

***FOR PUBLIC RELEASE***

# **Source Water Protection Plan Berkeley Springs City Of**

PWSID: WV3303301

Morgan County

December 2021

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In cooperation with Berkeley Springs City Of

WV Bureau for Public Health, Source Water Assessment and Protection Program

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

Responsible party of designee authorized to sign for water utility is on file:

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7/6/2021

Date of Submission (mm/dd/yyyy):

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## SOURCE WATER PROGRAM ACRONYMS

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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 (WVBPB) 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 Berkeley Springs City Of 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, Berkeley Springs City Of 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 Berkeley Springs City Of 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

BERKELEY SPRINGS CITY OF 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 BERKELEY SPRINGS CITY OF**

Administrative office location:		271 Wilkes Street, Suite A , Berkeley Springs, MORGAN, WV, 25411	
Is the system a public utility, according to the Public Service Commission rule?		Yes	
Date of Most Recent Source Water Assessment Report:		12/1/2002	
Date of Most Recent Source Water Protection Plan:		7/1/2019	
Population served directly:		3526	
Bulk Water Purchaser Systems:	System Name	PWSID Number	Population
Total Population Served by the Utility:		3526	
Does utility have multiple Source Water Protection Areas(SWPAs)?		Yes	
How many SWPAs does the utility have?		2	

## 5.0 WATER TREATMENT AND STORAGE

As required, Berkeley Springs City Of 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 Berkeley Springs City Of 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. Berkeley Springs City Of Water Treatment Information**

Berkeley Springs Water Works	
Water treatment processes (in order of occurrence) includes:	Raw Water Tank, Del Pac 2020, SODIUM HYPOCHLORITE, LIQUID, FILTRATION, RAPID SAND, Clear Well
The treatment capacity is approximately (GPD):	720,000
Current average production is approximately (GPD):	320,000
Maximum gallons of water treated and produced at that plant in one day during the past year was:	521,400
Minimum gallons of water treated and produced at that plant in one day during the past year was:	199,700
Plant is operated an average of hours a day:	16
Maximum number of hours of operation in one day at that plant during the past year was:	22
Minimum number of hours of operation in one day at that plant during the past year was:	10
How many storage tank(s) are maintained on systems distribution system:	6
Total gallons of treated water storage:	1,086,000
Total gallons of raw water storage (GALs):	20,000

**Table 3. Berkeley Springs City Of Surface Water Sources**

Intake Name	Facility #	Local Name	Describe Intake	State Id Code	Date Constructed / Modified	Frequency of Use (Primary / Backup / Emergency)	Activity Status (Active/Inactive)
SPILLWAY CHANNEL	3491600	BERKELEY SPRINGS, SPILLWAY CHANNEL	Surface Water Intake beginning at the Ladies' Spring at Berkeley Springs State Park into the raw water storage tank	IN001	1/1/1800	Permanent	Active

**Table 4. Berkeley Springs City Of Ground Water Sources**

Well/Spring Name	Facility #	Local Name	Date Constructed / Modified	Completion Report Available (Yes/No)	Well Depth (ft)	Casting Depth (ft)	Grout (Yes/No)	Frequency of Use (Primary / Backup / Emergency)	Activity Status (Active/Inactive)
COVERED BASIN SPRING	-	BERKELEY SPRINGS, BASIN	1/1/1800	No	0	0	None	Permanent	Active

## 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 warrant more detailed scrutiny due to its proximity to the surface water intake and the intake's susceptibility to potential contaminants within that corridor. The ZCC is determined using a mathematical model that accounts for stream flows, gradient and area topography. The length of the ZCC is based on a five-hour time-of-travel of water in the streams to the water intake, plus an additional one-quarter mile below the water intake. The width of the zone of critical concern is 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. The Ohio River ZCC delineations include 1,320 feet (1/4 mile) measured from the bank of the main stem of the Ohio River and 500 feet on a 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**

Intake Name	Lord Fairfax Spring
Size of WSDA (Square Miles)	5
River Watershed Name (8-digit HUC)	Conococheague-Opequon - 02070004
Size of Zone of Critical Concern (Acres)	1668
Size of Zone of Peripheral Concern (Acres) (Include ZCC area)	0
Do you blend with ground water	Yes
Do you have an intake or well/spring missing from the list?	No
Intake Name	BERKELEY SPRINGS, BASIN
Method of Delineation for Groundwater Sources	Conjunctive Delineation
Area of Wellhead Protection Area (Acres)	2,208

## 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 Berkeley Springs City Of 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.

Berkeley Springs City Of 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
	Berkeley Springs City Of			
Ron Jainniney	Berkeley Springs City Of	Chief Water Operator		water.town@hotmail.com
	Berkeley Springs City Of			
	Berkeley Springs City Of			
Chris Chapman	Berkeley Springs City Of	Bath Town Council	(304)671-7316	cwchapman27@msn.com
Alma Gorse	Morgan County Planning Commission	County Planner	(304)258-8840	agorse@morgancountywv.gov
Bill Clarke	Region 9 Planning and Development Council	Executive Director	(304)263-1743	bclark@region9wv.org
<b>Date of First Protection Team Meeting:</b>				
Protection Team Meeting was held Wednesday, April 13, 2016 at Berkeley Springs City Of. Meeting minutes attached in Appendix E.				
<b>Efforts made to inform and engage local stakeholders (public, local government, local emergency planners, local health department, and affected residents) and explain absence of recommended stakeholders</b>				
A public meeting was held on April 13, 2016 to provide an overview of the source water protection planning process and an additional public meeting was held on June 22, 2016 to present the draft SWPP. The April meeting was advertised in local newspapers for two weeks prior to the meeting dates and on the radio. The June 22 meeting was also advertised in the local newspapers and on the radio. A public meeting was held on June 4, 2019 during a town council meeting providing an overview of the Source Water Protection Plan. The meeting was advertised via the Town of Bath Facebook page and website.				

## 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 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 from 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. 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 Berkeley Springs City Of are identified in the communication planning section of the source water protection plan.

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

### 8.2. LOCAL AND REGIONAL PSSCS

For the purposes of this source water protection plan, local PSSCs are those that are identified by local stakeholders in addition to 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.

The Berkeley Springs City Of 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 Berkeley Springs City Of and not already appearing in datasets from the WVBPH can be found in **.Table 7**.

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

Please see Appendix A to view this information.

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### 8.3. PRIORITIZATION OF THREATS AND MANAGEMENT STRATEGIES

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

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

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

A list of these priority PSSCs was selected and ranked by the Berkeley Springs City Of 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

Berkeley Springs City Of 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. Berkeley Springs City Of has developed an implementation plan for priority concerns listed in **Table 8**. The responsible team member, timeline, and potential cost of each strategy are presented in **Table 9**. Note: Because timelines may change, future plan updates should describe the status of each strategy and explain the lack of progress.

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

PSSC or Critical Area	Priority Number	Reason for Concern
Mining Activities	1	Currently, the karst groundwater recharge area located outside of the Berkeley Springs watershed is currently primarily undeveloped. However, if new developments occur, the source could be impacted. Given that the water system is located in karst geology, the groundwater is susceptible to contamination much like a surface water source. Future development within the area could result in reduced water quality and/or quantity. Mining activities occur within the WHPA.
Storage Tanks	2	There are historic and active facilities located in the SWPA that may pose a threat with above-ground storage tanks. If these tanks remain at historic sites, they may contain residual chemicals/oils that could contaminate the source if they were to leak or be swept into the river during a flooding event. For active facilities above ground storage tanks potentially contain materials that if released would pose a risk to public health.
All contaminants during power outages	3	In the event of a power outage that affects the water treatment plant, Berkeley Springs Water Works will need another source of power. Berkeley Springs Water Works will provide backup generators to function at full capacity during power outages.
Any contaminant during an emergency situation	4	Berkeley Springs Water Works has developed a formal Emergency Response Plan (ERP). It will be kept up and followed. AS part of the ERP Berkeley Springs Water Works will connect with local fire departments and county emergency services on a regular basis. The emergency response agencies will be informed of the extent of the SWPA. This will ensure that all the agencies are in constant communication with one another and prepared in the event of an emergency. Berkeley Springs Water Works will ensure that sufficient system operational measures are taken to prevent introduction of contaminated surface water during flood periods. During a heavy precipitation event, floodwater, which can carry contaminants from chemicals to fecal matter with it, may impact the intake. The system is familiar with the types of flood conditions that could impact the intake and will monitor flood predictions and close the intake when necessary.
Any Contaminant	5	Contact PSSCs to determine if they have a spill/leak prevention program for their substations. Also determine their procedure should contamination occur. Communicate the boundaries of the SWPA to raise awareness with the utility company to ensure BMPs are followed. Request Safety Data Sheets and Tier II forms for any chemicals stored onsite. A template letter that can be used to contact the facility owner is included in Appendix F.
Electrical Substation	6	Contact Allegheny Power to determine if they have a spill/leak prevention program for their substations. Also determine their procedure should contamination occur. Communicate the boundaries of the SWPA to raise awareness with the utility company to ensure BMPs are followed. Request Safety Data Sheets and Tier II forms for any chemicals stored onsite. A template letter that can be used to contact the facility owner is included in Appendix F.
Any contaminant mixed in flood waters	7	Insure that the system operation measures are taken to prevent introduction of contaminated surface water during flood periods. Intake shuts down during floods

<p>Those associated with future developments, especially in groundwater recharge area</p>	<p>8</p>	<p>Berkeley Springs Water Works will establish a process for notification from entities contemplating new activities in the karst areas surrounding the Berkeley Springs watershed. The utility will coordinate with the Morgan County Planning Commission to monitor proposed land use changes and development to determine if any adverse effects on short- or long-term water quality may occur. Work with property owners to identify land uses that could threaten the source water. Ask to be included in discussions as a stakeholder and to be allowed to provide insight on BMPs to protect the source. It is in the best interest for the landowners as well as the community for the drinking water source to be protected and available to future development. The Morgan County Planning Commission may consider zoning restrictions in this area. A letter template that can be used to initiate communications is included in Appendix F.</p>
<p>Gas stations, auto repair shops, car dealerships, school bus garage, and historic gas stations</p>	<p>9</p>	<p>Communicate with station and shop owners the need for them to properly dispose of oil and other automobile products. Ask them to institute best management practices (BMPs) to contain and clean up spills. Monitor compliance with state environmental regulations. Provide owners or operators with copies of material on underground storage tank maintenance. Ensure that owners install secondary containment around aboveground storage tanks and/or chemical storage areas. These facilities may already be implementing BMPs for monitoring and/or containing a potential leak or spill and may be reviewed. Consider whether operating or historic stations and shops are compliant with rules regarding USTs and leaking underground storage tanks (LUSTs). If you suspect an issue with an UST or LUST, contact the WVDEP at (304) 926-0499 and ask for the Underground Storage Tank Staff for an inspection. Request copies of SDSs and Tier II forms for all chemicals stored onsite. A letter template that can be used to initiate communications with facility owners is included in Appendix F.</p>
<p>Potential commercial and residential development</p>	<p>10</p>	<p>In an effort to protect and sustain the quality and quantity of their source, Town of Bath (legal party for Berkeley Springs Water Works) will continue to partner with local community leaders to obtain funding sources in support of new infrastructure described in the Rural Water Report. Continue to support Warm Springs PSD in the development of another source for drinking water in the area to meet increasing water demands of new development in and near Berkeley Springs.</p>
<p>Residential Septic Systems</p>	<p>11</p>	<p>Provide information regarding contamination and source water protection in mailings to homeowners and include non-emergency contact information. Outreach materials will encourage them to have their septic system inspected regularly and pumped every 5-10 years as needed. Also, the USEPA provides a complete guide for residents to maintain their septic systems, for the guide, visit: <a href="http://epa.gov/owrm/septic/pubs/homeowner_guide_lo ng.pdf">http://epa.gov/owrm/septic/pubs/homeowner_guide_lo ng.pdf</a> The utility will encourage Warm Springs PSD (sewer provider for the city) to consider reducing the amount of septic systems in use by extension of the public sewer system. If expansion of the existing wastewater system is not feasible, consider alternate treatment such as decentralized and/or cluster wastewater systems.</p>



**Table 9. Priority PSSC Management Strategies**

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Potential commercial and residential development	Long term protection of water source. In an effort to protect and sustain the quality and quantity of their source, Town of Bath (legal party for Berkeley Springs Water Works) will continue to partner with local community leaders to obtain funding sources in support of new infrastructure described in the Rural Water Report. Continue to support Warm Springs PSD in the development of another source for drinking water in the area to meet increasing water demands of new development in and near Berkeley Springs.	Berkeley Springs Water Works in collaboration with local political leaders	Ongoing		Significant for infrastructure improvements.
Storage Tanks	Investigate the facilities to determine if storage tanks exist. If so, identify the responsible party to remove or maintain the tanks. Contact the W/DEP to determine if Groundwater Protection Plans were prepared for the sites. Groundwater Protection Plans may contain BMPs and other requirements that also act to protect surface water. Contact the W/DEP Division of Water and Waste Management at 304-926-0499. May receive their assistance to inspect the facilities and recommend if cleanup is needed.	Berkeley Springs Water Works Ron Janniney	Ongoing		Minimal
Any contaminant mixed in flood waters	Flood hazard plan. Insure that the system operation measures are taken to prevent introduction of contaminated surface water during flood periods. Intake shuts down during floods	Berkeley Springs Water Works	Completed		Minimal

**Table 9. Priority PSSC Management Strategies**

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
<p>Those associated with future developments, especially in groundwater recharge area</p>	<p>Monitor future development. Berkeley Springs Water Works will establish a process for notification from entities contemplating new activities in the karst areas surrounding the Berkeley Springs watershed. The utility will coordinate with the Morgan County Planning Commission to monitor proposed land use changes and development to determine if any adverse effects on short- or long-term water quality may occur. Work with property owners to identify land uses that could threaten the source water. Ask to be included in discussions as a stakeholder and to be allowed to provide insight on BMPs to protect the source. It is in the best interest for the landowners as well as the community for the drinking water source to be protected and available to future development. The Morgan County Planning Commission may consider zoning restrictions in this area. A letter template that can be used to initiate communications is included in Appendix F.</p>	<p>Berkeley Springs Water Works, in collaboration with the Morgan County Planning Commission</p>	<p>Ongoing</p>		<p>Minimal</p>

**Table 9. Priority PSSC Management Strategies**

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
<p>Gas stations, auto repair shops, car dealerships, school bus garage, and historic gas stations</p>	<p>Communicate with PSSC owners. Communicate with station and shop owners the need for them to properly dispose of oil and other automobile products. Ask them to institute best management practices (BMPs) to contain and clean up spills. Monitor compliance with state environmental regulations. Provide owners or operators with copies of material on underground storage tank maintenance. Ensure that owners install secondary containment around aboveground storage tanks and/or chemical storage areas. These facilities may already be implementing BMPs for monitoring and/or containing potential leak or spill and may be reviewed. Consider whether operating or historic stations and shops are compliant with rules regarding USTs and leaking underground storage tanks (LUSTs). If you suspect an issue with an UST or LUST, contact the WVDEP at (304) 926-0499 and ask for the Underground Storage Tank Staff for an inspection. Request copies of SDSs and Tier II forms for all chemicals stored onsite. A letter template that can be used to initiate communications with facility owners is included in Appendix F.</p>	<p>Berkeley Springs Water Works,</p>	<p>Ongoing</p>		<p>Minimal</p>

**Table 9. Priority PSSC Management Strategies**

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Electrical Substation	Communicate with PSSC owner Contact Allegheny Power to determine if they have a spill/leak prevention program for their substations. Also determine their procedure should contamination occur. Communicate the boundaries of the SWPA to raise awareness with the utility company to ensure BMPs are followed. Request Safety Data Sheets and Tier II forms for any chemicals stored onsite. A template letter that can be used to contact the facility owner is included in Appendix F.	Berkeley Springs Water Works	Ongoing		Minimal
All contaminants during power outages	Backup Generators In the event of a power outage that affects the water treatment plant, Berkeley Springs Water Works will need another source of power. Berkeley Springs Water Works will provide backup generators to function at full capacity during power outages.	Berkeley Springs Water Works Ron Jaiminey	Completed		Significant up-front cost. If necessary, repair or replacement could be significant in the long term.
Any Contaminant	Communicate with PSSC owner	Berkeley Springs Water Works	Ongoing		Minimal

**Table 9. Priority PSSC Management Strategies**

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Mining Activities	Contact the US Silica Plant to determine if they have a Groundwater Protection Plan (GPP) for review. These plans are required for industry that may impact groundwater and will contain measures that are also protective of the surface water. Coordinate with company emergency preparedness personnel to insure that they are aware of the water source and what to do in case of an emergency. Ask for copies of the facilities Materials Safety Data Sheets (MSDS) for the chemicals used/stored on site. The MSDS sheets are information sheets provided by the manufacturer explaining how to deal with first aid, and spills of the chemical product. A facility should have a central location of these sheets and provide them if requested by the public or emergency responders. Determine current use of quarry sites and future plans for mining areas. Consider discussing the purchase of the closed quarries within the protection area for development as parks.	Berkeley Springs Water Works - Terry Largent	Ongoing		Minimal
Any contaminant during an emergency situation	Develop Emergency Response Plan	Berkeley Springs Water Works	Completed		None

**Table 9. Priority PSSC Management Strategies**

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Residential Septic Systems	<p>Septic Tanks, and Public and Private Sewer Systems. Provide information regarding contamination and source water protection in mailings to homeowners and include non-emergency contact information. Outreach materials will encourage them to have their septic system inspected regularly and pumped every 5- 10 years as needed. Also, the USEPA provides a complete guide for residents to maintain their septic systems, for the guide, visit: <a href="http://epa.gov/owm/septic/pubs/homeowner_guide_long.pdf">http://epa.gov/owm/septic/pubs/homeowner_guide_long.pdf</a> The utility will encourage Warm Springs PSD (sewer provider for the city) to consider reducing the amount of septic systems in use by extension of the public sewer system. If expansion of the existing wastewater system is not feasible, consider alternate treatment such as decentralized and/or cluster wastewater systems.</p>	Berkeley Springs Water Works, City of Bath, and Morgan County Health Department	Ongoing	Ongoing	Minimal

## 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. Berkeley Springs City Of 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
Agricultural Land fact Sheets	Berkeley Springs Water Works will work with the County Extension Service, the Soil and Water Conservation District, and/or the Natural Resource Conservation Service to provide copies of fact sheets covering BMPs for nutrient management, pesticide use, pest management, waste oil disposal, safe chemical handling and/or safe chemical storage.	Berkeley Springs Water Works, with assistance from Kristen Bisom at NRCS and Alana Hartman at WVDEP	Ongoing	Information can be found at the following web addresses: WVU Hampshire County Extension <a href="http://motgan.ext.wvu.edu/">http://motgan.ext.wvu.edu/</a> West Virginia Conservation Agency <a href="http://www.wvca.us/">http://www.wvca.us/</a> National Resources Conservation Agency <a href="http://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/">http://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/</a> EPA brochure: <a href="http://www.sourcewatercollaborative.org/downloads/AgFieldtoFaucet-BR-v3f.pdf">http://www.sourcewatercollaborative.org/downloads/AgFieldtoFaucet-BR-v3f.pdf</a> Example from Montana: <a href="http://dhr.mo.gov/pubs/pub1338.pdf">http://dhr.mo.gov/pubs/pub1338.pdf</a>	Minimal
County Fair	Berkeley Springs Water Works will consider providing information on source water protection for the Morgan County Planning Commission booth at the County Fair, should they have one.	Morgan County Planning Commission, Monica Whyte at WWBPH will provide materials.	Ongoing		Minimal
Plant Tours	Berkeley Springs Water Works will provide tours of the water plant to interested organizations such as watershed groups, schools, and civic organizations as requested. Berkeley Springs Water Works will consider organizing a tour with local emergency responders to make them familiar with the facilities so they are prepared in the event of an emergency.	Berkeley Springs Water Works	Ongoing		None
Plant Tours	Organize a tour with local Emergency Responders to make them familiar with the facilities in the event of an emergency.	n/a	Not Started		



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

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Interagency Coordination	Berkeley Springs Water Works will participate with health, utilities, and fire department that meet with the Local Emergency Planning Commission as needed, so that these agencies are aware of boundaries of the SWPA and are in constant communication with one another.	Berkeley Springs Water Works	Ongoing	There is a current effort to establish monthly meetings involving these agencies.	Minimal
Public Meeting	Berkeley Springs Water Works will hold an informational meeting with local residents about source water protection efforts. The meeting will increase awareness of the connection between land use and drinking water quality.	Berkeley Springs Water Works	Completed	2016 meetings were held on April 13, 2016 and June 15, 2016. 2019 meeting June 4, 2019.	Minimal
Consumer Confidence Report	Berkeley Springs Water Works publishes a Consumer Confidence Report (CCR) annually, as required by the Safe Drinking Water Act. The CCR is available to all water customers. The CCR describes the source water for the system, the levels of contaminants in the source water, the EPA safe contaminant levels, and information about Cryptosporidium. The system will also include information about their source water protection program.	Berkeley Springs Water Works	Ongoing	The following paragraph or similar paragraph will be included in the CCR: Berkeley Springs Water Works is committed to protecting its drinking water sources. The drinking water for Berkeley Springs is sourced from a spring. We updated our Source Water Protection Plans (SWPP) in 2016, based on the requirements of Senate Bill 373. The SWPP includes physical actions to protect the drinking water sources such as ensuring that the source spring is secured, and planning actions such as creating an emergency response plan. It also includes an assessment of potential sources of contamination. The SWPPs were developed by the Water Department in collaboration with a local source water protection team, and with the involvement of the public. Please contact Berkeley Springs Water Works to learn more	Minimal

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

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Consumer Confidence Report	Due to recent heightened concerns about the effects of pharmaceuticals in surface water bodies and the fact that many source water areas are in a karst landscape, the utility should include information about pharmaceuticals and how to properly dispose of them in the CCR.	n/a	Not Started		
Brochures, Pamphlets, and Letters	Berkeley Springs Water Works will provide an informational brochure at the town office and post information on the town Facebook page. These will alert the recipients of the need for source water protection and conservation. Businesses that use greater-than household quantities of regulated substances may receive a different letter. Several organizations provide information and resources on the internet, related to certain source water concerns and PSSCs. The PWS will consider obtaining these materials when needed, to educate the community.	Town of Bath Municipal Court Clerk Codi Ford	Not Started	The links below provide educational materials that can be distributed: <a href="http://water.epa.gov/infrastructure/drinkingwater/sourcewater/protection/citizeninvolvementinresourcewaterprotection.cfm">http://water.epa.gov/infrastructure/drinkingwater/sourcewater/protection/citizeninvolvementinresourcewaterprotection.cfm</a> <a href="http://www2.epa.gov/sites/production/files/2014-06/documents/growthwater.pdf">http://www2.epa.gov/sites/production/files/2014-06/documents/growthwater.pdf</a> <a href="http://www.nesc.wvu.edu/pdf/WVW/publications/pipeline/PL_Su08.pdf">http://www.nesc.wvu.edu/pdf/WVW/publications/pipeline/PL_Su08.pdf</a> <a href="http://www.epa.gov/owm/septic/pubs/homeowner_guide_long.pdf">http://www.epa.gov/owm/septic/pubs/homeowner_guide_long.pdf</a>	Minimal
Brochures, Pamphlets, and Letters	Several organizations provide information and resources on the internet, related to certain source water concerns and PCs. The utility will consider obtaining these materials when needed, to educate the community. Examples of these resources are described below.	n/a	Not Started		

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

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Brochures, Pamphlets, and Letters	Due to recent heightened concerns about the effects of pharmaceuticals in surface water bodies, the Ohio River Valley Water Sanitation Commission (ORSANCO) developed a pamphlet regarding pharmaceutical disposal. This pamphlet can be viewed and possibly ordered from: <a href="http://orsanco.org/index.php/brochures">http://orsanco.org/index.php/brochures</a>	n/a	Not Started		
Brochures, Pamphlets, and Letters	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: <a href="http://www.yourwaterdecision.org">http://www.yourwaterdecision.org</a> and may assist in community planning and development.	n/a	Not Started		
Brochures, Pamphlets, and Letters	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: <a href="http://www.epa.gov/watersense/docs/ws_simplesteps508.pdf">http://www.epa.gov/watersense/docs/ws_simplesteps508.pdf</a>	n/a	Not Started		
Media Campaign	Participate in outreach with the local newspaper.	Berkeley Springs Water Works	Ongoing		Minimal
Media Campaign	Place an advertisement in the local newspaper reminding business and residents to protect their source water.	n/a	Not Started		

## 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 Berkeley Springs City Of is provided in **Table 11**.

### 11.1. RESPONSE NETWORKS AND COMMUNICATION

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

**Table 11. Berkeley Springs City Of Water Shortage Response Capacity**

Can the water utility isolate or divert contamination from the intake and groundwater supply?	No
Describe the results of an examination and analysis of the public water system's ability to isolate or divert contaminated waters from its surface water intake or groundwater supply:	N/A
Describe the results of an examination and analysis of the public water system's existing ability to switch to an alternative water source or intake in the event of contamination of its primary water source:	N/A
Is the Utility able to close the water intake in the event of a spill?	Yes
How long can the Utility keep the intake closed?	Approximately 3.5 days based on average production
Describe the process to close the intake:	the utility can shut down the raw water intake pumps
Describe the treated water system's storage capacity of the water system:	The system currently has five (5) treated water storage tanks totaling 1,086,000 gallons. At the time of this report, Berkeley Springs was operating at 100% treated water storage capacity.
Gallons of storage capacity (raw water)	20,000
Gallons of storage capacity (treated water)	1,086,000
Is the Utility a member of WVRWA Emergency Response Team?:	Yes
Is the Utility a member of WV-WARN?:	No
List other agreements to provide receive assistance in case of emergency:	N/A

## 11.2. OPERATION DURING LOSS OF POWER

Berkeley Springs City Of 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**

Can you connect to a generator at the intake/wellhead?:	Yes
Please provide a scenario that best describes your system:	Yes; the intake is connected to a 240 kW generator at the treatment facility.
What do you have (KW)?	240.00
What do you need (KW)?	240.00
Can you connect to a generator at the treatment facility?:	Yes
Please provide a scenario that best describes your system:	Yes; the treatment facility is connected to a 240 kW generator.
What do you have (KW)?	240.00
What do you need (KW)?	240.00

Can you connect to a generator at the distribution system?:		No	
Please provide a scenario that best describes your system:			
What do you have (KW)?			
What do you need (KW)?			
Does the utility have fuel on hand for generator?:		Yes	
Hours:		168	
Gallons:		300	
Provide a list of suppliers and alternate suppliers that could provide fuel in the event of an emergency:		Supplier	Phone Number
	Fuel	AC&T	
Does the utility test the generator(s) periodically?:		Yes	
Does the utility routinely maintain the generator(s)?:		Yes	
If the Utility does not have generator or the ability to connect to a generator, describe plans to respond to power outages:		N/A	

### 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. Berkeley Springs City Of 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 Berkeley Springs City Of**

Is the Utility able to meet water demands with the current capacity for the next five years?	Yes
Explain how you plan to do so:	n/a

### 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 13 is taken from the most recently submitted Berkeley Springs City Of PSC Annual Report.

**Table 14. Water Loss Information**

Water pumped - Total Gallons:		112,093,000
*Water purchased - Total Gallons:		347,000
Total gallons of water pumped and purchased:		112,440,000
Total gallons of water loss accounted for except main leaks:	Mains, plaint, filters, flushing, etc - Total Gallons:	0
	Fire department - Total Gallons:	0
	Back washing - Total Gallons:	3,470,000
	Blowing settling basins - Total Gallons:	0
Total Accounted for Water Loss		3,470,000
Unaccounted for lost water - Total Gallons:		-2,776,000
Water sold - Gallons:		105,335,000
Water Lost From Main Leaks:		6,411,000
Total Gallons of Unaccounted for Lost Water and Water Lost from Main Leaks:		3,635,000
Total percent unaccounted for water		3
Describe the measures to correct water loss greater than 15%:	The utility is conducting leak detection and making necessary repairs to reduce unaccounted for water.	

### 11.5. EARLY WARNING MONITORING SYSTEM

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

Alternately, or in addition, a utility may also pull periodic grab samples on a regular basis, or in case of a reported incident. The grab samples may be analyzed for specific contaminants. A utility should examine their PSSCs to determine what chemical contaminants could pose a threat to the water source. If possible, the utility should plan in advance how those contaminants will be detected. Consideration should be given to where samples will be

collected, the preservations and hold times for samples, available laboratories to analyze samples, and costs associated with the sampling event. Regardless of the type of monitoring (continuous or grab), utilities should collect samples for their source throughout the year to better understand the baseline water quality conditions and natural seasonal fluctuations. Establishing a baseline will help determine if changes in the water quality are indicative of a contamination event and inform the needed response.

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

Berkeley Springs City Of 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?	Yes	
From whom do you receive notices?	The utility receives spill notifications from the WV Health Department and the WV Department of Environmental Protection.	
Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?	Yes	
Are you prepared to detect potential contaminants if notified of a spill?	No	
List laboratories (and contact information) on whom you would rely to analyze water samples in case of a reported spill.	Laboratories	
	Name	Phone Number
	REI Consultants	(304)255-2500
	WV Office of Lab Services	(304)558-3530
Do you have an understanding of baseline or normal conditions for your source water quality that accounts for seasonal fluctuations?	Yes	
Does your utility (aside from turbidity monitoring) currently monitor your raw water through continuous monitoring at the surface water intake or groundwater source to detect changes in water quality that could indicate contamination?	Yes	
Does your utility collect periodic grab samples (ex. possess reserved sample bottles, on-call laboratory services, and trained personnel) in response to a spill notification or to investigate changes in water quality that could indicate contamination?	Yes	
Please explain:	N/A	



Provide or estimate the capital and O&M costs for your current or proposed early warning system or upgraded system.	Capital Cost:	50,000
	O&M Cost:	750
Do you serve more than 100,000 customers?	No	
Does your system currently receive spill notifications from a state agency, neighboring water system, local emergency responders, or other facilities?	Yes	
Are you prepared to detect potential contaminants if notified of a spill?	No	
Please describe the methods you use to monitor at the same technical levels utilized by ORSANCO:		

## 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**.

## 13.0 COMMUNICATION PLAN

Berkeley Springs City Of 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. Berkeley Springs City Of 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 Berkeley Springs City Of is attached as **Appendix C** for internal review and planning purposes only.

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

## 14.0 EMERGENCY RESPONSE

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

## 15.0 CONCLUSION

This report represents a detailed explanation of the required elements of Berkeley Springs City Of'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.

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# APPENDIX A. FIGURES AND TABLES

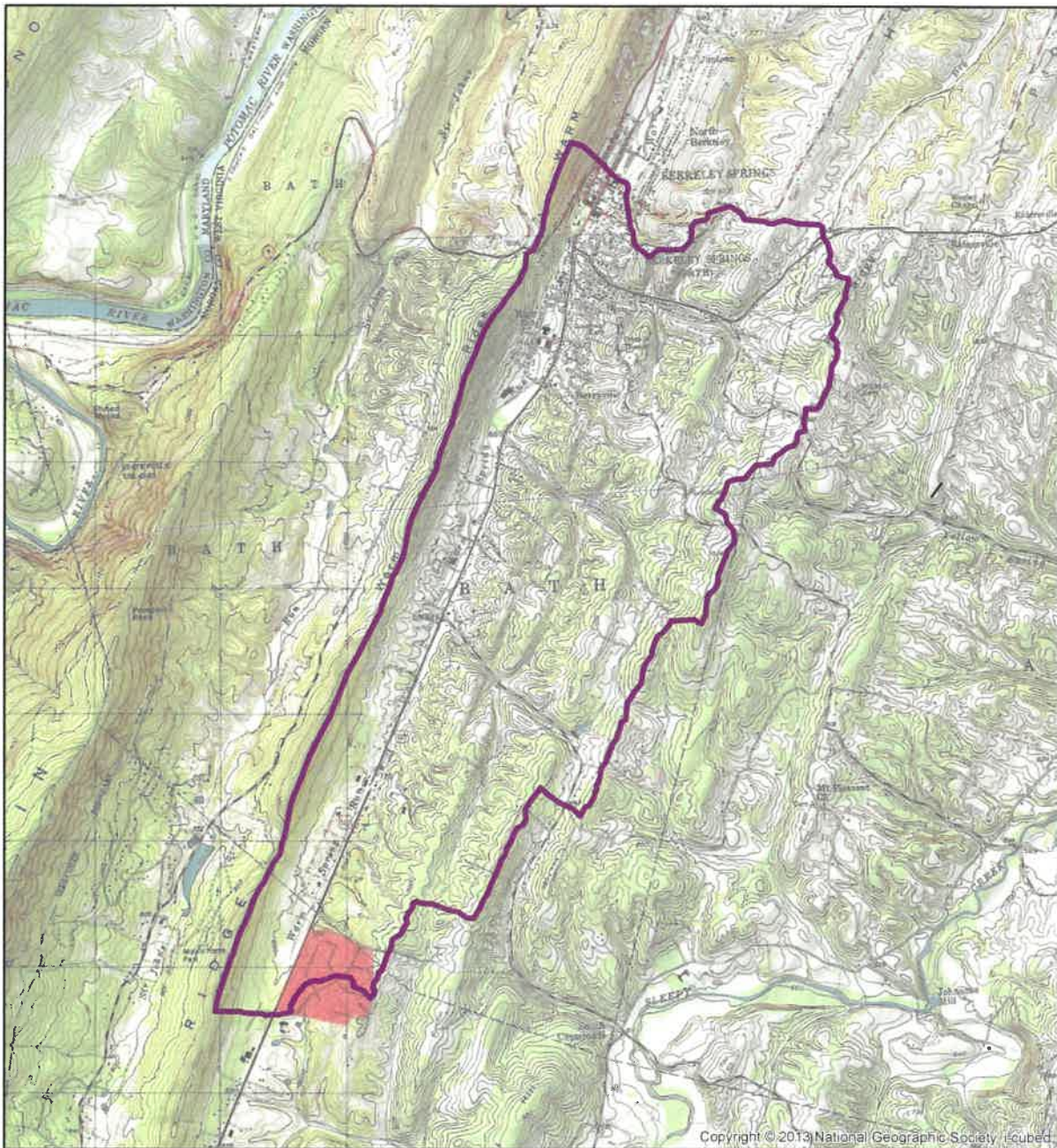
## Water Source / Delineation

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### Surface Water Sources

Intake: Lord Fairfax Spring

Map of watershed delineation area



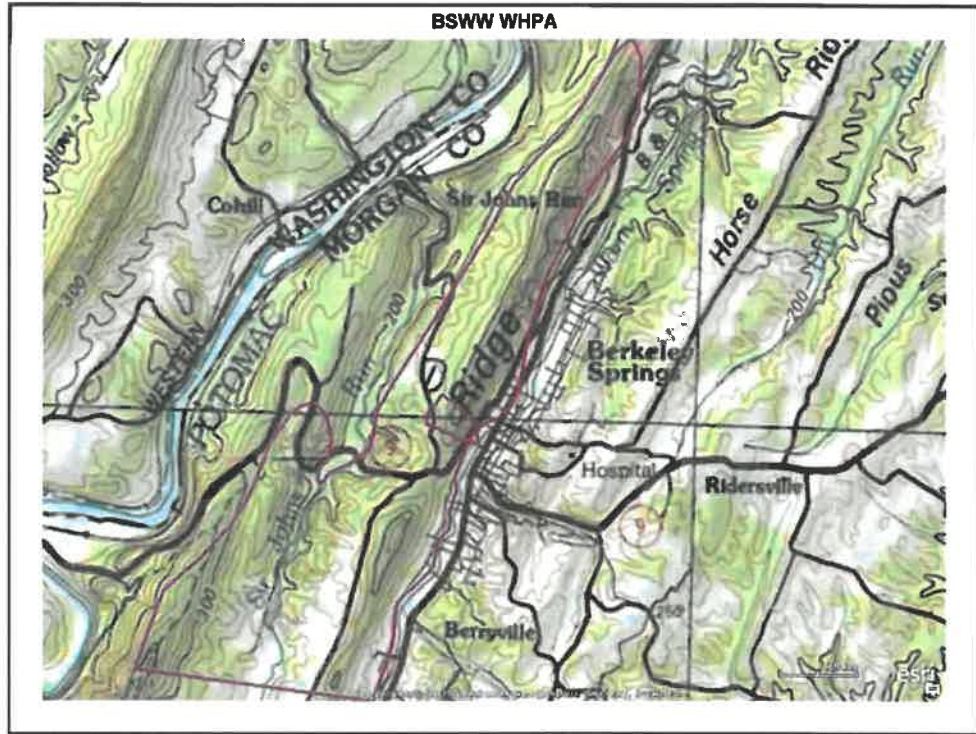
**Berkeley Springs  
Water Works**

Watershed delineation area  
5/30/2016

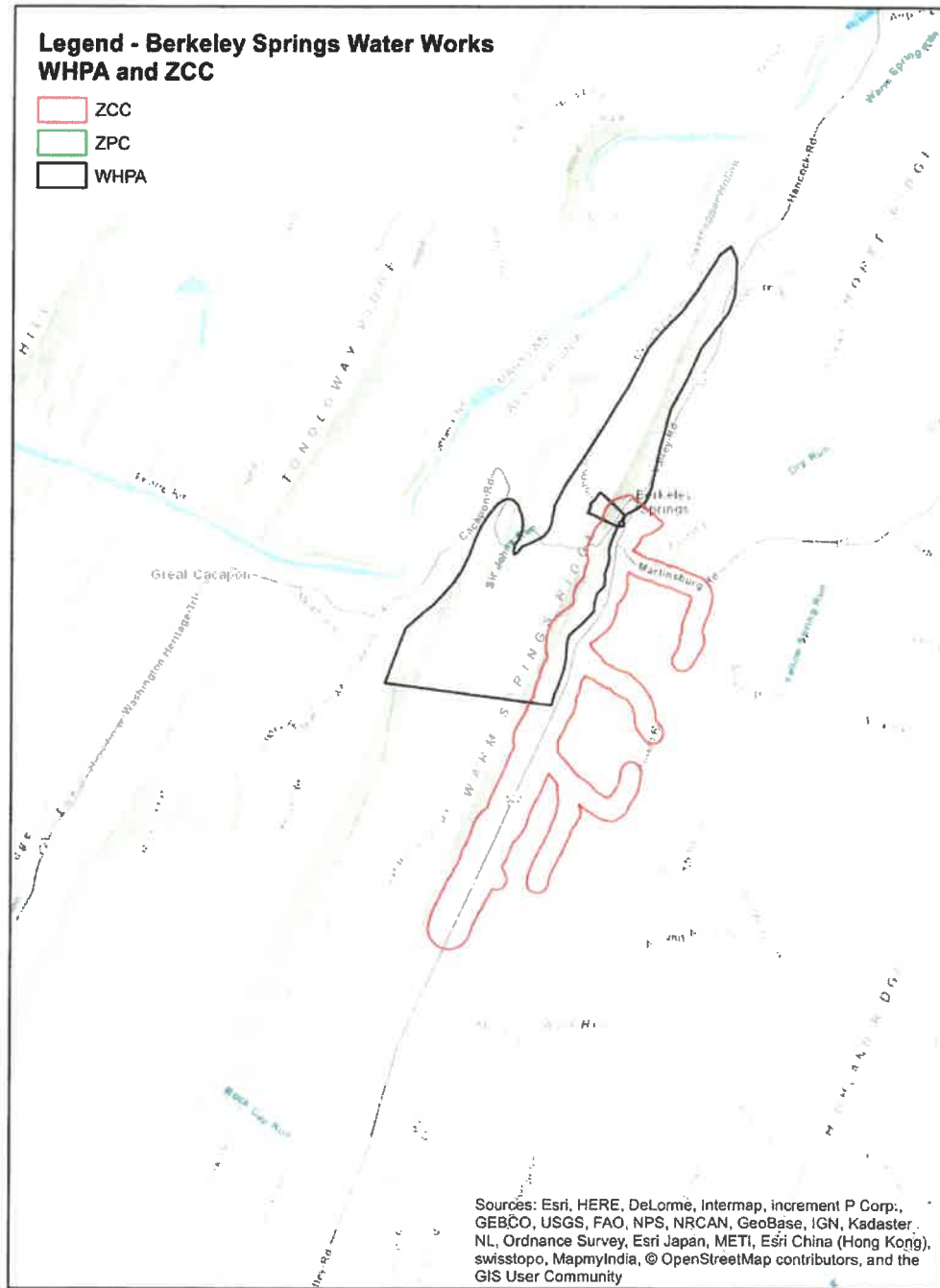
 BerkeleySprings Watershed







Map of zone of critical Concerns

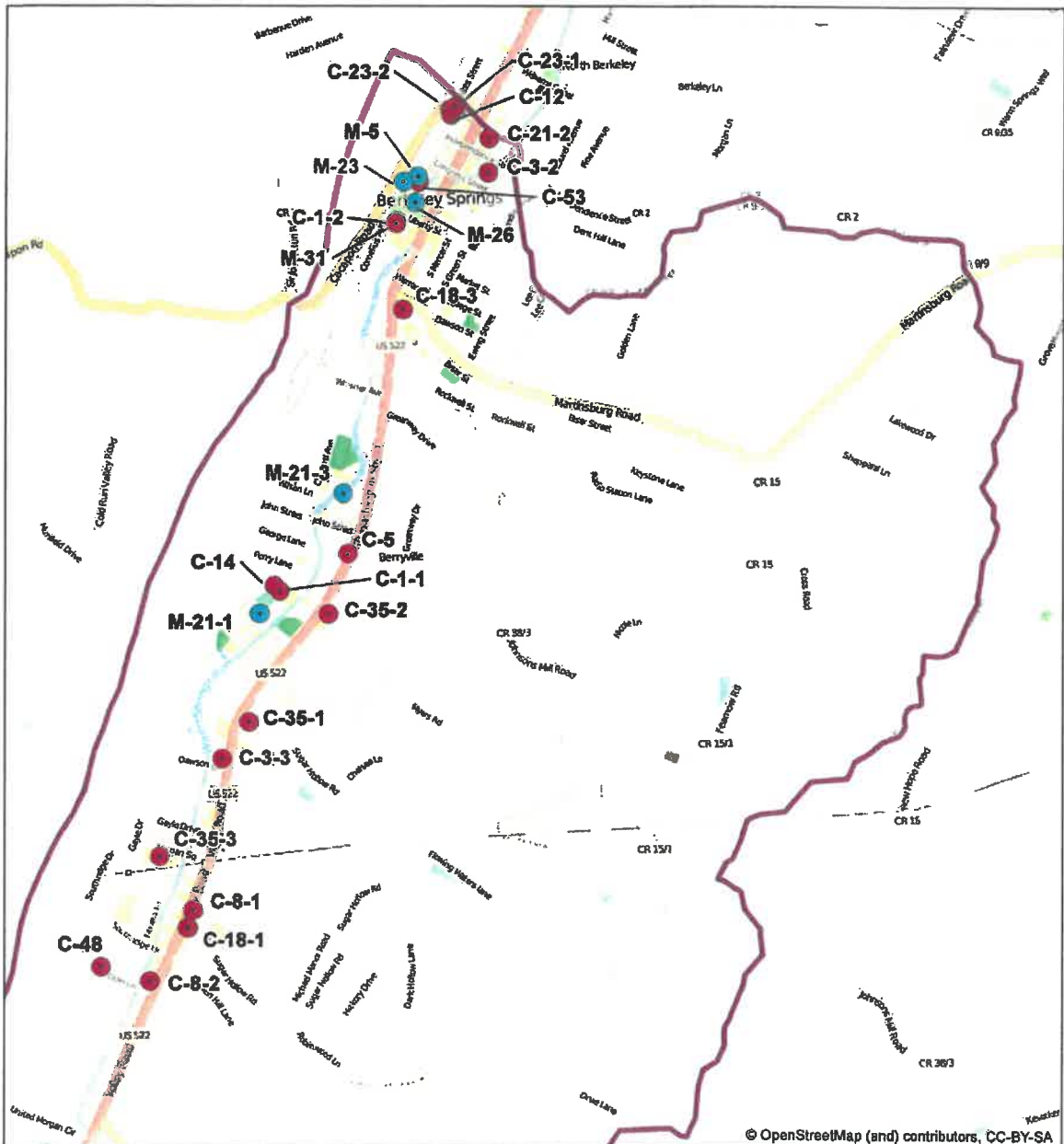


Ground Water Sources  
Intake: SP003

## PSSC Maps

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Local and Regional PSSC Map



**Berkeley Springs Water Works**

Source Water Assessment Program (SWAP) Potential Sources of Contamination 5/30/2016

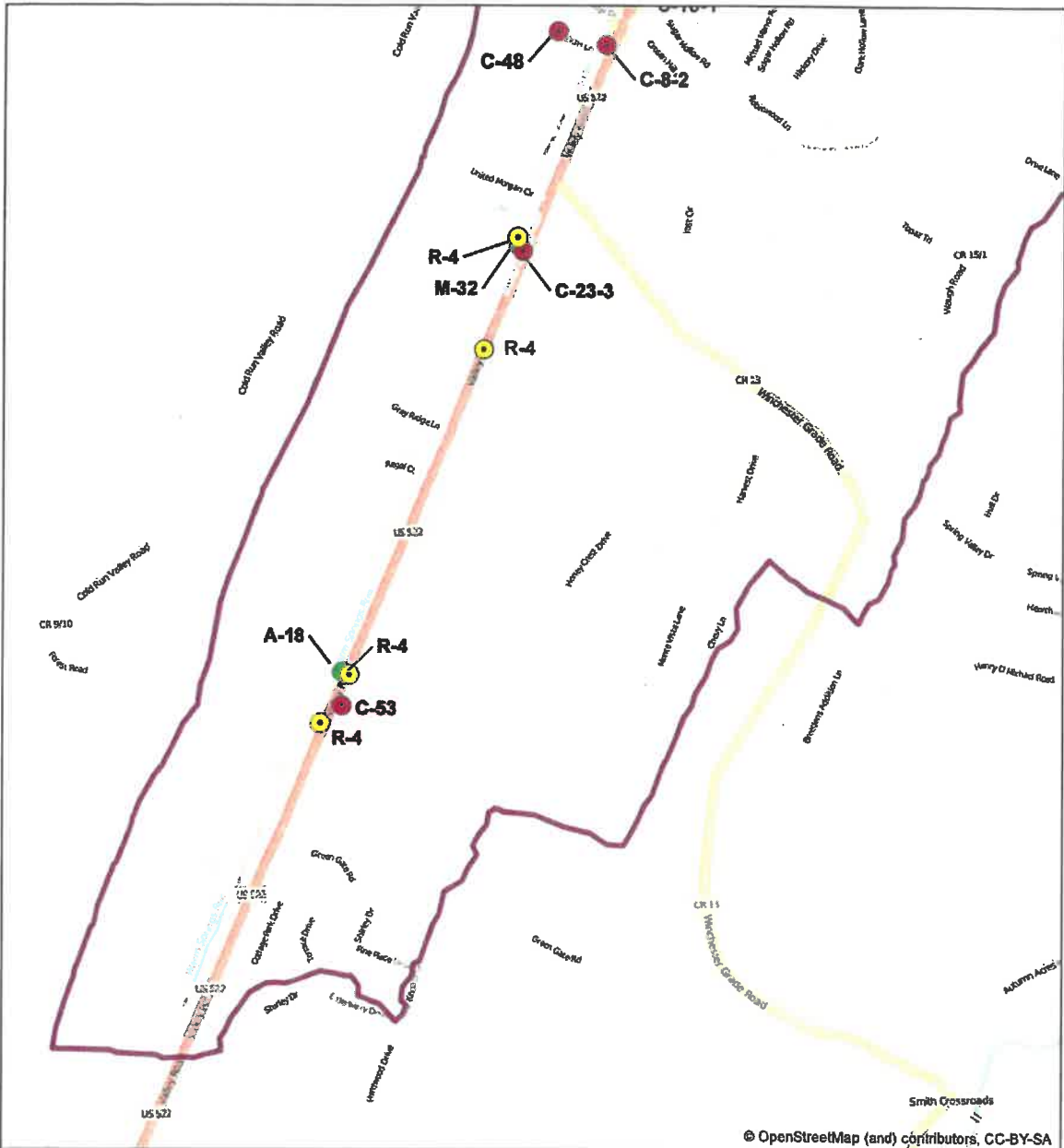
**BerkeleySprings Watershed**

**SWAP potential contaminant sources**










- Agriculture
- Commercial
- Industrial
- Municipal
- Residential

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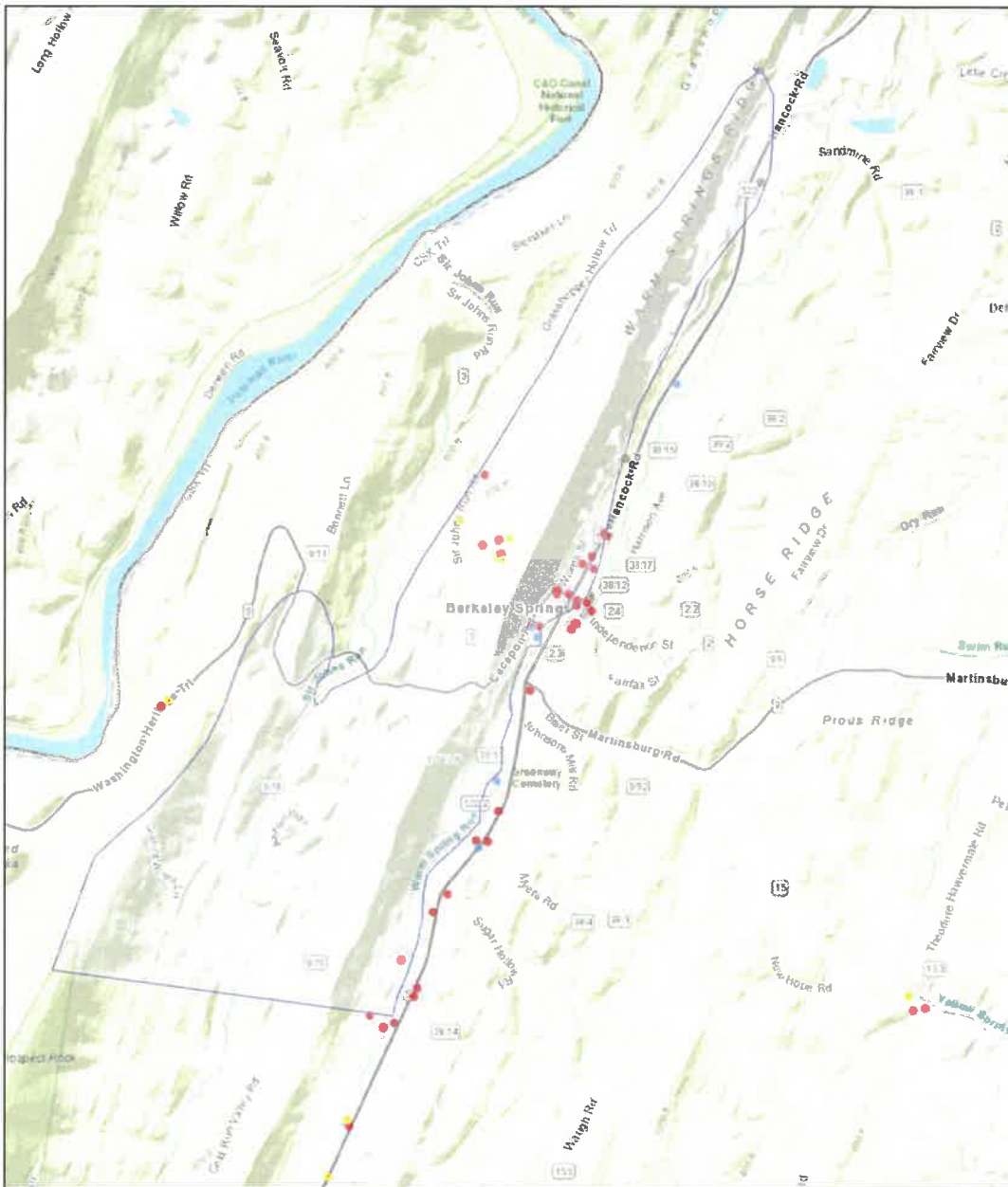
0 0.125 0.25 0.5 Miles



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<p><b>Berkeley Springs Water Works</b></p> <p>Source Water Assessment Program (SWAP) Potential Sources of Contamination 5/30/2016</p>	<p> Berkeley Springs Watershed</p> <p><b>SWAP potential contaminant sources</b></p> <ul style="list-style-type: none"> <li> Agriculture</li> <li> Commercial</li> <li> Industrial</li> <li> Municipal</li> <li> Residential</li> </ul>	<p></p> <p></p> <p></p>
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### WV3303301 SWAP PSSC MAP



6/17/2020 8:12:05 AM

Override 1

Source Water Protection PSSC

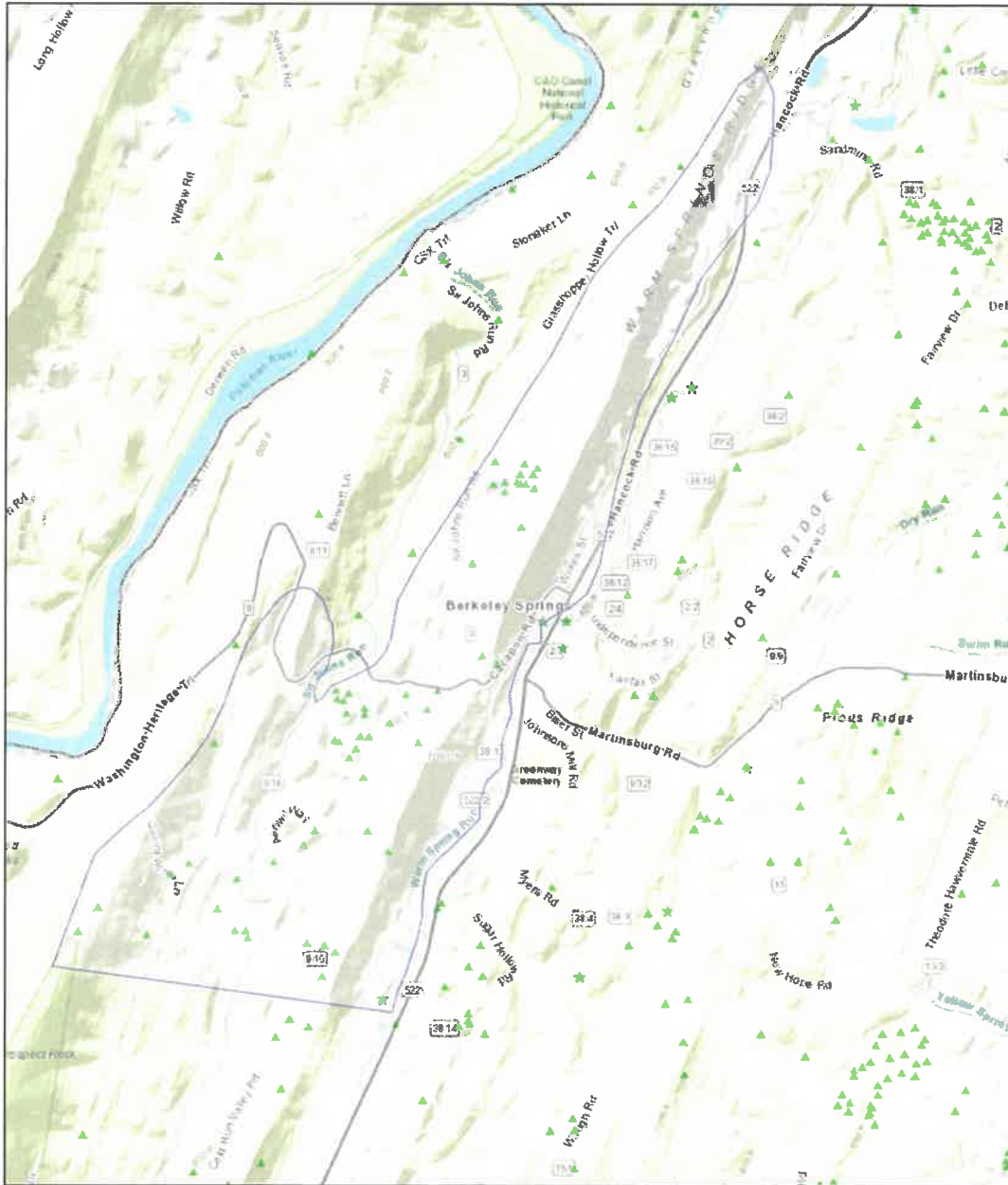
- Agriculture
- Commercial
- Industrial
- Municipal
- Residential
- State\_WW



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoSas, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

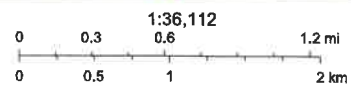
Source Water Assessment and Wellhead Protection Programs

### WV3303301 NPDES, NPDES OUTLET



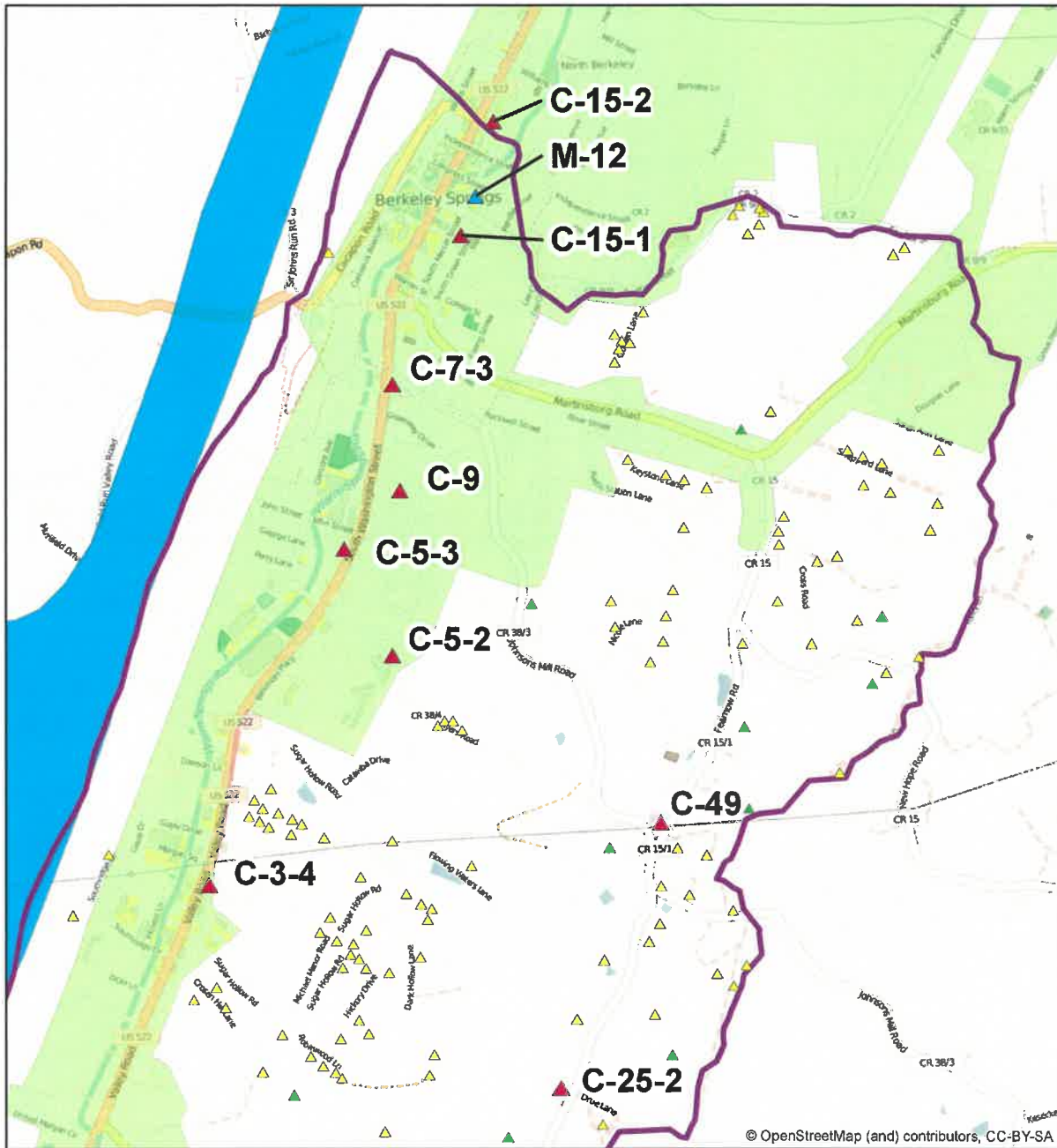
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- Override 1
- ★ NPDES Permit Outlet
- ▲ NPDES Permit
- State\_WV



Sources: Esri, HERE, Garmin, Intermap, Increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Source Water Assessment and Wellhead Protection Programs

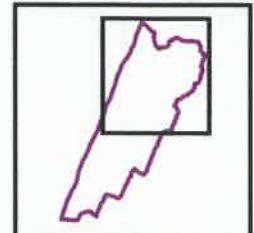
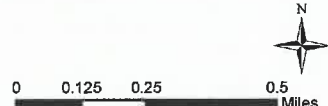


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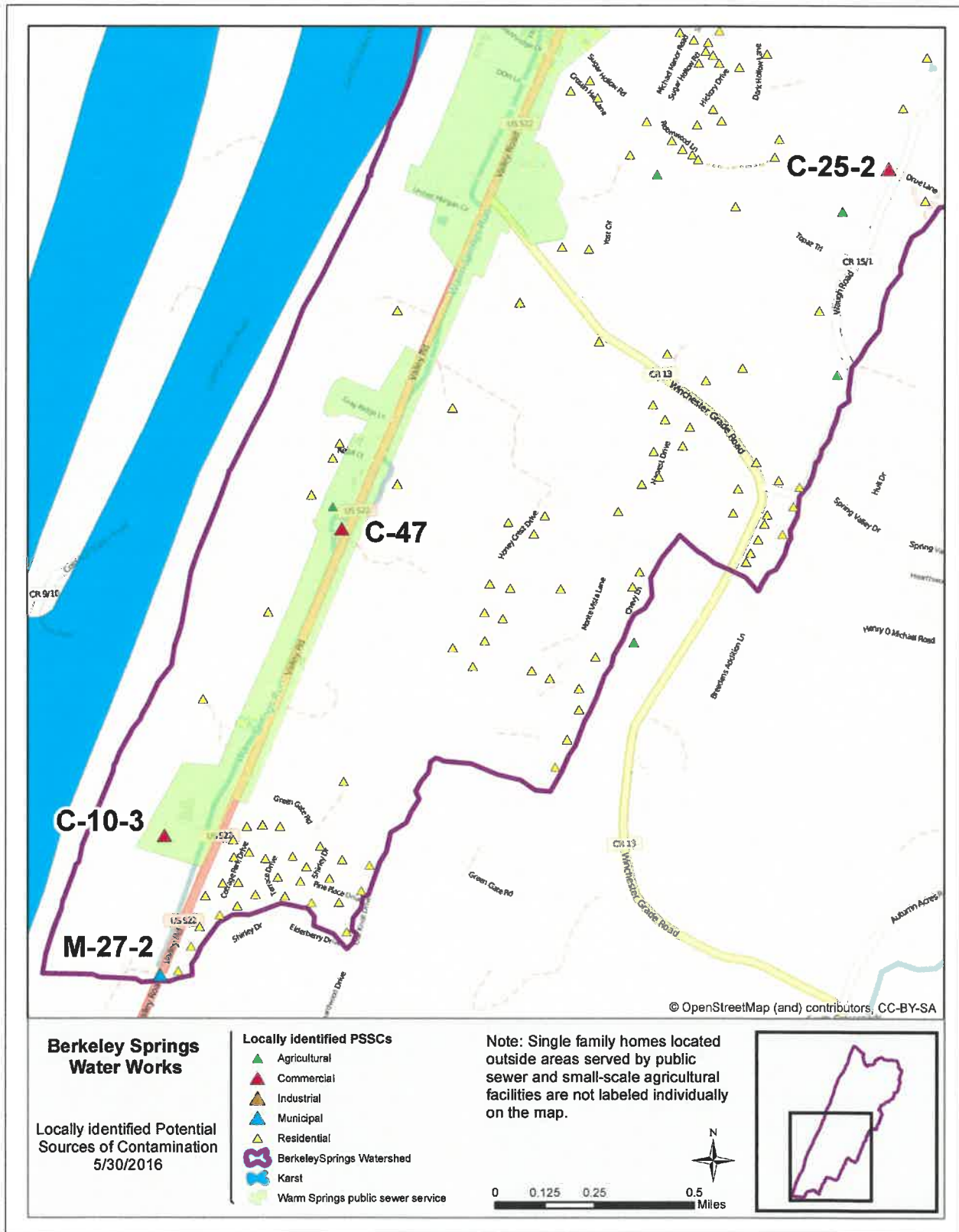
**Berkeley Springs Water Works**  
 Locally identified Potential Sources of Contamination  
 5/30/2016

- Locally Identified PSSCs**
- ▲ Agricultural
  - ▲ Commercial
  - ▲ Industrial
  - ▲ Municipal
  - ▲ Residential
  - Berkeley Springs Watershed
  - Karst
  - Warm Springs public sewer service

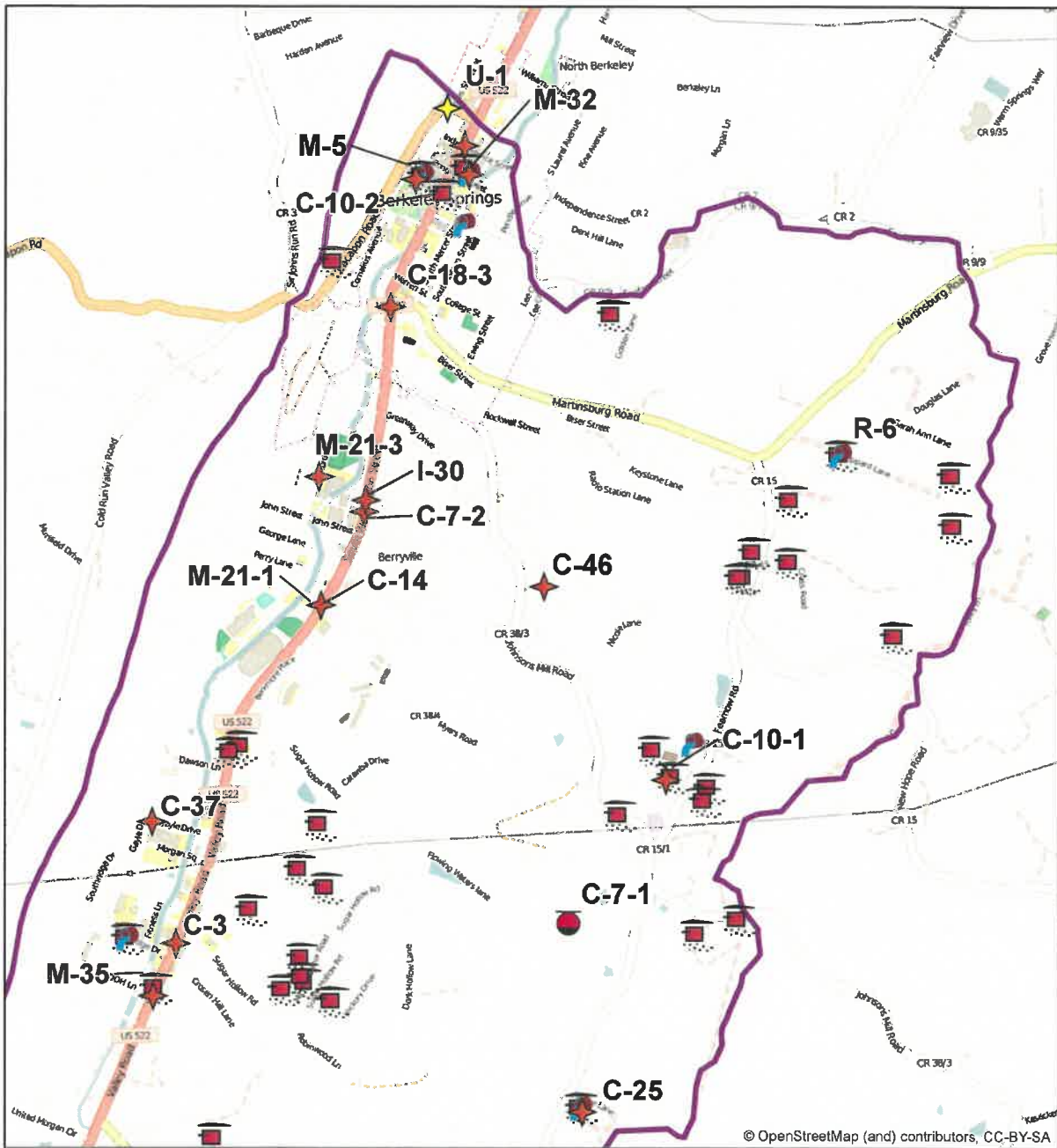
Note: Single family homes located outside areas served by public sewer and small-scale agricultural facilities are not labeled individually on the map.







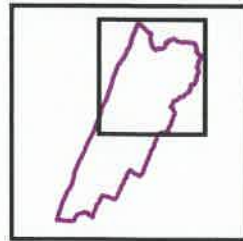
Regulated PSSC Map

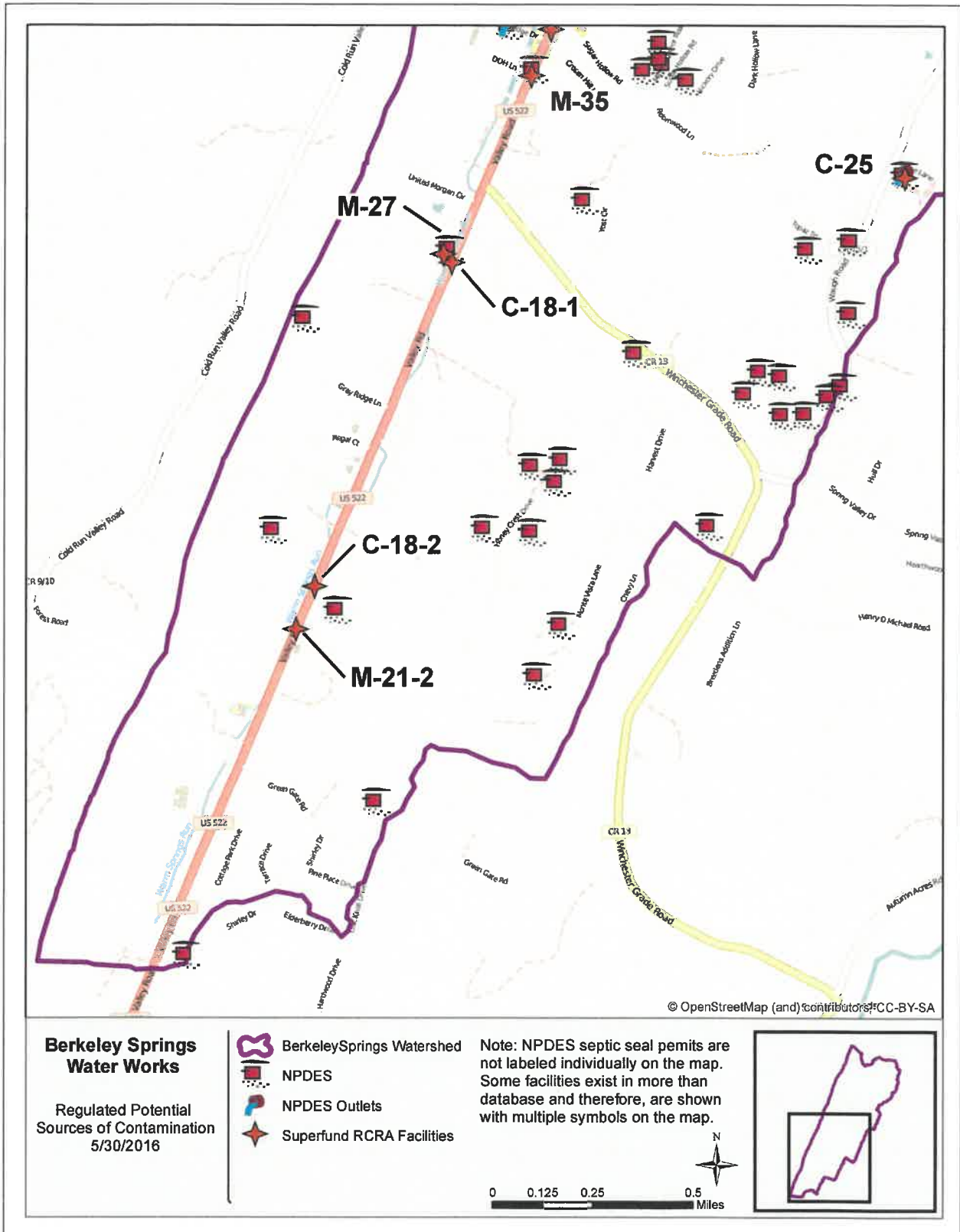


**Berkeley Springs Water Works**  
 Regulated Potential Sources of Contamination  
 5/30/2016

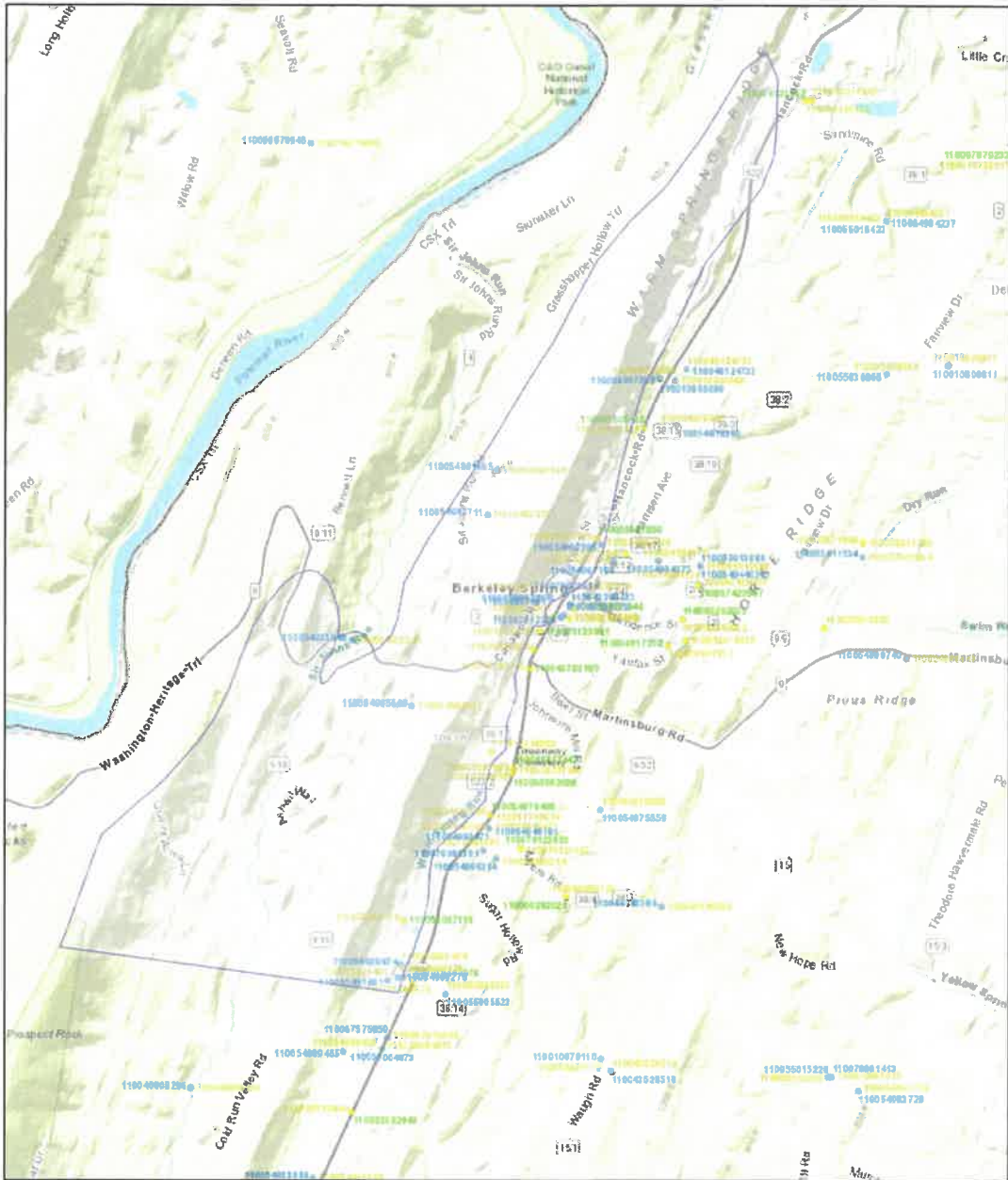
- BerkeleySprings Watershed
- NPDES
- NPDES Outlets
- Superfund/RCRA Facilities
- Volunteer Remediation Sites
- LUST Sites

Note: NPDES septic seal permits are not labeled individually on the map. Some facilities exist in more than database and therefore, are shown with multiple symbols on the map.











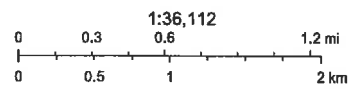


### WV3303301 USEPA FRS



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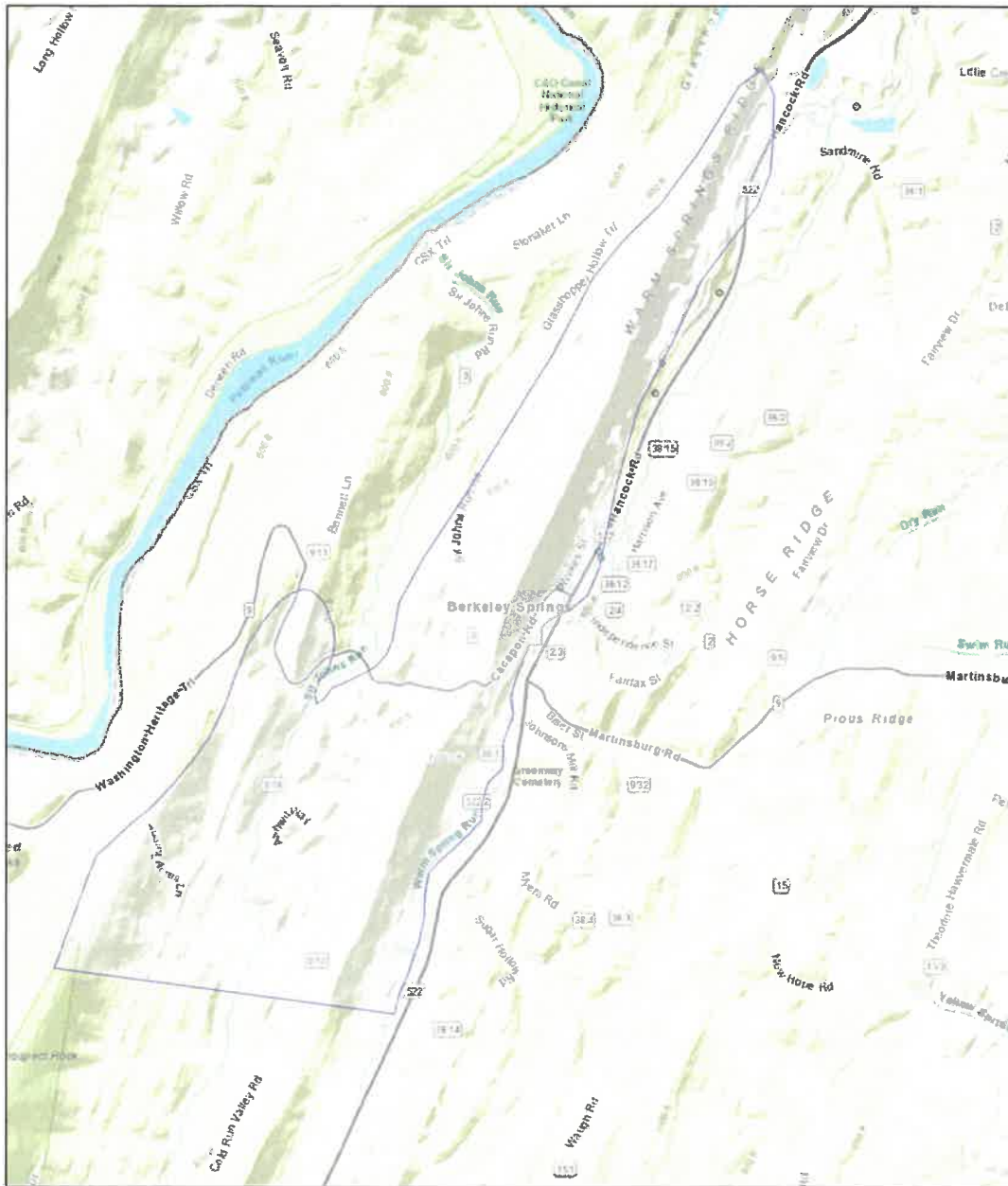
-  Override 1
-  State\_WV
-  Toxics Substances Control Act
-  Toxics Release Inventory
-  Superfund
-  Resource Conservation Recovery Act
-  All USEPA Facility Registry Service
-  NPDES



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

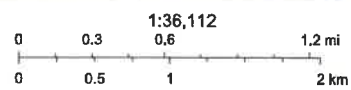
Source Water Assessment and Wellhead Protection Programs

# WV3303301 MINING OUTLETS, VOLUNTARY REMEDIATION



6/17/2020 8:28:14 AM

-  Override 1
-  Voluntary Remediation
-  Mining Outlet
-  State\_WW



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Source Water Assessment and Wellhead Protection Programs

**PSSC Lists**

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OB	SWAP PSSCs												
JEC	SITE_NAME	SITEDescription	COMMENTS	SOURCE_CAT	Associated_Chemicals	THREAT_TO_GW	THREAT_TO_SW	THREAT_in_WHPA					
TID													
1	U.S. Silica plant	Chemical Manufacture	Raw materials, finished material, processing facilities, and office campus	Industrial	PH, R, M, VOC, SOC	H	H	1					
2	Lumber stockpile - Closed	Sawmills and planers	CSX Transportation Properties listed on No Trespassing sign	Commercial	PH, VOC, SOC	M	M	1					
3	Historic gas station	Historic gas stations	Now residence, groundwater remediation in progress	Commercial	PH, M, VOC	H	L	1					
4	Historic Dry Cleaners	Dry cleaners	Now gift shop	Commercial	VOC, SOC	H	M	1					
5	H.J. Funeral Home	Funeral services and crematories	none	Commercial	M, MP, SOC, HM, VOC	M	L	1					
6	Historic gas station	Historic gas stations	Now Town of Bath municipal building and Warm Springs PSD office	Commercial	PH, M, VOC	H	L	1					
7	Antique Mall	Other	Former car dealer	Commercial				1					

8	State park swimming pool	Swimming Pools	none	Municipal	Chlorine				1	
9	fire station - Closed	Other	Currently a commercial building	Commercial					1	
10	Barker Auto Sales and gas station	Gas Stations	none	Commercial	PH, M, VOC, SOC	H	M		1	
11	Hunter Pro Hardware	Hardware/lumber/parts stores	none	Commercial	VOV, SOC, HM, M	L	L		1	
12	Residential Area	Residential (single family homes)	Possible septic systems	Residential	VOC, SOC, NN	H	H		1	
13	Triple B Arena	Other	Live music performance venue. Possible septic system.	Commercial					1	
14	Residential area with houses and trailers	Residential (single family homes)	Possible septic systems	Residential	VOC, SOC, NN	H	H		1	
15	Bob's Big Beef food distributor	Other	Possible septic systems	Commercial					1	
16	Residential Area	Residential (single family homes)	Possible septic systems	Residential	VOC, SOC, NN	H	H		1	
17	UNABLE TO PROCESS	Other	Associated with performance venue (PCS 34). Possible septic system. Possible septic systems	Commercial					1	
18	Residential Area	Residential (single family homes)	Possible septic systems	Residential	VOC, SOC, NN	H	H		1	
19	Affordable Auto Sales and Service	Car dealerships	3 service bays	Commercial	PH, VOC	H	L		1	



OB JEC TID	PRIMARY_NAME	LOCATION_ADDRESS	LOCATION_DESCRIPTION	PGM_SYS_A CRNMS	SIC_CODES	SIC_CODE_DESCRIPTION	in_WHPA
20	New Home Construction and Sediment Ponds.	Construction areas	Site of R-5 thru R-7.	M, T, PH, VOC, SOC, HIM	M	H	1
21	Morgan Square shopping center	Parking lots/malls	Food Lion, Family Dollar, Whale of a Wash laundromat, etc.	VOC, PH	L	M	1
22	site of sewer line bust	Sewer Lines *	past sewer line bust, repaired	M, VOC, MP, TO	H	L	1
23	Whale of a Wash	Laundromats		VOC, SOC	L	M	1
<b>NPDES</b>							
1	ANCORA ESTATES	UNKNOWN		NPDES:WVR 102686	1629	HEAVY CONSTRUCTION, NOT ELSEWHERE CLASSIFIED	1
2	BERKELEY SPRINGS DEVELOPMENT	3621 COLD RUN VALLEY ROAD	COOLFONT RE+CREATION INC. MR.	NPDES:WVO 081337	7032	SPORTING AND RECREATION, HEAVY	1
3	FORMER WOOD YARD	UNKNOWN		NPDES:WVR 104980	1629	CONSTRUCTION, NOT ELSEWHERE NONCLASSIFIABLE	1
4	MORGAN CNTY HQ	US 522		NPDES:WVG 980147	9999	ESTABLISHMENTS	1

5	RANKIN PHYSICAL THERAPY	US ROUTE 522					NPDES:WVR 102198	1629	HEAVY CONSTRUCTION, NOT ELSEWHERE CLASSIFIED	1	
6	ROBERT L. FORD	WV SEC RT 3					NPDES:WVR 100057	1629	HEAVY CONSTRUCTION, NOT ELSEWHERE CLASSIFIED	1	
7	SOUTHRIDGE PLANNED UNIT DEVELO	US RT 522					NPDES:WVG 072442	1629	HEAVY CONSTRUCTION, NOT ELSEWHERE CLASSIFIED	1	
8	TOWN OF BATH	103 WILKES STREET					NPDES:WVG 640088	4941	WATER SUPPLY	1	
9	PHASE II - WATER LINE REPLACEMENT PROJECT	CO RT 522/2, 38/12, 38/13					NPDES:WVR 104696	1629	HEAVY CONSTRUCTION, NOT ELSEWHERE CLASSIFIED	1	
	<b>NPDES PERMIT</b>										
<b>OB</b>	<b>PERMIT_ID</b>	<b>SUB_DESC</b>	<b>PERM_TYPE</b>	<b>RESP_NAME</b>	<b>RSTREAM</b>	<b>RS_CODE</b>	<b>in_WHPA</b>				
1	WVG640088	Water Treatment Plant (GP)	Industrial	BATH, TOWN OF HOFFMAN, DARRELL & CHANTEL LEVIN, MARC	Storm Drain/WAR M SPRINGS RN/POTOM AC RV	P-10	1				
2	16571	Septic Seal Permit	Septic Tank	PITTMAN, ADRIAN	N/A	N/A	1				
3	19376	Septic Seal Permit	Septic Tank	PITTMAN, ADRIAN	N/A	N/A	1				
4	24663	Septic Seal Permit	Septic Tank	PITTMAN, ADRIAN	N/A	N/A	1				
5	24664	Septic Seal Permit	Septic Tank	PITTMAN, ADRIAN	N/A	N/A	1				

6	25059	Septic Seal Permit	Septic Tank	FARRIS, ROBERT	N/A	N/A	1		
7	25024	Septic Seal Permit	Septic Tank	BERKELEY PARTNERSHIP	N/A	N/A	1		
8	25025	Septic Seal Permit	Septic Tank	BERKELEY PARTNERSHIP	N/A	N/A	1		
9	24870	Septic Seal Permit	Septic Tank	EDMONSTON, KURT & BONNIE	N/A	N/A	1		
10	25054	Septic Seal Permit	Septic Tank	COHEN, DAVID P	N/A	N/A	1		
11	26254	Septic Seal Permit	Septic Tank	NEWCOMER, THOMAS & ESTHER	N/A	N/A	1		
12	26331	Septic Seal Permit	Septic Tank	STOTLER, SHANNON & MELANIE	N/A	N/A	1		
13	26334	Septic Seal Permit	Septic Tank	HILL, JUDDIE THOMAS III	N/A	N/A	1		
14	28988	Septic Seal Permit	Septic Tank	BERKELEY PARTNERSHIP	N/A	N/A	1		
15	28881	Septic Seal Permit	Septic Tank	FORD, BOB & JEAN	N/A	N/A	1		
16	31394	Septic Seal Permit	Septic Tank	BAKER, PATRICIA &ROBERT	N/A	N/A	1		
17	31396	Septic Seal Permit	Septic Tank	SWINK, KENNETH L	N/A	N/A	1		
18	29493	Septic Seal Permit	Septic Tank	HOBDAY, COLONIAL VILLAGE INDUSTRIES, INC.	N/A	N/A	1		
19	33620	Septic Seal Permit	Septic Tank	COLONIAL VILLAGE INDUSTRIES, INC.	N/A	N/A	1		
20	33621	Septic Seal Permit	Septic Tank	COLONIAL VILLAGE INDUSTRIES, INC.	N/A	N/A	1		

21	33622	Septic Seal Permit	Septic Tank	BRENT, GEORGE	N/A	N/A	1		
22	33623	Septic Seal Permit	Septic Tank	BRENT, GEORGE	N/A	N/A	1		
23	33624	Septic Seal Permit	Septic Tank	BRENT, GEORGE	N/A	N/A	1		
24	33625	Septic Seal Permit	Septic Tank	BRENT, GEORGE	N/A	N/A	1		
25	33626	Septic Seal Permit	Septic Tank	BRENT, GEORGE	N/A	N/A	1		
26	33627	Septic Seal Permit	Septic Tank	BRENT, GEORGE	N/A	N/A	1		
27	33628	Septic Seal Permit	Septic Tank	BRENT, GEORGE	N/A	N/A	1		
28	33629	Septic Seal Permit	Septic Tank	BRENT, GEORGE	N/A	N/A	1		
29	33630	Septic Seal Permit	Septic Tank	BRENT, GEORGE	N/A	N/A	1		
30	33631	Septic Seal Permit	Septic Tank	BRENT, GEORGE	N/A	N/A	1		
31	33632	Septic Seal Permit	Septic Tank	BRENT, GEORGE	N/A	N/A	1		
32	33583	Septic Seal Permit	Septic Tank	BERKELEY PARTNERSHIP	N/A	N/A	1		
33	33602	Septic Seal Permit	Septic Tank	COBLE, TIM	N/A	N/A	1		
34	33729	Septic Seal Permit	Septic Tank	BERKELEY PARTNERSHIP	N/A	N/A	1		
35	35518	Septic Seal Permit	Septic Tank	ANDREWS, LUCAS	N/A	N/A	1		
36	35537	Septic Seal Permit	Septic Tank	BERKELEY PARTNERSHIP	N/A	N/A	1		
37	35538	Septic Seal Permit	Septic Tank	BERKELEY PARTNERSHIP	N/A	N/A	1		

38		35539	Septic Seal Permit	Septic Tank	BERKELEY PARTNERSHIP	N/A	N/A	1		
39		35540	Septic Seal Permit	Septic Tank	BERKELEY PARTNERSHIP	N/A	N/A	1		
40		35541	Septic Seal Permit	Septic Tank	BERKELEY PARTNERSHIP	N/A	N/A	1		
41		33752	Septic Seal Permit	Septic Tank	PITTMAN, CAROL	N/A	N/A	1		
42	WVG980147		WV DOH+MUN	Industrial	WV DEPARTMENT OF Rn/Potomac	Warm Springs	P-10	1		
43		37268	Septic Seal Permit	Septic Tank	BERKELEY PARTNERSHIP	N/A	N/A	1		
44		37290	Septic Seal Permit	Septic Tank	BERKELEY PARTNERSHIP	N/A	N/A	1		
45		37293	Septic Seal Permit	Septic Tank	BERKELEY PARTNERSHIP	N/A	N/A	1		
46		42501	Septic Seal Permit	Septic Tank	STOTLER, MARSHALL TODD	N/A	N/A	1		
47		43403	Septic Seal Permit	Septic Tank	KOONTZ, RON	N/A	N/A	1		
48		46538	Septic Seal Permit	Septic Tank	BERNHARD, RAYMOND S	N/A	N/A	1		
49		45859	Septic Seal Permit	Septic Tank	VOGT, TIM	N/A	N/A	1		
50		52966	Septic Seal Permit	Septic Tank	KNIGHT, JOHN & SHIRLEY	N/A	N/A	1		
51		54711	Septic Seal Permit	Septic Tank	FRANCIS, GLENN R	N/A	N/A	1		

52	56349	Septic Seal Permit	Septic Tank	MORGAN COUNTY HEALTH DEPARTMENT	N/A	N/A	1			
53	56360	Septic Seal Permit	Septic Tank	MORGAN COUNTY HEALTH DEPARTMENT	N/A	N/A	1			
54	59013	Septic Seal Permit	Septic Tank	BERKELEY - MORGAN BOARD OF HEALTH	N/A	N/A	1			
55	58717	Septic Seal Permit	Septic Tank	BERKELEY - MORGAN BOARD OF HEALTH	N/A	N/A	1			
56	58727	Septic Seal Permit	Septic Tank	BERKELEY - MORGAN BOARD OF HEALTH	N/A	N/A	1			
57	59083	Septic Seal Permit	Septic Tank	BERKELEY - MORGAN BOARD OF HEALTH	N/A	N/A	1			
58	59067	Septic Seal Permit	Septic Tank	BERKELEY - MORGAN BOARD OF HEALTH	N/A	N/A	1			
		NPDES PERMIT OUTLET								
		OB PERMIT_ID	FAC_NAME	SUB_DESC	PERM_TYPE	RP_NAME	RSTREA	RS_CODE	in_WHPA	
1	WVG640088	Town of Bath	Water Treatment Plant (GP)	Industrial	BATH, TOWN OF	Storm Drain/W ARM SPRINGS RN/POTO MAC RV	P-10		1	

2	WVG980147	Morgan Cnty HQ	WV DOH+MUN	Industrial	WV DEPARTME NT OF TRANSPORT ATION	Warm Spring Rn/Poto mac Rv	P-10	1	
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List of Locally Identified PSSCs

Map Code	Site Name	Site Description	Comments	BPH Risk
See attached map location	U.S.Silica Company	Mining	Quarry only -Sandstone & Limestone Quarry WV0005487 Quarry only – U. S. Silica Co. Berkeley Springs Plant WV1023691 General Quarry – Berkeley Springs Operation WVG022519	1.8–2.2
Rt. 522 & Winchester Grade Rd.	New Sheetz store under construction	Auto Service Station	Oils, antifreeze, and other automobile fluids	3.0 – 4.6
C-10-3	Tractor Supply	Tractor Supply store	Solvents, asbestos, paints, adhesives, waste insulation, lacquers, tars, sealants, epoxy waste, chemical wastes	2.6 – 3.5
See attached location map	Roy's Service Center	Auto Service Station	Oils, antifreeze, and other automobile fluids	3.0 – 4.6
C-15-1	Hunter-Anderson Funeral Home	Funeral home	Formaldehyde; wetting agents; fumigants; solvents	1.7
C-15-2	Hesley Funeral Home	Funeral home	Formaldehyde; wetting agents; fumigants; solvents	1.7
C-25-2	Junkyard	Formerly Ours Auto Sales, currently a junkyard.	Oils, antifreeze, and other automobile fluids	3.4 – 3.6
C-3-4	Pit Stop Service Center	Auto repair and service station	Oils, antifreeze, and other automobile fluids	2.7
C-47	Eddy's Tire Service	Many old tires, stored oil onsite	Metals	2.4 – 2.8
C-49	Utility substation	Power substation	PCBs, oils, solvents, wood preservatives, sludges, acid solution, metal plating solutions, and herbicides	2.7 – 2.9
C-5-2	Steve's Autobody	Auto body ahop	Waste oils, solvents; acids, paints, automotive wastes, miscellaneous cutting oils	2.1 – 2.8
C-5-3	Napa Auto Parts	Auto parts store	Waste oils, solvents; acids, paints, automotive wastes, miscellaneous cutting oils	2.1 – 2.9
C-7-3	Douglas Auto Sales	Car dealership	Automotive wastes, waste oils, solvents, miscellaneous wastes	1.2 – 1.3
C-9	Cemetery	Cemetery	Leachate; arsenic; lawn and garden maintenance chemicals	1.2 – 1.8



Map Code	Site Name	Site Description	Comments	BPH Risk
M-27-2	Apple Valley Waste	Trash removal and recycling	Residential and commercial solid waste residues	2.2 – 2.3
M-6	Berkeley Springs VFD	Fire station	Petroleum hydrocarbons and volatile organic compounds	1.2 – 1.3
Not labeled individually	Agricultural Land Use	13 sites, small-scale crops, pastures, and ponds	<ul style="list-style-type: none"> <li>• Pesticides and other chemicals used for farm operations</li> <li>• Disposal of animal waste or burying dead livestock</li> </ul> Increased nutrient load from these sources in surface water may result in algal growth. Algal presence may result in taste and odor issues. If stressed some algae also releases toxic chemicals that could cause a threat to human health	Variable
Not labeled individually	Residences	197 residences not served by public sewer	Common household products, wall and furniture treatments, mechanical repair and maintenance products	2.3

List of Regulated PSSCs

Map Code	Facility Name	Site Description	Permit ID	Database	BPH Risk
C-10-1	Fearnow Road property	First United Methodist Church	WVR104738	NPDES, Superfund/RCRA	2.6 – 3.5
C-10-2	Phase III Water System Replacements	Utility Construction	WVR107151	NPDES, Superfund/RCRA	2.6 – 3.5
C-14	Morgan County School Bus Garage	School Bus Garage		Superfund/RCRA	2.9 – 3.7
C-18-1	Berkeley Springs Shell Station	Service Station		Superfund/RCRA	2.7 – 2.9
C-18-2	Southern Belle Truck Stop	Truck Stop		Superfund/RCRA	2.7 – 2.9
C-18-3	Sheetz Store #126	Service Station		Superfund/RCRA	2.7 – 2.9
C-25	Timmons Salvage	Salvage yard	WVG611525	NPDES, Superfund/RCRA	3.4 – 3.6
C-3	Wheat's Repair Service	Auto repair		Superfund/RCRA	2.7
C-37	Rite Aid #2289			Superfund/RCRA	0.7 – 1.1
C-46	Michael Lumber Co.	Sawmill		Superfund/RCRA	2.2 – 3.1
C-7-1	Barker Auto Sales	Underground Storage Tank		LUST	1.2 – 1.3
C-7-2	Lawyer Motor Co.	Car Dealership & Service Station		Superfund/RCRA	1.2 – 1.3
I-30	Verizon WV Inc., Berkeley Springs Co.	RCRA facility		Superfund/RCRA	3.0 – 3.1
M-21-1	Widmyer Elementary School	RCRA facility		Superfund/RCRA	1.4 – 1.5
M-21-2	Seventh Day Adventist School	RCRA facility		Superfund/RCRA	1.4 – 1.5
M-21-3	Berkeley Springs High School	RCRA facility		Superfund/RCRA	1.4 – 1.5
M-27	Morgan County Solid Waste Authority	Waste Disposal	WVRNE0077	NPDES, Superfund/RCRA	1.8 – 2.2
M-32	Morgan County Courthouse	Air Conditioning Discharge	WV0116394	NPDES, Superfund/RCRA	
M-35	Morgan County Headquarters	DOH Garage, UST	WVG980147	NPDES	3.0 – 3.6
M-5	Berkeley Springs Drinking Water Plant	Water Treatment Plant	WVG640088	NPDES, Superfund/RCRA	1.2 – 1.5
R-6	Ford's Mobile Home Park	Septic (Drain Field Disposal)	1297-09-065	NPDES	2.5 – 6.1
U-1	Vernon Close Property	Volunteer Remediation Project, petroleum contamination	VRP 07650	Volunteer Remediation	

## APPENDIX B. EARLY WARNING MONITORING SYSTEM FORMS

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

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

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

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

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

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

**Appendix B - Form A**  
Surface Monitoring Worksheet

Describe the type of early warning detection equipment installed:
HACH SC-1000
Describe the mechanism to store the data and an institutional framework to analyze and interpret the data:
Connected to SCATA PLC
Describe the process to determine the credibility of a contamination event if a change is detected in the quality of source water:
The water system distribution pumps would be shut down if parameters were exceeded. A grab sample would be taken to verify condition of water.

## APPENDIX C. COMMUNICATION PLAN TEMPLATE

**Berkeley Springs City Of**

PWSID: WV3303301

Authorizing Signature: Ron Jaininey

Contact Phone Number: (304)995-6064

Contact Email Address: water.town@hotmail.com

Plan Developed On: July 2021

### **ACKNOWLEDGMENTS:**

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

## INTRODUCTION

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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

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

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

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

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

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

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

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

Tier	Tier Category	Risk Level	Tier Summary
A	Announcement	Low	The water system is issuing an announcement to the public and public agencies about an incident or event that could pose a threat to public health and safety. Additional information will be provided as it becomes available.
B	Boil Water Advisory	Moderate	Water system users are advised to boil any water to be used for drinking or cooking, due to possible microbial contamination. The system operator will notify users when the boil water advisory is lifted.
C	Cannot 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.
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
Ron Jaininey	Berkeley Springs City Of	(304)995-6064	water.town@hotmail.com
Scott Merki	Berkeley Springs City Of	(304)596-1487	court@wvdsi.net

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**

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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
  - If warranted by initial findings regarding the spill, release, or incident
- Notification of the WV Bureau of Public Health
  - As required
- Periodic information updates, as incident response information is received
- Updates to the applicable A-B-C-D-E advisory tier, as necessary

If time permits and the need arises, after the threat level is reduced, and operations return to normal, the water system staff, the communication and source water protection teams, and their partners may 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.

## EMERGENCY SHORT FORMS

### Emergency Communication Information

	<b>Name</b>	<b>Phone</b>	<b>Email</b>	
<b>Designated spokesperson:</b>	Ron Jainniney	(304)995-6064	water.town@hotmail.com	
<b>Alternate spokesperson:</b>	Scott Merki	(304)596-1487	court@wvdsi.net	
<b>Designated location to disseminate information to media:</b>	Town of Bath Town Hall 102 Wilkes Street, Berkeley Springs WV 25411			
<b>Method of Contact:</b>	Word of Mouth Newspaper Posted Notices Radio Call System			
<b>Media Contacts:</b>	<b>Name</b>	<b>Title</b>	<b>Phone Number</b>	<b>Email</b>
	Kate Shunney	Editor	(304)258-1800	editor@morganmessenger.com

**Emergency Service Contacts**

	Name	Emergency Phone	Alternative Phone	Email
Police	Bath Police Dept.	(911)___-___	(304)258-1198	
Fire	Berkeley Springs VFD	(911)___-___	(304)258-3191	
Ambulance	Morgan County EMS	(911)___-___	(304)258-1348	
Hazmat				
Other				
Other				
Other				

**Sensitive Populations**

Other Communities that are served by the Utility:	N/A				
Major User/Sensitive Population Notification	Name	Emergency Phone	Alternative Phone	Email	
	Kristen Tuttle - Schools	(304)258-2430		ktuttle@k12.wv.us	
EED District Office Contact	Name	Phone	Email		
	Alan Marchun	(304)725-9453	alan.f.marchun@wv.gov		
OEHS Readiness Coordinator	Lee Orr	(304)356-4290			
Downstream Water System Contacts	Water System Name	Contact Name	Emergency Phone	Alternate Phone	Email
	Berkeley County PSWD	Steve DeRidder	(304)274-5801	(304)274-5801	
Are you planning on implementing the TIER Communications plan?:			Yes		

**Emergency Service Key Staff Members**

	Name	Title	Phone	Email
Key Staff Responsible for Coordinating Emergency Response Procedures:	Ron Janniney	Chief Water Operator	(304)995-6064	water.town@hotmail.com
Staff Responsible for Keeping Confidential PSSC Information and Releasing to Emergency Responders.	Ron Janniney	Chief Water Operator	(304)995-6064	water.town@hotmail.com

**Emergency Response Information**

List Laboratories available to perform sample analysis in case of emergency.	<b>Name</b>	<b>Phone</b>
	REI Consultants	(304)255-2500
	WV Office of Lab Services	(304)558-3530
Has utility developed a detailed Emergency Response Plan in accordance with the Public Health Security Bioterrorism preparedness and Response Plan Act of 2002 that covers the following areas?:	Yes	
When was the emergency response plan developed or last updated?:	2015	

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## EMERGENCY CONTACT INFORMATION

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**State Emergency Spill Notification**

1-800-642-3074

**Office of Emergency Services**

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

Charleston, WV- (304) 558-5380

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

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

Readiness Coordinator - Lee Orr

Phone: 304-356-4290

Cell: 304-550-5607

E-mail: [Lee.E.Orr@wv.gov](mailto:Lee.E.Orr@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/pswcheck/>

## PRESS RELEASE ATTACHMENTS

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

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

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

The incident involves the following situation at this location:

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

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

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

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

UTILITY ISSUED NOTICE – LEVEL B  
BOIL WATER ADVISORY  
A BOIL WATER ADVISORY IS IN EFFECT

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

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

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

**What should I do?**

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

**What happened?**

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

**What is being done?**

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

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

- \_\_\_\_\_

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

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

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

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

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



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

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

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

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

**What should I do?**

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

**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 \_\_\_\_\_.

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

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

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

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

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

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

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

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

**What should I do?**

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

**What happened?**

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

**What is being done?**

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

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

- \_\_\_\_\_

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

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

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

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

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

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

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

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

**What should I do?**

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

**What happened?**

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

**What is being done?**

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

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

- \_\_\_\_\_

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

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

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

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

## APPENDIX D. SINGLE SOURCE FEASIBILITY

### Water Source Alternative:

Back up intake	
Name of Alternative:	Potomac River
Brief Description of the Alternative:	Potomac River
Feasible?:	Yes
Provide Cost Estimate:	\$1,170,625
Would this alternative supply 100% of your needs?:	No
Economic Criteria - Operation and Maintenance Costs:	0
Economic Criteria - Capital Cost:	0
Technical Criteria - Permitting:	0
Technical Criteria - Flexibility:	0
Technical Criteria - Resilience:	0
Technical Criteria - Institutional Requirements:	0
Environmental Criteria - Environmental Impacts:	0
Environmental Criteria - Aesthetic Impacts:	0
Environmental Criteria - Stakeholder Issues:	0
Final Score:	0.00%
Other	
Name of Alternative:	Additional Water Storage
Brief Description of the Alternative:	Additional Water Storage
Feasible?:	Yes
Provide Cost Estimate:	\$638,875
Would this alternative supply 100% of your needs?:	No
Economic Criteria - Operation and Maintenance Costs:	3
Economic Criteria - Capital Cost:	2
Technical Criteria - Permitting:	3
Technical Criteria - Flexibility:	3
Technical Criteria - Resilience:	2
Technical Criteria - Institutional Requirements:	3
Environmental Criteria - Environmental Impacts:	3
Environmental Criteria - Aesthetic Impacts:	3
Environmental Criteria - Stakeholder Issues:	3
Final Score:	90.67%
Other	
Name of Alternative:	Existing Water Storage

Brief Description of the Alternative:	Existing Water Storage
Feasible?:	Yes
Provide Cost Estimate:	\$0
Would this alternative supply 100% of your needs?:	Yes
Economic Criteria - Operation and Maintenance Costs:	3
Economic Criteria - Capital Cost:	3
Technical Criteria - Permitting:	3
Technical Criteria - Flexibility:	3
Technical Criteria - Resilience:	2
Technical Criteria - Institutional Requirements:	3
Environmental Criteria - Environmental Impacts:	3
Environmental Criteria - Aesthetic Impacts:	3
Environmental Criteria - Stakeholder Issues:	3
Final Score:	96.00%

Feasibility Study Narrative

**APPENDIX D. SINGLE SOURCE FEASIBILITY STUDY**

Berkeley Springs currently has sufficient water storage capacity to continue service in the event the primary water source becomes contaminated.

#### **1. Backup Intake**

The Berkeley Springs water treatment facility obtains water from springs at Berkeley Springs State Park. Warm Springs Run is the nearest alternative water source, flowing through Berkeley Springs State Park and into Berkeley Springs. The USGS Surface-Water Database reports instantaneous-data for Warm Springs Run from October 2011 to present. According to the data collected within that time, Warm Springs Run has a minimum mean daily discharge of 2.0 cubic feet per second (cfs), or 898 gpm. However, the minimum stream flow stream flow reported by the DEP database was only 0.101 cfs, or 45.3 gpm.

The treatment facility requires a flow rate of at least 220 gpm to supply Berkeley Springs' average water demand. The minimum supply is satisfied by Warm Springs Run during normal conditions, but is not during low flow conditions. Due to the inconsistent stream flow characteristics, Warm Springs Run was not evaluated in the feasibility matrix.

The Potomac River does maintain adequate flow to supply Berkeley Springs average water demand. The USGS Surface-Water Database records a minimum mean daily discharge of 164 cfs, or 73,608 gpm, satisfying the treatment requirements. Thus, the construction of a backup intake located on the Potomac River near the location shown on the map in **Appendix E** including 14,000 feet of 6" raw water line from the intake to the water treatment facility will be considered in the feasibility analysis.

#### **2. Interconnection**

Berkeley Springs is not currently interconnected with another utility. The only water producing utility within reasonable proximity is Warm Springs PSD, located 11.4 miles south from the Berkeley Springs system at the Industrial Park on U.S. Route 522. Warm Springs PSD has a treatment capacity of 60,500 GPD and produces an average of 3,000 GPD. Berkeley Springs currently consumes an average of 316,900 GPD. If Berkeley Springs were to become fully reliant, the required production by Warm Springs PSD is calculated to be:

$$3,000 \text{ GPD} + 316,900 \text{ GPD} = 319,900 \text{ GPD}$$

Therefore, an interconnection with Warm Springs PSD could not support the average demand of Berkeley Springs and was not evaluated in the feasibility matrix.

### 3. Existing Water Storage

Berkeley Springs total water storage capacity is 1,106,000 gallons comprised of five (5) treated water storage tanks, and one (1) raw water storage tank. According to the most recent monthly operating reports provided by the utility, the water treatment facility produces an average of 316,900 GPD and the maximum quantity produced in the last year was 521,400 gallons.

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

$$521,400 \text{ gallons per day} \times 2 \text{ days} = 1,042,800 \text{ gallons}$$

Therefore, the system currently meets the minimum required system water storage capacity. Berkeley Springs' days of water storage is calculated to be:

$$\frac{1,106,000 \text{ gallons}}{521,400 \text{ gallons per day}} = 2.12 \text{ days}$$

The use of existing treated water storage providing Berkeley Springs with approximately 2.12 days of water storage based on maximum production was analyzed in the feasibility matrix.

### 4. Additional Water Storage

In the event the utility wished to implement supplemental source water protection, additional water storage could be constructed. The WV BPH requires that all distribution tanks be controlled to provide an adequate turn-over of at least twenty percent (20%) of the total volume each 24 period, i.e., no more than five (5) days of treated water storage based on average production. The maximum treated water storage Berkeley Springs could retain is calculated to be:

$$316,900 \text{ gallons per day} \times 5 \text{ days} = 1,584,500 \text{ gallons}$$

Therefore, the maximum additional treated water storage Berkeley Springs could construct is calculated to be:

$$1,584,500 \text{ gallons} - 1,106,000 \text{ gallons} = 478,500 \text{ gallons}$$

The construction a 438,000 gallon water storage tank was evaluated in the feasibility matrix, allowing for a potential decrease in water production. The utility could also construct additional raw water storage without regard to the turn-over requirement.



Matrix Document

Feasibility Matrix		Berkeley Springs Water Works			PWSID#: WV 3303301			Date: June 2016			Completed By: Project Engineer - The Thrasher Group, Inc		
Criteria	Question	Backup Intake	Feasibility	Interconnect	Existing Water Storage	Feasibility	Additional Water Storage	Feasibility	Other	Feasibility			
O and M Costs	What is the total current budget year cost to operate and maintain the PWSU (current budget year)?	\$511,920.00		\$511,920.00		\$511,920.00		\$511,920.00					
	Describe the major O&M cost requirements for the alternative?	Labor, power, materials for maintenance	2	Labor, power, materials for maintenance		No additional cost		Labor, materials for maintenance		3			
Capital Costs	What is the incremental cost (\$/gal) to operate and maintain the alternative?	\$0.00004		\$0.00004				\$0.00000		3			
	Cost comparison of the incremental O&M cost to the current budgeted cost (\$/gal)?	0.00%		0.00%				0.00%		3			
Capital Cost-Feasibility Score	Describe the capital improvements required to implement the alternative.	Construction of raw water pump station and intake line	2.7	N/A		N/A		Construction of additional water storage		3.0			
	What is the total capital cost for the alternative?	\$1,170,625.00		\$0.00		\$0.00		\$58,875.00		1			
Permitting	What is the annualized capital cost to implement the alternative, including all other costs (contingency, P&ID, etc.) (\$/gal)?	\$0.00011		\$0.00000				\$0.00006		3			
	Cost comparison of the alternative to the current budgeted cost (\$/gal)?	0.00%		0.00%				0.00%		3			
Feasibility	Provide a listing of the expected permits required and the permitting agencies involved in their approval.	WV DEP, WV DNR, ACDE, WV HMDP, US FWS, WV DOI and County Floodplain	2	N/A		N/A		WV DEP, WV DNR, ACDE, WV HMDP, US FWS and County Floodplain		3			
	What is the timeline for permit approval for each permit?	WV DEP (90 days), WV DNR (90 days), US FWS (90 days), WV HMDP (90 days) and County Floodplain (90 days)	2	N/A		N/A		WV DEP (90 days), WV DNR (90 days), ACDE (90 days), WV HMDP (90 days), US FWS (90 days) and County Floodplain (90 days)		3			
Resilience	Describe the major requirements in obtaining the permits (environmental impact studies, public hearings, etc.)	Environmental Impact studies, water sampling	1	N/A		N/A		Environmental impact studies		3			
	Does the implementation of the alternative require regulatory acceptance or variances?	No	2	N/A		N/A		No		3			
Feasibility-Feasibility Score	Will the alternative be needed on a regular basis or only used intermittently, but can be used permanently?	Intermittently, but can be used permanently	2.0	N/A		Intermittently		Intermittently		3.0			
	How will implementing the alternative affect the PWSU's current method of treating and delivering potable water, including drinking water? (e.g., drinking water regulations? (e.g., in the case of storage, will the alternative increase the likelihood of disinfection byproduct?))	No impact	3		N/A		No impact		No impact		3		
Resilience-Feasibility Score	Will the alternative provide any advantages or disadvantages to meeting seasonal demands in demand?	Yes	3	N/A		No		No		3			
	Will the alternative be expandable to meet the growing needs of the service area?	Drought may limit availability of water	2	N/A		Brought may limit availability of water		Brought may limit availability of water		2			
Institutional Requirements	Identify any agreements or other legal instruments with governmental entities, private institutions or other PWSU required to implement the alternative.	None	3	N/A		N/A		None		3			
	Are any development/planning restrictions in place that can act as a barrier to the implementation of the alternative.	No	3	N/A		N/A		No		3			
Environmental Impacts	Identify potential land acquisition and easements requirements.	Property acquisition for pump station and easements for waterline	1	N/A		N/A		None		3			
	Identify any environmentally protected areas or habitats that might be impacted by the alternative.	None are known.	2.0	N/A		N/A		None		3.0			
Aesthetic Impacts	Identify any visual or noise issues caused by the alternative that may require mitigation measures that will be required to address aesthetic impacts?	Fencing and control joint for pump station	3	N/A		N/A		None		3.0			
	Identify the potential stakeholders affected by the alternative.	Water Customers	3	N/A		N/A		Water Customers		3			
Stakeholder Issues	Identify the potential issues with stakeholders for and against the alternative.	Rate increase may be needed to implement construction	1	N/A		N/A		Rate increase may be needed to implement construction		2			
	Will stakeholder concern represent a significant barrier to implementation or assistance of the alternative?	No	2	N/A		N/A		No		3			
Comments	There are no known utilities that can supply adequate capacity for the treatment facility.					Utilize existing water storage to intermittently continue service during an emergency.							
	Supplement existing water storage for additional source water protection.												

Alternative Strategy Description	Berkeley Springs Water Works										Date: June 2016										Completed By: Project Engineer - The Thrasher Group, Inc.									
	Economic Criteria					Technical Criteria					Environmental Criteria					Environmental Criteria					Total Capital Cost	Comments								
	Operation & Maintenance Csts	Capital Csts	Total	Total %	Weighted Total	Permitting	Flexibility	Resilience	Historical Requirements	Total	Total %	Weighted Total	Environmental Impacts	Aesthetic Impacts	Stakeholder Issues	Total	Total %	Weighted Total	Final Score											
Backup Intake	2.7	5.3	88.9%	85.6%	2.0	3.0	2.7	2.3	10.0	83.3%	33.3%	2.0	3.0	3.0	7.0	77.8%	35.6%	84.6%	\$1,170,625.00											
Inferconnect	-	0.0	0.0%	0.0%	-	-	-	0.0	0.0%	0.0%	0.0%	-	-	-	0.0	0.0%	0.0%	-	\$0.00	There are no known utilities that can supply adequate capacity for the treatment facility.										
Existing Water Storage	3.0	6.0	100.0%	40.0%	3.0	2.5	2.3	10.8	90.3%	36.1%	3.0	3.0	3.0	9.0	100.0%	20.0%	96.1%	\$0.00	Utilize existing water storage to intermittently continue service during an emergency.											
Additional Water Storage	3.0	2.3	88.9%	35.6%	3.0	2.5	2.3	10.8	90.3%	36.1%	3.0	3.0	2.7	8.7	96.3%	19.3%	90.9%	\$638,875.00	Implement existing water storage to provide source water protection.											
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A fifth alternative was not evaluated.										

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.

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# APPENDIX E. SUPPORTING DOCUMENTATION