# Source Water Protection Plan Clarksburg Water Board

PWSID 3301705 Harrison County

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Prepared by:

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In cooperation with Clarksburg Water Board, Region VI Planning and Development Council and their contractor The Thrasher Group



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\*\*Note: Portions of this plan relative to the contingency and single source alternative study were completed by The Thrasher Group. Their complete report is included as Appendix D.

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

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

Richard D. Welch

Print Name of Authorizing Signatory (see instructions):

Clarksburg Water Board General Manager

Title of Authorizing Signatory:

May 13, 2016

**Date of Submission** 

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## SOURCE WATER PROGRAM ACRONYMS

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

## 1.0 PURPOSE

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

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

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

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

# 2.0 BACKGROUND: WV SOURCE WATER ASSESSMENT AND PROTECTION PROGRAM

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

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

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



## 3.0 STATE REGULATORY REQUIREMENTS

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

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

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

## 4.0 SYSTEM INFORMATION

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

#### Table 1. Population Served by CWB

Administrative office location:			1001 S. Chestnut St. Clarksburg, WV 26301]				
Is the system a public utility, according to the Public Service Commission rule?			Yes				
Date of Most Recent Source Water Assessment Report:			April 2003	3			
Date of Most Recent Source Water Protection Plan:			December 2	011			
Population served directly:			19,552 (8,286 customers)				
	System Name		PWSID Number	Population			
	Greater Harrison PSD		WV3301719/ WV3301727/ WV3301713	8,300			
	City of Stonewood		WV3301724	1,900			
Bulk Water	City of Salem		WV3301720	1,586			
Purchaser Systems:	Town of Nutter Fort		WV3301717	1,686			
	Summit Park PSD	WV3301725		1,200			
	East View PSD	WV3301736/ WV3301737		367			
	City of Shinnston		WV3301741	6,700			

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Bulk Water Purchaser Systems	Enlarged Hepzibah PSD		WV3301709	1,977	
	Sun Valley PSD		WV3301739/ WV3301726	2923	
	Shortline PSD		WV3301722	4,600	
	Town of Anmoore		WV3301701	1,208	
	City of Bridgeport		WV3301703	8,100	
Total Population Served by the Utility:			60,099		
Does the utility have multiple source water protection areas (SWPAs)?			No		
How many SWPAs does the utility have?			1		

Note: Information from the contingency/single-source feasibility study by The Thrasher Group. The entire report is attached as Appendix D.

## **5.0 WATER TREATMENT AND STORAGE**

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

#### **Table 2. CWB Water Treatment Information**

Water Treatment Processes (List All Processes in Order)	Raw water intake > Contact Basin > Rapid Mixer > Flocculation, Sedimentation, Filtration, Disinfection and Fluoridation > Clearwell
Current Treatment Capacity (gal/day)	11,500,000
Current Average Production (gal/day)	7,500,000
Maximum Quantity Treated and Produced (gal)	11,000,000
Minimum Quantity Treated and Produced (gal)	6,000,000
Average Hours of Operation	24
Maximum Hours of Operation in One Day	24
Minimum Hours of Operation in One Day	24
Number of Storage Tanks Maintained	8
Total Gallons of Treated Water Storage (gal)	10,627,000 gal in CWB's direct system, 18,006,000 gal including purchasing systems.
Total Gallons of Raw Water Storage (gal)	0

Note: Information from the contingency/single-source feasibility study by The Thrasher Group. The entire report is attached as Appendix D.



#### Table 3. CWB 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)
West Fork River Impoundment		West Fork Intake	30" ductile iron conduit	West Fork River		Primary	Active

Note: Information from the contingency/single-source feasibility study by The Thrasher Group. The entire report is attached as Appendix D.

#### Table 4. CWB Groundwater Sources

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

### **6.0 DELINEATIONS**

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

The WSDA includes the entire watershed area upstream of the intake to the boundary of the State of West Virginia border or a topographic boundary. The ZCC for a public surface water supply is a corridor along streams within the watershed that warrants more detailed scrutiny due to its proximity to the surface water intake and the intake's susceptibility to potential contaminants within that corridor. The ZCC is determined using a mathematical model that accounts for stream flows, gradient and area topography. The length of the ZCC is based on a five-hour time-of-travel of water in the streams to the water intake, plus an additional one-quarter mile below the water intake. Ohio River ZCC delineations are based on ORSANCO guidance and extend 25 miles above the intake. The width of the zone of critical concern is 1,000 feet measured horizontally from each bank of the principal stream and five hundred feet measured horizontally from each bank of the tributaries draining into the principal stream. Ohio River ZCC delineations are based on ORSANCO guidance and extend 25 miles above the intake and one-quarter mile below the intake. The Ohio River ZCC delineations include 1,320 feet (one-quarter mile) measured from the bank of the main stem of the Ohio River and 500 feet on tributary.

The ZPC for a public surface water supply source and for a public surface water influenced groundwater supply source is a corridor along streams within a watershed that warrants scrutiny due to its proximity to the surface water intake and the intake's susceptibility to potential contaminants within that corridor. The ZPC is determined using a mathematical model that accounts for stream flows, gradient and area topography. The length of the zone of peripheral concern is based on an additional five-hour time-of-travel of water in the streams beyond the perimeter of the zone of critical concern, which creates a protection zone of ten hours above the water intake. The width of the zone of peripheral concern is one thousand feet measured horizontally from each bank of the principal stream and five hundred feet measured horizontally from each bank of the tributaries draining into the principal stream.

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

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

#### Table 5. Watershed Delineation Information

Size of WSDA (Indicate units)	383.4 square miles
River Watershed Name (8-digit HUC)	West Fork River (05020002)
Size of Zone of Critical Concern (Acres)	7,273
Size of Zone of Peripheral Concern (Acres) (Include ZCC area)	17,587
Method of Delineation for Groundwater Sources	N/A
Area of Wellhead Protection Area (Acres)	N/A

## 7.0 PROTECTION TEAM

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

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

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

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



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

Name	Representing	Title	Phone Number	Email
Richard Welch	Clarksburg Water Board	General Manager	304-623-3711	rwelch@clarksburgwater.com
Paul Howe III	Clarksburg Water Board	Board Representative		Paulhowe3@gmail.com
Don Summers	Clarksburg Water Board	Chief Operator	304-623-3711	dsummers@clarksburgwater.c om
Paul Bump	Harrison County Bureau of Emergency Services	Bureau Chief		
Steven R. Hinerman R.S.	Clarksburg-Harrison County Health Department	Sanitarian	304-623-9308	steven.r.hinerman@wv.gov
John Keeling, PE,CIH,CSP,QEP	LEPC, MSES Consultants, Inc.	Harrison Co. LEPC Chairman	304-624-9700	john@msesinc.com
Chad Evans	FBI-Criminal Justice Informational Services Division	Safety & Occupational Health Manager	304-625-2342,	Chad.Evans@ic.fbi.gov
Stephanie Graham- Sims	FBI-Criminal Justice Informational Services Division	Safety & Occupational Health	304-625-3215	Stephanie.graham- sims@ic.fbi.gov
Tom Brown, PE	City of Bridgeport	City Engineer	304-842-8231	tombrown@bridgeportwv.com
Matthew Fluharty	The Thrasher Group	Consulting Engineer	304-326-6142	mfluharty@thrashereng.com
Date of first protection Team Meeting		October 29, 2015 and April 19, 2016		
Efforts made to inform and engage local stakeholders (public, local government, local emergency planners, local health department, and affected residents) and explain absence of recommended stakeholders:		All members attended the mee Evans. Representative were review the final draft. CWB re and Matthew Fluharty attende	eting on October 29, 20 e invited to attend the A epresentatives (Dick, E d. The meeting minute	215 except Paul Bump and Chad April 19 <sup>th</sup> workgroup meeting to Don, and Robert), John Keeling, es are presented in Appendix E.

## **8.0 POTENTIAL SOURCES OF SIGNIFICANT CONTAMINATION**

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

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

## 8.1 CONFIDENTIALITY OF PSSCS

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

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

## 8.2 LOCAL AND REGIONAL PSSCS

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

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

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



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

PSSC Number	Map Code	Site Name	Site Description	Relative Risk Score	Comments
12	M-14	Armory	Nathan Goff National Guard Armory in Clarksburg	3.990	
15	C-14	Gas Company Headquarters	Dominion Transmission office building with vehicle fleet	3.740	
17	I-28	Oil and Gas Services	Unnamed oil and gas equipment yard on Washburncamp Run	5.070	
18	I-28	Oil and Gas Services	Allied oil and gas services yard with above ground tanks	5.070	
28	I-20	Welding Shop	Unnamed welding shop on Coburns Creek	2.550	
29	I-28	Oil and Gas Services	Unnamed oil and gas equipment yard on Davisson Run	5.070	
31	C-3	Auto Repair Shop	Evans Service Center on bank of West Fork River	2.730	
32	I-20	Welding Shop	Shumans Welding and equipment yard	2.550	
34	C-49	Substation	Mon Power West Milford substation	2.945	
35	C-13	Equipment Sales	Summit sales and equipment with 4 warehouses	2.070	
36	C-23	Historic Gas Station	Closed gas station with 2 above ground tanks	3.000	
37	C-3	Auto Repair Shop	Midway Auto Repair	2.730	

PSSC Number	Map Code	Site Name	Site Description	Relative Risk Score	Comments
38	I-28	Oil and Gas Services	Unnamed oil and gas staging area on West Fork River	5.070	
39	I-28	Compressor Station	Dominion Transmission Lightburn compressor station	5.070	
40	C-3	Auto Repair Shop	Barnett's Garage small auto repair shop	2.730	
41	I-28	Oil and Gas Services	Unnamed oil and gas services yard on Hackers Creek	5.070	
42	M-27	Waste Transfer	Weston Septic Transfer station	1.840	
43	C-25	Junk Yard	Jane Lew Hot Shot retired equipment yard	3.360	
44	I-28	Compressor Station	Dominion compressor station on McKinney Run	5.070	
45	I-28	Oil and Gas Services	Baker Corp. mobile water tanks for fracking yard	5.070	
46	C-3	Auto Repair Shop	Rinker's Diesel Performance auto repair shop	2.730	
47	M-6	Fire Station	Jane Lew Fire Department with diesel generator	1.190	
52	C-13	Repair Shop	TCI Tire Centers heavy truck yard with tires and fuel	2.070	
55	I-28	Oil and Gas Services	Nabors drilling equipment yard with chemical tanks	5.070	
58	C-7	Car Dealership	Hefner's used car lot	1.200	

PSSC Number	Map Code	Site Name	Site Description	Relative Risk Score	Comments
59	I-28	Oil and Gas Services	Elite Oilfield Services yard with above ground fuel tank	5.070	
60	M-15	Boat Ramp	Jackson's Mill public stream access	1.470	
61	C-2	Airport	Louis Bennett Field small landing strip with hangar	3.040	
62	M-6	Fire Station	Jackson's Mill Volunteer Fire Dept. with above ground fuel tank	1.190	
63	I-28	Oil and Gas Services	TK Stanley staging area with vehicles and materials	5.070	
64	M-10	Illegal Dump	Illegal dump cleanup site with sign and trash	6.375	
65	C-5	Auto Body Shop	Super Liner spray-on bedliner and small junkyard	2.835	
66	I-20	Welding Shop	Steve's Welding and Fabrication	2.550	
67	I-28	Oil and Gas Services	Weatherford gas industry warehouse	5.070	
68	A-17	Stockyards	Weston Livestock Auction	2.800	
69	C-9	Cemetery	Machpela Cemetery at Weston city limit	1.235	

#### **8.3 PRIORITIZATION OF THREATS AND MANAGEMENT STRATEGIES**

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

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

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

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



#### 9.0 IMPLEMENTATION PLAN FOR MANAGEMENT STRATEGIES

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

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

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

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

PSSC or Critical Area	Priority Number	Reason for Concern
Oil & Gas Wells, including Marcellus Shale Wells	1	Gas wells, when properly drilled in accordance with their permits, do not pose an imminent danger. However, brine and recovered fracturing fluids from the wells must be collected and handled properly to prevent contamination to the surface and ground waters. There are several methods to dispose of this fluid, such as deep injection and trucking the fluid to a treatment facility. The water system is concerned about fracturing water migrating or being spilled into the source water from above ground storage tanks. Road cuts to access gas well sites may create erosion issues that can cause increased sediment and turbidity in surface waters. Chemicals are transported and stored at the well sites. In addition to drilling at the permitted well sites, many staging and equipment storage areas have been established throughout the source water protection areas. Storage containers, mobile above ground storage tanks, and heavy machinery occur at these sites, with what appears to be few best management practices to control erosion and spills from these areas. Because these are temporary in nature, there is not a permitting process to ensure that proper notification is given in case of a spill incident.
Highway Traffic	2	The highway runs parallel to and crosses the source through the SWPA. If an accident were to occur on or along the river, it may be difficult to contain spill materials and these could potentially contaminate the surface water.
Municipal Landfill	3	<ul> <li>The S &amp; S Landfill is located in the protection watershed. The municipal solid waste landfill was permitted in 1975 and receives approximately 120,000 tons of waste per year. According to the landfill's Title V Permit Renewal Application, available at <a href="http://www.dep.wv.gov/dag/permitting/Pages/TitleVPermitApplications.aspx">http://www.dep.wv.gov/dag/permitting/Pages/TitleVPermitApplications.aspx</a>, the facility has storage vessels containing sanitary wastewater, leachate, on and off road diesel fuel, used oil, antifreeze, hydraulic oil, gear oil, lube oil, and unleaded gasoline.</li> <li>Should leachate or any other hazardous materials leak into the groundwater, the contamination could migrate into surface waters. Also there are large leachate tanks onsite.</li> </ul>
Public and Private Sewer	4	There are private individual septic systems and combined sewer systems located upstream in the protection watershed.



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PSSC or Critical Area	Priority Number	Reason for Concern
		Failing private septic systems can leach into surrounding soils or run off into surface water and potentially contaminate the water supply. Combined sewer overflow (CSO) permitted discharges, accidental releases or line breaks may allow untreated sewage to contaminate the surface water source. Untreated sewage contains total coliform, particularly <i>E. coli</i> , along with other bacteria and parasites that could negatively impact human health if treatment processes are not adjusted to address the contamination.
Gas Stations and Auto Repair Shops	5	Oils, antifreeze, and other automobile fluids can cause contamination of groundwater and surface sources if not cleaned up and disposed of properly
Power Line, Pipeline, and Highway Rights-of-Way	6	Rights-of-way are typically maintained with herbicides that can migrate into the water supply. Highway road salt runoff can also migrate into the water supply.
Golf Course	7	Maintenance of a golf course often requires fertilizer and pesticide application. These chemicals can leach into the ground or runoff into surface waters and contaminate the source water.
Boat Ramps	8	Two boat launch areas are located upstream of the intake. Petroleum products leaking from boats may contaminate the water supply.
Dam Removal	N/A	There is a project currently to remove three dams from the West Fork River, including West Milford Dam, Two-Lick Dam, and Highland Dam. CWB has cooperated with the US Fish and Wildlife service to plan the remove and restore natural flow of the river to improve endangered species habitat. The removal of the dams may release sediments and solid waste into the stream; however the release is unlikely because of the pace of the removal. The operating staff are aware that the removal of the dams will change the condition of the West Fork River following major storm events and this could mean that they will adjust how they treat water.

#### Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/ Schedule	Comments	Estimated Cost
Previous Plan Status	There were eight concerns addressed with management strategies in the existing CWB source water protection plan, prepared in 2011. Railroad traffic has been removed because it is no longer a concern. Seven of the original concerns are ongoing and continue to be a concern. Two additional concerns were added (i.e., highway spills and dam removal). All of these are incorporated in this plan update and listed below.	-	-	-	-
Oil & Gas Wells and Marcellus Shale Wells	CWB monitors raw water for bromides, chlorides, and conductivity. As participants in WV River Alert Information Network (RAIN), CWB has installed continuous monitoring equipment inside of their plant. The equipment may alert the operator of contamination, only if the data is downloaded, because the equipment is not currently communicating with the central database. In addition, water systems downstream may benefit from the alert when the equipment is synched and fully functioning. CWB can communicate the SWPA to the WVDEP Office of Oil and Gas staff at 304-926-0499 Ext. 1062 and ask for their consideration when approving future permits. Work with WVDEP and drilling companies to ensure BMPs are adhered to for well sites and staging areas. Monitor if water withdrawals are occurring during low flow periods and report concerns to WVDEP. Also CWB intends to establish a local program asking major responsible parties to participate as "partners in source water protection," in which parties would agree to provide information about their facilities or assistance if spills from their sites were to contaminant the source water. The assistance would be particularly important if a contaminant was spilled that CWB is not accustomed to detecting or treating.	Water utility staff	Ongoing monitoring. Letter by June 2017	Example letter is in Appendix E	Minimal cost associated with staff time.



PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/ Schedule	Comments	Estimated Cost
Highway Traffic	CWB staff communicates with emergency responders to prepare to react quickly to any spills and initiate cleanup activities. In the event that contaminants do find their way into the public water supplies, the system will monitor and react according to emergency response plans and communication plans that have been prepared with the emergency planners.	Water utility staff	Ongoing		Minimal cost associated with staff time.
Municipal Landfill	Staff should contact landfill personnel and ask to be notified if a spill or leak occurs that could contaminate the water source or if there are changes in their permit. Ask also to be included in the facilities emergency response plan, so that CWB is notified directly in the event of a leak or spill.	Water utility staff	By June 2017	Example letter is in Appendix E	Minimal cost associated with staff time.
Public and Private Sewer	Staff will continue to coordinate with the Clarksburg Sanitary Board to stay informed of the status of the CSO location upstream of the intake. Should consider shutting down intake pumps during flash flooding events that may result in the release of raw sewage from the CSO when the system is overwhelmed by stormwater runoff.				
	The United Hospital Center has changed uses and is now the site of Highland Hospital. There are fewer patients and less concerns with the lift station being overwhelmed. There is direct communication any time that the station overflows.	Water utility staff	Ongoing		Minimal cost associated with staff
	Staff will continue to communicate with the public sewer system personnel to raise awareness of the source water vulnerability to contamination from leaking lines.				time.
	The General Manager has expressed concern relative to failing septic systems and unmaintained home aeration units to the county health department. CWB will continue to contribute discussions and initiatives aimed at reducing contaminant discharge from private and public waste water systems.				

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/ Schedule	Comments	Estimated Cost
Gas Stations and Auto Repair Shops	CWB staff will communicate to auto repair shops and gas station owners the need for them to properly dispose of oil and other automobile products. Ask them to follow regulations and institute best management practices (BMPs) to contain and clean up spills. One such regulation is installing secondary containment around above ground storage tanks and/or chemical storage areas. Monitor compliance with state environmental regulations.	Water utility staff	By June 2017	Example letter is in Appendix E	Minimal cost associated with staff time.
Power Line, Pipeline, and Highway Rights-of- Way	CWB staff will contact the appropriate utilities and the WVDOH to determine the herbicides used within the ROW and any other chemicals used. Herbicide labeling is developed with guidance from the USEPA providing information on application. This guidance has been developed with public health in mind and may list restrictions for application to prevent herbicide migration into water supplies. Communicating the boundaries of the SWPA will raise awareness with the WVDOH and the utility company to ensure BMPs.	Water utility staff	By June 2017	Example letter is in Appendix E	Minimal cost associated with staff time.
Golf Course	CWB staff can communicate the vulnerability of source water to contamination from pesticides and fertilizers to the owners and maintenance personnel at the Clarksburg Country Club golf course and encourage BMPs (e.g., avoiding over fertilizing or applying when expecting heavy rains).	Water utility staff	By June 2017	Example letter is in Appendix E	Minimal cost associated with staff time.
Boat Ramps	CWB staff may contact personnel that manage the boat launch areas to identify how the water system can assist in keeping the water free of petroleum products and solid wastes associated with boats.	Water utility staff	In future if increased recreation results in a problem.		Minimal cost associated with staff time.
Dam Removal	CWB staff will continue to monitor the removal schedule and possible releases of materials that could impact treatment. In addition, operators will investigate the changes in the source		Ongoing		Minimal cost associated



PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/ Schedule	Comments	Estimated Cost
	water turbidity after the removal of the dams to inform the treatment process.				with staff time.
Yearly Windshield Survey	CWB staff will perform a yearly "windshield survey" of the zone of critical concern. They will note changes in land use, water quality, and other developments that may have occurred since the previous year's survey. These changes will be documented and reflected in future source water protection plan updates.	Water utility staff	Yearly, next survey in 2017		Minimal cost associated with staff time
Regular Coordination with Emergency Managers	CWB staff will continue to communicate with these emergency services groups on a regular basis, especially when there is not an ongoing emergency. They will meet yearly as part of the Source Water Protection Team.	Water utility staff emergency personnel	Yearly during regular Protection Team Meetings		Minimal cost associated with staff time
Yearly Source Water Protection Team Meetings	CWB will invite the protection team to meet on a yearly basis to discuss any changes that might have occurred within the watershed or to find replacements for members who can no longer participate.	Source Water Protection Team	Yearly, next meeting in 2017		Minimal cost associated with staff time

## **10.0 EDUCATION AND OUTREACH STRATEGIES**

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



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

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status/Schedule	Comments	Estimated Cost
Public Meeting	CWB has discussed and presented the source water protection plan in the board meetings in September 2015 and April 26, 2016. These meetings were open to the public and advertised specifically to solicit information and questions from the public. In both instances, the CWB invited local media to provide information to the public through newspaper and television. In the future, the CWB will review the source water protection plan and include discussion on board meeting agendas. The CWB actively participates in other opportunities to engage and inform the public (see below).	CWB	April 26, 2016	CWB posted notices, ran a notice in the newspaper and added source water protection to their agenda to communicate the meeting to the public.	Minimal cost associated with staff time.
Consumer Confidence Report	CWB publishes a Consumer Confidence Report (CCR) annually, as required by the Safe Drinking Water Act, which is sent to all water customers. Information concerning the Source Water Assessment is included in the CCR. In the future, the system will include a reference to this source water protection plan and how customers can access a copy.	Water utility staff	Consider mention in the next CCR.		Minimal cost associated with staff time.
Brochures, pamphlets, and letters	CWB distributes brochures during National Drinking Water Week. These will alert the recipients of the need for source water protection and conservation. If needed the CWB will send letters to residents or businesses to communicate specific concerns. See <b>Appendix E</b> for example letters and an additional brochure that can be customized. Funding for the brochures may be available through the Wellhead and Source Water Protection Grant Program.	Water utility staff	Ongoing		Minimal cost associated with staff time, postage, and printing.
Websites	CWB will consider distributing information on a website relative to source water, including a public facing version of the source water protection plan. In addition, several	Water utility staff	By June 2017		Minimal cost associated

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status/Schedule	Comments	Estimated Cost
	organizations provide information and resources on the internet, related to certain source water concerns and PCSs. The utility will consider providing links to these materials, to educate the community. Examples of these resources are described below.				with staff time.
	Due to concerns about the effects of pharmaceuticals in surface water bodies, the Ohio River Valley Water Sanitation Commission (ORSANCO) developed a pamphlet regarding pharmaceutical disposal. ORSANCO has also developed a source water protection brochure. These materials can be viewed and possibly ordered from: <u>http://www.orsanco.org/brochures</u> The Source Water Collaborative has released an educational				
	brochure building tool to assist with creating custom brochures targeting local decision makers. This tool is available at: <u>http://www.yourwateryourdecision.org</u> and may assist in community planning and development.				
	USEPA Water Sense Simple Steps to Save Water (EPA-832- F-07-011) presents benefits of conserving water. Focusing not only on the environment, but also on the financial savings associated with conservation. The brochure can be viewed at: <u>http://www.epa.gov/watersense/docs/ws_simplesteps508.pdf</u>				
School Curricula	CWB will continue to work with the school system to incorporate source water activities into the school curricula. They regularly invite school children to the plant and participate in activities aimed at school age children to educate them on their drinking water.	Water utility staff	Ongoing		Activities are annual events and included in budget.
Plant Tours	CWB staff provide tours of the water plant to interested organizations such as watershed groups, schools, and civic organizations. When school children visit the plant, the CWB has a mascot, AquaDuck that attends the visits.	Water utility staff	Ongoing		Activities are annual events and

#### Clarksburg Water Board

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status/Schedule	Comments	Estimated Cost
	CWB also conducts an annual safety seminar with local Emergency Responders to make them familiar with the facilities in the event of an emergency.				included in budget.
Drinking Water Protection Signs	Erecting Drinking Water Protection Signs along highways is a common awareness strategy in some states and recommended by the USEPA. Signs are placed to alert the public to the SWPA and about what to do in case of accidental spills. The WVDOH has not approved the placement of signs along or adjacent to state highway rights of way for the purposes of source water protection, except for specific sensitive areas. The WVDHHR recommends erecting awareness signs in public areas and along city streets not associated with state highways. CWB may consider erecting Drinking Water Protection Signs, if they are available through WVDHHR or the source water protection grant program.	Water utility staff	Consideration will be given by June 2017 and signs may be erected if available through a grant program.	To request signs along a state highway, contact the Traffic Engineering Division at 304-558- 3063. If approved the WVDOH may place and maintain signs along state highways at mutually acceptable locations.	Minimal costs if able to obtain signs and support for erecting from the WVDHHR and WVDOH.
Partner with Watershed Association or Civic Groups	Partner with local watershed associations, such as Guardians of the West Fork, or other civic groups. These groups may have similar goals and available volunteers that can integrate source water protection into their efforts. Participated in a Healthy Kids event at the YMCA.	Water utility staff	Ongoing		Activities are annual events and included in budget.
Water Watchers Program	CWB has a Water Watchers program, which is a community watch group organized and trained to report suspicious activity in and around local water utilities. For more information, visit http://www.clarksburgwater.com/waterwatchers.htm	Water utility staff	Ongoing		Activities are annual events and included in budget.

Source Water Protection Plan

#### Clarksburg Water Board

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status/Schedule	Comments	Estimated Cost
Media Campaign	CWB engages local television news stations to include stories about source water protection. In addition, CWB has developed a commercial through their Water Watchers Program. This commercial runs on local television stations and can be viewed at their Facebook page. They have recently applied for a grant to re-run the commercial.	Water utility staff	Ongoing		Seeking grant funding to air existing commercial.
# **11.0 CONTINGENCY PLAN**

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

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

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

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

# **11.1 RESPONSE NETWORKS AND COMMUNICATION**

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

### Table 11. CWB Water Shortage Response Capability\*

Can the utility isolate or divert contamination from the intake or groundwater supply?	No
Describe the utility's capability to isolate or divert potential contaminants:	N/A
Can the utility switch to an alternative water source or intake that can supply full capacity at any time?	No
Describe in detail the utility's capability to switch to an alternative source:	N/A

Can the utility close the water intake to prevent contamination from entering the water supply?	Yes
How long can the intake stay closed?	Approximately 1.4 days if satellite systems are to stay fully operational at average demand
Describe the process to close the intake:	Close the raw water intake valve.
Describe the treated water storage capacity of the water system:	Eight (8) water storage tanks totaling 10,627,000 gallons of treated water. At the time of this report, CWB was operating at 100% treated water storage capacity. Including satellite purchasers the entire system has 18,006,000 gallons of treated water storage
Is the utility a member of WVRWA Emergency Response Team?	Yes
Is the utility a member of WV-WARN?	Yes
List any other mutual aid agreements to provide or receive assistance in the event of an emergency:	N/A

Note: Information from the contingency/single-source feasibility study by The Thrasher Group. The entire report is attached as Appendix D.

# **11.2 OPERATION DURING LOSS OF POWER**

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

## Table 12. Generator Capacity\*

What is the type and capacity of the generator needed to operate during a loss of power?	The emergency generator capacity for the treatment facility is 1000 kW and the largest booster station is 175 kW.
Can the utility connect to generator at intake/wellhead? If yes, select a scenario that best describes system.	Yes, the utility has a generator at the treatment plant that provides full power service to the intake.
Can the utility connect to generator at treatment facility? If yes, select a scenario that best describes system.	Yes, the utility has a generator at the treatment plant that provides full power to the plant.
Can the utility connect to a generator in distribution system? If yes, select a scenario that best describes system.	Yes, the utility has a generator at the treatment plant that can provide full power service to the high service pumps.
Does the utility have adequate fuel on hand for the generator?	Yes

What is your on-hand fuel storage and how long will it last operating at full capacity?		Gallons		Hours		
		2500 gal				
Provide a list of		Supplier			Phone Number	
suppliers that could provide generators Generator N/A		N/A		N/A		
of an emergency:	Fuel	Oakland Oil			301-334-2678	
Does the utility test the generator(s) periodically?		Yes, monthly				
Does the utility roo gene	utinely mainta rator?	ain the	Yes			
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:		N/A		A.		

Note: Information from the contingency/single-source feasibility study by The Thrasher Group. The entire report is attached as Appendix D.

# **11.3 FUTURE WATER SUPPLY NEEDS**

When planning for potential emergencies and developing contingency plans, a utility needs to not only consider their current demands for treated water but also account for likely future needs. This could mean expanding current intake sources or developing new ones in the near future. This can be an expensive and time consuming process, and any water utility should take this into account when determining emergency preparedness. CWB 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 CWB\*

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, based on population trends there is no need for an increase in capacity to meet water demands. If population trends change, an upgrade to the plant would be needed at that time.
If not, describe the circumstances and plans to increase production capacity:	N/A

Note: Information from the contingency/single-source feasibility study by The Thrasher Group. The entire report is attached as Appendix D.

# **11.4 WATER LOSS CALCULATION**

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

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

Total Water Pumped (gal)		2,725,307,000
Total Wa	ater Purchased (gal)	0
Total Water Pumped and Purchased (gal)		2,725,307,000
Mains, Plants, Filters, Flushing, etc.		196,165,000
Water Loss Accounted for Except Main Leaks (gal)	Fire Department	892,000
	Back Washing	41,351,000
	Blowing Settling Basins	49,045,000
Total Water Loss Accounted For Except Main Leaks		287,453,000
Water Sol	d- Total Gallons (gal)	1,825,529,000
Unaccounte	ed For Lost Water (gal)	527,970,000
Water lost	from main leaks (gal)	84,355,000
Total gallons of Unaccou from	Inted for Lost Water and Water Lost Main Leaks (gal)	612,325,000
Total Percent Unaccoun Ma	ited For Water and Water Lost from in Leaks (gal)	22.47%

### Table 14. Water Loss Information\*

If total percentage of Unaccounted for Water is greater than 15%, please describe any measures that could be taken to correct this problem:

Increased inspection and leak detection. Making necessary repairs.

\* Note: Information from the contingency/single-source feasibility study by The Thrasher Group. The entire report is attached as Appendix D.

\*\*The water loss through main leaks estimate had been duplicated in the Source Water Protection Contingency Plan based upon the draft instructions to complete the calculation provided by the WVDHHR. Data presented in this table represents corrections to the guidance and calculation made since the Source Water Protection Contingency Plan was finalized.

# **11.5 EARLY WARNING MONITORING SYSTEM**

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

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

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

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

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

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?	The utility receives spill notifications from the WVDHHR Fairmont District Office.
Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?	No

Are you prepared to detect potential contaminat notified of a spill?		nts if	No			
List laboratories (and contact			Laboratories			
information) on whon would rely to analyze	n you water	Name		e	Contact	
samples in case of a reported	ported	RE	I Cons	ultants	304-255-2500	
		WV Office of	of Labo	ratory Services	304-558-3530	
Do you have an understanding of baseline or normal conditions for your source water quality that accounts for seasonal fluctuations?		f baseline or ırce water asonal		Yes		
Does your utility currently monitor raw water (through continuous monitoring or periodic grab samples) at the surface water intake or from a groundwater source on a regular basis?		Yes				
Provide or estimate the capital and O&M costs	C	Capital		S	\$50,000	
for your current or proposed early warning system or Yea upgraded system.		rly O & M	\$750		\$750	
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.		No		No		

Note: Information from the contingency/single-source feasibility study by The Thrasher Group, with slight corrections. The entire report is attached as Appendix D.



# **12.0 SINGLE SOURCE FEASIBILITY STUDY**

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

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

TETRA TECH

## **13.0 COMMUNICATION PLAN**

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

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

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

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



## **14.0 EMERGENCY RESPONSE SHORT FORM**

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

# **15.0 CONCLUSION**

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

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



# **APPENDIX A. FIGURES**

The following pages provide lists of PSSCs and maps of the delineated protection areas and locations of selected PSSCs.

Map Label	PSSC Name	PSSC Description	Comment	Мар Туре	Map Code	Relative Risk Score
1	Dam	Dam	Not Found.	Commercial	C-30	0.950
2	Marina/boat docks	Boat ramp at Veterans Park	none	Commercial	C-30	0.950
3	Swimming Pool	Veterans Park swimming pool	none, field checked 2014	Municipal	M-26	0.600
4	Gas Station	Go Mart gas station	none, field checked 2014	Commercial	C-18	2.880
5	Gas Station	Sheetz Gas Station across from West Fork River bridge		Commercial	C-18	2.880
6	Hospital	VA Medical Center	none, field checked 2014	Commercial	C-24	2.475
7	Marina/boat docks	Armory Boat Ramp	none, field checked 2014	Commercial	C-30	0.950
8	Other	Abandoned buildings and dump site	none	Industrial	I-44	0.000
9	Dam	Low water dam and pumps	none	Commercial	C-30	0.950
10	Auto Repair	Rigg's Service Center	none, closed and abandoned 2014	Commercial	C-3	2.730
11	Wastewater Treatment Plant	SHAFFER DISTRIBUTING	Sewage Treatment Plant	Municipal	M-29	4.025
12	Armory	Nathan Goff National Guard Armory in Clarksburg	An oil/gas services staging area is located near the armory.	Municipal	M-14	3.990
13	Hospital	United Hospital Center	*Is now the site of Highland Hospital, a mental health facility, with fewer patients	Commercial	C-24	2.475
14	Pharmacy	CVS Pharmacy	none, field checked 2014	Commercial	C-37	1.100
15	Gas Company Headquarters	Dominion Transmission office building with vehicle fleet	none	Commercial	C-14	3.740
16	Health Care	Allen Medical	none, field checked 2014	Commercial	C-24	2.475
17	Oil and Gas Services	Unnamed oil and gas equipment yard on Washburncamp Run	none	Industrial	I-28	5.070

Table A-1: WVBPH Source Water Database and Locally Identified Potential Sources of Significant Contamination.

Map Label	PSSC Name	PSSC Description	Comment	Мар Туре	Map Code	Relative Risk Score
18	Oil and Gas Services	Allied oil and gas services yard with above ground tanks	none	Industrial	I-28	5.070
19	Cemetery	Sunset Memorial Garden Cemetery	none, field checked 2014	Commercial	C-9	1.235
20	Wastewater Treatment Plant	LAUREL LEA SUBDIVISION	Sewage Treatment Plant	Municipal	M-29	4.025
21	Wastewater Treatment Plant	Windsor Hills Homeowners Association, Inc.	Sewage Treatment Plant	Municipal	M-29	4.025
22	Wastewater Treatment Plant	CCC Sewage Treatment Plant	none	Municipal	M-29	4.025
23	Sewage Treatment Plant	Joyce Properties package plant outfall	Same as R-13., permit active 2014	Municipal	M-29	4.025
24	Golf Course	Clarksburg Country Club golf course	none, field checked 2014	Commercial	C-20	1.170
25	Marina/boat docks	Low water dam and pumps	none	Commercial	C-30	0.950
26	Historic Gas Station	Station appears closed	No pumps observed, field checked 2014	Commercial	C-23	3.000
27	Auto Repair	Garage for vehicle repair	2 bays., field checked 2014	Commercial	C-3	2.730
28	Welding Shop	Unnamed welding shop on Coburns Creek	none	Industrial	I-20	2.550
29	Oil and Gas Services	Unnamed oil and gas equipment yard on Davisson Run	none	Industrial	I-28	5.070
30	Landfills/municipal	S & S Landfill	Same as R-2 and R-3.	Municipal	M-12	5.400
31	Auto Repair Shop	Evans Service Center on bank of West Fork River	none	Commercial	C-3	2.730
32	Welding Shop	Shumans Welding and equipment yard	none	Industrial	I-20	2.550
33	Mining: underground	Wilderness Park and Campground		Industrial	I-25	4.785
34	Substation	Mon Power West Milford substation	none	Commercial	C-49	2.945
35	Equipment Sales	Summit sales and equipment with 4 warehouses	none	Commercial	C-13	2.070
36	Historic Gas Station	Closed gas station with 2 above ground tanks	none	Commercial	C-23	3.000

Map Label	PSSC Name	PSSC Description	Comment	Мар Туре	Map Code	Relative Risk Score
37	Auto Repair Shop	Midway Auto Repair	none	Commercial	C-3	2.730
38	Oil and Gas Services	Unnamed oil and gas staging area on West Fork River	none	Industrial	I-28	5.070
39	Compressor Station	Dominion Transmission Lightburn compressor station	none	Industrial	I-28	5.070
40	Auto Repair Shop	Barnett's Garage small auto repair shop	none	Commercial	C-3	2.730
41	Oil and Gas Services	Unnamed oil and gas services yard on Hackers Creek	none	Industrial	I-28	5.070
42	Waste Transfer	Weston Septic Transfer station	none	Municipal	M-27	1.840
43	Junk Yard	Jane Lew Hot Shot retired equipment yard	none	Commercial	C-25	3.360
44	Compressor Station	Dominion compressor station on McKinney Run	none	Industrial	I-28	5.070
45	Oil and Gas Services	Baker Corp. mobile water tanks for fracking yard	none	Industrial	I-28	5.070
46	Auto Repair Shop	Rinker's Diesel Performance auto repair shop	none	Commercial	C-3	2.730
47	Fire Station	Jane Lew Fire Department with diesel generator	none	Municipal	M-6	1.190
48	Gas Stations	Exxon- 7eleven	Gas Station	Commercial	C-18	2.880
49	Other	Agrip Motor Oil	Oils & Lubricants	Commercial	C-53	0.000
50	Storm Drains	Pittsburgh Tube	Manufacturing	Municipal	M-24	4.200
51	Gas Stations	Chevron	Gas Station	Commercial	C-18	2.880
52	Repair Shop	TCI Tire Centers heavy truck yard with tires and fuel	none	Commercial	C-13	2.070
53	Car washes	Truck Stop	Auto Repair/Truck Wash	Commercial	C-8	1.700
54	Gas Stations	I-79 Truck Stop	Gas Station	Commercial	C-18	2.880

Map Label	PSSC Name	PSSC Description	Comment	Мар Туре	Map Code	Relative Risk Score
55	Oil and Gas Services	Nabors drilling equipment yard with chemical tanks	none	Industrial	I-28	5.070
56	Pasture*	Pasture Land	Pasture Land	Agriculture	A-18	2.000
57	Pasture*	Pasture Land	Pasture Land	Agriculture	A-18	2.000
58	Car Dealership	Hefner's used car lot	none	Commercial	C-7	1.200
59	Oil and Gas Services	Elite Oilfield Services yard with above ground fuel tank	none	Industrial	I-28	5.070
60	Boat Ramp	Jackson's Mill public stream access	none	Municipal	M-15	1.470
61	Airport	Louis Bennett Field small landing strip with hangar	none	Commercial	C-2	3.040
62	Fire Station	Jackson's Mill Volunteer Fire Dept. with above ground fuel tank	none	Municipal	M-6	1.190
63	Oil and Gas Services	TK Stanley staging area with vehicles and materials	none	Industrial	I-28	5.070
64	Illegal Dump	Illegal dump cleanup site with sign and trash	none	Municipal	M-10	6.375
65	Auto Body Shop	Super Liner spray-on bedliner and small junkyard	none	Commercial	C-5	2.835
66	Welding Shop	Steve's Welding and Fabrication	none	Industrial	I-20	2.550
67	Oil and Gas Services	Weatherford gas industry warehouse	none	Industrial	I-28	5.070
68	Stockyards	Weston Livestock Auction	none	Agriculture	A-17	2.800
69	Cemetery	Machpela Cemetery at Weston city limit	none	Commercial	C-9	1.235
70	Historic gas stations	Historic Gas Station	Closed for at least 3 years. Tanks probably still there. Located downstream of intake.	Commercial	C-23	3.000

Map Label	PSSC Name	PSSC Description	Comment	Мар Туре	Map Code	Relative Risk Score
71	Silviculture (logging)	Logging   PCS Not Found. Could not locate.     2005 aerial photographs show that logging activities did occur.		Agriculture	A-20	3.780
72	Military Base (past and present)	National Guard Armory Vehicle maintenance. Located Mun   downstream of intake.		Municipal	M-14	3.990
73	Road maintenance depots/deicing operations	NVDOH Maintenance Garage   Associated with R-4, R-9, R-10, and R-11.   Muni		Municipal	M-20	3.075
74	Marina/boat docks	Vest Fork River Marina Tailwater access site Co		Commercial	C-30	0.950
75	Highway	I-79 Bridge over West Fork River	Not field verified. Observed location where water haulers pull water from river and accidents/spills could potentially occur on I-79.	Municipal	M-7	6.150
76	Pasture*	Goat Holding Pen		Agriculture	A-18	2.000
77	Camp grounds	Broken Wheel Campground	Private Sewer Dump/Private Sewer Plant. Same as R-12.	Commercial	C-6	1.620
78	Camp grounds	Broken Wheel Campground		Commercial	C-6	1.620
79	Other	Broken Wheel Campgrond Sewer Dump		Private Campground- Sewer Dump	Com merci al	C-53
80	Office building/complexes	Main Office		Commercial	C-33	1.040
81	Wells: oil and gas	Petroleum Development Corp. 90060 MullColy #4	Oil and Gas well	Industrial	I-40	2.790
82	Sewage sludge/Biological Solids application	sewage package plant		Municipal	M-22	5.000
83	Other	industrial pipe supply		Commercial	C-53	0.000
84	Historic gas stations	Historic gas stations		Commercial	C-23	3.000

Map Label	PSSC Name	PSSC Description	Comment	Мар Туре	Map Code	Relative Risk Score
85	Repair Shops (engine, appliances, etc.)	historic storage facility	Possible auto repair	Commercial	C-43	2.070
86	Repair Shops (engine, appliances, etc.)	industrial storage area	warehouse	Commercial	C-43	2.070
87	Other	industrial storage area	warehouse	Industrial	1-44	0.000
88	Gas Stations	Gas Stations		Commercial	C-18	2.880
89	Gas Stations	Gas Stations		Commercial	C-18	2.880
90	Gas Stations	Gas Stations		Commercial	C-18	2.880
91	Sewage sludge/Biological Solids application	sewage lagoon		Municipal	M-22	5.000
92	Other	oil and gas pipe yard		Industrial	1-44	0.000
93	Auto repair shops	radiator repair shop		Commercial	C-3	2.730
94	Silviculture (logging)	lumber yard		Agriculture	A-20	3.780
95	Repair Shops (engine, appliances, etc.)	historic garage		Commercial	C-43	2.070
96	Historic gas stations	Historic gas stations		Commercial	C-23	3.000
97	Gravel pits	sand\gravel sales		Industrial	I-13	0.780
98	Pasture*	livestock pasture		Agriculture	A-18	2.000
99	Pasture*	cattle farm		Agriculture	A-18	2.000
100	Silviculture (logging)	lumber yard	Timbered log storage area	Agriculture	A-20	3.780

Map Label*	PADNUMBER	PADNAME	PROBKEY**
R1	WV003066	JOYCE TIPPLE & REFUSE	HEF
R2	WV003066	JOYCE TIPPLE & REFUSE	HEF
R3	WV006366	CLARKSBURG (LYONS) LANDSLIDE	PWAI
R4	WV001862	BROWN'S CREEK PORTALS AND REFUSE	HEF
R5	WV001862	BROWN'S CREEK PORTALS AND REFUSE	PWAI
R6	WV001862	BROWN'S CREEK PORTALS AND REFUSE	DI
R7	WV001712	ROY KEITH PORTALS & VERTICAL OPENINGS	VO
R8	WV001712	ROY KEITH PORTALS & VERTICAL OPENINGS	VO
R9	WV001712	ROY KEITH PORTALS & VERTICAL OPENINGS	VO
R10	WV002332	DAVID GOLDEN ROGERS HOLLOW #2	WA
R11	WV006425	MT. CLARE (BARKER) VO	VO
R12	WV002139	CECIL R. HILL PORTALS	WA
R13	WV001708	BROWN'S CREEK #9	HEF
R14	WV002139	CECIL R. HILL PORTALS	WA
R15	WV002138	FORANCE HOLLOW ROAD PORTAL	WA
R16	WV002138	FORANCE HOLLOW ROAD PORTAL	WA
R17	WV002008	BROWN'S CREEK #10	WA
R18	WV002138	FORANCE HOLLOW ROAD PORTAL	WA
R19	WV002008	BROWN'S CREEK #10	HEF
R20	WV002008	BROWN'S CREEK #10	WA
R21	WV000418	JOYCE MYERS SUBSIDENCE	VO
R22	WV006096	SYCAMORE ROAD (BLACKWELL) DRAINAGE	DI

#### Table A-2: Select Abandoned Mine Land Points

\*There are a total of 585 AML Points in the WSDA. 50 points are within or around the ZCC and ZPC. 32 Portals were not labeled. \*\*PROBKEY Problem Key HEF Hazardous Equipment & Facility DI Dangerous impoundment WA Water Area VO Vertical Opening PWAI Polluted Water: Agricultural & Industrial



Map Label	Reference ID	Responsible Party	Facility Name	Tank Label	Year Constructed	Cap
R18	2014-0015346	Thomas Petroleum LLC	Thomas Petroleum LLC Fairmont WV	025-00000397	2013	
R23	2014-0008530	Carder, Eddie	Goff 8HM, 16HM, & 17HM	017-00002673	2013	
R24	2014-0008530	Carder, Eddie	Goff 8HM, 16HM, & 17HM	017-00002672	2013	
R25	2014-0008530	Carder, Eddie	Goff 8HM, 16HM, & 17HM	017-00002671	2013	
R26	2014-0002730	Antero Resources Corporation	Antero Resources Corporation - West Virginia	017-00000959	1982	
R27	2014-0008363	Carder, Eddie	Hudkins 1HM, 2HM & 3HM	017-00002327	2012	
R28	2014-0008363	Carder, Eddie	Hudkins 1HM, 2HM & 3HM	017-00002326	2012	
R29	2014-0008363	Carder, Eddie	Hudkins 1HM, 2HM & 3HM	017-00002325	2012	
R30	2014-0008531	Carder, Eddie	Goff 9HM & 10HM	017-00002324	2011	
R31	2014-0008531	Carder, Eddie	Goff 9HM & 10HM	017-00002323	2011	
R32	2014-0008353	Carder, Eddie	Goff 5HM & 55M	017-00002674	2011	
R33	2014-0008353	Carder, Eddie	Goff 5HM & 55M	017-00002675	2009	
R34	2014-0008349	Carder, Eddie	Goff 3HM & 4HM	017-00002322	2010	
R35	2014-0008349	Carder, Eddie	Goff 3HM & 4HM	017-00002321	2010	
R36	2014-0013149	Waste Management Of Wv Inc	S&S Grading Landfill	017-00002813	1996	
R37	2014-0013149	Waste Management Of Wv Inc	S&S Grading Landfill	017-00002814	1992	
R38	2014-0011278	Dominion Transmission Inc	33898	017-00002314	2009	
R39	2014-0011278	Dominion Transmission Inc	33898	017-00002313	2009	
R40	2014-0002732	Antero Resources Corporation	Antero Resources Corporation - West Virginia	017-00000971	1986	
R41	2014-0001533	Waco Oil & Gas Co Inc	WACO OIL & GAS CO., INC./WELLS	017-00000301	1917	
R42	2014-0005290	Bakercorp	Clarksburg Branch	017-00001398	2008	
R43	2014-0005290	Bakercorp	Clarksburg Branch	017-00001404	2005	

Table A 2. Calest ab . . . . . 네 바느 ~ 700 ... aity tanks ( 2000 collops)\* .

Map Label	Reference ID	Responsible Party	Facility Name	Tank Label	Year Constructed	Capacit
R44	2014-0005290	Bakercorp	Clarksburg Branch	017-00001414	2008	
R45	2014-0005290	Bakercorp	Clarksburg Branch	017-00001387	1995	
R46	2014-0005290	Bakercorp	Clarksburg Branch	017-00001405	2005	
R47	2014-0005290	Bakercorp	Clarksburg Branch	017-00001415	2012	
R48	2014-0005290	Bakercorp	Clarksburg Branch	017-00001396	2006	
R49	2014-0005290	Bakercorp	Clarksburg Branch	017-00001390	1998	
R50	2014-0005290	Bakercorp	Clarksburg Branch	017-00001409	2005	
R51	2014-0005290	Bakercorp	Clarksburg Branch	017-00001412	2008	
R52	2014-0005290	Bakercorp	Clarksburg Branch	017-00001399	2008	
R53	2014-0005290	Bakercorp	Clarksburg Branch	017-00001393	1998	
R54	2014-0005290	Bakercorp	Clarksburg Branch	017-00001400	2011	
R55	2014-0005290	Bakercorp	Clarksburg Branch	017-00001407	2006	
R56	2014-0005290	Bakercorp	Clarksburg Branch	017-00001397	2008	
R57	2014-0005290	Bakercorp	Clarksburg Branch	017-00001394	1998	
R58	2014-0005290	Bakercorp	Clarksburg Branch	017-00001391	1999	
R59	2014-0005290	Bakercorp	Clarksburg Branch	017-00001413	2008	
R60	2014-0015237	Bakercorp	Clarksburg Branch	017-00002242	2000	
R61	2014-0005290	Bakercorp	Clarksburg Branch	017-00001410	2007	
R62	2014-0005290	Bakercorp	Clarksburg Branch	017-00001388	1995	
R63	2014-0005290	Bakercorp	Clarksburg Branch	017-00001385	1997	
R64	2014-0005290	Bakercorp	Clarksburg Branch	017-00001403	2002	
R65	2014-0005290	Bakercorp	Clarksburg Branch	017-00001406	2005	
R66	2014-0005290	Bakercorp	Clarksburg Branch	017-00001395	1995	
R67	2014-0005290	Bakercorp	Clarksburg Branch	017-00001392	1998	

Map Label	Reference ID	Responsible Party	Facility Name	Tank Label	Year Constructed	Capacity
R68	2014-0005286	Bakercorp	Clarksburg Branch	017-00001384	2006	
R69	2014-0005290	Bakercorp	Clarksburg Branch	017-00001408	2007	
R70	2014-0005290	Bakercorp	Clarksburg Branch	017-00001389	1998	
R71	2014-0005290	Bakercorp	Clarksburg Branch	017-00001386	1995	
R72	2014-0005290	Bakercorp	Clarksburg Branch	017-00001411	2007	
R73	2014-0007969	WVDOH-Equipment Division	WVDOH D4 LOST CREEK	017-00002796	2009	
R74	2014-0007969	WVDOH-Equipment Division	WVDOH D4 LOST CREEK	017-00002795	2013	
R75	2014-0002729	Antero Resources Corporation	Antero Resources Corporation - West Virginia	017-00000941	2011	
R76	2014-0002729	Antero Resources Corporation	Antero Resources Corporation - West Virginia	017-00000949	2011	
R77	2014-0001535	Antero Resources Corporation	Antero Resources Corporation - West Virginia	017-00000366	2011	
R78	2014-0001535	Antero Resources Corporation	Antero Resources Corporation - West Virginia	017-00000365	2011	
R79	2014-0002729	Antero Resources Corporation	Antero Resources Corporation - West Virginia	017-00000942	2011	
R80	2014-0002729	Antero Resources Corporation	Antero Resources Corporation - West Virginia	017-00000950	2011	
R81	2014-0002423	Antero Resources Corporation	Antero Resources Corporation- West Virginia	017-00001127	2011	
R82	2014-0002423	Antero Resources Corporation	Antero Resources Corporation- West Virginia	017-00001128	2011	
R83	2014-0013036	E Marcellus Assets Co Llc	Jarvisville	017-00002745	2011	
R84	2014-0001534	Waco Oil & Gas Co Inc	Waco Oil & Gas Co., Inc./wells	017-00000350	1916	
R85	2014-0002423	Antero Resources Corporation	Antero Resources Corporation- West Virginia	017-00001126	2011	

Map Label	Reference ID	Responsible Party	Facility Name	Tank Label	Year Constructed	Capacity
R86	2014-0013036	E Marcellus Assets Co Llc	Jarvisville	017-00002746	2011	
R87	2014-0013036	E Marcellus Assets Co Llc	Jarvisville	017-00002744	2011	
R88	2014-0002423	Antero Resources Corporation	Antero Resources Corporation- West Virginia	017-00001125	2011	
R89	2014-0013036	E Marcellus Assets Co Llc	Jarvisville	017-00002747	2011	
R90	2014-0002729	Antero Resources Corporation	Antero Resources Corporation - West Virginia	017-00000945	2012	
R91	2014-0002729	Antero Resources Corporation	Antero Resources Corporation - West Virginia	017-00000936	2012	
R92	2014-0002423	Antero Resources Corporation	Antero Resources Corporation- West Virginia	017-00001135	2011	
R93	2014-0002423	Antero Resources Corporation	Antero Resources Corporation- West Virginia	017-00001136	2012	
R94	2014-0009518	Interstate Chemical Co Inc	Water Reclamation Terminal	021-00002265	1982	
R95	2014-0014527	Extreme Plastics Plus, Inc.	Consol CAM17 60-5	999-00001335	2014	
R96	2014-0014526	Extreme Plastics Plus, Inc.	CONSOL CAM17 40-15	999-00001337	2013	

Note: There are 2744 unique tanks (registered one or more times depending upon contents) in the SWPA. There are 2,604 tanks with capacities less than 10,000 gallons and 126 tanks with capacities over 10,000 gallons. Tanks with capacity greater or equal to 6,000 gallons located in and around the zone of critical concern and zone of peripheral concern were prioritized for a label. Seventy-four were labeled. R42-R72 are empty storage tanks available for rent from BakerCorp and do not likely represent a threat.

Table A-4: Responsible parties with 20 or greater above ground storage tanks in the source water protection

Responsible Party	Total
CNX GAS COMPANY LLC	822
DOMINION TRANSMISSION INC	469
ENERVEST OPERATING L. L. C.	133
CHESAPEAKE APPALACHIA, L.L.C.	112
EQT PRODUCTION COMPANY	91
ALLIANCE PETROLEUM CORPORATION	76
PETROLEUM RESOURCES INC	67
BOWIE INC	65
ENERGY CORPORATION OF AMERICA	55
EXCO RESOURCES (PA), LLC	50
DEVONIAN GAS PRODUCTION	47
XTO ENERGY, INC.	47
ANTERO RESOURCES CORPORATION	43
EQT GATHERING LLC	36
BAKERCORP	35
DIVERSIFIED RESOURCES, INC.	30
KEY OIL COMPANY	30
MIKE ROSS, INC	25
MOUNTAIN V OIL & GAS, INC.	23
TARGA DEVELOPMENT, INC.	22
BERRY ENERGY, INC.	20
ENI USA R&M CO. INC.	20
SACHDEVA ENERGY ENTERPRISES, INC.	20
CNX GAS COMPANY LLC	822
DOMINION TRANSMISSION INC	469
ENERVEST OPERATING L. L. C.	133
CHESAPEAKE APPALACHIA, L.L.C.	112
EQT PRODUCTION COMPANY	91
ALLIANCE PETROLEUM CORPORATION	76
PETROLEUM RESOURCES INC	67

Reg_Label	COMPANY	PERMIT	COUNTY	DATE_REVOK	ERIS
R97	KWD CONSTRUCTION CO.	258-75	Harrison	12/2/1981	S025875
R98	KWD CONSTRUCTION CO.	H-187	Harrison	11/17/1982	H018700
R99	PAUL DON, INC.	207-75	Harrison	6/1/1980	S020775
R100	TANSTAAFL, INC.	150-77	Harrison	2/20/1981	S015077
R101	BRJ, INC.	I-740	Harrison	9/29/1994	1074000
R102	TREYCO, INC.	UO-270	Harrison	6/8/1987	U027000
R103	H & W COAL CO.	171-75	Harrison	3/1/1984	S017175
R104	DMG, INC.	158-82P	Harrison	1/12/1985	P015882
R105	GLORY MINING CO.	D-9866	Harrison	1/1/1984	D986600
R106	FLEX DEVELOPMENT CORPORATION	S-1013-91	Harrison	1/11/2005	S101391
R107	UNION GRANT COAL & STONE	S-6-82	Harrison	6/12/1992	S000682
R108	BYRON CONSTRUCTION COMPANY	Q-1009-92	Harrison	7/31/2001	Q100992

Table A-5: Bond forfeiture sites in and around the ZCC and ZPC.

Note: Only those sites located in and around the ZCC and ZPC were labeled. There are 41 sites in the watershed that were not labeled.

#### Table A-6: Coal refused site\*.

Map Label	FACILITY NAME	COMPANY	PERMIT_ID	SIZE_ACRE
R109	No facility name provided.	No company name provided.	65776017	

\*Note: The refuse pond impoundment is located near the Roblee Coal Company bond forfeited permits and the active United Coals, Inc. site.

Table A-7. Leaking Underground Storage Tank sites in or around the 200 and 200 without record or cleanup being complete	Table A-7: Leaking Underground Storage	Tank sites in or around the ZCC and ZPC	without record of cleanup being complete.
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Map Label	WVID	Leak	Facility Name	Address	City	Confirmed	Cleanup Intiated	Cleanup Complete
R110	2102709	97-085	JANE LEW RESTAURANT	PO BOX 1215, I-79 LANE LEW EXIT	JANE LEW	06/24/1997	06/24/1997	
R111	2102657	95-084	CORNER MART	2997 JACKSON'S MILL RD,	WESTON	05/15/1995	05/15/1995	
R112	2102704	00-073	7-ELEVEN # 35945	227 E THIRD ST,	WESTON	09/01/2000	12/01/2000	
R113	2102703	06-001	7-ELEVEN # 35952	274 S MAIN ST,	WESTON	01/11/2006	01/11/2006	
R114	2109002	14-032	PRICETOWN STOP N SHOP	1855 US HWY 33 W,	WESTON	06/26/2014	06/30/2014	

#### Table A-8: Mining Permits in and around the ZCC and ZPC.

Map Label	permit	Respible party	Туре	Number of Outlets
R115	WV1002481	J & B COAL COMPANY	OUTLT	6
R116	WV1002813	B.R.J. INC	OUTLT	1
R117	WV1011227	COMMUNITY COAL CO	OUTLT	2
R118	WV1002635	J. & J. GUZZI ENTERPRISES, INC.	OUTLT	3
R119	WV1007327	COMMUNITY COAL CO	OUTLT	4
R120	WV1010441	FLEX DEVELOPMENT CORP	OUTLT	9
R121	WV1011596	UNITED COALS, INC.	OUTLT	5
R122	WVG021506	BYRON CONST CO INC	OUTLT	5
R123	WV1011570	GOLD RESOURCES, LLC	OUTLT	36
R124	WV0067571	PATRIOT MINING COMPANY INC	OUTLT	5
R125	WV0098761	GOLD RESOURCES, LLC	OUTLT	4
R126	WV1017829	UNITED COALS, INC.	OUTLT	16
R127	WV0098973	JAMES ROBINSON EXCAVATING CO INC	OUTLT	1
R128	WV1011723	THE SYCAMORE GROUP, LLC	OUTLT	3
R129	WV0060461	UNITED COALS, INC.	OUTLT	1

R130	WV1010263	UNITED COALS, INC.	OUTLT	4
R131	WV0095303	AMBREC CORPORATION	OUTLT	2

### Table A-9: Select NPDES permits\* in and around the ZCC and ZPC.

Map Label	Permit	Facility name	Description	Permit type	Responsible Party
R132	WVG55008 9	SHAFFER DISTRIBUTING	Sewage General	Sewage	SHAFFER ENTERPRISES
R133	WVG61163 6	Allied Oil and Gas Services	Storm Water Industrial (GP)	Industrial	ALLIED OIL AND GAS SERVICES LLC
R134	WVG55128 2	Windsor Hills Subd.	Sewage General	Sewage	WINDSOR HILL HOMEOWNERS ASSOC
R135	WVG55025 0	JOYCE PROPERTIES	Sewage General	Sewage	GREATER HARRISON CNTY PSD
R136	WVG55091 0	Clarksburg Country Club	Sewage General	Sewage	GREATER HARRISON CNTY PSD
R137	WVG55118 2	Deertrail Subdivision	Sewage General	Sewage	DEER TRAIL HOMEOWNERS ASSOC
R138	WVG55077 3	PRESSLEY RIDGE @ LAUREL PARK	Sewage General	Sewage	KAPPA SIGMA PI, INC.
R139	WV0084301	Greater Harrison Co. PSD	Ind POTW	Sewage	GREATER HARRISON CNTY PSD
R140	WVG61126 8	Lost Creek Salvage	Storm Water Industrial (GP)	Industrial	LOST CREEK SALVAGE
R141	WVG98005 3	Lost Creek I-79	WV DOH+MUN	Industrial	WV DEPARTMENT OF TRANSPORTATION
R142	WVG55032 0	WOODSTOCK HEIGHTS	Sewage General	Sewage	GREATER HARRISON CNTY PSD
R143	WVG55033 0	WATTERS SMITH STATE PK	Sewage General	Sewage	WV DIVISION OF NATURAL RESOURCES

R144	WVG61150 8	Jarvisville Compressor Station	Storm Water Industrial (GP)	Industrial	E MARCELLUS ASSETS CO LLC
R145	WV0040894	JANE LEW WATER COMM	Ind POTW	Sewage	JANE LEW WATER COMM
R146	WVSG2012 7	Hoppes Construction LLC	Sludge/Septic POTW Disposal (GP)	Sewage	HOPPES CONSTRUCTION LLC
R147	WV0028088	WESTON CITY OF	Ind POTW	Sewage	WESTON CITY OF
R148	WV0101257	STONEWALL JACKSON LAKE	OTHER	Sewage	WV DIVISION OF NATURAL RESOURCES
R149	WV0101257	STONEWALL JACKSON LAKE	Ind Other	Sewage	WV DIVISION OF NATURAL RESOURCES

\*Note there were 2276 sites permitted through NPDES. The majority of these were septic seals (1,359) or home aeration units (565) and were not given labels. Stormwater constructions permits were also not prioritized for a label. Only those sites in and around the ZCC and the ZPC were labeled.

Map Label	API	Responsible Party	Well Status	Farm Name	Well Number
R150	033-05821	PDC MOUNTAINEER LLC	NAVL	CATHER, H. DOTSON TRUSTEE	GOFF 20HM
R151	033-05822	PDC MOUNTAINEER LLC	NAVL	H. DOTSON CATHER TRUSTEE	GOFF 19HM
R152	033-05820	PDC MOUNTAINEER LLC	NAVL	CATHER, H. DOTSON, TRUSTEE	GOFF 18HM
R153	033-05823	PDC MOUNTAINEER LLC	NAVL	H. DOTSON CAATHER TRUSTEE	GOFF 21HM
R154	033-05481	PDC MOUNTAINEER LLC	AC	CATHER, H. DOTSON - TRUSTE	GOFF 10HM
R155	033-05480	PDC MOUNTAINEER LLC	AC	CATHER, H. DOTSON - TRUSTE	GOFF 9HM
R156	033-05537	PDC MOUNTAINEER LLC	NAVL	DAVIS, LAURA GOFF, ET AL	GOFF 11HM
R157	033-05718	PDC MOUNTAINEER LLC	NAVL	DAVIS, LAURA GOFF	GOFF 17HM
R158	033-05717	PDC MOUNTAINEER LLC	NAVL	DAVIS, LAURA GOFF	GOFF 16HM
R159	033-05536	PDC MOUNTAINEER LLC	NAVL	DAVIS, LAURA GOFF	GOFF 8HM
R160	033-05344	PETROLEUM DEVELOPMENT CORPORATION	AC	DAVIS, LAURA GOFF	GOFF 3HM
R161	033-05343	PETROLEUM DEVELOPMENT CORPORATION	AC	DAVIS, LAURA GOFF	GOFF 4HM
R162	033-05740	PDC MOUNTAINEER LLC	NAVL	LYNCH FARM LLC	MAXWELL 2HM

#### Table A-10: Permitted Marcellus Shale Gas wells in and around the ZCC and ZPC.

Map Label	API	Responsible Party	Well Status	Farm Name	Well Number
R163	033-05744	PDC MOUNTAINEER LLC	NAVL	LYNCH FARM LLC	MAXWELL 6HM
R164	033-05739	PDC MOUNTAINEER LLC	NAVL	LYNCH FARM LLC	MAXWELL 1HM
R165	033-05743	PDC MOUNTAINEER LLC	NAVL	LYNCH FARM LLC	MAXWELL 5HM
R166	033-05741	PDC MOUNTAINEER LLC	NAVL	LYNCH FARM LLC	MAXWELL 3HM
R167	033-05742	PDC MOUNTAINEER LLC	NAVL	LYNCH FARM LLC	MAXWELL4HM
R168	033-05534	PDC MOUNTAINEER LLC	AC	HUDKINS, R. D.	HUDKINS 1HM
R169	033-05555	PDC MOUNTAINEER LLC	AC	HUDKINS, R. D.	HUDKINS 2HM
R170	033-05556	PDC MOUNTAINEER LLC	AC	HUDKINS, R. D.	HUDKINS 3HM
R171	033-05197	DOMINION EXPLORATION & PRODUCTION	AC	WARD, EVELYN MARIE	33898
R172	033-05641	ANTERO RESOURCES APPALACHIAN CORP	NAVL	MATHENY, NORMAN C.	ROGERS UNIT 2H
R173	033-05553	ANTERO RESOURCES APPALACHIAN CORP	AC	MATHENY, C. NORMAN & WANDA	HAWKER UNIT 1H
R174	033-05559	ANTERO RESOURCES APPALACHIAN CORP	AC	MATHENY, C. NORMAN & WANDA	NELSON UNIT 1H
R175	033-05639	ANTERO RESOURCES APPALACHIAN CORP	NAVL	MATHENY, NORMAN C.	DESSIE UNIT 1H
R176	033-05554	ANTERO RESOURCES APPALACHIAN CORP	AC	MATHENY, C. NORMAN & WANDA	HAWKER UNIT 2H
R177	033-05560	ANTERO RESOURCES APPALACHIAN CORP	AC	MATHENY, C. NORMAN & WANDA	NELSON UNIT 2H
R178	033-05640	ANTERO RESOURCES APPALACHIAN CORP	NAVL	MATHENY, NORMAN C.	ROGERS UNIT 1H
R179	033-05724	ANTERO RESOURCES APPALACHIAN CORP	NAVL	SPERRY, CLARENCE	ISAAC UNIT 1H
R180	033-05592	ANTERO RESOURCES APPALACHIAN CORP	AC	SPERRY, CLARENCE E., JANET	AA POST UNIT 1H
R181	033-05494	ANTERO RESOURCES APPALACHIAN CORP	AC	SPERRY, CLARENCE, JANET &	POST EAST UNIT 4H
R182	033-05491	ANTERO RESOURCES APPALACHIAN CORP	AC	SPERRY, CLARENCE, JANET &	POST UNIT 1H
R183	033-05576	ANTERO RESOURCES APPALACHIAN CORP	AC	SPERRY, CLARENCE E., JANET	GT POST UNIT 1H
R184	033-05577	ANTERO RESOURCES APPALACHIAN CORP	AC	SPERRY, CLARENCE E,, JANET	GT POST UNIT 2H
R185	033-05492	ANTERO RESOURCES APPALACHIAN CORP	AC	SPERRY, CLARENCE, JANET &	POST UNIT 2H

Map Label	API	Responsible Party	Well Status	Farm Name	Well Number
R186	033-05493	ANTERO RESOURCES APPALACHIAN CORP	AC	SPERRY, CLARENCE, JANET &	POST UNIT 3H

Table A-11: List of Responsible Parties operating 20 or more oil and gas wells in source water protection areas.

Responsible Party	ZCC	Around ZCC	ZPC	Around ZPC	WSDA	Total
DOMINION TRANSMISSION INC	13	32	172	298	1130	1645
DOMINION EXPLORATION & PRODUCTION		22	31	52	712	834
OPERATOR UNKNOWN	3	2	10	7	317	339
ROSS AND WHARTON GAS COMPANY, INC	4	1	10	9	276	300
ALAMCO INC	3	4	9	14	147	177
CNG PRODUCING COMPANY	0	3	10	5	149	167
EQT PRODUCTION COMPANY	0	0	1	2	160	163
EQUITRANS, L P	0	0	0	0	125	125
PETROLEUM RESOURCES, INC.	2	0	0	0	114	116
ENERVEST OPERATING L. L. C.	2	2	2	5	97	108
PETROLEUM DEVELOPMENT CORPORATION	35	29	0	1	43	108
ANTERO RESOURCES APPALACHIAN CORP	0	8	14	29	53	104
MOUNTAIN V OIL & GAS, INC.	6	7	0	0	91	104
ENERGY CORPORATION OF AMERICA	2	2	10	10	75	99
BOWIE INC	18	22	6	1	44	91
BLAZER ENERGY CORPORATION	3	6	15	11	48	83
INTERSTATE ENERGY INC	0	0	0	0	71	71
SENECA-UPSHUR PETROLEUM	0	0	1	0	68	69
DEVONIAN GAS PRODUCTION	0	0	3	0	65	68
EMAX OIL COMPANY	2	1	4	16	32	55
CABOT OIL & GAS CORPORATION	0	4	3	1	46	54
DIVERSIFIED RESOURCES, INC.	1	1	2	0	45	49
COLUMBIA NATURAL RESOURCES, LLC	0	0	0	0	44	44
PDC MOUNTAINEER LLC	10	15	4	13	0	42
KEY OIL COMPANY	0	0	0	0	39	39
BRAXTON OIL & GAS CORP.	0	0	0	0	37	37
ROCKWELL RESOURCES LLC	0	0	0	0	36	36
CNX GAS COMPANY LLC	0	0	0	2	32	34



Responsible Party	ZCC	Around ZCC	ZPC	Around ZPC	WSDA	Total
JACKSON FUEL CORPORATION	0	0	0	0	31	31
U.S. ARMY CORPS OF ENGINEERS	0	0	0	0	31	31
FLUHARTY ENTERPRISES INC	0	0	1	3	25	29
BAKER, J C & SONS INC	0	0	0	0	27	27
LONE PINE OPERATING COMPANY, INC.		1	0	2	23	27
BOGGS NATURAL GAS FLP	0	0	0	0	25	25
DENEX PETROLEUM CORP.	2	0	0	0	20	22
RUBIN RESOURCES CO.	0	0	6	1	15	22
ST. CLAIR OIL CO.	0	0	0	0	22	22
HOUSTON EXPLORATION COMPANY		0	1	0	20	21
SACHDEVA ENERGY ENTERPRISES, INC.	0	0	0	0	21	21

Map Label	Registry	Primary Name	Location	City	Conveyor
R187	110055000000	STANLEY SUBSIDENCE II AML ENHA	UNKNOWN	CLARKSBURG	ICIS
R188	110042000000	GO MART	900 MILFORD STREET	CLARKSBURG	FRS
R189	110055000000	CLARKSBURG FAMILY AQUATIC CENT	UNKNOWN	CLARKSBURG	ICIS
R190	110047000000	SHEETZ STORE #501	101 STONEYBROOK RD	CLARKSBURG	FRS-GEOCODE
R191	110055000000	STAR AUTOMOTIVE GROUP-PARKING	UNKNOWN	CLARKSBURG	ICIS
R192	110046000000	SHEETZ CLARKSBURG	UNKNOWN	CLARKSBURG	ICIS
R193	110055000000	VETERANS PARK BRIDGE	UNKNOWN	CLARKSBURG	ICIS
R194	110055000000	ARMORY ROAD	UNKNOWN	CLARKSBURG	ICIS
R195	110055000000	AMSA 102(G)	6 ARMORY RD	CLARKSBURG	ICIS
R196	110055000000	VETERANS NURSING HOME SITE PRE	UNKNOWN	CLARKSBURG	ICIS
R197	110044000000	LOUIS A JOHNSON VA MEDICAL CENTER	ONE MEDICAL CENTER DRIVE	CLARKSBURG	COMMERCIAL VENDOR
R198	110040000000	VETERANS ADMINISTRATION MEDICAL CENTER	1 MED CENTER DRIVE	CLARKSBURG	FRS
R199	110006000000	BYRON CONSTRUCTION	400 RIVERSIDE DR	CLARKSBURG	FRS
R200	110046000000	VA HOSPITAL BRIDGE REPLACEMENT	UNKNOWN	CLARKSBURG, WV	ICIS
R201	110055000000	MOUNT CLARE ROAD PSD	UNKNOWN	UNKNOWN	ICIS
R202	110006000000	BETZ MINING CHEMICAL DIV	10 ARMORY RD	CLARKSBURG	FRS-GEOCODE
R203	110039000000	PRO CONTRACTING INC	8 ARMORY RD	CLARKSBURG	FRS
R204	110008000000	ALLEGHENY POWER - CLARKSBURG SVC CTR	ARMORY RD RTE 19 S	CLARKSBURG	FRS
R205	110011000000	SHAFFER DISTRIBUTING	8 ARMORY ROAD	CLARKSBURG	ICIS

Table A-12: USEPA Facilities in and around the ZCC and ZPC.



Map Label	Registry	Primary Name	Location	City	Conveyor
R206	110055000000	RITE AID #915	505 ROSEBUD PLAZA	CLARKSBURG	FRS-GEOCODE
R207	110006000000	JENKINS CLEANERS	614 ROSEBUD PLAZA	CLARKSBURG	FRS
R208	110006000000	UNITED HOSPITAL CENTER	3 HOSPITAL PLAZA	CLARKSBURG	FRS
R209	110055000000	CLARKSBURG SANITARY BOARD-SEWE	UNKNOWN	CLARKSBURG	ICIS
R210	110041000000	CNG DIVISION 4	UNKNOWN	CLARKSBURG	EIS
R211	110046000000	LIBERTY H.S. PROPOSED ATHLETIC	UNKNOWN	CLARKSBURG	ICIS
R212	110055000000	SALEM/GORE MIDDLE SCHOOL	UNKNOWN	CLARKSBURG	ICIS
R213	110044000000	MOUNTAINEER MIDDLE SCHOOL	2 MOUNTAINEER DRIVE	CLARKSBURG	FRS
R214	110008000000	DOMINION TRANSMISSION INC - PRODUCT HQ	500 DAVISSON RUN ROAD	CLARKSBURG	FRS
R215	110055000000	MANCUSO PROPERTY	CR 25	CLARKSBURG	NPDES
R216	110055000000	LAUREL LEA SUBDIVISION	UNKNOWN	WEST MILFORD	ICIS
R217	110055000000	WINDSOR HILLS SUBDIVISION	RT 5 BOX 567	CLARKSBURG	ICIS
R218	110011000000	JOYCE PROPERTIES	COUNTRY CLUB ROAD	CLARKSBURG	ICIS
R219	110008000000	JOYCE PROPERTIES, INC.	PO BOX 630	CLARKSBURG	ICIS
R220	110055000000	WESCOR FOREST PRODUCTS	UNKNOWN	UNKNOWN	ICIS
R221	110047000000	CLARKSBURG (LYONS) LANSLISE	RT. 1 BOX 765, CLARKSBURG, WV	CLARKSBURG	ICIS
R222	110055000000	DEER TRAIL SUBDIVISION	UNKNOWN	UNKNOWN	ICIS
R223	110046000000	PHASE II SANITARY SEWER EXTENS	COUNTY RT 19	CLARKSBURG	ICIS
R224	110055000000	MEADOW VIEW APARTMENTS	MEADOW VIEW DRIVE	CLARKSBURG	ICIS
R225	110046000000	HAWKINS & NESBITT CONTRACT	CO RT. 31	WEST MILFORD	ICIS
R226	110055000000	SHILOH FARMS, ROUTE 19	UNKNOWN	CLARKSBURG	ICIS
R227	110041000000	S & S LANDFILL	ROUTE 19 SOUTH	CLARKSBURG	EIS

Map Label	Registry	Primary Name	Location	City	Conveyor
R228	110046000000	COUNTY ROUTE 25 WATER DISTRIBU	CO. RT. 25	CLARKSBURG	ICIS
R229	110055000000	PETROLEUM DEVELOPMENT CORP GEPCO PIPELINE	STONEPOT ROAD	MONTE CLARE	ICIS
R230	110055000000	MCWHORTER-CLARKSBURG TRAIL	UNKNOWN	CLARKSBURG	ICIS
R231	110046000000	WEST MILFORD ELEMENTARY	226 SCHOOL ST	WEST MILFORD	NPDES
R232	110046000000	HIGHLAND HIDEAWAY	UNKNOWN	WEST MILFORD	ICIS
R233	110011000000	GREATER HARRISON CO. PSD	P.O. BOX 190	WEST MILFORD	ICIS
R234	110040000000	GREATER HARRISON CO - BRIDGEPORT CS	P.O. BOX 190	WEST MILFORD	CWNS
R235	110055000000	GREATER HARRISON PSD, PHASE 1-	UNKNOWN	UNKNOWN	ICIS
R236	110040000000	GREATER HARRISON - W MILFORD WWTP	LIBRARY ST, OFF RT 36	WEST MILFORD	CWNS
R237	110008000000	GRANT UNION PSD	HIGHLAND DAM ROAD	WEST MILFORD	FRS
R238	110006000000	ASHLAND-289-0352400	226 SCHOOL ST	WEST MILFORD	COMMERCIAL VENDOR
R239	110055000000	GREENBRIER ACRES SUBD.	200 LIBERTY STREET	WEST MILFORD	NPDES
R240	110022000000	WEST MILFORD ELEM. SCHOOL	226 SCHOOL ST	WEST MILFORD	NPDES
R241	110008000000	WALKER ENT	MAIN ST PO BOX 149	WEST MILFORD	FRS
R242	110055000000	SAVIN BATTERIES, LLC	RT. 1, BOX 57A-1	LOST CREEK	ICIS
R243	110046000000	BUFFALO LAKE DAM IMPROVEMENTS	UNKNOWN	WEST MILFORD	ICIS
R244	110046000000	WETLANDS COMPENSATORY MITIGATI	UNKNOWN	WEST MILFORD	ICIS
R245	110046000000	WATTERS SMITH MEMORIAL STATE P	UNKNOWN	LOST CREEK	NPDES
R246	110055000000	<b>RIGHTER MINE TIPPLE &amp; REFU</b>	OFF COUNTY ROUTE 27/1	LOST CREEK	ICIS
R247	110055000000	LOST CREEK SALVAGE	PO BOX 306	LOST CREEK	ICIS



Map Label	Registry	Primary Name	Location	City	Conveyor
R248	110055000000	WV DIVISION OF HIGHWAYS	LOST CREEK I-79 MAINTENANCE	LOST CREEK	ICIS
R249	110055000000	HORIZONS CHURCH	UNKNOWN	LOST CREEK	ICIS
R250	110055000000	WILDERNESS WATER PARK	UNKNOWN	WOLF SUMMIT	ICIS
R251	110046000000	SPERRY METER STATION EXPANSION	OFF JARVISVILLE ROAD	WEST MILFORD	NPDES
R252	110006000000	BOLTON'S CYCLE	1 MAIN ST.	LOST CREEK	FRS-GEOCODE
R253	110055000000	WOODSTOCK HEIGHTS	ROUTE 1, BOX 64-A	LOST CREEK	ICIS
R254	110055000000	TL-414 RELOCATION PROJECT	UNKNOWN	LOST CREEK	ICIS

#### Volunteer Remediation

Map Label	Project Name	Project Description	Owner Name	contaminants	size_acres
R255	Weatherford (VRP	VRP Project #03975			
	03975)	Wv State Route 7(Hackers Creek Road)	NA	Pipe Yard	3.70000004000
R256	Dominion - Weston				
	(VRP 07823)	VRP Project #07823	NA	Petroleum	3.79999995000
R257	Avery - Weston			Former Cloth, Garment,	
	(VRP 09375)	VRP Project #09375.	Mr. Bruce Martin	and Label Manufact.	8.47999954000
# APPENDIX B. EARLY WARNING MONITORING SYSTEM FORMS

#### Appendix B- Form A

Existing Early Warning Monitoring System Worksheet- Surface Water Source

Describe the type of early warning detection equipment installed.

HACH equipment through the WV RAIN program.

Describe the mechanism used to store data and an institutional framework to analyze and interpret the data.

WV RAIN- although the local computer is not currently synched with the online data server. This has been conveyed to WV RAIN and they are currently seeking funding to make repairs.

Describe the process used to determine the credibility of a contamination event if a change is detected in the quality of source water.

This data is not readily available to CWB or downstream system, since it is not being kept in the data server. Clarksburg can access the data by downloading it from the computer, but this is not regularly done.

#### Appendix B-Form B

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

#### Describe the type of early warning detection equipment that could be installed, including the design.

The early warning detection equipment that could be installed includes a level controller, display module, back panel, level & trough (see cost estimate by Hach Company in Appendix D) along with conductivity, oil-inwater, ORP, and pH sensors.

#### Where would the equipment be located?

Early warning monitoring systems would be located upstream of the raw water intake line on the West Fork River.

#### What would the maintenance plan for the monitoring equipment entail?

The proposed maintenance plan for the monitoring equipment shall consist of annual cleaning and/or exchanging of the probe(s) for the controller. Periodic calibration of the unit may also be required

#### Describe the proposed sampling plan at the monitoring site.

Sampling of water quality data occurs every fifteen minutes. CWB would need to retrieve data from the "History" of the controller data collector twice per month.

#### Describe the proposed procedures for data management and analysis.

Data management for the early warning monitoring system consists of data points (up to 500 points or approximately six months per probe) being recorded in the "History" of the controller data collector. To access the "History", the probe has to be plugged into the controller. Data is able to be removed via USB or through a local SCADA system.

Note: Information from the contingency/single-source feasibility study by The Thrasher Group. The entire report is attached as Appendix D.



# APPENDIX C. COMMUNICATION PLAN TEMPLATE

#### **Clarksburg Water Board**

PWSID: 3301705

Administrative Contact: Richard Welch

Contact Phone Number: 304-623-3711

Contact Email Address: rwelch@clarksburgwater.com

Plan Developed: April 2016

#### ACKNOWLEDGMENTS:

This plan was developed by Clarksburg Water Board to meet certain requirements of the Source Water and Assessment Protection Program (SWAPP) for the State of West Virginia, as directed by state laws and regulations.

TETRA TECH

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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 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** = **A**nnouncement. 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

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

**C** = **C**annot 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.

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

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

D	Do Not Use	Very High	The water should only be used for flushing commodes and fire protection until further notice. More information on this notice will be provided as soon as it is available.
E	Emergency	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
Board President	Clarksburg Water Board			Primary Spokesperson
Richard Welch	Clarksburg Water Board	304-623-3711	rwelch@clarksburgwater.com	Secondary Spokesperson
Paul Howe III	Clarksburg Water Board	304-844-4163	Paulhowe3@gmail.com	Member
Don Summers	Clarksburg Water Board	304-623-3711	dsummers@clarksburgwater.com	Member
Paul Bump	Harrison County Bureau of Emergency Services			Member
Steven R. Hinerman R.S.	Clarksburg-Harrison County Health Department	304-623-9308	steven.r.hinerman@wv.gov	Member
John Keeling	LEPC- MSES Consultants, Inc	304-624-9700	john@msesinc.com	Member

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

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

# COMMUNICATION TEAM DUTIES

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

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

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

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

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

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

# INCIDENT / EVENT COMMUNICATION PROCEDURE

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

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

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

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

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

- The initial release (i.e., Announcement, Boil Water Advisory, Cannot Drink, Do Not Use, or Emergency)
  - Sent to local health agencies, the public, and the news media within 30 minutes
- Notification of the local water system's source water protection and communication teams

- Notification of the WV Bureau of Public Health
  - As required
- Periodic information updates, as incident response information is received
- Updates to the applicable A-B-C-D-E advisory tier, as necessary

After the threat level is reduced and operations return to normal, the water system staff, as well as 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.



Clarksburg Water Board

**TIERS FLOW CHART** 



#### Incident Poses Potential a Risk and **Requires Notification within 30 Minutes**

 Public water supplier must issue notification to the public and local health agencies within 30 minutes of determining that incident poses a risk to public health and safety

₽

### Activate Incident Response

 Deploy incident assessment personnel

#### **Threat Assessment and Characterization**

- Incident/event type (spill, release, etc.)
- Location of incident/event
- Material(s) involved in spill, release, etc.
- · Quantity of material
- Material movement/migration potential
- Time factor(s) in risk assessment
- Level of risk to water system o Low, moderate, high, very high
- Initial risk characterization
- Communicate\*

**Threat Level Remains or Escalates-**Communicate\*





 Should notify that known incident does not pose a risk.

#### Implement Contingency Plan if Necessary

- Replace/augment water source
- Adapt as necessary •
- Communicate\*

Threat is Reduced or Eliminated- Communicate\*

- **Review Incident, Adapt Approach**
- Incident response/investigation
- Communication activities
- Contingency operations

#### **Return to Normal Operations**

- Monitor any new developments
- Continue managing operations & source water protection program
- Communicate\*

Communicate\* Constant communication with local agencies, public, and the media is critical throughout the entire process. The initial notification should include all pertinent information, depending on the TIERS level. Regular information updates should be provided. The A-B-C-D-E TIERS levels should be updated and explained as necessary.

# EMERGENCY SHORT FORMS

# **Emergency Communication Information**

	Nam		ne	Phone Numb	er		Email
Designated spokesperson:		Board President					
Alternate spol	kesperson:	Richard	Welch	304-623-371	1	rwelch@clarksburgwater.com	
Designated lo disseminate in to med	ocation to nformation dia:	Clarksburg Water Board Office					
Methods of c affected re	contacting sidents:	Pe	Posted Notices, radio, television, newspaper, Facebook				
	Nam		Cont	act Person	P Nu	hone umber	Email
	Exponent-Telegram		Jim Davis		304.6	624.6411	jdavis@theet.com
Media	WDTV		Nate Smail		304.8	348.5000	nsmail@wdtv.com
	WD	TV	Nicky Porter		304.6	695.1356	nporter@wdtv.com
	WB	ΟΥ	Gretchen Ross		304.6	623.3311	gross@wboy.com
	WB	WBOY		Don Graye		623.3311	dgraye@wboy.com

# **Sensitive Populations**

	Greater Harrison PSD						
		City of Stonewood					
		City of Salem					
Other communities that are served by the utility:		Town of Nutter Fort					
	Summit Park PSD						
		East View PSD					
		City of Shinnston					
	Enlarged Hepzibah PSD						
	Sun Valley PSD						
	Shortline PSD						
	Town of Anmoore						
	City of Bridgeport						
	Name	Emergency Phone	Alternate Phone				
	Highland Hospital	304-622-4951	UHC				
	3		681-342-1000				
Major user/sensitive population notification:	Harrison County Board of Ed.	304-326-7300					
	FBI	304-625-2500					
	Harrison – Clarksburg Health Dept.	304-623-9308					
EED District Office	Name	Phone	Email				
Contact:	Craig Cobb	304-368-2530	Craig.R.Cobb@wv.gov				

OEHS Readiness Coordinator		Warren Von Dollen		304-356-4290 (main) 304-550-5607 (cell)		warren.r.vondollen@wv.gov	
Downstream	Water Sys	tem Name	Contact Name		Emergency P	hone	Alternate Phone
Water Contacts:	Morgantown Utility Board		Greg Shelito- Chief Operator		304-599-2111		
	City of Fairmont		Chip West- Water Filtration Superintendent		304-366-1461		
	Town of Monongah		Bill McCombs-Chief Operator		304-363-8812		
	City of S	hinnston Mar		lake	304-534-37	58	
Are you planning on implementing the TIER system?					Yes		

# Key Personnel

	Name	Title	Phone	Email
Key staff responsible for coordinating emergency response procedures?	Richard Welch	General Manager	304-623-3711	rwelch@clarksburgwater.com
	Don Summers	Chief Operator	304-623-3711	dsummers@clarksburgwater. com
Staff responsible for keeping confidential PSSC information and releasing to emergency responders:	Richard Welch	General Manager	304-623-3711	rwelch@clarksburgwater.com
	Don Summers	Chief Operator	304-623-3711	dsummers@clarksburgwater. com



# **Emergency Response Information**

	Name			Phone	
List laboratories available to perform sample analysis in case of emergency:	Sturm Environmental Services			304-623-6549	
	REIC Laboratory		800-999-0105, 304-255-2500		
	Reliance Laboratories, Inc.		304-842-5285		
	Clarksburg Water Board			304-642-5467	
Has the utility developed a detailed Emergency Response Plan in accordance with the Public Health Security Bioterrorism Preparedness and Response Pan Act of 2002?				Yes	
When was the Emergency R	eloped or last update	ed?	2015		

# EMERGENCY CONTACT INFORMATION

#### 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

Readiness Coordinator- Warren Von Dollen Phone; 304-356-4290 Cell; 304-550-5607 E-mail: warren.r.vondollen@wv.gov

Environmental Engineering Division Staff Charleston, Central Office (304) 558-2981 Beckley, District 1 (304) 256-6666 St. Albans, District 2 (304) 722-0611 Kearneysville, District 4 (304) 725-9453 Wheeling, District 5 (304) 238-1145 Fairmont, District 6 (304) 368-2530

#### National Response Center - Chemical, Oil, & Chemical/Biological Terrorism 1-800-424-8802

WV State Fire Marshal's Office 1-800-233-3473

West Virginia State Police 1-304-746-2100

WV Watch – Report Suspicious Activity 1-866-989-2824

#### **DEP Distance Calculator**

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



### PRESS RELEASE ATTACHMENTS

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

# UTILITY ISSUED NOTICE – LEVEL A

## PUBLIC WATER SYSTEM ANNOUNCEMENT

### A WATER SYSTEM INVESTIGATION IS UNDERWAY

On	at	<u>:</u>	AM/PM, the _	 Water System began

investigating an incident that may affect local water quality.

The incident involves the following situation at this location:

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

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

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

# **UTILITY ISSUED NOTICE – LEVEL B**

#### **BOIL WATER ADVISORY**

### A BOIL WATER ADVISORY IS IN EFFECT

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

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

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

#### What should I do?

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

#### What happened?

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

#### What is being done?

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

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

•

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

\_\_\_\_\_ or \_\_\_\_\_ at \_\_\_\_\_.

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

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

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



# UTILITY ISSUED NOTICE – LEVEL C "CANNOT DRINK" WATER NOTIFICATION A LEVEL C WATER ADVISORY IS IN EFFECT

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

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

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

#### What should I do?

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

#### What happened?

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

#### What is being done?

\_\_\_\_\_ at \_\_\_\_\_.

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

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

•

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

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

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

# UTILITY ISSUED NOTICE – LEVEL D "DO NOT USE" WATER NOTIFICATION A LEVEL D WATER ADVISORY IS IN EFFECT

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

Entire Water System or Other:

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

#### What should I do?

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

#### What happened?

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

#### What is being done?

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

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

• \_\_\_\_\_

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

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

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



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

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

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

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

#### What should I do?

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

#### What happened?

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

#### What is being done?

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

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

• \_\_\_\_\_

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

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

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

# APPENDIX D. SINGLE SOURCE FEASIBILITY STUDY



# Source Water Protection Contingency Plan Clarksburg Water Board PWSID 3301705

Harrison County, West Virginia December 2015





# SOURCE WATER PROTECTION CONTINGENCY PLAN FOR THE CLARKSBURG WATER BOARD

Prepared By:

Project Engineer

#### THE THRASHER GROUP, INC.

600 White Oaks Boulevard Bridgeport, West Virginia 26330 www.thrashereng.com Phone: 304-624-4108 Fax: 304-624-7831

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

Authorizing Signatory:

Richard Welch General Manager

3-22-16

Date

March 22, 2016 Date of Submission

Funding By:



Office of Environmental Health Services

West Virginia Department of Health and Human Resources

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#### **EXECUTIVE SUMMARY**

This Source Water Protection Contingency Plan is being developed for the Clarksburg Water Board (Clarksburg) in accordance with Senate Bill 373. Clarksburg is a state regulated public utility and operates a public water system serving the city of Clarksburg and surrounding areas in Harrison County, West Virginia. As reported in the 2015 PSC Annual Report, the utility serves 7,694 residential customers, 534 commercial customers, seven (7) industrial customers, and 51 public authorities. Clarksburg also provides water to the City of Bridgeport, Hepzibah Public Service District (PSD), Sun Valley PSD, East View PSD, Town of Nutterfort, Summit Park PSD, Tri-County, Greater Harrison, Short Line PSD, City of Shinnston, Town of Anmoore, City of Salem and City of Stonewood.

The Clarksburg water treatment facility obtains surface water from the West Fork River. The plant has a treatment capacity of 11,500,000 gallons per day (GPD) and operates twenty-four (24) hours per day producing an average of 7,500,000 GPD. Clarksburg maintains eight (8) treated water storage tanks with a total capacity of 10,627,000 gallons and does not retain any raw water storage. Currently, the water system is experiencing 25.5 % unaccounted for water; however, the utility is conducting leak detection and making necessary repairs to reduce unaccounted for water. Clarksburg currently maintains a 1000 kW stationary generator to provide standby power service to the raw water intake and treatment facility, and a 175 kW stationary generator to provide standby power service to the Summit Park Booster Station.

In the event that the primary water source is contaminated, Clarksburg currently has no alternative source of water. Based on the evaluation of the water system, the most feasible alternative for a secondary water source is additional treated water storage. To meet the Senate Bill (SB) 373 requirements, an additional 4,021,000 gallons of treated water storage was proposed in the analysis. The additional storage would allow the utility to remain in operation intermittently if the West Fork River were to be contaminated. Also, it is recommended that Clarksburg install an early warning monitoring system to prevent the surface water from contaminating the system. Additional detail of the selection of this alternative is discussed in the "Conclusion and Recommendations" section of this report. The feasibility study and supporting documentation is included in the Appendices.

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#### **Backup Intake**

Buffalo Lake has adequate supply to provide the average water demand of Clarksburg. The backup intake would be located on the eastern side of Buffalo Lake. Approximately 7.25 miles of 24" water line would need to be installed with all necessary appearances. This alternative was considered in the feasibility analysis.

#### Interconnection

Clarksburg is currently interconnected with several systems. None of the interconnected systems, however, produce treated water. After analysis of surrounding systems and their capacities, an interconnection with the City of Fairmont was determined to be the only feasible option. Due to the large volume of water (4900 GPM) needed by Clarksburg, the interconnection would require approximately 23 miles of 24'' HDPE water line between the Fairmont and Clarksburg plants. This interconnection was analyzed in the feasibility analysis.

#### **Treated Water Storage**

Clarksburg and surrounding purchasing systems currently have approximately 18,006,000 gallons of treated water storage. Clarksburg has eight (8) storage tanks within their direct system totaling 10,627,000 gallons. Clarksburg sells approximately 72% of the water produced at the plant; therefore, due to the high demand of the satellite systems, the treated water storage in those systems was utilized when analyzing the treated water storage requirements. Shinnston and Tri County storage tanks were not accounted for in the analysis because both systems are able to produce water or purchase the majority of their water from another utility. Senate Bill 373 requires that each utility maintain two (2) days of storage based on the maximum amount of water produced. Clarksburg peak production experienced within the past year was approximately 11,000,000 gallons; therefore, approximately 22,000,000 gallons of treated water storage is required to comply with Senate Bill 373.

After utilizing the existing treated water storage of Clarksburg and its purchasing systems, it was determined Clarksburg needs a minimum of 3,994,000 gallons of treated water storage satify SB 373. The construction of several additional treated water storage tanks in both Clarksburg and purchasing systems were evaluated in the feasibility analysis.

#### **Raw Water Storage**

Clarksburg currently has no raw water storage. As described above, to satisfy the two (2) day storage requirement described in Senate Bill 373, the utility needs 22,000,000 gallons of raw water storage.

The addition of enough raw water storage tanks to satisfy the minimum requirement was not considered in the analysis because the size and number of the tanks needed would not be feasible.

### 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 which may preclude present and future uses of drinking water supplies to provide safe water in sufficient quantity to users. The most efficient way to accomplish this goal is to encourage and oversee source water protection on a local level. Every aspect of source water protection is best addressed by engaging local stakeholders.

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

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

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

protection area, and other improvements to the intake or source water protection areas.

# BACKGROUND: WV SOURCE WATER ASSESSMENT AND PROTECTION PROGRAM

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

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

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

## STATE REGULATORY REQUIREMENTS

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

Under the amended and new codes, each existing public water utility using surface water or ground water influenced by surface water as a source must have completed or updated a source water protection plan by July 1, 2016, and must continue to update their plan every three years. Existing

source water protection plans have been developed for many public water utilities in the past. If available, these plans were reviewed and considered in the development of this updated contingency plan. Any new water system established after July 1, 2016 must submit a source water protection plan before they begin operation. A new plan is also required when there is a significant change in the potential sources of significant contamination (PSSC) within the zone of critical concern (ZCC).

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

### SYSTEM INFORMATION

Clarksburg is classified as a state regulated public utility and operates a public water system serving areas of Harrison County. A public water system is defined as:

"Any water supply or system which regularly supplies or offers to supply water for human consumption through pipes or other constructed conveyance, if serving at least an average of twenty-five individuals per day for at least sixty days per year, or which has at least fifteen service connections, and shall include:

- i. Any collection, treatment, storage and distribution facilities under the control of the owner or operator of the system and used primarily in connection with the system
- ii. Any collection or pretreatment storage facilities not under such control which are used primarily in connection with the system."

A public water utility is defined as, "any public water system which is regulated by the West Virginia Public Service Commission."

For purposes of this source water protection plan, public water systems are also referred to as public water utilities. Information on the population served by this utility is presented in **Table 1** on the following page.

Table – 1	1 Population	Served	by Clark	shurg V	Vater Bo	oard
1 able - 1	i i opulation	Sciveu	Dy Clairs	sourg v	value Di	Jaru

Administrative offi	ce location:	1001 S. Chestnut Street Clarksburg, West Virginia 26301					
Is the system a pub Public Service Con	lic utility, according to the mission rule?	1e Yes			6		
Date of Most Recen Assessment Report	nt Source Water :		April 2003				
Date of Most Recent Source Water Protection Plan:			April 2003				
Population served of	directly:	CustomersResidential7,694Commercial534Industrial7Public Authorities51			Total Customers 8,286 Customers		
	System Name		PWSIE	) Number	Population		
	City of Bridgeport		330	01703	8100		
	Hepzibah PSD		3301709		1977		
	Sun Valley PSD		3301739 / 3301726		2923		
	East View PSD		3301736 / 3301737		367		
Bulk Water Purchaser	Town of Nutter Fort		3301717		1686		
Systems:	Summit Park PSD		331725		1200		
	Tri-County		33052522		N/A		
	City of Stonewood		3301724		1900		
	Greater Harrison		3301727 / 3301713 3301719		8300		
	Short Line PSD		3301722		4600		

	City of Shinnston			6700	
Town of Anmoore			3301701	1208	
	City of Salem		3301720	1586	
Total Population Served by the Utility:			60,099		
Does the utility have multiple source water protection areas (SWPAs)?			No		
How many SWPAs does the utility have?			1		

# WATER TREATMENT AND STORAGE

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

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

	Raw Water Intake			
	Contact Basin			
	Rapid Mixer			
Water Treatment Process	Flocculation			
(List in order)	↓ Settling Basin			
	↓ Filtration			
	↓ Clearwell			
	↓ High Service Pumps			
Current Treatment Capacity (gal/day)	11,500,000			
Current Average Production (gal/day)	7,500,000			
Maximum Quantity Treated and Produced (gal/day)	11,000,000			
Minimum Quantity Treated and Produced (gal/day)	6,000,000			
Average Hours of Operation in One Day	24			
Maximum Hours of Operation in One Day	24			
Minimum Hours of Operation in One Day	24			
Number of Storage Tanks Maintained	8			
Total Gallons of Treated Water Storage (gal)	10,627,000 gal in Clarksburg's direct system, 18,006,000 gal including purchasing systems.			
Total Gallons of Raw Water Storage (gal)	0			

# Table – 2 Clarksburg Water Board Water Treatment Information

# Table – 3 Clarksburg Water Board 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)
West Fork River Impoundment	N/A	N/A	30" ductile iron conduit	West Fork River	N/A	Primary	Active

# Table – 4 Clarksburg Water Board Groundwater Sources

Does the utility blend with groundwater?	No

(C) - Constructed

(M) - Modified

#### **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/). Clarksburg has analyzed its ability to effectively respond to emergencies and this information is provided in **Table 5**.

Can the utility isolate or divert contamination from the intake or groundwater supply?	No
Describe the utility's capability to isolate or divert potential contaminants:	N/A
Can the utility switch to an alternative water source or intake that can supply full capacity at any time?	No
Describe in detail the utility's capability to switch to an alternative source:	N/A
Can the utility close the water intake to prevent contamination from entering the water supply?	Yes
How long can the intake stay closed?	Approximately 1.4 days if satellite systems are to stay fully operational at average demand.
Describe the process to close the intake:	Close the raw water intake valve
Describe the treated water storage capacity of the water system:	Eight (8) water storage tanks totaling 10,627,000 gallons of treated water. At the time of this report, Clarksburg was operating at 100% treated water storage capacity. Including satellite purchasers the entire system has 18,006,000 gallons of treated water storage.
Is the utility a member of WVRWA Emergency Response Team?	Yes
Is the utility a member of WV-WARN?	Yes
List any other mutual aid agreements to provide or receive assistance in the event of an emergency:	N/A

 Table – 5 Clarksburg Water Board Water Shortage Response Capability

#### **Operation During Loss of Power**

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

What is the type and capacity of the generator needed to operate during a loss of power?	The emergency generator capacity for the treatment facility is 1000 kW and the largest booster station is 175 kW.
Can the utility connect to generator at the intake/wellhead? If yes, select a scenario that best describes system.	Yes, the utility has a generator at the treatment plant that provides full power service to the intake.
Can the utility connect to generator at the treatment facility? If yes, select a scenario that best describes system.	Yes, the utility has a generator at the treatment plant that provides full power to the plant.
Can the utility connect to a generator in distribution system? If yes, select a scenario that best describes system.	Yes, the utility has a generator at the treatment plant that can provide full power service to the high service pumps.
Does the utility have adequate fuel on hand for the generator?	Yes

#### Table – 6 Clarksburg Water Board Generator Capacity

What is your on-hand fuel storage and how long will it last operating at full capacity?		Gallons		Duration			
		2500 GAL			_		
Provide a list of		S	upplier	Contact Name		Phone Number	
provide generators	Generator		N/A	N/A		N/A	
and fuel in the event of an emergency:	Fuel	Oakland Oil		N/A		(301) 334-2678	
Does the utility test the generator(s) periodically?		Yes, monthly					
Does the utility routinely maintain the generator?		Yes					
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:			N/A				

#### **Future Water Supply Needs**

When planning for potential emergencies and developing contingency plans, a utility needs to not only consider their current demands for treated water but also account for likely future needs. This could mean expanding current intake sources or developing new ones in the near future. This can be an expensive and time consuming process, and any water utility should take this into account when determining emergency preparedness. Clarksburg has analyzed its ability to meet future water demands at current capacity and this information is included in **Table 7** on the following page.
Tabla	7 Enturo	Watar	Supply	Noods of	Clarkshurg	Water Board
I abic -	/ ruture	<b>vv</b> atti	Suppry	Inccus of	Clarksburg	water Duaru

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, based on population trends there is no need for an increase in capacity to meet water demands. If population trends change, an upgrade to the plant would be needed at that time.
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 distribution system. Some of this water is used in treatment plant processes such as backwashing filters or flushing piping, but there is usually at least a small percentage unaccounted. To measure and report on this unaccounted for water, a public utility must use the same method used in the Public Service Commission's rule, *Rules for the Government of Water Utilities*, 150CSR7, Section 5.6. The rule defines unaccounted for water as "the volume of water introduced into the distribution system less all metered usage and all known non-metered usage which can be estimated with reasonable accuracy."

To further clarify, metered usages are most often those that are distributed to customers. Non-metered usages estimated include water used by fire departments for fires or training, un-metered bulk sales, flushing to maintain the distribution system, backwashing filters, and cleaning settling basins. By totaling the metered and non-metered uses, the utility calculates unaccounted for water. Note: To complete annual reports submitted to the PSC, utilities typically account for known water main breaks by estimating the amount of water lost. However, for the purposes of the source water protection contingency plan, any water lost due to leaks – even if the system is aware of how much water is lost at a main break – is not considered a use. Water lost through leaks and main breaks cannot be

controlled during water shortages or other emergencies and should be included in the calculation of percentage of water loss for purposes of the source water contingency protection plan. The data in **Table 8** is taken from the most recently submitted Clarksburg PSC Annual Report.

Total Water Pumpe	ed (gal)	2,725,307,000				
Total Water Purcha	ased (gal)	0				
Total Water Pumpe	ed and Purchased (gal)	2,725,307,000				
	Mains, Plants, Filters, Flushing, etc.	196,165,000				
Water Loss Accounted for	Fire Department	892,000				
Except Main Leaks (gal)	Back Washing	41,351,000				
	Blowing Settling Basins	49,045,000				
Total Water Loss A	ccounted For Except Main Leaks	287,453,000				
Water Sold- Total (	Gallons (gal)	1,825,529,000				
Unaccounted For L	ost Water (gal)	612,325,000				
Water lost from ma	in leaks (gal)	84,355,000				
Total gallons of Un Lost from Main Le	accounted for Lost Water and Water aks (gal)	696,680,000				
Total Percent Unac from Main Leaks (	counted For Water and Water Lost %)	25.56 %				
If total percentage of than 15%, please do taken to correct this	of Unaccounted for Water is greater escribe any measures that could be s problem:	Increased inspection and leak detection, and making necessary repairs.				

 Table – 8 Clarksburg Water Board Water Loss Information

#### EARLY WARNING MONITORING SYSTEM

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

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

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

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

#### Table – 9 Early Warning Monitoring System Capabilities of Clarksburg

Does your system currently reconstructions from a state agence water system, local emergency receive facilities? If yes, from where receive notices?	eive spill y, neighboring responders, or om do you	The utility receives spill notifications from the WV Health Department.					
Are you aware of any facilities, critical areas within your prote- where chemical contaminants c or spilled?	land uses, or ction areas ould be released	No					
Are you prepared to detect pote contaminants if notified of a spi	ential ill?	No					
List laboratories (and contact		Lal	ooratorie	S			
information) on which you would rely to analyze water	N	lame		Contact			
samples in case of a reported	REI Consultants			(304) 255-2500			
spin.	WV Office of La	b Services	(304) 558-3530				
Do you have an understanding normal conditions for your sour quality that accounts for season	of baseline or rce water al fluctuations?	Yes					
Does your utility currently mon (through continuous monitoring grab samples) at the surface wa from a groundwater source on a	iitor raw water g or periodic iter intake or a regular basis?			Yes			
Provide or estimate the capital	and O&M costs	Capital		\$50,000			
for your current or proposed ea system or upgraded system.	arly warning	Yearly O&M	\$750				
Do you serve more than 100,000 so, please describe the methods monitor at the same technical le ORSANCO.	0 customers? If you use to evels utilized by	No					

#### SINGLE SOURCE FEASIBILITY STUDY

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

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

#### CONCLUSION & RECOMMENDATIONS

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

This source water protection contingency plan is intended to help prepare community public water systems all over West Virginia to properly handle any emergencies that might compromise the quality of the system's source water supply. It is imperative that this plan is updated as often as necessary to reflect the changing circumstances within the water system. The protection team should continue to meet regularly and continue to engage the public whenever possible. Communities taking local responsibility for the quality of their source water are the most effective way to prevent contamination

and protect a water system against contaminated drinking water. Community cooperation, sufficient preparation, and accurate monitoring are all critical components of this source water protection contingency plan, and a multi-faceted approach is the only way to ensure that a system is as protected as possible against source water degradation.

Based on the evaluation of the existing water system, Clarksburg does not have a secondary water source capable of sustaining the entire system in the event that the West Fork River became compromised. The most feasible option for an alternative source would be the utility to construct additional water storage meeting the two (2) day minimum requirement of by Senate Bill 373. Clarksburg sells water to several other utilities in the county. After analysis of the direct and purchasing system treated water storage amounts, it was concluded that four (4) treated water storage tanks should be constructed. The tanks are as follows: a 297,000 gallon tank in the Hepzibah system, one (1) 438,000 gallon tank in the City of Stonewood, one (1) 1,260,000 gallon tank in the City of Bridgeport system and one (1) 2,026,000 gallon tank in the Clarksburg system next to the North Side Tank. The additional storage would supply Clarksburg with a feasible supply of treated water to meet the requirements of SB 373. It is also recommended that Clarksburg install an early warning monitoring system upstream of the surface water intake on the West Fork River as described in **Appendix A**. The early warning system shall protect the system from potential contaminants detected in the primary surface water source, providing source water protection for Clarksburg raw water the intake.

This recommendation is based on an evaluation of the four alternatives. The evaluation consisted of operation and maintenance impacts, capital costs, environmental impacts, along with other criteria. The supporting documentation from the evaluation is included in the Appendices of this report.

Q	Qty.	Description	<b>Unit Price</b>	<b>Total Cost</b>					
4	EA	Treated Water Storage Tanks totaling 4,021,000 gallons	Multiple	\$4,206,075					
1	LS	Early Warning Detection Equipment	\$50,000						
1	LS	Operation & Maintenance for Early Warning System per year	\$750.00	\$750					
	TOTAL								

**RECOMMENDED ALTERNATIVE COST ESTIMATE** 

#### **APPENDIX A**

#### EARLY WARNING MONITORING SYSTEM INFORMATION

#### Proposed Early Warning Monitoring System Worksheet - Surface Water Source

Describe the type of early warning detection equipment that could be installed, including the design.

The early warning detection equipment that could be installed includes a level controller, display module, back panel, level & trough (see cost estimate by Hach Company in **Appendix D**) along with conductivity, oil-in-water, ORP, and pH sensors.

#### Where would the equipment be located?

Early warning monitoring systems would be located upstream of the raw water intake line on the West Fork River.

#### What would the maintenance plan for the monitoring equipment entail?

The proposed maintenance plan for the monitoring equipment shall consist of annual cleaning and/or exchanging of the probe(s) for the controller. Periodic calibration of the unit may also be required.

#### Describe the proposed sampling plan at the monitoring site.

Sampling of water quality data occurs every fifteen minutes. Clarksburg would need to retrieve data from the "History" of the controller data collector twice per month.

#### Describe the proposed procedures for data management and analysis.

Data management for the early warning monitoring system consists of data points (up to 500 points or approximately six months per probe) being recorded in the "History" of the controller data collector. To access the "History", the probe has to be plugged into the controller. Data is able to be removed via USB or through a local SCADA system.

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

#### **APPENDIX B**

#### SINGLE SOURCE FEASIBILITY STUDY

#### **Matrix Explanation**

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

Economic factors evaluated in the matrix include all information needed to fund the alternative source. The matrix considers the current utility budget available per the latest (2015) annual report, operation and maintenance costs for each alternative, and the capital cost needed to construct each alternative. Supporting documentation is included in **Appendix D** of the report, which provides a breakdown of costs for each alternative that are used as capital costs in the matrix. The economic feasibility of each alternative is compared on a cost per gallon ratio. This ratio is determined by dividing the capital cost of the improvements by the total number of gallons of water produced per year. An average of the economic feasibility factors is then calculated and entered into the overall feasibility matrix found in **Appendix B**.

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

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

Feasibility Mat	trix		Clarks	sburg Water	Board		PWSID:		3301705		Date:	12/15	/2015	Comple	eted by:			Project	Engineer -	The Thrasher Grou	p, Inc.
Alternative Strategy Description	Operation & Main	Costs <sup>- Wenance</sup> Gabias	Strong		Meight.	Permi.	Flexin	Autor	echnical Crite	eria <sup>Sumem</sup> ents	<sup>1</sup> opsil	Weighthan	Environment	Aesthetic.	Stafeehoud	Sansa	lan Morei	Weighted Total	Final Score	Total Capital Cost	Comments
Backup Intake	3.0	1.3	4.3	72.2%	28.9%	2.4	3.0	2.3	1.3	9.1	75.6%	30.2%	3.0	2.0	2.3	7.3	81.5%	16.3%	75.4%	\$21,371,875.00	No comment
Interconnect	3.0	1.0	4.0	66.7%	26.7%	2.4	3.0	2.3	0.7	8.4	70.0%	28.0%	3.0	2.0	2.3	7.3	81.5%	16.3%	71.0%	\$50,458,125.00	No comment
Treated Water Storage	3.0	2.3	5.3	88.9%	35.6%	2.4	2.5	2.3	2.3	9.6	79.7%	31.9%	3.0	3.0	3.0	9.0	100.0%	20.0%	87.4%	\$4,206,075.00	No comment
Raw Water Storage	0.0	0.0	0.0	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0%	0.0%	0.0%	N/A	Alternative was not analyzed.
Other (Specify)	0.0	0.0	0.0	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0%	0.0%	0.0%	\$0.00	No comment

Scoring:

0 - Not feasible. Criterion cannot be met by this alternative and removes the alternative from further consideration.

1 - Feasible but difficult. Criterion represents a significant barrier to successful implementation but does not eliminate it from consideration.

2 - Feasible. Criterion can be met by the alternative.

3 - Very Feasible. Criterion can be easily met by the alternative.

**APPENDIX C** 

#### **ALTERNATIVES ANALYSIS**

Clarksburg currently does not have an alternative water source in the event the West Fork River would become contaminated or degraded.

#### 1. Backup Intake

Buffalo Lake is located approximately 5.5 miles southwest of the Clarksburg treatment plant. The lake has a volume of 302,064,274 per to the WVDEP Inventory of Lakes. Buffalo Lake would be able to sustain Clarksburg's average daily production as seen in the equation below:

$$\frac{302,064,274 \text{ GAL}}{7,000,000 \text{ GPD}} = 43.15 \text{ Days}$$

The backup intake would include 39,000 feet of 24" HDPE raw water line and the appropriate pump to withdraw 4900 GPM to sustain the average demand of the system. Permitting and rights-of-way acquisition are also included in the price quoted in the feasibility matrix. Thus, this alternative was analyzed in the feasibility analysis.

#### 2. Interconnection

Clarksburg is currently interconnected with several other purchasing systems. The City of Fairmont's water treatment plant is located 18 miles North on I-79 and could sustain the Clarksburg system.

The City of Fairmont has a treatment capacity of fifteen (15) million gallons per day (MGD). Fairmont currently produces an average of 6.2 MGD per the monthly MOR reports acquired. Clarksburg and their purchasing system currently consumes an average of seven (7.5) gallons per day. The required production by the City of Fairmont to fully supply Clarksburg is shown below:

$$6.2 \text{ MGD} + 7.5 \text{ MGD} = 13.7 \text{ MGD}$$

Since,

#### $13.7 \leq 15 \; \text{MGD}$

Therefore, the City of Fairmont is capable of fully satisfying Clarksburg's average water demand. The interconnection with the City of Fairmont and Clarksburg was analyzed in the feasibility analysis.

#### **APPENDIX C**

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

Clarksburg's direct system treated water storage is 10,627,000 gallons, divided among eight (8) treated water storage tanks. According to the most recent monthly operating reports provided by the utility, the water treatment facility produces an average of 7,500,000 gallons per day and maximum quantity produced was 11,000,000 gallons per day.

The utility supplies water to many surrounding systems. In the event of contamination, the purchasing utilities would need to be sustained as well. On average, Clarksburg sells approximately 72% of their produced water to these systems; therefore, the purchasing systems' treated water storage was included in the minimum treated water storage requirements of SB 373. Systems such as Tri- County and Shinnston that produce water were removed from the treated water storage analysis because Clarksburg only supplies a small portion of their daily demand. Eastview PSD, Town of Nutter Fort and Summit Park obtain water directly from Clarksburg's treated water storage; therefore, no storage was added their systems. Per the 2015 PSC Annual Report, the average sales and treated water storage for the purchasing systems can be found on the following page:

Utility	Treated Water Storage	Total Water Purchased	Average Used Daily	Days of Storage	Recommended Additional Storage	New Days of Storage
Clarksburg Water	10,627,000	1 429 445 000	3 916 288	2.71	2 026 000	3 73
Doard	10,027,000	1,427,443,000	5,710,288	2.71	2,020,000	3.23
City of Bridgeport	2,699,000	475,327,000	1,302,266	2.07	1,260,000	3.04
Hepzibah PSD	210,000	65,782,000	180,225	1.17	297,000	2.81
Sun Valley PSD	968,000	106,034,000	290,504	3.33		3.33
East View PSD	_	10,790,000	29,562	-		-
Town of Nutter Fort	-	123,246,000	337,660	-		-
Summit Park PSD	-	25,234,000	69,134	-		_
Tri-County	Cannot be Utilized	9,198,000	25,200	-		-
City of Stonewood	200,000	100,250,000	274,658	0.73	438,000	2.32
Greater Harrison (LC GH QD)	1,650,000	215,712,000	590,992	2.79		2.79
Short Line PSD	702,000	78,650,000	215,479	3.26		3.26
City of Shinnston	Cannot be Utilized	3,677,000	10,074	-		-
Town of Anmoore	300,000	41,255,000	113,027	2.65		2.65
City of Salem	650,000	79,499,800	217,808	2.98		2.98
	18,006,000		7,572,876.16	2.38	4,021,000	

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

11,000,000 gallons per day  $\times$  2 days = 22,000,000 gallons

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

22,000,000 gallons – 18,006,000 gallons = 3,994,000 gallons

The location of additional treated water storage for the Clarksburg and surrounding systems is shown in the supporting documentation **Appendix D**. The construction of several tanks to add treated water storage to Clarksburg's system were analyzed in the feasibility analysis.

#### **APPENDIX C**

#### 4. Raw Water Storage

Clarksburg currently has no raw water storage. As mentioned in section 3, the minimum required raw water storage for the system is 22,000,000 gallons. Even with the significantly large tanks, Clarksburg would need to construct over ten (10) 2,000,000 gallon tanks. Consequently, the addition of 22,000,000 gallons of raw water storage was not analyzed during the feasibility analysis.

Feasibility Matrix	Clarksburg Water Board	PWSID:	3301705	Date:	12/15/2015	Completed by:		Project Engineer - The Thrasher Group, Inc.			
Criteria	Question	Backup Intake	Feasibility	Interconnect	Feasibility	Treated Water Storage	Feasibility	Raw Water Storage	Feasibility	Other (Specify)	Feasibility
	Economic Criteria										
What is the total current budget ye	ear cost to operate and maintain the PWSU (current budget year)?	\$4,675,766.00		\$4,675,766.00		\$4,675,766.00		\$4,675,766.00		\$4,675,766.00	
	Describe the major O&M cost requirements for the alternative?	Labor, power and materials for maintenance	3	Labor, power and materials for maintenance	3	Labor and materials for maintenance	3	N/A	0		
O and M Costs	What is the incremental cost (\$/gal) to operate and maintain the alternative?	\$0.00	3	\$0.00	3	\$0.00	3	N/A	0		
	Cost comparison of the incremental O&M cost to the current budgeted costs (%)	0.00%	3	0.00%	3	0.00%	3	N/A	0		
	O and M-Feasibility Score		3.0		3.0		3.0		0.0		
Describe the capital i	Construction of a secondary intake, raw water pump and approximately 39,000LF of 24" raw water line		An interconnection with the City of Fairmont, including a booster station, water line and all related appurtenances.		Construction of a several new treated water storage tanks.		N/A				
	What is the total capital cost for the alternative?	\$21,371,875.00	1	\$50,458,125.00	1	\$4,206,075.00	2	N/A	0		
Capital Costs	What is the annualized capital cost to implement the alternative, including land and easement costs convenience tan fees etc. (\$/gal)	\$0.01	2	\$0.02	1	\$0.00	3	N/A	0		
	Cost comparison of the alternatives annualized capital cost to the current	457.08%	1	1079 14%	1	80.05%	2	N/A	0		
	budgeted costs (%)	457.00%	1	1075.1476	-	05.55%	2	N/A	0		
	Technical Criteria		1.3		1.0		2.3		0.0		
	Provide a listing of the expected permits required and the permitting agencies involved in their approval.	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	2	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	2	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	2	N/A	0		
Permitting	What is the timeframe for permit approval for each permit?	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WV DOH (90 days) and County Floodplain (90 days)	2	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WD DOH (90 days) and County Floodplain (90 days)	2	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WV DOH (90 days) and County Floodplain (90 days)	2	N/A	0		
	Describe the major requirements in obtaining the permits (environmental impact studies, public hearings, etc.)	Environmental impact studies.	2	Environmental impact studies.	2	Environmental impact studies.	2	N/A	0		
	What is the likelihood of successfully obtaining the permits?	Good	3	Good	3	Good	3	N/A	0		
	Does the implementation of the alternative require regulatory exceptions or variances?	No	3	No	3	No	3	N/A	0		
	Will the alternative be needed on a regular basis or only used	Can fully sustain Clarksburg	<b>2.4</b> 3	Can fully sustain Clarksburg	<u>2.4</u> 3	Intermittently	2.4	N/A	<u>0.0</u> 0		
Flexibility	intermittently? How will implementing the alternative affect the PWSU's current method of treating and delivering potable water including meeting Safe Drinking Water Act regulations? (ex. in the case of storage, will the alternative increase the likelihood of disinfection byproducts?)	No impact	3	No impact	3	The alternative will add 4,021,000 gallons of treated water storage to the system, and will not have any other	3	N/A	0		
	Flexibility-Feasibility Score		3.0		3.0	Inipact.	2.5		0.0		
	Will the alternative provide any advantages or disadvantages to meeting seasonal changes in demand?	Yes	3	Yes	3	Yes	3	N/A	0		
Resilience	How resistant will the alternative be to extreme weather conditions such as drought and flooding?	Drought may limit the availability of water.	2	Drought may limit the availability of water.	2	Drought may limit the availability of water.	2	N/A	0		
	Will the alternative be expandable to meet the growing needs of the service area?	Yes	2	Yes	2	Yes	2	N/A	0		
			2.3		2.3		2.3		0.0		
	identity any agreements or other legal instruments with governmental entities, private institutions or other PWSU required to implement the alternative.	None	3	An agreement with the City of Fairmont will be required.	1	None	3	N/A	0		
	Are any development/planning restrictions in place that can act as a barrier to the implementation of the alternative.	No	1	No	1	No	2	N/A	0		
Institutional Requirements	Identify potential land acquisitions and easements requirements.	Easements (permanent and temporary) may be required for the construction of the raw water line.	0	Easements (permanent and temporary) may be required for the construction of the interconnection.	0	Property acquisition would be required for the tank.	2	N/A	0		
Institu	itional Requirements-Feasibility Score		1.3		0.7		2.3		0.0		
Environmental Impacts	Environmental Criteria Identify any environmentally protected areas or habitats that might be	None are known.	3	None are known.	3	None are known.	3	N/A	0		
Envi	ronmental Impacts-Feasibility Score		3.0		3.0		3.0		0.0		

Criteria	Question	Backup Intake	Feasibility	Interconnect	Feasibility	Treated Water Storage	Feasibility	Raw Water Storage	Feasibility	Other (Specify)	Feasibility
Aesthetic Impacts	Identify any visual or noise issues caused by the alternative that may affect local land uses?	Fencing and a control panel for the pump station would be constructed, and construction would cause temporary noise issues.	2	Construction would cause temporary noise issues.	2	Construction would cause temporary noise issues, and some visual impact would be made by the tank.	3	N/A	0		
	Identify any mitigation measures that will be required to address aesthetic impacts?	The construction would need to be as quick as possible.	2	The construction would need to be as quick as possible.	2	The construction would need to be as quick as possible.	3	N/A	0		
A	esthetic Impacts-Feasibility Score		2.0		2.0		3.0		0.0		
Stakeholder Issues	Identify the potential stakeholders affected by the alternative.	Water customers and land owners.	2	Water customers and land owners.	2	Water customers and land owners.	3	N/A	0		
	Identify the potential issues with stakeholders for and against the alternative.	A rate increase may be required to implement construction, and possible land ownership issues may arise.	2	A rate increase may be required to implement construction, and possible land ownership issues may arise.	2	A rate increase may be required to implement construction, and possible land ownership issues may arise.	3	N/A	0		
	Will stakeholder concerns represent a significant barrier to implementation (or assistance) of the alternative?	No	3	No	3	No	3	N/A	0		
SI	takeholder Issues-Feasibility Score		2.3		2.3		3.0		0.0		
	No comme	ent	No comme	nt	No comment		Even with the significant Clarksburg would need to cc (10) 2,00,000 gallon tanks. The feasible.	y large tanks, instruct over ten e alternative is not			

#### **APPENDIX D**

#### SUPPORTING DOCUMENTATION

Q	ty.	Description	Unit Price	Total Cost
1	EA	Back Panel / Trough / Level (required)	\$4,350.00	\$ 4,350
1	EA	Probe Module SC1000 (6 sensors)	\$ 1,344.00	\$ 1,344
1	EA	Internal Card SC1000 (4 mA inputs)	\$ 879.00	\$879
1	EA	Display Module SC1000	\$ 2,770.00	\$ 2,770
1	EA	Conductivity Sensor	\$ 860.00	\$860
1	EA	FP360 SC Sensor, 500 ppb, SS, 1.5 m Cable	\$ 17,480.00	\$ 17,480
1	EA	ORP Sensor	\$ 880.00	\$ 880
1	EA	pH Sensor, Ryton	\$ 800.00	\$ 800
1	LS	Installation	\$ 20,637.00	\$ 20,637
			TOTAL=	\$ 50,000

#### EARLY WARNING MONITORING COST ESTIMATE

#### **OPERATION & MAINTENATNCE COST ESTIMATE**

(	Qty.	Description	Unit Price	Total Cost
1	LS	Annual O&M Cost	\$750.00	\$ 750
			TOTAL=	\$ 750

In addition to the early warning system, Clarksburg Water Board should establish a baseline water quality for their sources.

#### GPM of Existing Pump 5,200 GPM

Intake Pricing Parameters	Cost per GPM
If the GPM needed is Greater than or Equal to 2,000 GPM (24" Pipe)	\$ 1,100.00
If the GPM needed is between 1000 GPM to 2000 GPM (12" Pipe)	\$ 1,500.00
If the GPM needed is between 700 GPM to 999 GPM (8" Pipe)	\$ 1,750.00
If the GPM needed is less than 700 GPM (6" Pipe)	\$ 2,000.00
Intake pricing includes acreage, pumps, screens, concrete, raw water well, electricity, etc.	\$ 5,390,000.00

Additional Environmental Costs						
Mussel Survey						
Permits	Yes	\$	7,500.00			
	\$	7,500.00				

Piping Size		ost per Foot	Footage	Totals
6" Pipe	\$	34.00		\$ -
8" Pipe	\$	37.00		\$ _
12" Pipe	\$	60.00		\$ -
24" Pipe	\$	300.00	39,000	\$ 11,700,000.00
				\$ 11,700,000.00

Totals	
Intake	\$ 5,390,000.00
Permitting	\$ 7,500.00
Piping	\$ 11,700,000.00
Additional Fees	\$ 4,274,375.00
Total Cost	\$ 21,371,875.00

Assumptions

Water will be taken from Buffalo Lake.

According to the WVDNR, Buffalo Lake is not a mussel stream and does not require a survey to be completed during permitting. Permits required would include WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain.

The piping route is included in the following page of supporting documentation.

Additional fees are predicted to be 25% of overall cost. The fees include legal, engineering and accounting needs.



Pricing Parameters
If the GPM needed is Greater than or Equal to 2,000 GPM (24" Pipe)
If the GPM needed is Greater than or Equal to 1,000 GPM (12" Pipe)
If the GPM needed is between 700 GPM to 999 GPM (8" Pipe)
If the GPM needed is less than 700 GPM (6" Pipe)

Price for First 1,000 LF									
Item		\$/Unit		Gate Valve (2)		Meter	Co	st Per Foot	
24" Pipe	LF	\$	300.00	\$	40,000.00	\$	30,000.00	\$	370.00
12" Pipe	LF	\$	60.00	\$	4,400.00	\$	2,450.00	\$	66.85
8" Pipe	LF	\$	37.00	\$	2,530.00	\$	2,450.00	\$	41.98
6" Pipe	LF	\$	34.00	\$	1,880.00	\$	2,450.00	\$	38.33

Additional Footage after 1,000 LF								
Item Unit \$/Unit Gate Valve (1)						Cost	t Per Foot	
24" Pipe	LF	\$	300.00	\$	20,000.00	\$	320.00	
12" Pipe	LF	\$	60.00	\$	2,200.00	\$	62.20	
8" Pipe	LF	\$	37.00	\$	1,265.00	\$	38.27	
6" Pipe	LF	\$	34.00	\$	940.00	\$	34.94	

Additional Costs	
Permitting (All)	\$ 7,500.00

Booster Station Cost							
GPM \$/Gal Total Cost							
1000+	\$ 949.00	\$ 949,000.00					
400+	\$ 950.00	\$ 380,000.00					
100+	\$ 1,798.00	\$ 180,000.00					
60+	\$ 2,750.00	\$ 165,000.00					

<b>Total Cost of Interconnection</b>								
First 1,000 LF	\$	370,000.00						
Additional Footage	\$	39,040,000.00						
Permiting	\$	7,500.00						
Booster Station	\$	949,000.00						
Additional Fees	\$	10,091,625.00						
Total	\$	50,458,125						

Utility I	l	
Existing Capacity	5,200 GF	М
Footage Needed	123,000	LF

Assumptions
One gate valve per 1,000 feet of additional water line.
Non-rocky conditions.
Additional Fees predicted to be 25% of overall cost. These include legal,
engineering and accounting requirements.
Permits would include WVDEP, WVDNR, ACOE, WVSHPO, USFW,
WVDOH and County Floodplain.
The piping route is included in the following page of supporting
documentation.
Costs for each item include materials and labor.

#### **Clarksburg Water Board Proposed Interconnection**



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

COSTS OF ADDITIONAL ITEMS AND ASSUMPTIONS	
Access Road and Site Preparation	\$ 75,000
Yard Piping and Vault	13%
Bonds/Permits	\$ 20,000
Fencings	\$ 35,000
Engineering/Accounting/Legal Fees	25%
Level-Sensing and Measuring Equipment	\$ 10,000
Rock Excavation of Foundation (if encountered)	5%
ASSUMPTIONS: Cost are based on a standhing glass lined tank. Brice includes access roads and site preparation	(assuming land would need to be

**ASSUMPTIONS:** Cost are based on a standpipe glass lined tank. Price includes access roads and site preparation (assuming land would need to be purchased for the tank site), telemetry, excavation in rock (% of Tank Cost), valve vault and piping (% of tank Cost), fencing. Price does not include additional waterline from site to water system. Fees for engineering, legal and accounting services will be 25% of the overall project cost.

	TOTAL COST (IN	ICLUDING ADDITIONAL ITEMS) OF TREATED W	/ATI	ER STORAG	ЭЕ	
Gallons	Tank Dimension	Model Number		Cost	Cost Per Gallon	Utility
105,000	25.17'dia. x 28.43' sidewall height	AQUASTORE tank Model 25 28 - SSWT	\$	403,625	\$ 3.84	
209,000	30.77'dia. x 37.59' sidewall height	AQUASTORE tank Model 31 38 - SSWT	\$	506,875	\$ 2.43	
297,000	39.16'dia. x 33.01' sidewall height	AQUASTORE tank Model 39 33 - SSWT	\$	595,375	\$ 2.00	Hepzibah
438,000	47.55'dia. x 33.01' sidewall height	AQUASTORE tank Model 48 33 - SSWT	\$	683,875	\$ 1.56	Stonewood
491,000	50.35'dia. x 33.01' sidewall height	AQUASTORE tank Model 50 33 - SSWT	\$	713,375	\$ 1.45	
607,000	55.95'dia. x 33.01' sidewall height	AQUASTORE tank Model 56 33 - SSWT	\$	801,875	\$ 1.32	
691,000	64.34'dia. x 28.43' sidewall height	AQUASTORE tank Model 64 28 - SSWT	\$	868,250	\$ 1.26	
816,000	69.93'dia. x 28.43' sidewall height	AQUASTORE tank Model 70 28 - SSWT	\$	927,250	\$ 1.14	
948,000	69.93'dia. x 33.01' sidewall height	AQUASTORE tank Model 70 33 - SSWT	\$	993,625	\$ 1.05	
1,025,000	72.73'dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$	1,052,625	\$ 1.03	
1,260,000	72.73'dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$	1,200,125	\$ 0.95	Bridgeport
1,453,000	97.91'dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$	1,340,250	\$ 0.92	
1,601,000	97.91'dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$	1,458,250	\$ 0.91	
1,789,000	103.5'dia. x 28.43' sidewall height	AQUASTORE tank Model 104 28- SSWT	\$	1,568,875	\$ 0.88	
2,026,000	120.29'dia. x 23.84' sidewall height	AQUASTORE tank Model 120 24- SSWT	\$	1,726,700	\$ 0.85	Clarksburg
	TOTAL COST OF ALL TAN	KS FOR CWB AND SURROUNDING UTILITIES	\$	4,206,075		

#### APPENDIX E. SUPPORTING DOCUMENTATION

## Meeting Minutes Clarksburg Water Board Protection Team

October 29, 2015

Attendance: Paul Howe III, Dick Welch, Don Summers, Steve Hinerman, Tom Brown, John Keeling, Larry Guzzi, Mark Victor, Matthew Fluharty, and Mindy Ramsey

To start the meeting Mindy provided an overview of the source water protection plan.

- a. Protection Areas Zone of Critical Concern (ZCC), Zone of Peripheral Concern (ZPC)
- b. Potential Sources of Significant Contamination (PSSC)
- c. Prioritize Threats-Low/Med/High vs. Relative Risk Scores
- d. Management strategies/Education and Outreach
- e. Implementation Plan (responsible party/timeline)
- f. Communication Plan
- g. Contingency Planning Thrasher through Region 6 contract
- h. Early Warning Monitoring- Thrasher through Region 6 contract
- i. Storage analysis- Thrasher through Region 6 contract
- j. Feasibility Analysis- Thrasher through Region 6 contract (study interconnect, alternative source, additional storage

The role of the protection team was discussed and Mindy agreed to send a statement defining the protection team responsibility after communicating with the WVDHHR about their expectations.

The team members talked about the confidentiality statement and agree to sign a statement acknowledging that the exact locations, contents, and sizes of the PSSCs (especially the ASTs) were to be kept confidential. The representatives from the FBI expressed that they were unable to sign the agreement. Mindy agreed to follow up with them to coordinate using a standard policy if required by the WVDHHR.

Mindy presented an overview of the PSSC data and there was a discussion about the facilities that are included and what was not. The delineated protection areas were discussed and Mindy agreed to send the team a data package of contaminants that they could review. A second meeting will be held to talk about specific threats and management strategies.

The team reviewed the communication plan template and discussed the requirement to notify the public of a spill that could pose a threat to human health and safety within 30 minutes of becoming aware of the spill. Mindy discussed the strategy of the communication plan's TIERS and the participants asked if they could get a copy of the communication plan template.



The team reviewed action items: Mindy is to send a statement defining the protection team responsibilities, a data package for review, and the communication plan template.

The next meeting will be scheduled to discuss the PSSC and priorities in detail. Also, the next meeting may come after Thrasher completes their contingency plan/feasibility study.

#### Protection Team Contacts

Name	Email	Phone
Don Summers	DSUMMERS OCLARKSBURS WATER	204-844-0062
Sleve Hinerman	steven, Y, hinermanque,	623-9308 901
tom Bronn	tombrown ebridgeportau	304 892 con 8231
John Keeling	phi @msesinc.com	304-624-9700
Larry Guzzi	lavry, qu22 10 IC, fb1,904	309 (25-2329
MARK VICTOR	Mark. Victor ic. fbi. 900	304 625-2472
Matt Flihmty	mthharty @ Harashereng.com	304-326-6142
Dick Welch	RWELCH RCLARKSBURGMATER.	304-623-3711 com
PAUL Howe IT	Paul Howe 3@ GMAi). com	30'1 844-4163

## Meeting Minutes Clarksburg Water Board Protection Team

April 19, 2016

Attendance: Dick Welch, Don Summers, Robert Davis, John Keeling, Matthew Fluharty, and Mindy Ramsey

To start the meeting Mindy discussed the status of the draft plan and timeline for public meeting, as well as, the recent changes in the legislation allowing water systems to disclose information about potential sources of significant contamination if it was already in the public domain including things like mining outlets, oil/gas wells, NPDES permits. Above ground storage tanks are still to be kept confidential.

The primary goal for the meeting was to address any missing information in the draft plan and verify the priority concerns and management strategies. The following areas were discussed in detail:

- a. Incorporated the tables from Thrasher
- b. Completing/Clarifying Information
  - i. Paul Bump from emergency services is to participate on the protection team and communication team (Table 6, Communication Plan p. C-4). John Keeling volunteers as the local emergency planning committee chairman, and should also be kept on the meeting—particularly for planning purposes. Paul would be the person to work in an official capacity during an emergency incident.
  - ii. Titles and Telephone numbers for participants (Table 6) were all completed. Mindy to check with Larry Guzzi about his and other's participation from the FBI since there has been some staffing changes.
  - iii. Are all concerns addressed? (Table 8)
    - Not as concerned about WWTP as once was, especially at the United Hospital Center since it changed hands. The facility now houses Highland Hospital with fewer patients, who are less likely to create an overflow issue at the lift station. There is still direct communication when there is an incident. The team agreed to leave the private and public waste water facilities on the list. Dick has specifically discussed private septic systems, home aeration units, and straight-pipes with the county. He stated that having even one unsewered or failing septic system discharging into the river untreated is too many.
    - 2. There is no major concern with the dams, although the team would leave it to demonstrate that it is being considered. CWB



has been involved with the planning from the beginning. The dam removal is being accomplished by and with oversight from the USFWS, so it is being done in such a way that would minimize any release of sediments. There have been sections as large as 2 feet per day removed, but the current rate is 6 inches a day to insure that the sediments are controlled. The CWB does anticipate a difference in their treatment process following storm events in the future. They are prepared to monitor and adjust their treatment as needed. For instance, normally they have seen two separate spikes in turbidity following a storm, because of how water is detained behind dams. They suspect that in the future there will be one major spike—potentially higher turbidty, but also a quicker decline as fresh, less turbid water flushes the stream out.

- 3. The USFWS project is also helping water quality by providing funds to area farmers to fence their livestock from streams and develop new sources of water.
- Illegal dump sites—CWB has been part of a cleanup by the USFWS and state REAP program to rid the streams of solid waste.
- 5. Remove the boat ramps or change the language. They do anticipate an increase in recreation, but anticipate it will be with none-motorized vessels.
- 6. Add highways and eliminate railroads—because the major lines near the source have been converted to trails. There is still one area in the county with active rails, but this is outside of the watershed. They have experienced a spill event before—but the emergency responders were able to stop the leak and clean up the spill before it made it to the storm drain or river. Even so, without such a quick response, spills from the highways or bridges are a possible threat.
- 7. Include ASTs in the priorities and strategies for the facilities where they are used.
- iv. Discussed the management strategies and reviewed the activities that have already been accomplished or are ongoing. In most instances the management strategies center on communication and awareness. (Table 9). John Keeling mentioned that the LEPC has quarterly meetings where CWB would be welcome to attend. .
- v. Have any strategies been completed or ongoing since 2011 plan? (Table 9)
- vi. WV RAIN- equipment is still in place and collecting data. But CWB's system is not synced with the main dataset, so they and no one downstream can get to the data on a regular basis. They are able to access the data from the computer. (Table 9 and Appendix B-Form A). Will continue to work with the state and WVRAIN to get that equipment up

and running. Will also consider the early warning monitoring information that The Thrasher Group included in their study.

- vii. Discussed education and outreach strategies and decided to add specific information about CWBs public outreach. (Table 10) They continue to invite school children to the plant to learn about water. They distribute educational brochures during National Drinking Water Week. They have a mascot, AquaDuck, that participates during the tours and also at the YMCA's Healthy Kid Day events. They also invite emergency responders to the plant each year to conduct a safety seminar to make sure all responders are familiar with the plant and chemicals stored there. Have applied for a grant to run their downstream commercial again. The commercial currently is available on their Facebook page.
- viii. Made a few changes to the communication team (p. C-4)
- ix. Media Contacts Mindy will send the table to Dick for his input(p. C-8)
- x. Sensitive populations- ex. hospitals, schools, industrial facilities, FBI? Mindy will send the table to Don to get his input.(p. C-9)
- xi. Laboratories were covered and Sturm, Reliance, REIC, and CWB were added (p. C-10)
- xii. The emergency response plan was last updated in 2015. The national guard recently dropped off a flashdrive with a template document that was to be filed. Don asked Mindy to take a look and complete those sections that are also appearing in the source water protection plan.

Planned to present the plan to the public in the next board meeting 2:30 on 4/26. Dick will advertise in the newspaper and has already posted a notice in the water board office.



# SOURCE WATER PROTECTION PLANNING Clarksburg Water Board Protection Team April 19, 2016

page \_\_\_ of \_\_\_\_

# Sign In Sheet

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							Dick Welch	John Creint	Mathew Fluharty	ROBERT W, DAVIS	Dow SUMMERS	Name
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					¢.		34-1.23-2711	234-624-970	304-326-6142	304-624-5467 Ext. 122	304-624-5469	Phone Number

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John Schmidt	694 Beverly Pike Ellin	
Tim Bungarduer	515 W Man St. Bridgent WU / ctx of Bridgent	
Hand J. Thomas AT	315 SOUTH CHESTAUZ ST. CHARKSBURG 26301	
Mitthen Fichershy	600 White Dally Blud, Bridgent in 26303	
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SOURCE WATER PROTECTION PLANNING Clarksburg Water Board Public Meeting April 26, 2016

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#### Example Letter to Business for SURFACE WATER

Month/Day/Year

Local Business Owner Address

City, West Virginia Zip Code

Dear Local Business Owner,

This letter is to make you aware that you own or regulate properties and/or resources within or near the Source Water Protection Area for our community's drinking water. This protection area was developed for the Clarksburg Water Board by the West Virginia Department of Health and Human Resources and provided in a source water assessment report and protection plan.

Our drinking water is supplied from a surface water source. Chemicals used in industrial processes, highway maintenance, agricultural and municipal land uses can contaminate surface water. Water used in these processes and draining from sites can carry contaminants to surface water. These substances can enter the surface water through improper management or accidental incidents. The Clarksburg Water Board water system can be protected from any contamination that enters the surface water if alerted to an incident immediately. Once alerted, the operators can shut down the intake. If not shut down, a contaminant could be drawn into the water system, possibly endangering public health and resulting in a costly cleanup.

Clarksburg Water Board is asking all businesses, landowners, utilities, and agencies located, owning, or regulating properties within the protection area to follow all regulations as required by state and federal laws, report any spills to appropriate officials, and implement best management practices within operations to prevent the improper management of any materials that could contaminate the surface water resources. Ideally facilities will formally include notification to the Clarksburg Water Board in their own Emergency Response Plan.

In addition, Clarksburg Water Board is creating a local program to identify "Partners in Source Water Protection." Participation in the program will mean that your facility would make a good faith effort to cooperate with Clarksburg Water Board in a contamination event from your site to identify protocols to detect contamination and support response to clean up the contaminants.

Clarksburg Water Board thanks you for your cooperation and assistance. If you have any questions or would like to review the drinking water source assessment report or protection plan, or if you would be willing to partner with the water system, please contact Richard Welch at 304-623-3711.

Sincerely,

TETRA TECH
#### Example Letter to Resident for Surface Water

Month/Day/Year

Local Resident

Dear Local Resident,

This letter is to make you aware that your residence is located within or near the Clarksburg Water Board Drinking Water Source Protection Area. This protection area was developed by the West Virginia Department of Health and Human Resources and provided in a drinking water source assessment report and a protection plan.

Our source of drinking water is supplied by surface water that draining from the watershed in which you reside. Liquid substances such as automotive products, fuel oil, cleaning fluids, pharmaceutical, pesticides, fertilizers, and sediments are common water contaminants. These substances can enter the water through improper disposal methods. Improper disposal methods include pouring chemicals on the ground, down a sink or toilet connected to a septic system, or down storm drains. Any contamination that enters the water resources will force the Clarksburg Water Board to implement additional costly measures in order to assure the water supplied to local customers is safe to drink.

Clarksburg Water Board is asking all residents living within the protection area to report any spills to appropriate officials and prevent the improper disposal of any liquids that could contaminate the water resources. In addition, residents should have septic systems inspected and maintained regularly to protect the source water.

Clarksburg Water Board thanks you for your cooperation and assistance. If you have any questions or would like to review the Clarksburg Water Board source water assessment report or protection plan, please contact Richard Welch at 304-623-3711.

Sincerely,



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



## **Contaminants**

**Cleaning Products** 

Automotive Products

Fuel Oil

**Furniture Strippers** 

**Oil-based Paints** 

Sewage

Lawn and Garden Products

Sediments

Pharmaceuticals

#### **Source Water Links**

www.wvdhhr.org/oehs/eed/swap/ www.epa.gov/safewater/index.html www.epa.gov/watersense/ http://orsanco.org

## For Kids

www.epa.gov/safewater/kids/index.html www.epa.gov/watersense/kids/index.html www.groundwater.org/kids/



### Contacts

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





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

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

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



#### **Do Your Part to Protect Source Water**

- ✓ Recycle used oil and other automotive products at a service center. Don't pour them on the ground or down storm drains. Storm drains can lead directly to your source water.
- Fix leaks from your automobile and clean up spills.
- Apply fertilizers and pesticides as directed. Consider natural alternatives to chemicals.
- ✓ Don't flush pharmaceuticals.

Dispose by mixing with coffee grounds or kitty litter, sealing in a container, and placing in the trash. Organize a collection day with a pharmacy and local police department.

- Take unwanted household chemical waste, such as cleaners, oils, and paints to proper waste collection sites. Don't dump down your sink, toilet, or storm drains. Consider organizing a collection day in your community.
- Check for leaks at heating fuel tanks and install pads to catch accidental leaks or spills.
- ✓ Report unused water wells to your utility or WVDHHR.
- Inspect your septic system regularly and pump every 5-10 years.



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



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

