B	C-42	CONFIDENTIAL	Recreational Vehicle / Mini-Storage	Storage of Vehicles, Unknown garage
34-B	I-1	CONFIDENTIAL	Laboratory analysis (unknown analytical methods/chemicals)	Unknown laboratory hazards. Recommend JUI investigate.
35-B	I-44	CONFIDENTIAL	Distributor of parts	Unknown storage hazards. Recommend JUI investigate

PSSC Number	Map Code	Site Name	Site Description	Comments
36-B	C-13	CONFIDENTIAL	Tools and Equipment Storage	Equipment (including vehicles) maintenance and rental.
31-WG		CONFIDENTIAL	Small medical center	Spills, leaks or improper handling of x-ray, biological, chemical and radioactive wastes and other materials. The use, storage and disposal may impact the drinking water supply
9-WG		CONFIDENTIAL	Building supplies and lawn maintenance	Likely low threat level. Recommend JUI investigate materials stored on-site.
40-B		CONFIDENTIAL	Vehicle repair	Storage of Vehicles, Unknown garage
41-B		CONFIDENTIAL	Manufacturing Facility	Unknown storage hazards. Recommend JUI investigate
42-B		CONFIDENTIAL	Vehicle repair	Storage of Vehicles, Unknown garage
8-WG		CONFIDENTIAL	Fueling Station	Spills, leaks or improper handling of petroleum products.

Note: The windshield survey for this system was completed prior to receipt of the BPH provided databases. Geospatial information collected during the windshield survey was compared against that provided by BPH for regulated and previously identified PSSCs. ALWI attempted to remove geospatial duplicates and add PSSC numbers for newly identified PSSCs, which are listed above. Numbers not displayed in the table above (i.e., 1 through 38) correspond with PSSCs previously identified in past SWAP reports or in regulated databases, the information for which can be found in **Appendix A**

## Prioritization of Threats and Management Strategies

The identified PSSCs have been prioritized by potential threat based on water quality concerns, proximity to system water sources, and other local concerns. In addition to identifying and prioritizing PSSCs within the SWPA, local source water concerns may also focus on critical areas. For purposes of this SWPP, a critical area is defined as an area, identified by local stakeholders, within or outside of the SWPA, that may contain one or more PSSC(s), and/or within which immediate response would be necessary to address the incident and to protect source waters. The highest priority PSSCs or critical areas will be addressed first in the management plan. Lower ranked PSSCs will be addressed in the future as time and resources allow. To assess potential threats to source waters, the Walnut Grove WTP Protection Team and ALWI have considered information regarding each PSSC.

After identifying local concerns, Walnut Grove WTP staff developed and prioritized management strategies to protect the source water from contamination, in cooperation with the WVBPH, local health departments, local emergency responders, OHSEM and other agencies and organizations. This task was completed at the JUI Protection Team meeting, hosted at JUI's main office on September 14, 2015. A list of local representatives involved in the decision-making process were provided in **Table 6**. Source management strategies are any actions taken to protect the source water from specific PSSCs, categories of PSSCs (e.g., agricultural, commercial, etc.), and critical areas. It is advisable to focus source management strategies on high-priority PSSCs while working with the officials of the county in which the sources are located.

A list of these priority PSSCs and critical areas were selected and ranked by the Walnut Grove WTP Protection Team. This list reflects the concerns of JUI and local government representatives and may contain PSSCs not previously identified and not within the SWPA. It contains a description of why each critical area or PSSC is considered a threat. This information is presented in **Table 8**.

## Implementation Plan for Management Strategies

Source management strategies are any actions taken to protect source waters from specific PSSCs, categories of PSSCs, and critical areas. For example, prohibitions of certain land uses or facilities, design standards, best management practices, operating standards, and reporting requirements are typical source management strategies. Land purchases, conservation easements, and purchase of development rights are also considered source management strategies. As a management strategy, water utilities may also consider notification to and coordination with government agencies during a water supply impairment event. Finally, one strategy all water utilities should implement is periodic surveys of their SWPAs to maintain an active and updated inventory and awareness of potential threats.

For source management and education/outreach strategies, this utility has considered how the strategies will be implemented. The initial step in implementation is to discuss responsible parties and timelines for implementation of strategies. The Protection Team members will determine the best process for completing activities within the projected time periods. Additional meetings may be needed during the initial effort to complete activities, after which the Protection Team should consider meeting annually to review and update the SWPP. A system of regular updates should be included in every implementation plan.

Proposed commitments and schedules related to both protection strategies and education/outreach strategies may change. The Walnut Grove WTP Protection Team has developed an implementation plan for each PSSC that is listed in the Prioritization of Threats section. The responsible team member, timeline and additional comments for each management strategy, are presented in **Table 9**.

*Table 8. Priority PSSCs or Critical Areas*

<b>PSSC or Critical Area</b>	<b>Priority Number</b>	<b>Reason for Concern</b>
Agricultural Activities and Rural Lands	1	Due to extensive agricultural land use in the area, nitrate levels in the groundwater are elevated throughout much of the region. *Levels of nitrate in the water were found to be above 50% of the MCL in all quarterly samples collected between early 2009 and present.
Major Transportation (Highways and Railroads)	2	Threat to source water due to the potential for accidental leaks and spills of vehicle fluids or hazardous freight; the area is underlain by karst terrain and contains losing streams which put ground water sources at a higher risk from surface water contaminant pathways. Rail corridors also pose a risk due to the possibility of spills and derailments.
Industrial & Commercial Activity	3	Facilities such as auto repair shops and waste collection/transport stations lie within and just outside of the SWPA and pose a threat due to the potential for accidental leaks/spills, improper disposal of hazardous wastes or improperly managed stormwater runoff. Additionally, stormwater re-direction and ponding is a major cause of sinkholes in the area; which provide a direct conduit between surface water and groundwater.
Sinkholes	4	When sinkholes occur a direct conduit from the surface to groundwater is created and natural soil filtration processes are bypassed. Water quality threats are dependent on land use.
Septic Systems	5	The status of some older septic systems is unknown and failures and leaks are possible. Unlike other areas, in karst terrain a septic will fail downwards and can therefore be difficult to detect.



**Table 9. Priority PSSC Management Strategies**

<b>PSSC or Critical Area</b>	<b>Management Activity</b>	<b>Responsible Protection Team Member</b>	<b>Status / Schedule</b>
Agricultural Activities and Rural Lands	JUI will work with the County Extension Service, the Soil and Water Conservation District, and/or Natural Resources Conservation Service (NRCS), WV Rivers Coalition, WV land trust, the Farmland Protection Board, and Land Trust of the Eastern Panhandle to encourage agricultural land owners to participate in nutrient management planning, forest conservation, land retirement and management programs (including riparian zone preservation or restoration and along streams to help conserve land and protect source water) within the SWPA. Efforts here will focus on education and outreach measures.	JUI and WV River Coalition	Long Term (5+ years)
Railroad	<p>JUI will request that Jefferson County OHSEM work with LEPC and other local emergency responders to utilize the training materials provided by CSX railways (i.e., planning guides and in-person/on-site trainings, featuring a safety rail car) and their short line partners. JUI will further request that OHSEM and emergency responders also work with CSX to inquire about the Rail Respond program, which provides easy mobile access to critical information about what's traveling on CSX rails. Information regarding these programs is provided in Appendix F-7.</p> <p>Finally, JUI will work with OHSEM to request that emergency personnel perform routine Emergency Response drills for Highway and Railroad spills.</p> <p>JUI will work with WV DEP or BPH to perform a Hazmat Re-route request to prevent specific potential contaminants from being transported through system source water protection areas. JUI will also request that these entities, along with OHSEM, will work with railroad companies to discuss safety measures, emergency plans and inspection routine(s).</p>	JUI	Mid Term (2-3 years)

Highway (Route 9)	<p>JUI will begin a dialogue with the Jefferson County OHSEM, as well as the Department of Transportation (DOT), to explore opportunities to create and manage pre-stocked emergency spill response kits along highway and railroad corridors. JUI will consider alternative plans should an agreement not be reached by these entities. JUI will encourage the local OHSEM to work with LEPC coordinators and other emergency personnel to ensure that JUI receives timely notification in the event of highway or other roadway spills within SWPAs.</p> <p>JUI will begin a dialogue with the DOT to explore traffic regulation options for key highway corridors, and revisit postings of source water protection signs along these roadways.</p>	JUI	Long Term (5+ years)
Industrial & Commercial Activity	<p>JUI will request Groundwater Protection Plans (GPPs) and/or stormwater management plans from WV DEP for commercial and industrial facilities located within the SWPAs. From these the utility will investigate what (if any) preventative pollution measures are already in place for these facilities. This will permit the utility to better understand protection strategies already in place at these facilities and more accurately determine the threat posed by specific facilities.</p> <p>JUI will educate facility owners on the potential threat of sinkhole development caused by improper stormwater management.</p> <p>JUI will distribute site-specific Best Management Practice lists, along with advanced hazardous materials containment options to facilities (which will include vaulted Above ground Storage Tanks) on an as-needed basis.</p>	JUI	Mid Term (2-3 years)
Sink Holes	<p>JUI will work with the planning and zoning department, and will attempt to identify potential sources of funding to implement a sinkhole management program specific to SWPAs. The goal of the sinkhole management program will be to assign responsibility for mitigation and repair to relevant parties, encourage routine investigations along key travel corridors and provide advice and funding opportunities for sinkholes that develop on lands within the SWPA. Implementation of this task will take many years and cooperation from multiple public and private entities. The recommended sinkhole management plan is broadly based upon the Carroll County, MD sinkhole management plan.</p>	JUI	Long Term (10+ years)
Septic Systems	<p>JUI will work with the Health Department, to the degree feasible, to encourage homeowners to maintain and routinely inspect their septic systems or replace old or failing septic systems with Best Available Technologies (BATs).</p>	JUI	Long Term (5+ years)

## Education and Outreach Strategies

The goals of education and outreach strategies are to raise awareness of the need to protect drinking water supplies and build support for implementation strategies. Education and outreach activities will also help ensure that affected citizens and other local stakeholders remain informed and are provided an opportunity to contribute to the development of the SWPP. The Walnut Grove WTP has created an Education and Outreach plan to keep the local community involved in protecting their sources of drinking water in the future. This information can be found in **Table 10**.

*Table 10. Education and Outreach Implementation Plan*

<b>Education and Outreach Strategy</b>	<b>Description of Activity</b>	<b>Responsible Protection Team Member</b>	<b>Status / Schedule</b>
General Information Dissemination	JUI will include educational information on the following topics on their website for public use: source water protection, water conservation, household hazardous materials disposal, pharmaceuticals disposal, observing and reporting spills/leaks.	JUI	Ongoing
BMP lists	Distribute lists of industry specific BMPs to the owners of (1) Gas Stations, (2) Car Repair Shops, (3) Agricultural Lands/Facilities within the SWPA (Future Farmers, etc.). Provide SWPP education materials.	JUI	Ongoing
Public Workshops	Present Source Water Protection information at already scheduled meetings (i.e. town board meetings) and/or a Source Water specific Public Presentation	JUI	Ongoing
Waste Collection	Consider planning and publicizing more frequent community hazardous waste drop-off events.	JUI	Long Term (5+ years)
Clean Up Events	Coordinate with local Clean Up efforts and publicize projects. Work closely with Watershed Associations. This will support the implementation of our SWPP through community involvement and watershed protection.	JUI and WV Rivers Coalition	Ongoing
Early Education	Work with area schools to include source water protection in the curriculum, or present information at assemblies or in classroom events (e.g., environmental science class).	JUI	Long Term (5+ years)
Display Information	Include informational materials (i.e. brochures, maps, etc.) in county government offices and other public places (i.e. local fairs). Host non-confidential SWPP online for public review and comment. Work with DOT for protection area sign expansion/coverage.	JUI	Ongoing / As local events occur
Public-Private partnerships	Engage in activities that support public-private partnerships for source water protection, including the Safe Water for WV program coordinated by the WV Rivers Coalition.	JUI and WV Rivers Coalition	Ongoing / As local events occur

## Contingency Plan

The goal of contingency planning is to identify and document how the utility will prepare for and respond to drinking water shortages or emergencies that may occur due to short and long term water interruption, or incidents of contamination resulting from spills or other events. The Walnut Grove WTP has examined their capability to protect their sources, treatment, and distribution system from contamination events and water shortages by assessing their water sources to determine if adequate capacity exists to meet demands during such events. They also reviewed their ability to use alternative water sources and minimize water loss, as well as their ability to operate during power outages. In addition, this utility has reported on the feasibility of establishing an early warning monitoring system and meeting future water demands.

For groundwater sources, diverting or removing contaminated groundwater can be extremely difficult and costly. It may involve removing contaminated groundwater via pump and treat methods, or by implementing other remediation technologies. Systems have contingency plans in place to protect each source and treatment facility during contaminant events. Walnut Grove WTP can protect their source by turning off pumps and closing valves to prevent contamination of the treatment plant and/or distribution system. The amount of time that a source can remain offline depends, in part, on the water infrastructure, and should be determined by the utility before an emergency occurs. For groundwater sources, other factors, such as geologic strata orientation and configuration, contaminant type, contaminant viscosity, and retention also affect the period of time over which a groundwater source may not be usable. The longer a source can remain offline in such a case via interconnections and backup sources, the better equipped and flexible a water system will be for responding to emergency events. Incorporation of advanced treatment options into the water system, while expensive, may also offer additional options during contamination events, with the specific treatment methods dependent on the type of contaminant introduced into the groundwater supply.

Treated water storage capacity also becomes important in the event of an emergency or contaminant release. Storage capacity can directly determine how well a water system can respond to a contamination event and how long a source can remain offline. Information regarding the water shortage response capability of the Walnut Grove WTP is provided in **Table 11**.

## Response Networks and Communication

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

*Table 11. Walnut Grove WTP Water Shortage Response Capability*

<b>Can the utility isolate or divert contamination from the groundwater supply?</b>	Yes
<b>Describe the utility's capability to isolate or divert potential contaminants:</b>	CONFIDENTIAL
<b>Can the utility switch to an alternative water source that can supply full capacity at any time?</b>	Yes
<b>Describe in detail the utility's capability to switch to an alternative source:</b>	CONFIDENTIAL

<b>Can the utility close the water source to prevent contamination from entering the water supply?</b>	Yes
<b>How long can the source stay closed?</b>	N/A
<b>Describe the process to close the source:</b>	CONFIDENTIAL
<b>Describe the treated water storage capacity of the water system:</b>	510,000 gal standpipe that has security fencing surrounding the perimeter and a 500,000 gal elevated storage tank, a 30,000 gal contact tank, a 22,400 gal contact tank and a 20,000 gal contact tank. Based on the daily average usage data (513,605gal) obtained from the actual 2018-year, Walnut Grove has roughly 1.97days of reserve capacity within the standpipe and elevated tank. With the clear well and contact tanks factored in, reserve capacity increases to 2.65 days.
<b>Is the utility a member of WVRWA Emergency Response Team?</b>	Yes
<b>Is the utility a member of WV-WARN?</b>	Yes
<b>List any other mutual aid agreements to provide or receive assistance in the event of an emergency:</b>	Generator with Snyder Environmental Existing interconnections with the JUI owned and operated Briar Run and Meadowbrook WTPs. JUI has also developed an interconnection with the JUI owned and operated Burr Industrial Park water system.

### Operation During Loss of Power

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

*Table 12. Generator Capacity*

<b>What is the type and capacity of the generator needed to operate during a loss of power?</b>	CONFIDENTIAL
<b>Can the utility connect to generator at wellhead? If yes, describe.</b>	Yes, CONFIDENTIAL
<b>Can the utility connect to generator at treatment facility? If yes, select a scenario that best describes system.</b>	Yes, CONFIDENTIAL
<b>Can the utility connect to a generator in distribution system? If yes, select a scenario that best describes system.</b>	No, CONFIDENTIAL
<b>Does the utility have adequate fuel on hand for the generator?</b>	CONFIDENTIAL

What is your on-hand fuel storage and how long will it last operating at full capacity?		Gallons	Hours	
		CONFIDENTIAL	CONFIDENTIAL	
Provide a list of suppliers that could provide generators and fuel in the event of an emergency:	Supplier		Contact Name	Phone Number
	Generator	WVWARN	Bonnie Serrett	304-335-2035
	Generator	Sunbelt Rentals	Associate	301-662-3403
	Fuel	Sunoco	Associate	304-725-1900
	Fuel	Southern States	Associate	304-274-0440
Does the utility test the generator(s) periodically?		No-Snyder Environmental is in charge of maintenance		
Does the utility routinely maintain the generator?		No		
If no scenario describing the ability to connect to generator matches the utility's system or if utility does not have ability to connect to a generator, describe plans to respond to power outages:		—		

### Future Water Supply Needs

When planning for potential emergencies and developing contingency plans, a utility needs to not only consider their current demands for treated water, but also account for likely future needs (future demand). This could mean expanding current sources (e.g., removing water at greater rates than present) or developing new sources in the near future. This can be an expensive and time-consuming process, and the water utility should take this into account when determining emergency preparedness. The Walnut Grove WTP has analyzed its ability to meet future water demands at current capacity, and this information is included in **Table 13**.

*Table 13. Future Water Supply Needs for Walnut Grove WTP*

Is the utility able to meet water demands with the current production capacity over the next 5 years? If so, explain how you plan to do so.	Yes, high producing wells that will sustain growth.
If not, describe the circumstances and plans to increase production capacity:	N/A

### Water Loss Calculation

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

To further clarify, metered usages are most often those that are distributed to customers. Non-metered usages that are typically estimated include water used by fire departments for fires or training, un-metered bulk sales, flushing to maintain the distribution system, backwashing filters, and cleaning settling basins. By totaling the metered and non-metered uses the utility calculates unaccounted for water. Note: To complete annual reports submitted to the

Public Service Commission, utilities typically account for known water main breaks by estimating the amount of water lost. However, for the purposes of the SWPP, any water lost due to leaks, even if the system is aware of how much water is lost at a main break, is not considered a use. Water lost through leaks and main breaks cannot be controlled during water shortages or other emergencies. Therefore, these circumstances are included in the calculation of percentage of water loss for purposes of the SWPP. The data in **Table 14** were taken from the most recently submitted JUI combined system annual report; the data were not available in a manner that isolates water loss by WTP.

*Table 14. Water Loss Information; this reflects the entire Walnut Grove PWS.*

<b>Total Water Pumped (gal)</b>		242,314,000
<b>Total Water Purchased (gal)</b>		N/A
<b>Total Water Pumped and Purchased (gal)</b>		242,314,000
<b>Water Loss Accounted for (gal)</b>	<b>Mains, Plants, Filters, Flushing, etc.</b>	8,472,000
	<b>Fire Department</b>	2,400,000
	<b>Back Washing</b>	6,948,000
	<b>Main Leaks</b>	27,940,000
	<b>Blowing Settling Basins</b>	0
<b>Total Water Loss Accounted For [sum of above]</b>		45,760,000
<b>Water Sold- Total Gallons (gal)</b>		161,276,000
<b>Unaccounted for Lost Water (gal) [ produced – sold - accounted]</b>		35,278,000
<b>Total Percent Unaccounted for Water and Water Lost from Main Leaks (gal) [unaccounted lost water/produced *100]</b>		14.56%
<b>If total percentage of Unaccounted for Water is greater than 15%, please describe any measures that could be taken to correct this problem:</b>		It is recommended that Walnut Grove PWS purchase a leak noise correlation system that listens to the distribution system daily and produces a report indicating potential leak noise. It is also advised that Walnut Grove PWS install meter pits to section the distribution system into different zones. This will allow the utility to section the system off during a leak to determine where the leak is and allow for accurate estimating of water loss.

### Early Warning Monitoring System

Public water utilities are required to provide an examination of the technical and economic feasibility of implementing an early warning monitoring system. Implementing an early warning monitoring system may be approached in different ways depending upon the water utility's resources and specific threats to source waters. A utility may install a continuous monitoring system that will provide real time information regarding water



quality conditions. This would require utilities to analyze the data in order to establish which conditions are indicative of baseline water quality results and which are indicative of a contamination event. Continuous monitoring provides results for a predetermined list of water quality parameters. The more parameters being monitored, the more sophisticated the monitoring equipment will be. When establishing continuous monitoring systems, a utility considers the logistics of placing and maintaining the equipment, and receiving output data from the equipment.

Alternately, or in addition, a utility may also pull periodic grab samples on a regular basis, or in case of a reported incident. The grab samples may be analyzed for specific contaminants. A utility should examine their PSSCs to determine what chemical contaminants could pose a threat to the water source. If possible, the utility should plan in advance how those contaminants will be detected. Consideration should be given to where samples will be collected, the preservatives and hold times for specific samples, laboratories available to analyze samples, and costs associated with the sampling event. JUI collects samples from their source throughout the year to better understand the baseline water quality conditions and natural seasonal fluctuations. Having a baseline will help determine if changes in the water quality are indicative of a contamination event. In addition to required water quality sampling analyses, the Walnut Grove WTP monitors pH, turbidity, and total organic carbon.

The Walnut Grove WTP has established an early warning monitoring system for detecting chemical threats with sufficient time to respond to protect the treatment facility and public health. The utility also has outlined a communication plan, which establishes communication with facility owners and operators that pose a threat to water quality, with state and local emergency response agencies, with surrounding water utilities, and with the public. Communication plays an important role in knowing how to interpret data and how to respond. The Walnut Grove WTP has analyzed its ability to monitor for and detect potential contaminants that could impact its source water. Information regarding this utility's early warning monitoring system capabilities can be found in **Table 15** and in **Appendix B**.

*Table 15. Early Warning Monitoring System Capabilities*

<b>Does your system currently receive spill notifications from a state agency, neighboring water system, local emergency responders, or other facilities? If yes, from whom do you receive notices?</b>		Yes, notifications are received from the West Virginia Department of Environmental Protection and Local Fire and Police Stations. The Department of Health and Human Resources Bureau for Public Health also sends out emails regarding spills reported throughout the County.	
<b>Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?</b>		Yes; Routes 230, 115, 9 and both Norfolk Southern and CSX Railways. Multiple commercial facilities also exist within the SWPA.	
<b>Are you prepared to detect potential contaminants if notified of a spill?</b>		The utility has the ability to detect potential contaminants that may affect pH or turbidity. Other contaminants, including VOCs and SOCs, require analysis from an outside laboratory.	
<b>List laboratories (and contact information) on whom you would rely to analyze water samples in case of a reported spill.</b>	<b>Laboratories</b>		
	<b>Name</b>		<b>Contact</b>
	CONFIDENTIAL		CONFIDENTIAL

<b>Do you have an understanding of baseline or normal conditions for your source water quality that accounts for seasonal fluctuations?</b>	Yes; turbidity and pH	
<b>Does your utility currently monitor raw water (through continuous monitoring or periodic grab samples) at the source or from a groundwater source on a regular basis?</b>	Yes; turbidity and pH. The system is also contemplating acquiring equipment to monitoring conductivity, dissolved oxygen, temperature, total dissolved solids, alkalinity and hardness.	
<b>Provide or estimate the capital and O&amp;M costs for your current or proposed early warning system or upgraded system.</b>	<b>Capital</b>	CONFIDENTIAL
	<b>Yearly O&amp;M</b>	CONFIDENTIAL
<b>Do you serve more than 100,000 customers? If so, please describe the methods you use to monitor at the same technical levels utilized by ORSANCO.</b>	No	

## Single Source Feasibility Study

If a public water utility's water supply plant is served by a single-source intake for a surface water supply source or a GWUDI source, the submitted SWPP must also include an examination and analysis of the technical and economic feasibility of alternative sources of water to provide continued safe and reliable public water service in the event its primary source of supply is detrimentally affected by contamination from a chemical release or spill event, or other reasons (including drought). These alternatives may include a secondary source, raw or treated water storage, interconnection with neighboring systems, or other options identified on a local level. A secondary water supply should draw water from a substantially different location or water source to prevent contamination of both sources.

The JUI Walnut Grove WTP has interconnections with the JUI owned and operated Briar Run, Meadowbrook, Bardane, Burr, Shenandoah Junction and Woodland WTPs. In the event of an emergency in which the Walnut Grove wells or treatment plant cannot be utilized, the system would be able to supply water to its customers via these interconnections. These alternative WTPs have excess capacity that can cover the demand typically required of the Walnut Grove WTP. As a result, completion of the Feasibility Study Matrix spreadsheet was not required for this system; however, a brief narrative is attached (**Appendix E**) which describes the alternatives already in place.

## Communication Plan

The Protection Team for this water system has also developed a Communication Plan that documents the manner in which the public water utility, working in concert with state and local emergency response agencies, shall notify the local health agencies and the public of a 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. The initial notification to the public for any such event will occur 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 Protection Team will update the Communication Plan continually to ensure contact information is up to date.

The water system has procedures in place for various types of catastrophic spills or other emergencies that can reasonably be predicted at the source location or within the SWPA. The chain-of-command, notification procedures and response actions are known by water system employees, though JUI intends to work with OHSEM and emergency response personnel to improve the communication and first response systems.

The WVBPH has developed a recommended communication plan template that provides a Tiered Incident communication process to provide a universal system of alert levels to utilities and water system managers; JUI has opted to utilize this procedure. The Communication Plan for the Walnut Grove WTP is included in **Appendix C**.

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

## Emergency Response

A public water utility must be prepared for any number of emergency scenarios and events that would require immediate response. It is imperative that information about key contacts, emergency services, and other potentially impacted systems be posted and readily available in the event of an emergency. Key information regarding this utility's Emergency Response Plan can be found in **Appendix C**. Several short forms are included and provide quick access to important information about emergency response. The following information is included in the utility's Emergency Response Plan:

- Emergency Response Team
- Emergency Communication Equipment
- List of sensitive populations
- List of major users
- Personnel and property protection measures?
- Planned training courses
- Resource inventory
- Repair and supply providers
- Procedures for specific emergency incidents

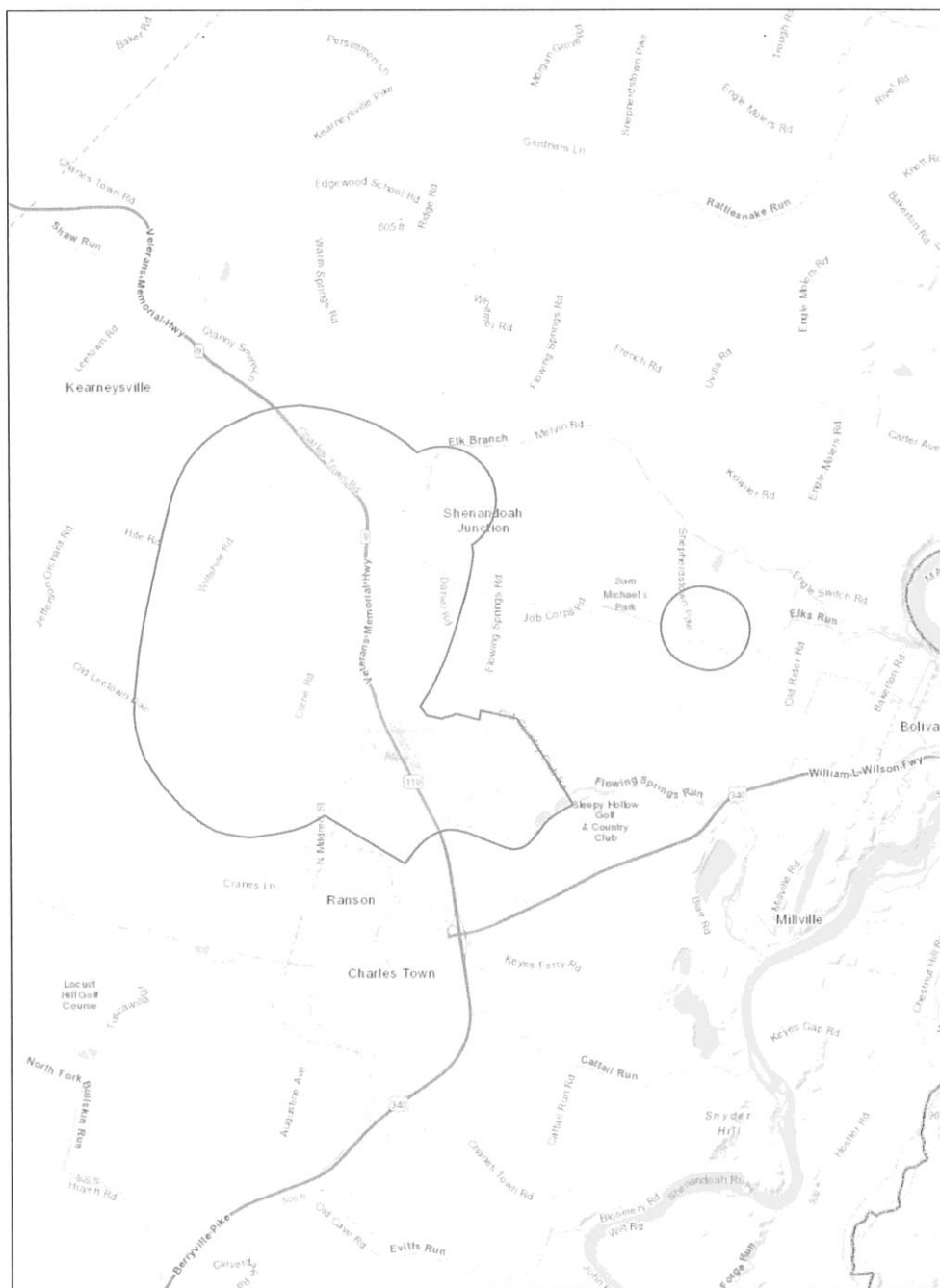
If this information is not included in the Emergency Response Plan, the plan should be reevaluated and updated to provide all important information.

## Conclusion

This report represents a detailed explanation of the required elements of Walnut Grove WTP's SWPP. Any supporting documentation or other materials that the utility considers relevant to their plan can be found in the **Appendices** of this report.

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

# West Virginia SWAP Protection Areas v0.01



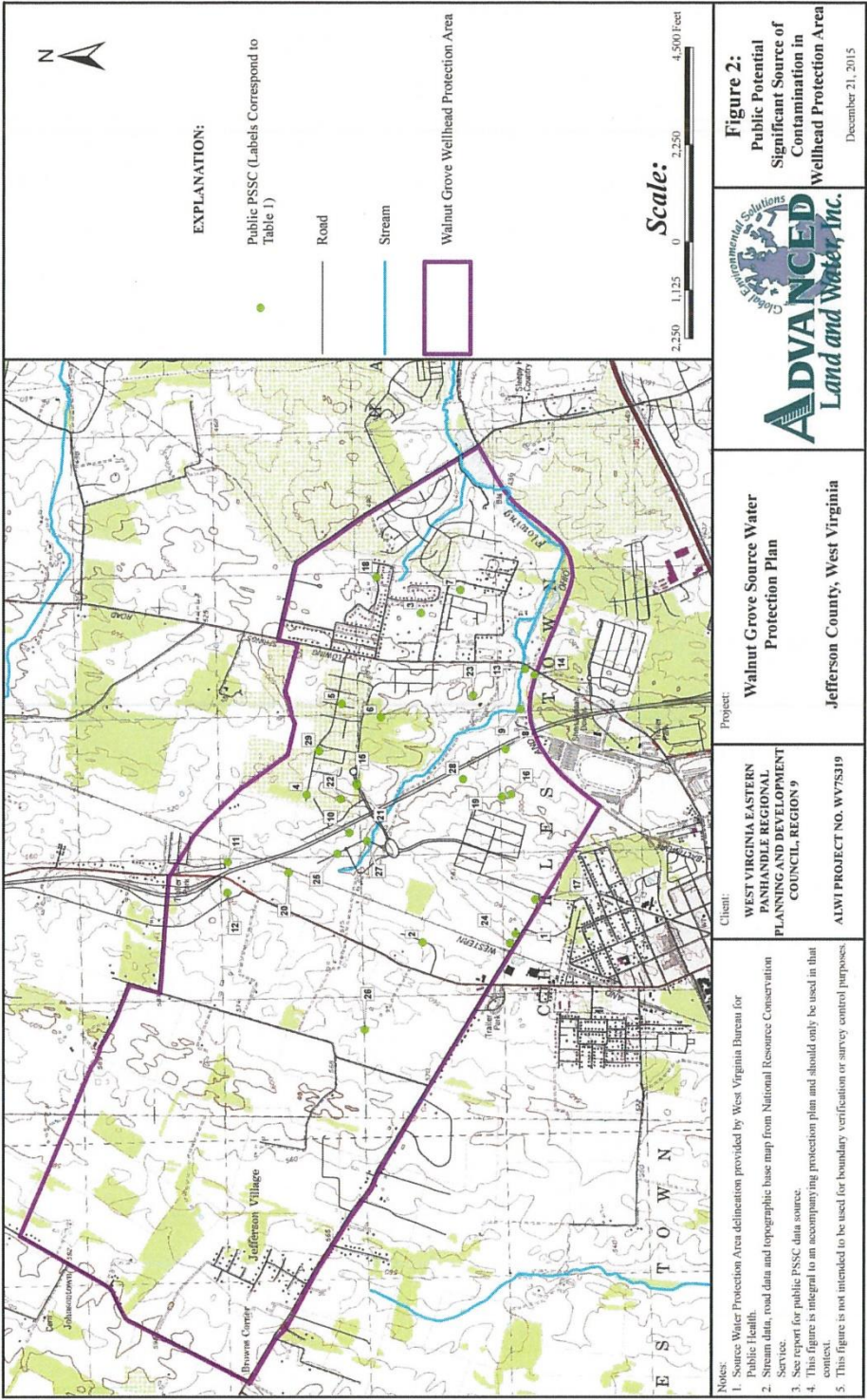
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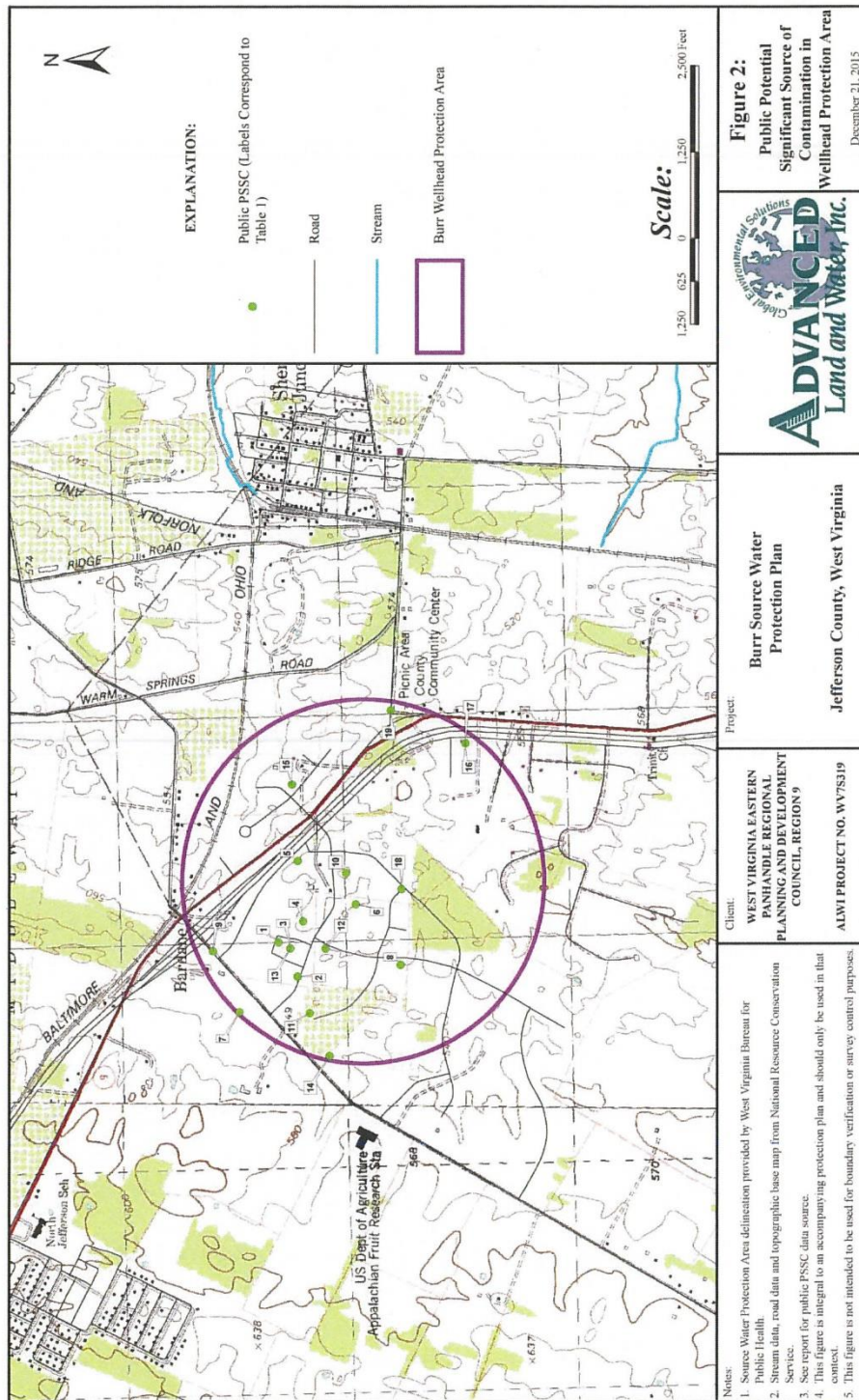
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Source Water Assessment and Wellhead Protection Programs



Wellhead Protection Area (WHPA) Map





<p><b>Client:</b></p> <p>WEST VIRGINIA EASTERN PANHANDLE REGIONAL PLANNING AND DEVELOPMENT COUNCIL, REGION 9</p> <p>ALWI PROJECT NO. WV75319</p>	<p><b>Project:</b></p> <p>Burr Source Water Protection Plan</p> <p>Jefferson County, West Virginia</p>	<p><b>Figure 2:</b></p> <p>Public Potential Significant Source of Contamination in Wellhead Protection Area</p> <p>December 21, 2015</p>
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**Public List of Regulated PSSC's- Burr Source**

Arc Label	Source Name	PSSC Type	Site Description
2	CONFIDENTIAL	Pesticide	Pesticide Dealer
3	CONFIDENTIAL	Pesticide	Landscaping Business
4	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
5	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
6	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
7	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
8	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
11	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
12	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
14	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
15	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
17	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
19	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
21	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
23	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
24	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
25	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
28	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest
29	CONFIDENTIAL	Resource Conservation and Recovery Act	Facility of Interest

**Public List of Regulated PSSC's- Walnut Grove Source**

Arc Label	Source Name	Source Type
1	CONFIDENTIAL	LUST Site
2	CONFIDENTIAL	Resource Conservation and Recovery Act
3	CONFIDENTIAL	Resource Conservation and Recovery Act
4	CONFIDENTIAL	Resource Conservation and Recovery Act
5	CONFIDENTIAL	Resource Conservation and Recovery Act
6	CONFIDENTIAL	Resource Conservation and Recovery Act
7	CONFIDENTIAL	Resource Conservation and Recovery Act
8	CONFIDENTIAL	Resource Conservation and Recovery Act
9	CONFIDENTIAL	Resource Conservation and Recovery Act
10	CONFIDENTIAL	Resource Conservation and Recovery Act
11	CONFIDENTIAL	Resource Conservation and Recovery Act
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26	CONFIDENTIAL	Resource Conservation and Recovery Act
27	CONFIDENTIAL	Resource Conservation and Recovery Act
28	CONFIDENTIAL	Resource Conservation and Recovery Act
29	CONFIDENTIAL	Resource Conservation and Recovery Act



## Public List of Locally Identified PSSCs-Burr

Arc Label	Source Name	Map Code	Source Category	Associated Chemicals	Threat to GW	Threat to SW
2	CONFIDENTIAL	C-14	Commercial	M, VOC, HM, SOC, PH	H	H
3	CONFIDENTIAL	C-14	Commercial	M, VOC, HM, SOC, PH	H	H
4	CONFIDENTIAL	C-53	Commercial (Other / Not Specified)			
5	CONFIDENTIAL	C-53	Commercial (Other / Not Specified)			
6	CONFIDENTIAL	C-40	Commercial	VOC, SOC	M	L
7	CONFIDENTIAL	A-5	Agriculture	NN, SOC, MP	L	L
8	CONFIDENTIAL	M-23	Municipal	M, VOC, MP, TO	H	L
11	CONFIDENTIAL	C-3	Commercial	PH, M, VOC, HM, SOC	H	M
12	CONFIDENTIAL	C-53	Commercial (Other / Not Specified)			
14	CONFIDENTIAL	M-32	Commercial (Other / Not Specified)			
16	CONFIDENTIAL	C-53	Commercial (Other / Not Specified)			
17	CONFIDENTIAL	A-15	Agriculture	MP, NN	L	L
19	CONFIDENTIAL	C-53	Commercial (Other / Not Specified)			
21	CONFIDENTIAL	I-9	Industrial	M, VOC, HM, SOC	M	M
23	CONFIDENTIAL	C-53	Commercial (Other / Not Specified)			
24	CONFIDENTIAL	M-29	Municipal	MP, D	L	M
25	CONFIDENTIAL	C-53	Commercial (Other / Not Specified)			
28	CONFIDENTIAL	C-53	Commercial (Other / Not Specified)			
29	CONFIDENTIAL	C-53	Commercial (Other / Not Specified)			
31	CONFIDENTIAL	C-53	Commercial (Other / Not Specified)			
32	CONFIDENTIAL	C-31	Commercial	MP, D, R	M	L
33	CONFIDENTIAL	C-42	Commercial	PH, VOC	L	L
34	CONFIDENTIAL	I-1	Industrial	PH, VOC	M	H
35	CONFIDENTIAL	I-44	Industrial (Other / Not Specified)			
36	CONFIDENTIAL	C-13	Commercial	PH, M, VOC	H	L

37	CONFIDENTIAL		Commercial	MP, D, R	M	L
38	CONFIDENTIAL		Commercial	MP, D, R	M	L
39	CONFIDENTIAL		Commercial	NN,M,VOC,SOC	L	L
40	CONFIDENTIAL		Commercial	PH,M,VOC,HM,SOC	H	H
41	CONFIDENTIAL		Commercial			
42	CONFIDENTIAL		Commercial	PH,M,VOC,HM,SOC	H	H
43	CONFIDENTIAL		Commercial	PH, VOC	L	L

Index to Associated Chemicals are as follows:

MP Microbiological Pathogens: Total/Fecal Coliform, Viruses, Protozoa  
 NN Nitrate/Nitrite  
 VOC Volatile Organic Compounds  
 HM Heavy Metals  
 M Metals  
 SOC Synthetic Organic Compounds  
 T Turbidity  
 TO Taste and Odor precursors  
 R Radionuclides  
 PH Petroleum Hydrocarbons  
 D Disinfection byproducts

## Walnut Grove

Arc Label	Source Name	Map Code	Source Category	Associated Chemicals	Threat to GW	Threat to SW
1	CONFIDENTIAL	A-12	Agriculture	PH, VOC	L	L
2	CONFIDENTIAL	A-12	Agriculture	PH, VOC	L	L
3	CONFIDENTIAL	A-17	Agriculture	MP	L	L
4	CONFIDENTIAL	A-18	Agriculture	MP, SOC	L	L
5	CONFIDENTIAL	A-22	Agriculture			
6	CONFIDENTIAL	A-5	Agriculture	NN, SOC, MP	L	L
7	CONFIDENTIAL	C-10	Commercial	M, VOC, T, PH, SOC, HM	H	L
8	CONFIDENTIAL	C-18	Commercial	PH, M, VOC, SOC	H	M
9	CONFIDENTIAL	C-21	Commercial (Other / Not Specified)	VOC, SOC, HM, M	L	L
10	CONFIDENTIAL	C-21	Commercial (Other / Not Specified)	VOC, SOC, HM, M	L	L
11	CONFIDENTIAL	C-53	Commercial (Other / Not Specified)	VOC, PH	L	M
12	CONFIDENTIAL	C-35	Commercial	VOC, PH	L	M
13	CONFIDENTIAL	C-7	Commercial (Other / Not Specified)	PH, VOC	H	L
14	CONFIDENTIAL	I-41	Industrial	M, VOC, SOC	H	H
15	CONFIDENTIAL	I-44	Industrial			
16	CONFIDENTIAL	M-17	Municipal	M, VOC, SOC, PH	H	M
17	CONFIDENTIAL	M-29	Municipal	MP, D	L	M
18	CONFIDENTIAL	M-29	Municipal	MP-D	L	M
19	CONFIDENTIAL	M-29	Municipal	MP, D	L	M
20	CONFIDENTIAL	M-29	Municipal	MP, D	L	M
21	CONFIDENTIAL	M-29	Municipal	MP, D,	L	M

22	CONFIDENTIAL	M-29	Municipal	MP, D	L	M
23	CONFIDENTIAL	M-31	Municipal	VOC, SOC	L	L
24	CONFIDENTIAL	M-5	Municipal	D	L	L
25	CONFIDENTIAL	M-7	Municipal	PH, M, VOC	M	H
26	CONFIDENTIAL	R-3	Residential	VOC, NN, TO, MP	L	L
27	CONFIDENTIAL	R-4	Residential	VOC, SOC, NN	H	H
28	CONFIDENTIAL	R-4	Residential	VOC, SOC, NN	H	H
29	CONFIDENTIAL	R-6	Residential	VOC, SOC, MP, TO, NN	M	M
30	CONFIDENTIAL		Commercial	VOC, SOC, PH	M	M
31	CONFIDENTIAL		Commercial	VOC, SOC, R,	M	M

Index to Associated Chemicals are as follows:

MP Microbiological Pathogens: Total/Fecal Coliform, Viruses, Protozoa

NN Nitrate/Nitrite

VOC Volatile Organic Compounds

HM Heavy Metals

M Metals

SOC Synthetic Organic Compounds

T Turbidity

TO Taste and Odor precursors

R Radionuclides

PH Petroleum Hydrocarbons

D Disinfection byproducts

*Appendix B. Early Warning Monitoring System Forms*

**The following forms have been prepared by WV BPH for use by public utilities, with the proper form dependent on source type (surface or groundwater) and the presence or absence of an early warning monitoring system. The appropriate form for this utility to complete is Form C, as the utility has an existing early warning monitoring system.**

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

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

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

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

**Appendix B- Form A (Not applicable to the Walnut Grove WTP)**

**Existing Early Warning Monitoring System Worksheet- Surface Water Source**

<b>Describe the type of early warning detection equipment installed.</b>
<b>Describe the mechanism used to store data and an institutional framework to analyze and interpret the data.</b>
<b>Describe the process used to determine the credibility of a contamination event if a change is detected in the quality of source water.</b>

**Appendix B-Form B (Not applicable to the Walnut Grove WTP)**

**Proposed Early Warning Monitoring System Worksheet- Surface**

<b>Describe the type of early warning detection equipment that could be installed, including the design.</b>
<b>Where would the equipment be located?</b>
<b>What would the maintenance plan for the monitoring equipment entail?</b>
<b>Describe the proposed sampling plan at the monitoring site.</b>
<b>Describe the proposed procedures for data management and analysis.</b>

**Appendix B-Form C****Existing Early Warning Monitoring System Worksheet- Groundwater Source**

<b>Describe the type of early warning detection equipment installed.</b>
CONFIDENTIAL
<b>How many monitoring (sentinel) wells are established?</b>
None. Due to the complex hydrogeologic setting and widespread geospatial position of PSSCs, there is no guarantee that installation of monitoring wells would provide adequate advanced notification of contamination in the groundwater system. Monitoring wells may be considered in the future if outside funding sources are available.
<b>What is the expected rate of travel of a contaminant through the groundwater system?</b>
Travel times are highly dependent on the 1.) Location of the contaminant source with respect to System sources, 2.) Hydraulic conductivity of geologic formations, which reflects the degree to which fractures are naturally enlarged and 3.) Hydraulic gradient along groundwater flow pathways. As such, travel times vary significantly throughout the SWPA and change as hydrologic conditions change.
<b>Provide the distance from the contaminant source to the monitoring wells.</b>
CONFIDENTIAL
<b>What is the distance of the monitoring equipment to the wellhead?</b>
CONFIDENTIAL
<b>Describe the mechanism used to store data and an institutional framework to analyze and interpret the data.</b>
CONFIDENTIAL
<b>Describe the process used to determine the credibility of a contamination event if a change is detected in the quality of source water.</b>
<p>If a notable change is detected in water quality for a parameter regularly monitored, an additional water quality sample will be taken immediately for result verification. If the result is confirmed, more comprehensive testing could be performed, depending on the type of water quality change observed (for the purpose of differentiating between hazard types). Jefferson Utilities, Inc. personnel may also choose to shut down the affected well pump until an appropriate course of action is determined. This would not affect the quality or quantity of water delivered to customers, as the utility has adequate storage for several days, as well as interconnections with the JUI owned and operated Briar Run, Meadowbrook, Bardane, Burr, Shenandoah Junction and Woodlawn WTPs.</p> <p>If the sample is in violation of an MCL, an additional water quality sample will be taken immediately for result verification. As water quality results are pending, Jefferson Utilities, Inc. personnel should shut down the affected well pump until an appropriate course of action is determined. This would not affect the quality or quantity of water delivered to customers, as the utility has adequate storage for several days, as well as interconnections with the JUI owned and operated Briar Run and Meadowbrook, Bardane, Burr, Shenandoah Junction and Woodlawn WTPs.</p>

**Appendix B-Form D (Not applicable to the Walnut Grove WTP)**

**Proposed Early Warning Monitoring System Worksheet- Groundwater Source**

<b>Describe the type of ground water monitoring network that could be installed, including the design and location.</b>
<b>How many monitoring (sentinel) wells would need to be established?</b>
<b>What is the expected rate of travel of a contaminant through the groundwater system?</b>
<b>Provide the distance from the contaminant source to the proposed monitoring wells.</b>
<b>What is the distance from the proposed monitoring equipment to the wellhead?</b>
<b>What would the maintenance plan for the monitoring equipment entail?</b>
<b>Describe the proposed sampling plan at the monitoring site.</b>
<b>Describe the proposed procedures for data management and analysis.</b>

## Communication Plan Template

### For Walnut Grove WTP

PWSID: WV3301942 District: IV Kearneysville

Certified Operator: CONFIDENTIAL

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

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

Plan Developed On: \_\_\_\_\_ Plan Update Due On: 06-30-19

#### ACKNOWLEDGMENTS:

*This plan was developed by Jeff Pippel, Chief Operator, Jefferson Utilities, Inc. to meet certain requirements of the Source Water and Assessment Protection Program (SWAPP) and the Wellhead Protection Program (WHPP) for the State of West Virginia, as directed by the federal Safe Drinking Water Act (SDWA) and state laws and regulations.*



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## Introduction

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

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

## TIERS Reporting System

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

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

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

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

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

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

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

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

### Communication Team

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

Water system communication team members, organizations, and roles:

Team Member Name	Organization	Phone	Email	Role
CONFIDENTIAL				
CONFIDENTIAL				
CONFIDENTIAL				

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

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

### Communication Team Duties

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

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

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

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

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

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

#### **Incident / Event Communication Procedure**

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

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

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

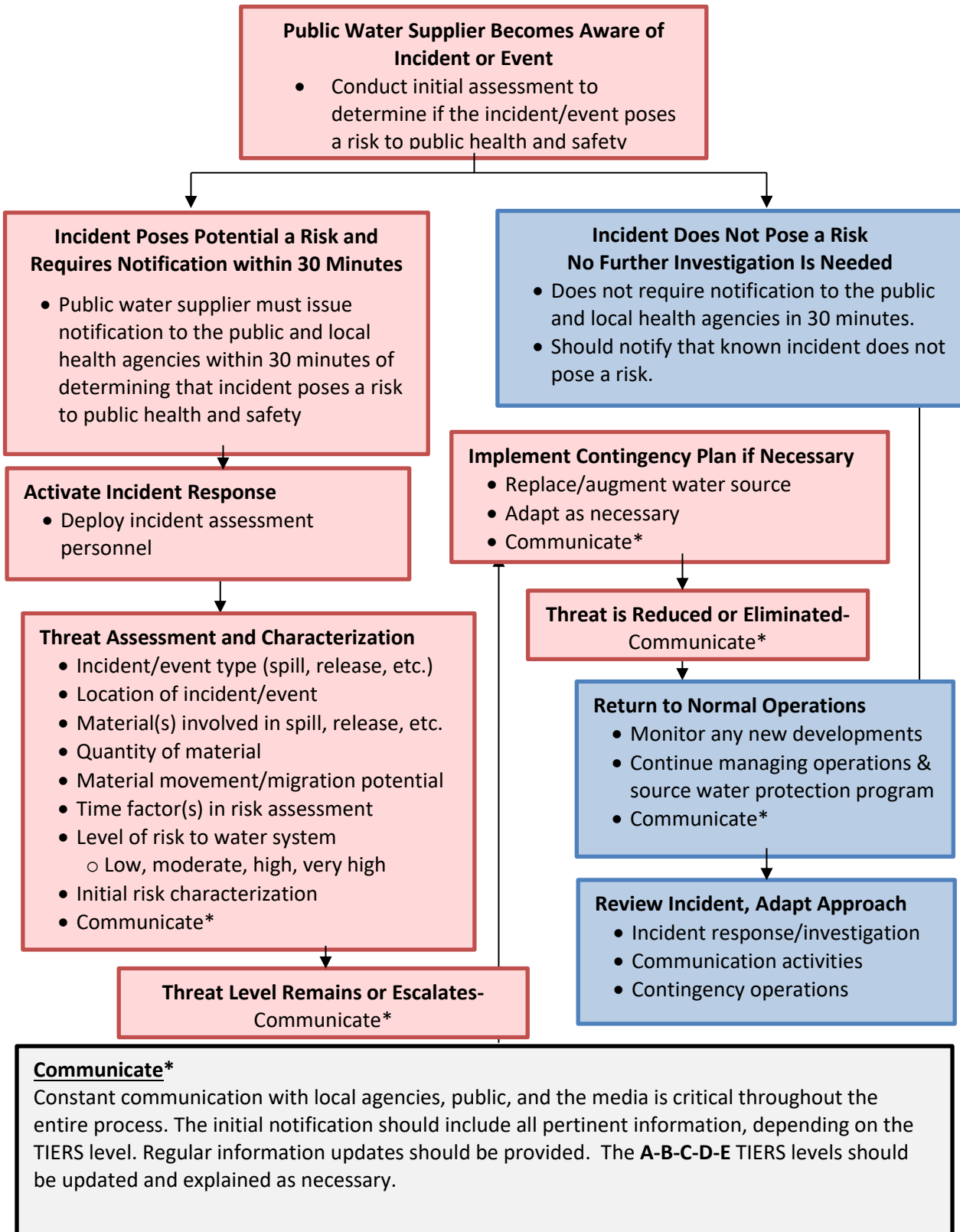
- ☐ Incident/event type (spill, release, etc.)
- ☐ Location of incident/event
- ☐ Type of material(s) involved in spill, release, etc.
- ☐ Quantity of material involved
- ☐ Potential of the material to move, migrate, or be transported
- ☐ Relevant time factor(s) in the risk assessment (e.g., downstream movement rate)
- ☐ Overall level of risk to water system, whether low, moderate, high, or very high
- ☐ Development of the initial risk characterization

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

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

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

## TIERS Flow Chart



Emergency Communication Information				
	Name	Phone Number	Email	
<b>Designated spokesperson:</b>	Stephanie Reel	304-728-2078	sreel@juiwater.net	
<b>Alternate spokesperson:</b>	Jeff Pippel	304-728-2077	jpippel@juiwater.net	
<b>Designated location to disseminate information to media:</b>	270 Industrial Blvd. Kearneysville, WV 25430			
<b>Methods of contacting affected residents:</b>	<b>Word of mouth</b>		<b>Posted notices</b>	
	<b>Door-to-door canvassing</b>		<b>Radio</b>	<b>X</b>
	<b>Newspaper</b>	<b>X</b>	<b>Other</b>	<b>Automated Phone Tree</b> <b>Web Site</b>
<b>Media contacts:</b>	<b>Name</b>	<b>Title</b>	<b>Phone Number</b>	<b>Email</b>
	Robert Snyder	Editor - Publisher	(304) 725-2046	<a href="mailto:editor@spiritofjefferson.com">editor@spiritofjefferson.com</a>
	Bill Kohler; The Herald Mail Co.	Editor	301-733-5131	billk@herald-mail.com
	The Journal	-	304-263-8931 ext. 125	-
	WRNR – Main Line	-	304-263-6586 304-263-6540	info@talkradiowrnr.com
	WLTF – Main Line	-	304-263-8868 Studio – 888-797-5975	-
	WKMZ – Main Line	-	304-263-2770	

	WYII	-	304-263-0637	-
	WEPM 1340	-	304-263-8868 304-263-4321	-
	WHAG Channel 25	-	301-797-4400	-

#### Emergency Short Form 1

Emergency Services Contacts				
	Name	Emergency Phone	Alternate Phone	Email
State Police	WV State Police	911	304-725-9779	
Local Police	Jefferson County Sheriff	304-728-3205	304-728-3205	pdougherty@jcsdvw.com
Local Fire Department	Citizens Fire Company	911	304-725-2814	
Local Ambulance Service	Citizens Fire Company	911	304-725-2814	
Hazardous Material Response Service	Citizens Fire Company	911	304-725-2814	



## Emergency Short Form 2

<b>Key Personnel</b>				
	<b>Name</b>	<b>Title</b>	<b>Phone</b>	<b>Email</b>
<b>Key staff responsible for coordinating emergency response procedures?</b>	CONFIDENTIAL			
	CONFIDENTIAL			
<b>Staff responsible for keeping confidential PSSC information and releasing to emergency responders:</b>	CONFIDENTIAL			
	CONFIDENTIAL			
<b>Sensitive Populations</b>				
<b>Other communities that are served by the utility:</b>	None			
<b>Major user/sensitive population notification:</b>	<b>Name</b>	<b>Emergency Phone</b>	<b>Alternate Phone</b>	
	CONFIDENTIAL			
	CONFIDENTIAL			
	CONFIDENTIAL			
	CONFIDENTIAL			
	CONFIDENTIAL			
<b>EED District Office Contact:</b>	<b>Name</b>	<b>Phone</b>	<b>Email</b>	
	CONFIDENTIAL			
	<b>Water System Name</b>	<b>Contact Name</b>	<b>Emergency Phone</b>	<b>Alternate Phone</b>

<b>Downstream Water Contacts:</b>	None			
<b>Are you planning on implementing the TIER system?</b>	Yes			

### Emergency Short Form 3

Emergency Response Information		
List laboratories available to perform sample analysis in case of emergency:	Name	Phone
	CONFIDENTIAL	
Has the utility developed a detailed Emergency Response Plan in accordance with the Public Health Security Bioterrorism Preparedness and Response Pan Act of 2002 that covers the following areas?	Yes	
When was the Emergency Response Plan developed or last updated?	February 24, 2016	

**Emergency Short Form 4**

**State Emergency Spill Notification**

1-800-642-3074

**Office of Emergency Services**

<http://www.wvdhsem.gov/>

Charleston, WV- (304) 558-5380

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

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

Charleston, Central Office (304) 558-2981

Beckley, District 1 (304) 256-6666

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

Kearneysville, District 4 (304) 725-9453

Wheeling, District 5 (304) 238-1145

Philippi, District 6 (304) 457-2296

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

1-800-424-8802

**WV State Fire Marshal's Office**

1-800-233-3473

**West Virginia State Police**

1-304-746-2100

**WV Watch – Report Suspicious Activity**

1-866-989-2824

**DEP Distance Calculator**

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

#### *Appendix D. Single Source Feasibility Study*

The single source feasibility study is required for a public water utility which is served by a single surface water source or a single groundwater source (i.e., one well or one spring). The Walnut Grove WTP has one or more alternative supply sources in place at this time; see **Appendix E** for details. As a result, a single source feasibility study is not required for this utility at this time.

#### *Appendix E. Feasibility Study Narrative*

A feasibility study matrix was deemed unnecessary for the JUI Walnut Grove WTP. This WTP can receive water from other interconnected water treatment plants, which include the Briar Run (TP2), Meadowbrook (TP3), Bardane (TP4), Burr (TP5), Shenandoah Junction (TP6) and Woodlawn (TP7) treatment plants. If Walnut Grove's (TP1) groundwater sources at the Walnut Grove WTP was to go out of service as a result of a contamination event or other emergency, the other sources have the capacity to fully supply the Walnut Grove WTP.

**Appendix F-1. ALWI PSSC Update and Source Inspection**

**Appendix F-2. Locally Identified PSSC Database Search**

**Appendix F-3. Walnut Grove Source Water Assessment Report**

**Appendix F-4. JUI Protection Team Meeting Minutes**

**Appendix F-5. Emergency Response Plan Signature Page**

**Appendix F-6. Engineering Evaluation**

**Appendix F-7. Railroad Emergency Response Trainings and Services**

**Appendix F-1. ALWI PSSC Update and Source Inspection**

Advanced Land and Water, Inc. (ALWI) performed regulatory database reviews and a field reconnaissance in order to identify changes to known PSSCs and to identify and record additional PSSCs not previously documented. The field reconnaissance also included verifying water source locations and reviewing the delineated SWPA. Both point sources and non-point sources of contamination were considered during our field reconnaissance.

**PSSC VERIFICATION AND SWPA INSPECTION**

On May 14, 2015, ALWI performed a visual reconnaissance in the way of a windshield survey from public rights-of-way for the purpose of verifying and updating the PSSC inventory provided in past SWAPs, database reviews and associated lists provided by BPH. In so doing, we observed the existence (or continuing existence) of the previously identified PSSCs, and recorded the locations of previously unidentified PSSCs. Results of this updated inventory are listed in Appendix A.

During this reconnaissance, local land use conditions were observed with an emphasis on the potential use, storage and disposal practices of hazardous materials and petroleum products near the sources and elsewhere throughout the delineated SWPA. Properties were visually scanned to the degree practicable

from public rights-of-way. Global Positioning System (GPS) devices were used to verify geospatial positions of PSSCs.

Though ALWI observed and recorded additional hazards previously unknown to BPH and the utility and updated the existing hazard data, (1) contaminant hazards may exist and could remain undetected due to limitations in the methods employed (concealed visual evidence, etc.) and/or (2) new contamination hazards may develop in the future. For these reasons, the measures employed herein for identifying contaminant hazards should be repeated periodically for the assessment to remain current.

On May 14, 2015, ALWI also observed the location and condition of each of the Walnut Grove Utilities sources and the measures which the System has taken to protect them. Well #1 is a 47 feet deep hand-dug well that was completed around the time of the Civil War. It is surrounded by a locked chain link fence and additionally protected by a building which is kept locked and appears to be structurally sound. Well #6 is located outside the building next to Well #1 and is surrounded by the same locked chain link fence; the well cap is securely bolted and the electrical wires are completely encased.

Well #3 is used as an emergency backup source and is also considered a GWUDI source; it is located in a residential area near a neighborhood playground. The well cap is securely bolted but is not locked and the well is not protected by any fence or other barrier. Additionally, the electrical box by which the Well #3 pump is turned ON/OFF is not enclosed by a fence or barrier. There is a locked padlock securing the electrical box from being opened, however there is no lock securing the ON/OFF switch which is located on the outside of the electrical box. ALWI recommends surrounding both the well and the electrical box with a locked fence or other barrier, as well as providing the well cap and the electrical box switch with padlocks. Additional measures, such as security cameras, may need to be taken as a result of the wells proximity to residential areas.

Well #4 is also used as an emergency backup source and is considered a GWUDI source; it is located near an open area of land in a residential area. Well #4 is not protected by a fence or other barrier, the well cap is neither bolted nor locked in place and the PVC casing around the electrical wires is insufficient to protect the entire length of wire. In order to protect this source for future emergency backup use ALWI recommends surrounding the well with a locked chain-link fence or other barrier, encasing the electrical wires with PVC or metal in a way that they cannot be accessed from the outside and cut, as well as bolting the well cap to the well and additionally securing it with a padlock.

Well #5 is located close to a residential area and immediately next to Treatment Plant #2 (Briar Run) which houses the pump system for this well and Well #7. This location is not protected by a fence or other barrier; however, the pump house appears to be structurally sound, is locked with a padlock, and is posted with a NO TRESPASSING sign. Well #5 is protected at the surface with a small concrete pad, the well cap is not bolted or locked to the well and is easily lifted. The electrical wires are adequately encased and protected with PVC piping. Well #7 is further to the right of the pump house and also has a concrete pad to protect the ground surface immediately surrounding the well. This well cap is not bolted to the well but is secured in place with a locked padlock, additionally the electrical wires are entirely protected by a PVC casing. There is evidence that the vegetation surrounding the well pads is killed with an application of some type of herbicide. ALWI recommends enclosing the entire area (Well #5, Well #7, and the pump house) in a locked chain link fence, that the Well #5 cap be bolted and padlocked into place, and that the chemical means of controlling the grasses be replaced with mechanical means (i.e. mowing or weed-whacking).

The Meadowbrook Treatment Plant (TP3) receives water from Well #8, Well #9 and Well #10. Well #8 is located near a residential area; it is not protected by a surrounding fence or barrier, the well cap is welded and locked to the well, and the electrical lines are securely encased with metal. There is also evidence of the surrounding grasses being killed by herbicide, and there is no concrete pad to protect the immediate



ground surface. ALWI recommends enclosing the area with a locked chain link fence, also controlling the grasses by mechanical means rather than chemical means (i.e., mowing). Well #9 is near TP3 and is also not protected by a fence or other barrier; the well cap is welded and locked to the well, and the electrical lines are sufficiently protected by metal casing. For this area, ALWI recommends enclosing the well area in a locked chain link fence.

On May 14, 2015, ALWI also observed the location and condition of the Burr Industrial Park WTP source, and the measures which the System has taken to protect it. ALWI personnel also observed the location and condition of sources at the Bardane and Shenandoah Junction WTPs. Well #1 (Bardane TP1) is housed within the Bardane Treatment Plant (TP1) which is kept locked. Well #2 (Bardane TP) is located at the same site as Well #1 (Bardane TP1), but is located outside the building. The well is not protected by a fence or other surrounding barrier, the well cap is welded and locked to the well, and the electrical lines are sufficiently protected by metal casing. ALWI recommends installing additional protective devices around Well #2 (Bardane TP1), such as a locked fence.

Well #3 (Burr TP2) is enclosed within a high chain link fence which is locked. The well is additionally protected by a securely bolted well cap and the electrical lines are encased in metal piping. The Burr Treatment Plant is also enclosed by this same fence and is also kept locked.

Well #4 (Shenandoah Junction TP3) is located in a residential trailer park, abutting one such trailer. The ground surface immediately surrounding the well is protected by a pad of concrete. The well is capped without bolts and is not locked, while the electrical wires are protected by a PVC casing. ALWI recommends improving the protection around Well #5 (Shenandoah Junction TP3) by installing a locked fence or securing the well in a way that would prevent possible contamination or destruction, such as a bolted and padlocked well cap. Additional measures may need to be taken as a result of the wells proximity to residential areas, such as installation of security cameras.

Well #6 (Shenandoah Junction TP3), which is also referred to as the Railroad Well, is located close to the railroad tracks near the track's intersection with Shenandoah Junction Road. Well #6 is housed in a brick building which is kept locked and appears to be structurally intact. The building sits on a concrete pad. ALWI observed a train moving past the well at a low rate of speed (5-10 mph) due to the close proximity to a railroad crossing.

Well #5 (Shenandoah Junction TP3) is located in the same residential trailer park as Well #4 (Shenandoah Junction TP3). However, Well #5 is further from any residential dwelling than Well #4. Well #5 is not protected by a fence or other surrounding barrier. Additionally, the well cap is not bolted or padlocked and the electrical lines are not protected by any piping. ALWI recommends improving the protection around Well #5 (Shenandoah Junction TP3) by installing a locked fence or securing the well in a way that would prevent possible contamination or destruction, such as a bolted and padlocked well cap, complete and proper encasement of electrical wires and a concrete pad to protect the surrounding ground surface. Additional measures may need to be taken as a result of the wells proximity to residential areas, such as installation of security cameras.

## **Appendix F-2. Locally Identified PSSC Database Search**

ALWI incorporated information from the following state-maintained environmental databases to supplement the non-confidential point-source hazard inventories, with the date of database publication provided parenthetically as follows:

- ❑ Pesticide Businesses (11/6/2015);
- ❑ Land Restoration Program Sites (Voluntary Cleanup Program and Comprehensive Environmental Response, Comprehensive, and Liability Act) (11/9/2015);
- ❑ Underground Storage Tank and Leaking Underground Storage Tank Databases (5/4/2015 and 11/9/2015 respectfully);
- ❑ Resource Conservation and Recovery Act (RCRA) sites (11/9/2015).

The databases helped with interpretations of groundwater susceptibility, in that the listed facilities may be generators of hazardous materials, petroleum products and/or other drinking water contaminants.

## **Appendix F-3. Walnut Grove Source Water Assessment Report**

**State of West Virginia  
Source Water Assessment and  
Protection Program  
Source Water Assessment Report**

**Walnut Grove Utilities  
Jefferson County  
PWSID: WV3301942**



**Prepared by:**

**West Virginia Department of Health and Human Resources  
Bureau for Public Health  
Office of Environmental Health Services  
Source Water Protection Unit**

**Date: December 2002**

**Ground Water Public Water Supply Systems  
Source Water Assessment and Protection (SWAP) Program**

*Prepared by the West Virginia Bureau for Public Health, SWAP Program*

**What is the Purpose of this Report?**

The Source Water Assessment and Protection (SWAP) Program of the West Virginia Bureau for Public Health (BPH) is completing assessments of the contamination threats to all public water sources (private wells are not involved in this effort). This concept of source water protection is a preventative approach and complements the effort of proper treatment and disinfection by the individual water supply systems. This assessment is one step in a multilevel approach to ensure a safe future supply of water by understanding what potential threats exist.

This Source Water Assessment Public Summary is to provide information to support local and state efforts to protect public drinking water source and to maintain a safe and dependable water supply for the protection of human health by preventing contamination. The costs of these preventative measures will never outweigh the cost of possibly remediating a public water supply.

The emphasis of this assessment is on “source” (well/spring) water rather than the “tap” water. Information on tap water quality is available in the Consumer Confidence Report, which can be obtained from your local water supplier.

This report identifies the significant potential contaminant sources that could threaten source(s) water quality. Your susceptibility ranking does not imply poor water quality. Actual water quality is best reflected by results of regular water tests. Please refer to Table 1 for an informational summary of your public water supply:

**Table 1: Public Water Supply Information**

PWS Name	Walnut Grove Utilities
Address	120 Industrial Blvd
City, State, Zip	Kearneysville, WV 25430
PWSID#	3301942
County	Jefferson
System Type	Community

**What is my Well's Source Water Protection Area?**

A well(s) or spring source water protection area (SWPA) is the land around the well where protection activities should be focused. The SWPA is the area that is likely contributing water to the well. Please refer to the attached map for your SWPA.

### **What is SWAP?**

The SWAP, established under the Safe Drinking Water Act, requires every state to:

- Delineate the area from which a public water supply system receives its water;
- Inventory land uses within the recharge areas of all public water supplies;
- Assess the susceptibility of drinking water sources to contamination from these land uses;
- Publicize the results to provide support for improved protection of sources.

The West Virginia BPH will complete all of these components of a source water assessment.

### **What is Susceptibility?**

Susceptibility is a measure of your well's or spring's potential to become contaminated by land uses and activities within the SWPA. The purpose of a susceptibility analysis is to provide a overview to actions a public water system may take to further reduce the susceptibility to their drinking water supply. Because public water supply wells have been constructed in various hydrologic settings and have a range of potentially significant contaminant sources, best professional judgment has been used in determining the susceptibility of each public water system to contamination. The possibility of a release from potential contaminant sources is greatly reduced if Best Management Practices (BMP's) are used. The susceptibility determination for your well did not take into account whether BMP's are being used.

Susceptibility of drinking water does not mean a customer will drink contaminated water. Water suppliers protect drinking water by monitoring and treating water supplies, and using BMP's and source water protection measures to ensure that safe water is delivered to the tap.

### **How Was my Well's Susceptibility Determined?**

Your well(s) susceptibility is based on the following parameters:

- Review of the hydrologic setting (ease of contamination transport through each materials present in the local hydrologic setting);
- Review of the physical integrity of the well;
- Review of available ground water quality data;
- Characterization of the potential significant contaminant sources identified in the SWPA;
- Integration of this information to identify the greatest threats to the source water and suggestions of appropriate protection strategies or activities.

#### Source of Your Drinking Water - Hydrogeologic Setting

Well/Spring Name	Geologic Setting/Sensitivity
Well 1	Karst Areas-High Sensitivity
Well 3	Karst Areas-High Sensitivity
Well 4	Karst Areas-High Sensitivity
Ambrose	Karst Areas-High Sensitivity

The Walnut Grove Utilities water system serves a population of approximately 700 people. The supply is from four (4) wells. The wells are pumped to provide an average daily production of about 64,000 gallons per day.

There could be some shallow sinkholes in this area and the surface streams will generally lose their water to the subsurface. Surface waters can enter the ground water regime very quickly via direct injection through sinkholes or other fracture or solution openings. The type of flow in karst areas is described as being conduit flow and is delivered via strike oriented cave passages or along fault planes and fault passages. The estimated land area (approximately 3231 acres) that contributes water to the well is depicted in the attached map as the Source Water Protection Area (SWPA). The SWAP program's consultant, RK&K Engineers, used Mod Flow as the ground water flow model to determine a portion of the delineated area along with a hydrogeologic boundary approach in which the boundaries are identified.

#### Physical Integrity of Well or Spring

Well/Spring Name	Source Integrity
Well 1	Not Constructed to Standard
Well 3	Constructed to Standard
Well 4	Constructed to Standard
Ambrose	Constructed to Standard

Wells may vary in their construction characteristics and in the geologic rock types in which they occur. The lack of an effective grout and sanitary seals are avenues by which contaminants from nearby surface water bodies or overland runoff can percolate to wells. Based on onsite reviews and the ground water under the direct influence data the well integrity was rated generally satisfactory or good, with no visible problems existing during the visit. The State has determined that Well #3 is GWUDI or Ground Water Under the Direct Influence of surface water. Wells 1, 4 and Ambrose are still being tested. The apparent cause, considering the well is constructed to a great distance in a short amount of time carrying contaminants with it. Generally, a standards, is the karst geology of the area. Surface waters can enter and flow through this setting conjunctive delineation is performed for GWUDI systems to account for the area of surface influence. In a

complex karst setting, it is almost impossible to determine which streams are contributing surface water directly. Often, the closest stream is not involved and streams further away are involved. Dye trace studies could possibly identify the area of contribution.

#### Water Quality and Water Treatment Information

Well/Spring Name	Results
Well 1	Meets standards
Well 3	Meets standards
Well 4	Meets standards
Ambrose	Meets standards

This assessment evaluates contaminants that may enter the water drawn directly from the well. The contaminants addressed in this assessment include those regulated under the Safe Drinking Water Act as well as those the BPH has determined may present a concern to public health. The water withdrawn from the well is currently disinfected prior to distribution. Periodic analysis for a variety of bacterial, organic, nitrate, synthetic and inorganic contaminants in the water after treatment have consistently yielded values below the maximum contaminant level (MCL) as regulated by the Safe Drinking Water Act. Drinking water that meets MCL standards is associated with little or no health risk and is considered safe. Because sampling requirements are for treated water, the lack of water quality impacts does not necessarily indicate a lack of contamination. This determination is limited by the sampling that is performed for the water system. Despite being classified as GWUDI, the finished water quality has been generally good. The raw water contained bacteria that will require filtration treatment or a new water source developed, to meet compliance standards. **There was a peak nitrate level of 12.7 mg/l in 1994. More recent testing indicates nitrate levels in the 7 to 9 mg/l. This is high. The MCL for nitrate is 10 mg/l. Nitrates occur generally from fertilizer and are found in sewage and wastes from human and/or farm animals.**

All drinking water including bottled water may reasonably be expected to contain small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. For further information regarding the quality of the system's finished water, please refer to the *Consumer Confidence Report* or call the Environmental Protection Agency's Safe Drinking Water Hotline at **1-800-426-4791** or contact your local health provider for more information about contaminants and potential health effects.

#### Evaluation of Significant Potential Sources of Contamination

The inventory of the Walnut Grove Utilities consists of approximately 19 significant Potential Contaminant Sources (PCS) of which 3 are considered higher threats to ground water. Please refer to Table 2 for a listing of these and the attached map for the location of these in the SWPA. Each significant potential source of contamination has been analyzed and prioritized (low, moderate, and high) in accordance with their potential to impact the water supply. It is important



to note that the links between the PCS and the primary contaminant types are not intended to be comprehensive, but only those commonly associated with the PCS. Any potential source may have none, some, or more types of contaminants associated with the chemicals indicated. Threat rankings are a combination of the perceived risk of the release of a contaminant from a land use area, the migration route of the contaminant to the well or spring and the relative public health risk of the contaminant itself. The risk rankings are based on the general nature of their activities and the contaminants associated with them, not on facility specific information, such as management practices. This ranking does not take into consideration any unforeseen releases or the dynamics of new PCS's within the delineated SWPA. A detailed risk assessment of PCS's was beyond the scope of what could be accomplished with available resources and data. A detailed risk analysis is more meaningful when prepared by local decision makers as the bridge from assessment work to protection strategies.

#### **Recommendation for your Source Water Assessment and Protection Activities**

Based on this summarized narrative and susceptibility review for each well, the overall susceptibility ranking for all four wells of Walnut Grove Utilities have a higher susceptibility to the identified potential sources of contamination. Natural protection of this water source is reduced due to the karst geology, which makes it very vulnerable to potential contamination if some type of leak were to occur. This subterranean drainage is a very complex regime. For this susceptibility analysis, the State combined the inventory results with other relevant information to decide how likely a water supply may become contaminated by the identified potential sources of contamination. This step makes the assessments useful for communities, since it provides information that local decision-makers use to prioritize approaches for protecting the drinking water supply. It does not mean that these wells are currently contaminated or that these wells are going to be contaminated in the near future, but the potential does exist.

An aquifer protection management program should be developed for the well. Preferably, the protection plan should be developed for the entire SWPA with the cooperation of neighboring towns, county, and state agencies. It is recommended that protection and management efforts should focus on obtaining additional information on the sources present to evaluate their risk. Walnut Grove Utilities may want to consider the following:

1. Reduce existing chronic threats by obtaining further detailed information concerning Leaking Underground Storage Tanks (LUST's) or other Underground Storage Tanks (UST's) within the SWPA that are now in service or were in the past. This information should include the type of leak detection and corrosion protection currently being used at the facility.
2. Investigate what types of preventative pollution measures are being conducted by the industrial or commercial facilities located within the SWPA. Some facilities may already have developed their Groundwater Protection Plan (GPP) for their facility.
3. The railroad is threat due to the potential for derailments, spills or leaks. A section of railroad passes through the SWPA.

4. Inspect the SWPA regularly.
5. Nitrate trends should be analyzed and developed to determine if the concentration is increasing, decreasing, or stable. Nitrates occur generally from fertilizer and are found in sewage and wastes from human and/or farm animals. Drinking water that meets the MCL standard is associated with little or no risk and is considered safe.
6. At least one source for this system was determined to be GWUDI. The system needs to determine the corrective action to comply with the Surface Water Treatment Rule (SWTR) requirements; either filter, disinfect and monitor in accordance with the SWTR; abandon the source and develop a replacement source or rehabilitate the source to prevent surface water influence.
7. Implement Land Use Planning tools to influence future developments within the SWPA. One way to accomplish this is to join forces with the county to adopt a zoning ordinance that would govern certain uses that are considered thigh threats to ground water.
8. Provide maps of the SWPA to the Jefferson County Planning Commission to make them aware of the location of proposed development in relation to the water supply source.
9. Establish or encourage buffering around sinkholes. Buffering techniques in use in other regions range from encouraging landowners to provide vegetative buffers to purchasing rights from the landowner. Once significant sinkholes are identified, individual assessments will need to be made to determine the best method of buffering.
10. Establish funds to purchase land banks of critical areas (e.g. around sinkholes, wells, springs) to preserve the areas from future development.
11. Support and encourage the implementation of Best Management Practices for agricultural areas including grazing lands, crop production farms, and orchards. In addition, support information can be provided to residents and commercial users to encourage the reduction in over use of common pesticides and fertilizers.
12. Implement systems for regular collection of hazardous waste from residents. The Eastern Panhandle Soil Conservation District and the Berkeley County Solid Waste Authority has helped organize amnesty days in the past where residents could bring in all types of hazardous wastes without threat of punishment.
13. Encourage and implement public education about your water supply regarding its susceptibility to contamination and ways to protect. This could come in the form of brochures containing information and advice about ground water and the local terrain. For example, the Berkeley County Health Department has an on-going educational program that is presented to all fourth graders in the county.
14. Support and encourage the identification of contamination incidents by citizens.

15. Include information regarding contamination and source water protection in mailings to homeowners, including non-emergency contact information. Reduce the amount of septic systems in use by extension of the public sewer system or other approved systems.
16. Conduct additional dye tracings and investigations to verify and refine the SWPA delineation. This will provide G&E MHP with a higher level of confidence in the areas in which various management efforts may be created.

#### **Next Step:**

The next step in source water protection planning is to prepare or updating a SWAP plan. Check with your water system to see if they currently have a protection (Management and Contingency Planning) plan in place. The SWAP plan incorporates this source water delineation and assessment report and the following additional sections:

#### Contingency Planning

A contingency plan documents the system's planned response to interruption of the source water.

#### Alternative Sources

Information pertaining to alternative water sources focusing on long-term source replacement should the system be required to develop a new source of water due to contamination (or other reasons). This section outlines the most likely sources that can be utilized.

#### Management Planning

Management planning is the most important element of SWAP. The management plan identifies specific activities that will be pursued by the system to protect their water resources. The system will benefit by taking a proactive approach to source water protection in their source water protection area. It is anticipated that most of the management effort will focus on coordination with government agencies and periodic surveys of the watersheds. It may be necessary to conduct a limited number of special studies to determine actual risk and consequences for selected contaminant sources. This information may be needed before decisions can be made on management activities.

#### **Need additional information?**

Visit the WVBPH Web site at [www.wvdhhr.org/bph/swap](http://www.wvdhhr.org/bph/swap) or call 304-558-2981 to obtain additional information or sources of information.

**\*Disclaimer - The coverage presented in this program are under constant revision as new sites or facilities are added. They may not contain all the potential or existing sites or facilities. The West Virginia Bureau for Public Health is not responsible for the use or interpretation of this information.**

Please report any revisions or updates on either the map or inventory in writing to the WVBPH within 15 days of receipt of this report.

**Table 2: Potential Contaminant Sources (PCS)**

Sequential Number	Map Code	PCS Category	PCS Name	Associated Chemicals	Threat to GW
1	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
2	I-41	Industrial	Wood preserving/treatment facilities	M, VOC, SOC	H
3	A-18	Agriculture	Pasture*	MP, SOC	L
4	R-6	Residential	Septic Systems (leach field)*	MP, VOC, SOC, TO, NN	M
5	A-11	Agriculture	Manure spreading or Storage*	NN, MP, T, TO	M
6	M-5	Municipal	Drinking Water Treatment Plants	D	L
7	M-31	Municipal	Wells: water supply	VOC, SOC	L
8	A-22	Agriculture	Other		
9	A-12	Agriculture	Farm machinery areas	PH, VOC	L
10	A-12	Agriculture	Farm machinery areas	PH, VOC	L
11	C-7	Commercial	Car dealerships	PH, VOC	H
12	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
13	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
14	A-22	Agriculture	Other		
15	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
16	A-17	Agriculture	Other animal facilities	MP	L
17	A-5	Agriculture	Crops, corn, soybean, wheat	NN, SOC, MP	L
18	M-17	Municipal	Railroad Tracks (right of way)	M, VOC, SOC, PH	H
19	M-29	Municipal	Wastewater Treatment Plant	MP, D	L

Index to Associated Chemicals are as follows:

MP Microbiological Pathogens: Total/Fecal Coliform, Viruses, Protozoa  
 NN Nitrate/Nitrite  
 VOC Volatile Organic Compounds  
 HM Heavy Metals  
 M Metals  
 SOC Synthetic Organic Compounds  
 T Turbidity  
 TO Taste and Odor precursors  
 R Radionuclides  
 PH Petroleum Hydrocarbons  
 D Disinfection byproducts

## **Glossary of Terms**

**Alluvium** - Sediments deposited by moving rivers.

**Aquifer** - A formation, group of formations, or part of a formation that contains sufficient saturated permeable materials to yield sufficient, economical quantities of water to wells and springs.

**Conjunctive Delineation** – In cases where a “groundwater” source is designated as groundwater under the direct influence (GWUDI), an additional delineation in addition to the five (5) year time of travel/recharge delineation for groundwater will be completed. The additional delineation will account for stream segments outside of the groundwater delineation in cases where the area of surface influence is known or reasonably suspected. It should be noted in Karst situations particularly, the surface link is not always an adjacent stream, but could come from a stream miles away. In these cases a conjunctive delineation may not always be performed.

**Contamination** - The addition to water of any substance or property preventing the use of reducing the usability of the water for ordinary purposes such as drinking, preparing food, bathing, washing, recreation, and cooling

**Flood Plain** - Any land area susceptible to inundation by floodwater from any source.

**GWUDI or "Ground Water Under the Direct Influence"** - is defined by the EPA as water beneath the surface of the ground with either a significant occurrence of insects or other macro organisms, algae, or large diameter pathogens such as Giardia, lambia or Cryptosporidium or other water characteristic such as turbidity, temperature, pH or conductivity. Systems need to determine the corrective action to comply with SWTR requirements, either filter, infect and monitor in accordance with the SWTR, abandon the source and develop a replacement source, rehabilitate the source to prevent surface water influence.

**Hydrogeologic Setting** - Evaluates the sensitivity of an aquifer. The likelihood of a contaminant reaching a well or spring is a function of the ground water flows patterns, the rate of flow, the distance to the source and the hydraulic characteristics of the contaminant. The technical factors include the well(s) pumping rate and spring flow, the direction, slope and elevation of the water table, transmissivity and storativity characteristics of the aquifer, overlaying material and recharge rate for ground water systems.

**Infiltration** - The process of, or fluids, entering the soil and recharging aquifers rather than becoming runoff.

**Karst** - A term denoting a formation containing soluble rocks, underground solution passages, sinkholes and springs.

**Maximum Contaminant Level (MCL)** - Defined as the maximum permissible level of a contaminant in water, which is delivered to any user of a public water system.

**100-year Flood Plain** - The area adjoining a river, stream, or water course covered by water in the event of a 100 year flood.

**100-year Flood** - The flood having a one percent chance of being equaled or exceeded in magnitude in any given years. Contrary to popular belief it is not a flood occurring once every 100 years.

**Physical (Structural) Integrity of the Well or Spring** - This analysis evaluates and reviews the integrity of the well or spring structures needed to protect the water source from a Potential Contaminant Source(s). It is recognized that protective well construction characteristics can prevent the occurrence of contamination even in the presence of a Potential Contaminant Source. The design and construction of a well should include casing without cracks; tight joints between lengths of casing; adequate grout between the casing and bore hole and location (floodplain or flooding area). A spring must be protected with a "shoe box" type lid enclosure that is screened and locked to prevent unauthorized entry. Surface water runoff diversion and land use of the recharge area are paramount elements to evaluate. These features provide reasonable assurance that contaminants will not enter the well or spring through any pathway, and allow operators to focus on the potential for contaminants to migrate through the aquifer and enter into the well(s) or spring. However, even a well(s) and springs constructed to the most exacting standards may lose structural integrity with time. Maintenance records of remedial improvements also will be reviewed in evaluation of integrity.

**Potential Contaminant Source (PCS)** – A facility or activity that stores, uses, or produces chemicals or elements, and that has the potential to release contaminants within a source water protection area.

**Public Water System** - is any water system or water supply which regularly supplies or offers to supply, piped water to the public for human consumption, if serving at least an average of twenty-five (25) individuals per day for at least sixty (60) days per year, or which has at least fifteen (15) service connections.

**Recharge** - Water entering the upper end of a groundwater flow system.

**Remediation** - The removal of contaminants from soil and/or ground water.

**Sensitivity of the Source Water Protection Area (SWPA)** - refers to the hydrologic or hydrogeologic characteristics that affect the transport of contaminant from a source of contamination to a well or intake.

**Source Water Assessment and Protection (SWAP) Program** - The program established by the 1996 Amendments to the Safe Drinking Water Act (SDWA) which expanded the initial Wellhead Protection Program to all public drinking water supply systems including surface water systems. This program is to assess, preserve, and protect the source waters which are used to supply water for public drinking water supply systems and to provide a long term availability of an abundant supply of safe water in sufficient quantity for present and future citizens of the

State. This program also enables the water supply owners, consumers, and others to initiate and promote actions to protect their drinking water supplies with the developed information.

**Source Water Protection Area (SWPA)** - refers to the area delineated by the State for a public water system, or including numerous public water systems, whether the source is ground water, surface water or both, as part of the West Virginia SWAP approved by the EPA under section 1453 of the Safe Drinking Water Act.

**Susceptibility** - The likelihood that a release from a PSCS would contaminate and render unusable a drinking water supply such as aquifers or surface streams.

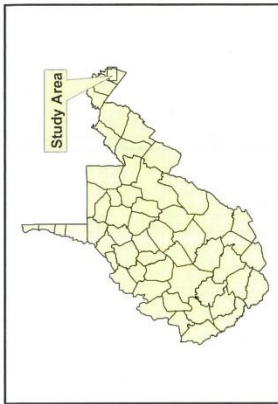
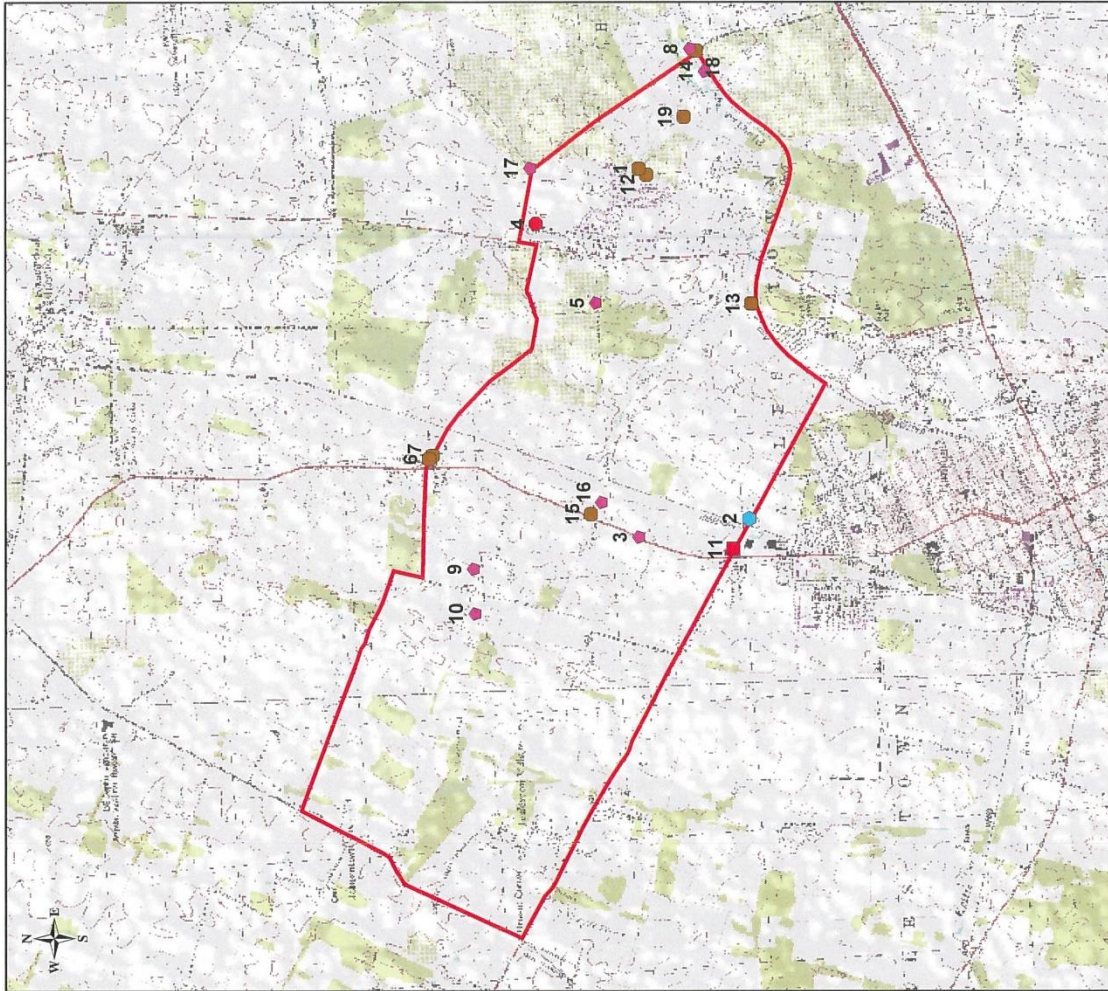
**Unconfined Aquifer** - An aquifer over which there is no confining layer.

**Water Quality** - Available data will be evaluated to help direct protection activities. If the water quality impact is known, evaluating the source(s) present may help to determine the origin of the contamination and where immediate protection efforts should be focused

**Well(s)** - refers to ground water intakes including the well structure (i.e., casing, etc) and wellhead.

**Wellhead Protection Area (WHPA)** - The surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfield. This area is delineated by the State for ground water source public water systems. The former Wellhead Protection Program (WHPP) is now part of the Source Water Assessment and Protection (SWAP) Program.





- Map Key**
- Potential Contaminant Sources**
- ◆ Agriculture
  - Commercial
  - Industrial
  - Municipal
  - Residential
- Source Water Protection Area



This map is provided as a public service by the West Virginia Bureau for Public Health. The Bureau makes NO representation regarding completeness or accuracy of the data hereon. Efforts are made to verify and update the data used to generate this map. However, with data sets of this size and nature, eliminating all errors is difficult. Thus, the user assumes total responsibility for verification.

Source locations not included for reasons of security.

**Walnut Grove Utilities**  
**WV3301931**  
**Jefferson County**

Scale: 1:42,000  
 Drawn By: JEM  
 08/25/08

0 2,000 4,000 Feet



**State of West Virginia  
Source Water Assessment and  
Protection Program  
Source Water Assessment Report**

**Shenandoah Junction MHP  
Jefferson County  
PWSID: WV3301931**



**Prepared by:**

**West Virginia Department of Health and Human Resources  
Bureau for Public Health  
Office of Environmental Health Services  
Source Water Protection Unit**

**Date: December 2002**

**Ground Water Public Water Supply Systems**  
**Source Water Assessment and Protection (SWAP) Program**

*Prepared by the West Virginia Bureau for Public Health, SWAP Program*

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The Source Water Assessment and Protection (SWAP) Program of the West Virginia Bureau for Public Health (BPH) is completing assessments of the contamination threats to all public water sources (private wells are not involved in this effort). This concept of source water protection is a preventative approach and complements the effort of proper treatment and disinfection by the individual water supply systems. This assessment is one step in a multilevel approach to ensure a safe future supply of water by understanding what potential threats exist.

This Source Water Assessment Public Summary is to provide information to support local and state efforts to protect public drinking water source and to maintain a safe and dependable water supply for the protection of human health by preventing contamination. The costs of these preventative measures will never outweigh the cost of possibly remediating a public water supply.

The emphasis of this assessment is on "source" (well/spring) water rather than the "tap" water. Information on tap water quality is available in the Consumer Confidence Report, which can be obtained from your local water supplier.

This report identifies the significant potential contaminant sources that could threaten source(s) water quality. Your susceptibility ranking does not imply poor water quality. Actual water quality is best reflected by results of regular water tests. Please refer to Table 1 for an informational summary of your public water supply:

**Table 1: Public Water Supply Information**

PWS Name	Shenandoah Junction MHP
Address	P.O. Box 400
City, State, Zip	Shenandoah Junction, WV 25442
PWSID#	3301931
County	Jefferson
System Type	Community

**What is my Well's Source Water Protection Area?**

A well(s) or spring source water protection area (SWPA) is the land around the well where protection activities should be focused. The SWPA is the area that is likely contributing water to the well. Please refer to the attached map for your SWPA.

### **What is SWAP?**

The SWAP, established under the Safe Drinking Water Act, requires every state to:

- Delineate the area from which a public water supply system receives its water;
- Inventory land uses within the recharge areas of all public water supplies;
- Assess the susceptibility of drinking water sources to contamination from these land uses;
- Publicize the results to provide support for improved protection of sources.

The West Virginia BPH will complete all of these components of a source water assessment.

### **What is Susceptibility?**

Susceptibility is a measure of your well's or spring's potential to become contaminated by land uses and activities within the SWPA. The purpose of a susceptibility analysis is to provide a overview to actions a public water system may take to further reduce the susceptibility to their drinking water supply. Because public water supply wells have been constructed in various hydrologic settings and have a range of potentially significant contaminant sources, best professional judgment has been used in determining the susceptibility of each public water system to contamination. The possibility of a release from potential contaminant sources is greatly reduced if Best Management Practices (BMP's) are used. The susceptibility determination for your well did not take into account whether BMP's are being used.

Susceptibility of drinking water does not mean a customer will drink contaminated water. Water suppliers protect drinking water by monitoring and treating water supplies, and using BMP's and source water protection measures to ensure that safe water is delivered to the tap.

### **How Was my Well's Susceptibility Determined?**

Your well(s) susceptibility is based on the following parameters:

- Review of the hydrologic setting (ease of contamination transport through each materials present in the local hydrologic setting);
- Review of the physical integrity of the well;
- Review of available ground water quality data;
- Characterization of the potential significant contaminant sources identified in the SWPA;
- Integration of this information to identify the greatest threats to the source water and suggestions of appropriate protection strategies or activities.

#### Source of Your Drinking Water - Hydrogeologic Setting

Well/Spring Name	Geologic Setting/Sensitivity
Well 1	Karst Areas-High Sensitivity
Well 2	Karst Areas-High Sensitivity
Well 3	Karst Areas-High Sensitivity

The Shenandoah Junction MHP water system serves a population of approximately 545 people. The supply is from two active wells (Wells 2 & 3). Well 1 is not currently active. The two active wells are pumped to provide an average daily production of about 51,000 gallons per day.

Surface waters can enter the ground water regime very quickly via direct injection through sinkholes or other fracture or solution openings. The type of flow in karst areas is described as being conduit flow and is delivered via strike oriented cave passages or along fault planes and fault passages. The estimated land area (approximately 3678 acres) that contributes water to the well is depicted in the attached map as the Source Water Protection Area (SWPA). The SWAP program's consultant, RK&K Engineers, used Mod Flow as the ground water flow model to determine a portion of the delineated area along with a hydrogeologic boundary approach in which the boundaries are identified.

#### Physical Integrity of Well or Spring

Well/Spring Name	Source Integrity
Well 1	Constructed to Standard
Well 2	Constructed to Standard
Well 3	Constructed to Standard

Wells may vary in their construction characteristics and in the geologic rock types in which they occur. The lack of an effective grout and sanitary seals are avenues by which contaminants from nearby surface water bodies or overland runoff can percolate to wells. Based on onsite reviews and the ground water under the direct influence data the well integrity was rated generally satisfactory or good, with no visible problems existing during the visit. The State has determined that the wells are not GWUDI or Ground Water Under the Direct Influence of surface water. In a complex karst setting, it is almost impossible to determine which streams are contributing surface water directly. Often, the closest stream is not involved and streams further away are involved. Dye trace studies could possibly identify the area of contribution.

#### Water Quality and Water Treatment Information

Well/Spring Name	Results
Well 1	Impacted
Well 2	Meets standards
Well 3	Meets standards

This assessment evaluates contaminants that may enter the water drawn directly from the well. The contaminants addressed in this assessment include those regulated under the Safe Drinking Water Act as well as those the BPH has determined may present a concern to public health. The water withdrawn from the well is currently disinfected prior to distribution. Periodic analysis for a variety of bacterial, organic, nitrate, synthetic and inorganic contaminants in the water after treatment have consistently yielded values below the maximum contaminant level (MCL) as regulated by the Safe Drinking Water Act. Drinking water that meets MCL standards is associated with little or no health risk and is considered safe. Because sampling requirements are for treated water, the lack of water quality impacts does not necessarily indicate a lack of contamination. This determination is limited by the sampling that is performed for the water system.

There were two instances of detectable inorganic compounds detected in Well 1. These were Cadmium in July of 2000 and Mercury in March of 1994. However, both were below the maximum contaminant level of 0.005 and 0.002, respectively. There was a peak nitrate level of 6.60 mg/l in 1994. The MCL for nitrate is 10mg/l. Nitrates occur generally from fertilizer and are found in sewage and wastes from human and/or farm animals.

All drinking water including bottled water may reasonably be expected to contain small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. For further information regarding the quality of the system's finished water, please refer to the *Consumer Confidence Report* or call the Environmental Protection Agency's Safe Drinking Water Hotline at **1-800-426-4791** or contact your local health provider for more information about contaminants and potential health effects.

#### Evaluation of Significant Potential Sources of Contamination

The inventory of the Shenandoah Junction MHP consists of approximately 51 significant Potential Contaminant Sources (PCS) of which 13 are considered higher threats to ground water. Please refer to Table 2 for a listing of these and the attached map for the location of these in the SWPA. Each significant potential source of contamination has been analyzed and prioritized (low, moderate, and high) in accordance with their potential to impact the water supply. It is important to note that the links between the PCS and the primary contaminant types are not intended to be comprehensive, but only those commonly associated with the PCS. Any potential source may have none, some, or more types of contaminants associated with the chemicals indicated. Threat rankings are a combination of the perceived risk of the release of a

contaminant from a land use area, the migration route of the contaminant to the well or spring and the relative public health risk of the contaminant itself. The risk rankings are based on the general nature of their activities and the contaminants associated with them, not on facility specific information, such as management practices. This ranking does not take into consideration any unforeseen releases or the dynamics of new PCS's within the delineated SWPA. A detailed risk assessment of PCS's was beyond the scope of what could be accomplished with available resources and data. A detailed risk analysis is more meaningful when prepared by local decision makers as the bridge from assessment work to protection strategies.

#### **Recommendation for your Source Water Assessment and Protection Activities**

Based on this summarized narrative and susceptibility review for each well, the overall susceptibility ranking for all three wells of the Shenandoah Junction MHP have a higher susceptibility to the identified potential sources of contamination. Natural protection of this water source is reduced due to the karst geology, which makes it very vulnerable to potential contamination if some type of leak were to occur. This subterranean drainage is a very complex regime. For this susceptibility analysis, the State combined the inventory results with other relevant information to decide how likely a water supply may become contaminated by the identified potential sources of contamination. This step makes the assessments useful for communities, since it provides information that local decision-makers use to prioritize approaches for protecting the drinking water supply. It does not mean that these wells are currently contaminated or that these wells are going to be contaminated in the near future, but the potential does exist.

An aquifer protection management program should be developed for the well. Preferably, the protection plan should be developed for the entire SWPA with the cooperation of neighboring towns, county, and state agencies. It is recommended that protection and management efforts should focus on obtaining additional information on the sources present to evaluate their risk. The Shenandoah Junction MHP may want to consider the following:

1. Reduce existing chronic threats by obtaining further detailed information concerning Leaking Underground Storage Tanks (LUST's) or other Underground Storage Tanks (UST's) within the SWPA that are now in service or were in the past. This information should include the type of leak detection and corrosion protection currently being used at the facility.
2. Investigate what types of preventative pollution measures are being conducted by the industrial or commercial facilities located within the SWPA. Some facilities may already have developed their Groundwater Protection Plan (GPP) for their facility.
3. The railroad is another threat. A section of railroad passes through the SWPA.
4. Inspect the SWPA regularly.

5. Nitrate trends should be analyzed and developed to determine if the concentration is increasing, decreasing, or stable. Nitrates occur generally from fertilizer and are found in sewage and wastes from human and/or farm animals. Drinking water that meets the MCL standard is associated with little or no risk and is considered safe.
6. Implement Land Use Planning tools to influence future developments within the SWPA. One way to accomplish this is to join forces with the county to adopt a zoning ordinance that would govern certain uses that are considered thigh threats to ground water.
7. Provide maps of the SWPA to the Jefferson County Planning Commission to make them aware of the location of proposed development in relation to the water supply source.
8. Establish or encourage buffering around sinkholes. Buffering techniques in use in other regions range from encouraging landowners to provide vegetative buffers to purchasing rights from the landowner. Once significant sinkholes are identified, individual assessments will need to be made to determine the best method of buffering.
9. Establish funds to purchase land banks of critical areas (e.g. around sinkholes, wells, springs) to preserve the areas from future development.
10. Support and encourage the implementation of Best Management Practices for agricultural areas including grazing lands, crop production farms, and orchards. In addition, support information can be provided to residents and commercial users to encourage the reduction in over use of common pesticides and fertilizers.
11. Implement systems for regular collection of hazardous waste from residents. Help organize amnesty days where residents could bring in all types of hazardous wastes without threat of punishment.
12. Encourage and implement public education about your water supply regarding its susceptibility to contamination and ways to protect. This could come in the form of brochures containing information and advice about ground water and the local terrain.
13. Support and encourage the identification of contamination incidents by citizens.
14. Include information regarding contamination and source water protection in mailings to homeowners, including non-emergency contact information. Reduce the amount of septic systems in use by extension of the public sewer system or other approved systems.
15. Conduct additional dye tracings and investigations to verify and refine the SWPA delineation. This will provide Shenandoah Junction MHP with a higher level of confidence in the areas in which various management efforts may be created.

### **Next Step:**

The next step in source water protection planning is to prepare or updating a SWAP plan. Check with your water system to see if they currently have a protection (Management and Contingency Planning) plan in place. The SWAP plan incorporates this source water delineation and assessment report and the following additional sections:

#### Contingency Planning

A contingency plan documents the system's planned response to interruption of the source water.

#### Alternative Sources

Information pertaining to alternative water sources focusing on long-term source replacement should the system be required to develop a new source of water due to contamination (or other reasons). This section outlines the most likely sources that can be utilized.

#### Management Planning

Management planning is the most important element of SWAP. The management plan identifies specific activities that will be pursued by the system to protect their water resources. The system will benefit by taking a proactive approach to source water protection in their source water protection area. It is anticipated that most of the management effort will focus on coordination with government agencies and periodic surveys of the watersheds. It may be necessary to conduct a limited number of special studies to determine actual risk and consequences for selected contaminant sources. This information may be needed before decisions can be made on management activities.

### **Need additional information?**

Visit the WVBPH Web site at [www.wvdhhr.org/bph/swap](http://www.wvdhhr.org/bph/swap) or call 304-558-2981 to obtain additional information.

**\*Disclaimer - The coverage presented in this program are under constant revision as new sites or facilities are added. They may not contain all the potential or existing sites or facilities. The West Virginia Bureau for Public Health is not responsible for the use or interpretation of this information.**

Please report any revisions or updates on either the map or inventory in writing to the WVBPH within 15 days of receipt of this report.



**Table 2: Potential Contaminant Sources (PCS)**

Sequential Number	Map Code	PCS Category	PCS Name	Associated Chemicals	Threat to GW
1	A-22	Agriculture	Other		
2	C-19	Commercial	Gas Stations	PH, M, VOC, SOC	H
3	C-9	Commercial	Cemeteries	M, SOC, PH	L
4	A-15	Agriculture	Greenhouses/Nurseries	MP, NN	L
5	I-20	Industrial	Machine and metalworking shops	M, VOC, HM, PH, SOC	H
6	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
7	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
8	A-22	Agriculture	Other		
9	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
10	M-21	Municipal	Schools	SOC, D, VOC, PH	L
11	M-21	Municipal	Schools	SOC, D, VOC, PH	L
12	C-3	Commercial	Auto repair shops	PH, M, VOC, HM, SOC	H
13	C-44	Commercial	Research laboratories	M, VOC, SOC	H
14	I-20	Industrial	Machine and metalworking shops	M, VOC, HM, PH, SOC	H
15	A-6	Agriculture	Crops: orchards	NN, SOC	L
16	C-53	Commercial	Other		L
17	M-17	Municipal	Railroad Tracks (right of way)	M, VOC, SOC, PH	H
18	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
19	I-32	Industrial	Sawmills	PH, VOC	M
20	A-2	Agriculture	Animal Feedlots	NN, MP, TO	H
21	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
22	M-21	Municipal	Schools	SOC, D, VOC, PH	L
23	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
24	M-5	Municipal	Drinking Water Treatment Plants	D	L
25	C-53	Commercial	Other		
26	M-17	Municipal	Railroad Tracks (right of way)	M, VOC, SOC, PH	H
27	C-53	Commercial	Other		
28	M-17	Municipal	Railroad Tracks (right of way)	M, VOC, SOC, PH	H
29	C-1	Commercial	Above Ground Storage Tanks	PH, VOC	L
30	C-1	Commercial	Above Ground Storage Tanks	PH, VOC	L
31	I-20	Industrial	Machine and metalworking shops	M, VOC, HM, PH, SOC	H
32	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
33	I-44	Industrial	Other		
34	C-53	Commercial	Other		
35	C-10	Commercial	Construction areas	M, T, PH, VOC, SOC, HM	M
36	C-3	Commercial	Auto repair shops	PH, M, VOC, HM, SOC	H
37	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
38	M-30	Municipal	Wells: abandoned	VOC, SOC, MP, PH, NN	H
39	C-47	Commercial	Tire Dumps	M	L
40	C-53	Commercial	Other		
41	C-53	Commercial	Other		

42	C-53	Commercial	Other		
43	M-5	Municipal	Drinking Water Treatment Plants	D	L
44	M-31	Municipal	Wells: water supply	VOC, SOC	L
45	C-44	Commercial	Research laboratories	M, VOC, SOC	H
46	R-3	Residential	Residential (multi-units)	VOC, NN, TO, MP	L
47	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
48	C-1	Commercial	Above Ground Storage Tanks	PH, VOC	L
49	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
50	M-29	Municipal	Wastewater Treatment Plant	MP, D	L
51	I-44	Industrial	Other		

Index to Associated Chemicals are as follows:

MP Microbiological Pathogens: Total/Fecal Coliform, Viruses, Protozoa  
 NN Nitrate/Nitrite  
 VOC Volatile Organic Compounds  
 HM Heavy Metals  
 M Metals  
 SOC Synthetic Organic Compounds  
 T Turbidity  
 TO Taste and Odor precursors  
 R Radionuclides  
 PH Petroleum Hydrocarbons  
 D Disinfection byproducts

## **Glossary of Terms**

**Alluvium** - Sediments deposited by moving rivers.

**Aquifer** - A formation, group of formations, or part of a formation that contains sufficient saturated permeable materials to yield sufficient, economical quantities of water to wells and springs.

**Conjunctive Delineation** – In cases where a “groundwater” source is designated as groundwater under the direct influence (GWUDI), an additional delineation in addition to the five (5) year time of travel/recharge delineation for groundwater will be completed. The additional delineation will account for stream segments outside of the groundwater delineation in cases where the area of surface influence is known or reasonably suspected. It should be noted in Karst situations particularly, the surface link is not always an adjacent stream, but could come from a stream miles away. In these cases a conjunctive delineation may not always be performed.

**Contamination** - The addition to water of any substance or property preventing the use of reducing the usability of the water for ordinary purposes such as drinking, preparing food, bathing, washing, recreation, and cooling

**Flood Plain** - Any land area susceptible to inundation by floodwater from any source.

**GWUDI or "Ground Water Under the Direct Influence"** - is defined by the EPA as water beneath the surface of the ground with either a significant occurrence of insects or other macro organisms, algae, or large diameter pathogens such as Giardia, lamblia or Cryptosporidium or other water characteristic such as turbidity, temperature, pH or conductivity. Systems need to determine the corrective action to comply with SWTR requirements, either filter, infect and monitor in accordance with the SWTR, abandon the source and develop a replacement source, rehabilitate the source to prevent surface water influence.

**Hydrogeologic Setting** - Evaluates the sensitivity of an aquifer. The likelihood of a contaminant reaching a well or spring is a function of the ground water flows patterns, the rate of flow, the distance to the source and the hydraulic characteristics of the contaminant. The technical factors include the well(s) pumping rate and spring flow, the direction, slope and elevation of the water table, transmissivity and storativity characteristics of the aquifer, overlaying material and recharge rate for ground water systems.

**Infiltration** - The process of, or fluids, entering the soil and recharging aquifers rather than becoming runoff.

**Karst** - A term denoting a formation containing soluble rocks, underground solution passages, sinkholes and springs.

**Maximum Contaminant Level (MCL)** - Defined as the maximum permissible level of a contaminant in water, which is delivered to any user of a public water system.

**100-year Flood Plain** - The area adjoining a river, stream, or water course covered by water in the event of a 100 year flood.

**100-year Flood** - The flood having a one percent chance of being equaled or exceeded in magnitude in any given years. Contrary to popular belief it is not a flood occurring once every 100 years.

**Physical (Structural) Integrity of the Well or Spring** - This analysis evaluates and reviews the integrity of the well or spring structures needed to protect the water source from a Potential Contaminant Source(s). It is recognized that protective well construction characteristics can prevent the occurrence of contamination even in the presence of a Potential Contaminant Source. The design and construction of a well should include casing without cracks; tight joints between lengths of casing; adequate grout between the casing and bore hole and location (floodplain or flooding area). A spring must be protected with a "shoe box" type lid enclosure that is screened and locked to prevent unauthorized entry. Surface water runoff diversion and land use of the recharge area are paramount elements to evaluate. These features provide reasonable assurance that contaminants will not enter the well or spring through any pathway, and allow operators to focus on the potential for contaminants to migrate through the aquifer and enter into the well(s) or spring. However, even a well(s) and springs constructed to the most exacting standards may lose structural integrity with time. Maintenance records of remedial improvements also will be reviewed in evaluation of integrity.

**Potential Contaminant Source (PCS)** – A facility or activity that stores, uses, or produces chemicals or elements, and that has the potential to release contaminants within a source water protection area.

**Public Water System** - is any water system or water supply which regularly supplies or offers to supply, piped water to the public for human consumption, if serving at least an average of twenty-five (25) individuals per day for at least sixty (60) days per year, or which has at least fifteen (15) service connections.

**Recharge** - Water entering the upper end of a groundwater flow system.

**Remediation** - The removal of contaminants from soil and/or ground water.

**Sensitivity of the Source Water Protection Area (SWPA)** - refers to the hydrologic or hydrogeologic characteristics that affect the transport of contaminant from a source of contamination to a well or intake.

**Source Water Assessment and Protection (SWAP) Program** - The program established by the 1996 Amendments to the Safe Drinking Water Act (SDWA) which expanded the initial Wellhead Protection Program to all public drinking water supply systems including surface water systems. This program is to assess, preserve, and protect the source waters which are used to supply water for public drinking water supply systems and to provide a long term availability of an abundant supply of safe water in sufficient quantity for present and future citizens of the

State. This program also enables the water supply owners, consumers, and others to initiate and promote actions to protect their drinking water supplies with the developed information.

**Source Water Protection Area (SWPA)** - refers to the area delineated by the State for a public water system, or including numerous public water systems, whether the source is ground water, surface water or both, as part of the West Virginia SWAP approved by the EPA under section 1453 of the Safe Drinking Water Act.

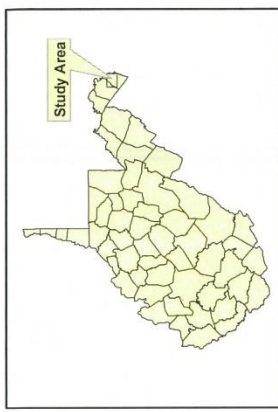
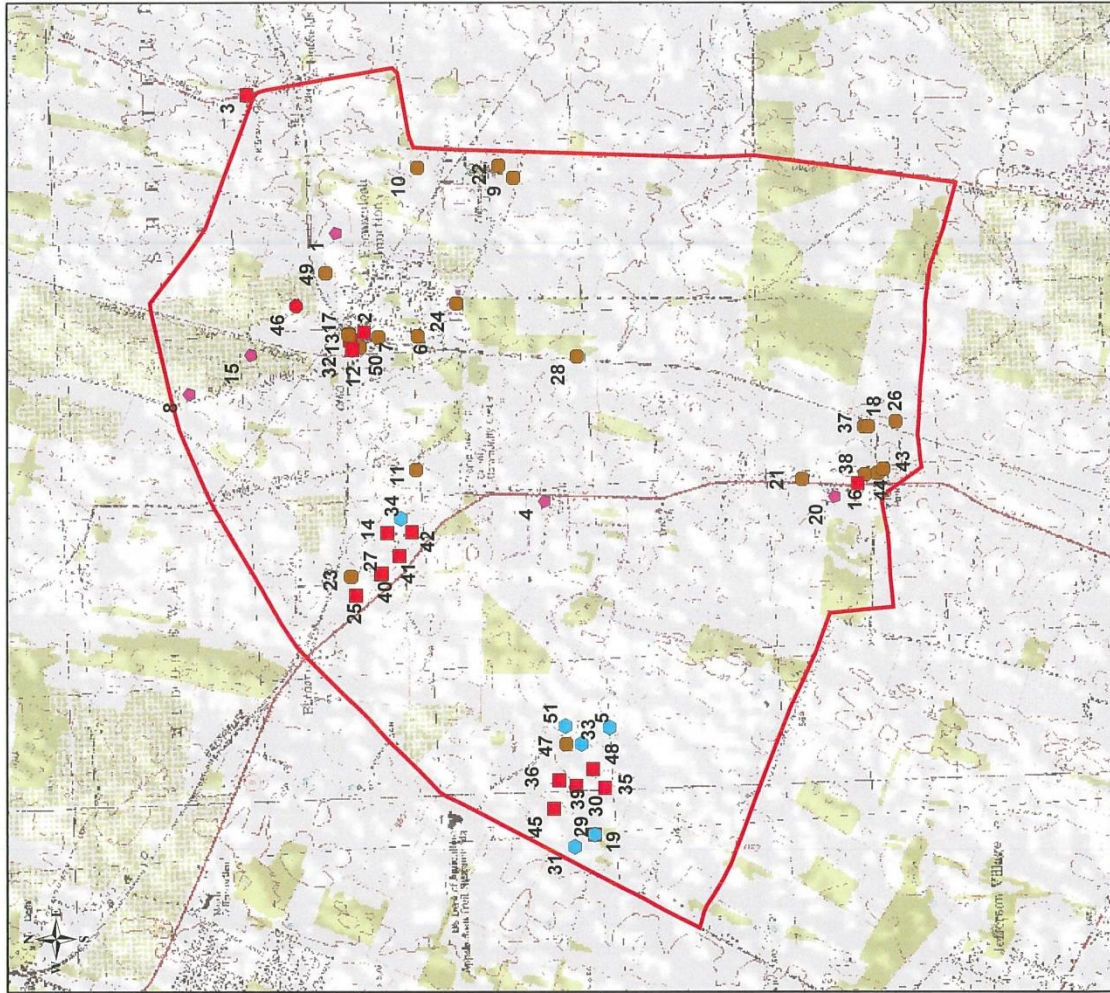
**Susceptibility** - The likelihood that a release from a PSCS would contaminate and render unusable a drinking water supply such as aquifers or surface streams.

**Unconfined Aquifer** - An aquifer over which there is no confining layer.

**Water Quality** - Available data will be evaluated to help direct protection activities. If the water quality impact is known, evaluating the source(s) present may help to determine the origin of the contamination and where immediate protection efforts should be focused

**Well(s)** - refers to ground water intakes including the well structure (i.e., casing, etc) and wellhead.

**Wellhead Protection Area (WHPA)** - The surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfield. This area is delineated by the State for ground water source public water systems. The former Wellhead Protection Program (WHPP) is now part of the Source Water Assessment and Protection (SWAP) Program.



- Map Key**
- Potential Contaminant Sources**
- Agriculture
  - Commercial
  - Industrial
  - Municipal
  - Residential
- Source Water Protection Area**



This map is provided as a public service by the West Virginia Bureau for Public Health. The Bureau makes NO representation regarding completeness or accuracy of the data hereon. Efforts are made to verify and update the data used to generate this map. However, with data sets of this size and nature, eliminating all errors is difficult. Thus, the user assumes total responsibility for verification.

Source locations not included for reasons of security.

**Shenandoah Junction MHP**  
**WV3301931**  
**Jefferson County**

Scale: 1:36,000  
 Drawn By: JEM  
 08/21/08





## Appendix F-4. JUI Protection Team Meeting Minutes

### Jefferson Utilities, Inc. Protection Team Meeting

September 14, 2015

270 Industrial Blvd. Kearneysville, WV 25430

#### In Attendance:

Stephanie Reel .....Jefferson Utilities, Inc. (JUI)  
Jeff Pippel .....JUI  
Zachary Neal .....Advanced Land and Water, Inc. (ALWI)  
Sarah Taggart .....ALWI  
Stephen M. Gyurisin.....Advanced Planning Associates, LC  
Alana Hartman .....West Virginia Department of Environmental Protection  
Lee Snyder.....Snyder Environmental Services  
Jennifer Brockman .....Jefferson County Department of Planning and Zoning

#### Invitees Who Did Not Respond:

Bill Zaleski .....Jefferson County Health Department  
Barbara Miller .....Jefferson County Office of Homeland Security & Emergency  
Management  
Stephanie Grove .....Jefferson County Commission (Administrator)  
John Reisenweber.....Jefferson County Development Authority  
Amy Panzarella .....Jefferson County Chamber of Commerce, Inc.  
Christina Jackson.....Jefferson County Health Department (Administrator)  
Lew Baker .....West Virginia Rural Water Association  
David Hartley .....Eastern Panhandle Home Builders Association  
Michael Blue .....Jefferson County Farm Bureau  
Elizabeth D. McDonald.....Jefferson County Farmland Protection Board

Representatives from Jefferson Utilities, Inc. (JUI) opted to invite potential protection team members via email (documentation of invitation should be acquired from JUI directly). As such, ALWI makes no warranty that all participants included in the list above received invitations, as our office was not included in the mass email invitation. Consequently, we are unsure of who specifically was invited. ALWI recommended that the below list of individuals be invited, though we cannot know with certainty if they were:

#### Supplemental Invitees:

Tim Canfield.....USDA Natural Resources Conservation Service  
Sherry Duncan.....West Virginia Conservation Agency  
Michael Harman .....West Virginia University Extension Office  
Tanner Haid.....WV Rivers Coalition - Eastern Panhandle

Dave Pidgeon .....Norfolk Southern Corporation  
Dave Scott .....CSX Corporation  
Nathan B. Ware .....Jefferson County Department of Transportation  
Dr. Bondy Shay Gibson.....Jefferson County Schools

The JUI Protection Team was composed of a variety of local, regional and state officials. The above list of team members was developed by ALWI as part of this source water protection effort. JUI indicated a desire to host a second protection team meeting where the later list of representatives shown above (Mr. Tim Canfield through Dr. Bondy Shay Gibson) would be invited for discussions regarding implementation of protection and education and outreach measures. A second protection team meeting could not be accommodated by JUI within the timeframe of our engagement due to JUI scheduling constraints. The prospect of a second protection team meeting independent of our involvement remains an option for JUI and ALWI encourages JUI to pursue such a meeting as their availability allows.

#### PowerPoint and ALWI Recommendations for System/Protection Team:

Prior to the meeting, ALWI prepared a PowerPoint presentation in which ALWI summarized system information, local hydrogeology, and preliminary source water protection recommendations for consideration by the Protection Team. This presentation was used to facilitate an open discussion of source water protection matters. All members of the team who were in attendance were encouraged to ask questions and contribute information, source water protection measures and education and outreach measures throughout the meeting.

Generally, the Team was introduced to ALWI recommendations, asked to suggest additional recommendations, prioritize which recommendations and Source Water Protection (SWP) strategies seemed most critical to address as part of the current Source Water Protection Program (SWPP) effort, and review recommendations for public education and outreach measures. Since attendance was limited during this first meeting and only strategies were discussed, specific roles and responsibilities related to source water protection tasks were not assigned to particular team members. The protection team decided to assign roles to particular team members during a future, second meeting, which was tentatively planned for the week of October 5. The Protection Team planned to discuss implementation strategies for protection recommendations discussed during this second meeting. However, this second protection team meeting could not be accommodated by JUI within the timeframe of our engagement, and roles remain unassigned. JUI may opt to conduct a second protection team meeting in the future, without our immediate involvement, with the intention of accomplishing the foregoing goals. In the interim, it is our understanding that JUI representatives will take responsibility for our recommended source water protection and education and outreach measures, working in unison with local representatives and state and government entities as opportunities allow.

Having reviewed ALWI system recommendations, the Protection Team decided to place an emphasis on the following potential threats, ranked from highest importance to lowest importance:



- 1.) **Spills and Other Threats Related to Highways (Route 9) and Railroads (Norfolk Southern and CSX):** ALWI discussed HAZMAT re-route requests, as well as educational and planning opportunities made available by the railroads. ALWI also discussed the need to involve LEPC or other emergency first responders in SWPP efforts. ALWI, with the agreement of the protection team members, emphasized re-inviting Barbara Miller (Jefferson County OHSEM Director) to future Protection Team meetings to discuss training opportunities and existing first response procedures for emergencies within the Source Water Protection Areas (SWPAs). During this discussion, the Protection Team learned that plans exist to install a natural gas pipeline along Route 9, which could affect both the Burr Industrial Park and Walnut Grove SWPAs.
- 2.) **Existing and Future Industrial and Commercial Properties:** ALWI discussed the concept of ensuring that localized protection strategies are put into place to prevent contaminant occurrences arising from related facilities. The Protection Team discussed the potential for a county bus storage garage/facility planned within the Burr SWPA in the near future. The facility would include storage of County vehicles and fuel. For the Walnut Grove SWPA (and to some extent the Burr Industrial Park area) the Protection Team thought it would be beneficial to involve Andy Blake (City Manager for Ranson) in future meetings, as plans exist to further develop the commercial area in the Walnut Grove SWPA.
- 3.) **Sinkholes at a Localized/Small Scale:** The Protection Team discussed education and outreach strategies to raise public awareness about sinkholes and to promote homeowner action. The Team also focused on sinkholes that are associated with stormwater management ponds for commercial and industrial properties. The protection team opted against creating a County-Wide Sinkhole Management Program specific to SWPAs until such time that zoning restrictions are more openly embraced by the general public. As such, implementation of this recommendation would need to involve Jefferson County's Department of Planning and Zoning, and coordination likely would not begin for at least another few years (anticipated 5-10 years).
- 4.) **Agricultural Activities:** ALWI placed an emphasis on the Walnut Grove SWPA which exhibits elevated nitrate concentrations above 50% of the Environmental Protection Agency Maximum Contaminant Level. The Team discussed voluntary strategies and educational opportunities for farmers, as well as involvement through the conservation agencies, including the WV Conservation Agency (Eastern Panhandle Conservation District). By working with these programs, nutrient management plans may be adopted by farmers, or farmers may voluntarily improve or change land use practices to receive economic incentives. Ultimately this could help to reduce nutrient enrichment of the groundwater supply and improve the quality of rivers within the watershed. In this regard, funding opportunities and protection measures may be achieved by working with the Farmland Protection Board and local watershed groups.

- 5.) **Septic Systems Within the SWPA:** This was ranked the lowest threat as the number of septic systems throughout the Burr and Walnut Grove SWPAs are limited. Additionally, sanitary sewer capacity limitations currently prevent the system from adding new connections to the sewer system. The Protection Team decided that the best measures for the time being would be educational and outreach strategies focused on voluntary replacement and/or upgrading of residential septic systems using best available technologies. Ms. Alana Hartman with DEP indicated that the conservation district may be able to provide grant funding covering up to 50% of repair and/or replacement costs for failing septic systems. The opportunity for grant funding should be pursued, and best available technologies (sample ports, etc.) should be encouraged as a potential contingency for grant funding.

Other Recommendations and Discussion Points during Meeting:

The following additional points and recommendations arose from members of the protection team over the course of the meeting:

- 1.) **Additional Education and Outreach Strategies** – While the Protection Team embraced ALWI outreach strategies, Ms. Alana Hartman suggested taking advantage of state and government funded public relations opportunities, such as the EPA Septic Smart Week, which occurred from September 21, 2015 to September 25, 2015. Other similar events exist, such as the USGS Groundwater Awareness Week. It was also suggested that JUI set up SWPA informational booths at Earth Day events, etc. During this discussion, ALWI learned that the Jefferson County Water Advisory Committee (WAC) had previously overseen community wide disposal events (paint, oil, pharmaceuticals, etc.). Consideration should be given to inviting WAC members to protection team meetings to make them aware of SWPP efforts, understand roles and the details of the source water protection program, prevent duplication of efforts, and better protect SWPAs by uniting county and volunteer resources. Also noted that associated activities can include supporting and participating in various public-private partnerships for source water protection, including the Safe Water for West Virginia program coordinated by the WV Rivers Coalition. This program assists with implementing SWPPs through community involvement and watershed protection. Upstream solutions to source water protection include outreach to landowners to promote land conservation, specifically within the zones of critical and peripheral concern to serve as critical protection areas for drinking water sources, as well as other best management practices involving private landowners such as septic pumping, riparian forest buffer plantings, and others. Up stream solutions should include an education and outreach component to raise awareness of threats to drinking water sources and encourage voluntary implementation of best management practices for source water protection.

- 2.) **Integrally Involve the Conservation Agency** – The Protection Team discussed recent efforts and a County-wide challenge to adopt land development ordinances, concluding that a SWPA Ordinance may not be well received at this time. As a result, much of the current SWP effort will focus on voluntary and grant funded opportunities, as well as educational and public outreach strategies. This can include participating in the WV Safe Water Conservation Collaborative which is coordinated by WV Rivers Coalition. This collaborative is implementing a 5-year action plan to accelerate land conservation in source water protection areas. The source water Protection Team felt ALWI should furnish relevant agricultural and sinkhole recommendations to the WV Conservation Agency so that they may pursue and address these SWP measures. Our recommendations to the WV Conservation Agency were not reviewed and approved by JUI representatives; this task remains incomplete at this time and should be pursued by JUI representatives in the future.

After discussing source water protection and public outreach strategies, the Protection Team discussed the need for a second Protection Team meeting, focused on means of implementing prioritized strategies and recommendations to achieve improved source water protection. During this meeting, the Protection Team planned to hold a second Protection Team meeting the week of October 5, 2015. Individuals and entities previously invited to the first Protection Team would be re-invited and encouraged to participate in the second Protection Team meeting. Additionally, invitations would also be sent to members of the Water Advisory Council, Andy Blake (City Manager of Ranson) and Todd Coyle (Manager of the local Earth Day event at Morgan's Grove Park).

We also briefly discussed future public workshops to enhance public participation. JUI expressed an interest in holding a joint workshop(s) with other similar water utilities within Region 9's jurisdiction. At these workshops, the participating utilities might tentatively inform the public about the current source water protection program and what efforts are being performed to continuously provide safe drinking water (even during emergencies). The second half of the presentation could be aimed at outreach measures and public education on how they can better help the system protect against contaminant occurrences (e.g., through septic maintenance, BMPs, etc.). The option to invite a select number of public participants was discussed, with the idea that the workshop could be broadcast on local television stations or other media. JUI may contact other utilities to determine the feasibility of such a joint effort.

However, contract administration constraints for Round 3 and Round 4 funding may make a joint public workshop for Region 9 systems currently subject to SB373 difficult to coordinate before funding expires. As such, a joint public workshop of this scale may be better coordinated at a later date as an educational and outreach strategy at the regional level, as discussed during the meeting. The Protection Team discussed that JUI should identify plans to host a smaller scale public workshop within the next couple of months, to best ensure enhanced public participation and that compliance is achieved within the required timeframe. More planning and coordination time likely would be needed to implement the previously mentioned regional, large-scale public workshop.

Region 9 was suggested as an ideal organization to host a regional public participation workshop event.

The Protection Team meeting concluded with the understanding that an additional meeting would be held the week of October 5, 2015 to discuss implementation of prioritized recommendations. ALWI recommended re-inviting previously invited members, as well as the supplemental invitees provided identified earlier in this document.

## Appendix F-5. Emergency Response Plan Signature Page

### EMERGENCY RESPONSE PLAN WATER SECTOR

Public Water System: Walnut Grove Public Water System

PWSID No: WV3301942

Physical Address: 270 Industrial Blvd.  
Kearneysville  
West Virginia  
25430  
(304) 728-2077

Population Served: 6,237 [year end 2018]

Municipalities Served: None

Prepared by:

Reviewed by:

Date Completed: 02-24-2016

Date Revised: 06-20-2019

## **Appendix F-6. Engineering Evaluation**

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## F7. Railroad Emergency Response Trainings and Services

The information included in this Appendix may be found at the following web addresses (respectfully):

### Online Education:

- ❑ General - <https://www.csx.com/index.cfm/about-us/safety/community/emergency-responder-training-and-education/>
- ❑ Online Trainings – [www.csxsafe.com](http://www.csxsafe.com)
- ❑ Planning Guides – <http://csxhazmat.kor-tx.com/>
- ❑ Additional Training Opportunities - <http://www.beyondourrails.org/index.cfm/safety/>

### Rail Respond:

- ❑ Program Information – <http://www.beyondourrails.org/index.cfm/safety/respond/>

### Safety Train:

- ❑ Program Information – <http://www.beyondourrails.org/index.cfm/news-stories/articles/csx-safety-train-delivers-enhanced-outreach-to-first-responders-and-communities/>
- ❑ Related Article – [http://www.richmond.com/business/article\\_6b1526cf-e3fe-55d4-bec6-37601609a875.html](http://www.richmond.com/business/article_6b1526cf-e3fe-55d4-bec6-37601609a875.html)
- ❑ CSX Corporate Social Responsibility Report (additional information on the Safety Train program may be found on page 50) - <https://www.csx.com/index.cfm/library/files/responsibility/csr-report-files/corporate-social-responsibility-report/>

**Jefferson Utilities, Inc.**  
**Walnut Grove Water System**  
**Public Outreach and Involvement Summary**

**The Protection Team:** Efforts to engage local stakeholders, government officials and specific members of the community in forming the Walnut Grove Water System Source Water Protection Team are listed below.

1. ALWI provided Jefferson Utilities, Inc. (JUI) a recommended list of entities (including local stakeholders, government officials, etc.) to consider inviting to participate on the Protection Team. This list also contained contact information for each potential invitee.
2. JUI sent an invitation electronically (email) to each recommended invitee from the above-mentioned list.
3. The corresponding minutes for the September 14, 2015 Protection Team Meeting illustrate the entities which were invited and methods used to reach out to them. This document can be found in Appendix F-4 of the Walnut Grove Source Water Protection Plan (SWPP).

**The SWPP Report:** Efforts to publicize the SWPP update and to receive comments and opinions on the content of the report are listed below.

1. ALWI created a SWPP Summary PowerPoint presentation for Region 9 to host on their website. This afforded the public an opportunity to view general SWPP information prior to the Draft SWPP being uploaded for public review and comment.
2. A Press Release was developed and provided to both JUI and the Eastern Panhandle Regional Planning & Development Council (Region 9) to direct the public to the online report. The press release was distributed to the local media and posted on the JUI Facebook page, as well as the Region 9 website.
3. A public version of the SWPP Draft was posted on the Region 9 website for the public to opine on, prior to final submittal of the plan to WV BPH. At the close of the public comment period, ALWI discussed comments received with JUI and updated the SWPP accordingly.