

FOR PUBLIC RELEASE

Source Water Protection Plan Pendleton Co Psd(Brandywine)

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Pendleton County

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In cooperation with Pendleton Co Psd(Brandywine)
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.

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SOURCE WATER PROGRAM ACRONYMS

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

1.0 PURPOSE

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

The intent of this document is to describe what Pendleton Co Psd(Brandywine) 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, Pendleton Co Psd(Brandywine) 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 Pendleton Co Psd(Brandywine) 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

PENDLETON CO PSD(BRANDYWINE) 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 PENDLETON CO PSD(BRANDYWINE)

| | | | |
|--|-------------|--|------------|
| Administrative office location: | | 200 Confederate Road, Franklin, PENDLETON, WV, 26807 | |
| Is the system a public utility, according to the Public Service Commission rule? | | Yes | |
| Date of Most Recent Source Water Assessment Report: | | 1/1/2003 | |
| Date of Most Recent Source Water Protection Plan: | | 7/1/2019 | |
| Population served directly: | | 692 | |
| Bulk Water Purchaser Systems: | System Name | PWSID Number | Population |
| Total Population Served by the Utility: | | 692 | |
| Does utility have multiple Source Water Protection Areas(SWPAs)? | | No | |
| How many SWPAs does the utility have? | | 1 | |

5.0 WATER TREATMENT AND STORAGE

As required, Pendleton Co Psd(Brandywine) 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 Pendleton Co Psd(Brandywine) 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. Pendleton Co Psd(Brandywine) Water Treatment Information

| Default Facility | |
|--|--|
| Water treatment processes (in order of occurrence) includes: | Raw water is drawn from the South Fork of the South Branch of the Potomac River through an infiltration trench consisting of 60' of 10" perforated PVC pipe and wetwell., The raw water is pumped into a pre-sediment tank before going to the absorption clarifiers (Del Pac and Soda Ash) and filters., After the filters, the water is treated with Chlorine and Flouride and held in the Clearwell under the plant., From the clearwell, the finished water is pumped into the system., The treatment process includes coagulation, flocculation, sedimentation, filtration, and disinfection. |
| The treatment capacity is approximately (GPD): | 288,000 |
| Current average production is approximately (GPD): | 35,000 |
| Maximum gallons of water treated and produced at that plant in one day during the past year was: | 202,000 |
| Minimum gallons of water treated and produced at that plant in one day during the past year was: | 12,000 |
| Plant is operated an average of hours a day: | 3 |
| Maximum number of hours of operation in one day at that plant during the past year was: | 16 |
| Minimum number of hours of operation in one day at that plant during the past year was: | 1 |
| How many storage tank(s) are maintained on systems distribution system: | 3 |
| Total gallons of treated water storage: | 270,000 |
| Total gallons of raw water storage (GALs): | 102,000 |

Table 3. Pendleton Co Psd(Brandywine) 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) |
|------------------|------------|----------------------------------|---|---------------|-----------------------------|---|-----------------------------------|
| SOUTH FORK RIVER | 3491059 | PENDLETON PSD - SOUTH FORK RIVER | 4 – 10” perforated pipes 60’ in length each | IN001 | 1/1/2006 | Permanent | Active |

Table 4. Pendleton Co Psd(Brandywine) 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) |
|------------------|------------|------------|-----------------------------|--------------------------------------|-----------------|--------------------|----------------|---|-----------------------------------|
|------------------|------------|------------|-----------------------------|--------------------------------------|-----------------|--------------------|----------------|---|-----------------------------------|

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 | South Fork |
| Size of WSDA (Square Miles) | 102 |
| River Watershed Name (8-digit HUC) | South Branch Potomac - 02070001 |
| Size of Zone of Critical Concern (Acres) | 16740 |
| Size of Zone of Peripheral Concern (Acres) (Include ZCC area) | 19952 |
| Do you blend with ground water | No |
| Do you have an intake or well/spring missing from the list? | No |

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 Pendleton Co Psd(Brandywine) 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.

Pendleton Co Psd(Brandywine) 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 |
|--|------------------------------|--------------------------------|---------------|------------------------|
| French Moates | Pendleton Co Psd(Brandywine) | Chairman of Board | (304)249-5647 | f_469@yahoo.com |
| | Pendleton Co Psd(Brandywine) | | | |
| Brooke Hott R.S. | Pendleton Co Psd(Brandywine) | Sanitarian | (304)358-7565 | brooke.l.hott@wv.gov |
| | Pendleton Co Psd(Brandywine) | | | |
| Bruce Minor | Pendleton Co Psd(Brandywine) | Office Contact | (304)358-3889 | tact12000@yahoo.com |
| | Pendleton Co Psd(Brandywine) | | | |
| Darrell Bodkin | Pendleton County PSD | Board Member | (304)358-7897 | dwbodkin@hotmail.com |
| Gene McConnell | Pendleton County Commission | President of County Commission | (304)567-2211 | genemc@spruceknob.net |
| Tammy George | Pendleton County PSD | Office Manager | (304)358-3027 | pendcopsd@frontier.com |
| Date of First Protection Team Meeting: | | | | |
| Protection Team Meeting was held Thursday, May 12, 2016 at Pendleton Co Psd(Brandywine). Meeting minutes attached in Appendix E. | | | | |
| Letter mail outs along with direct communications. Downstream Strategies provided a list of potential team members to use as a reference. Downstream also provided assistance in placing the advertisement for the public meeting. Meeting was held with protection team members. Public meeting had one (1) person attend outside of protection team. No comments at this time. PUBLIC MEETING JUNE 21, 2019 11:00 AM PENDLETON CO COMMUNITY BLDG | | | | |

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 Pendleton Co Psd(Brandywine) 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

drains, dry wells, or old dumps and mines.

The Pendleton Co Psd(Brandywine) 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 Pendleton Co Psd(Brandywine) 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.



8.3. PRIORITIZATION OF THREATS AND MANAGEMENT STRATEGIES

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

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

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

A list of these priority PSSCs was selected and ranked by the Pendleton Co Psd(Brandywine) 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

Pendleton Co Psd(Brandywine) 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. Pendleton Co Psd(Brandywine) 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 |
|--|-----------------|---|
| Highway Traffic and Maintenance | 1 | Sugar Grove Road (County Route 21) runs along the South Fork South Branch River upstream of the source water intake. If a highway accident were to occur, spilled materials could potentially contaminate the source water. |
| Agricultural Land Uses | 2 | Pesticides and other chemicals used for farm operations can migrate into the water supply. Concentrated animal feeding operations for poultry production are common in the watershed. Poultry litter is spread on fields seasonally in the SWPA. Direct access into the stream not only introduces animal waste (containing E. coli, as well as other potentially harmful bacteria and parasites) into the water directly, but also leads to bank instability and erosion. |
| Septic Tanks and Sewer Systems | 3 | There are residential septic systems in the protection watershed. Failing septic systems can leach into surrounding soils or run off into surface water. Untreated runoff can increase bacterial concentrations in source water, especially when the river is at low flow conditions. Under normal operating conditions privately owned sewage treatment systems (package plants) and injection wells would not be expected to contaminate source water. However, accidental raw sewage overflows or emergencies at the plant may allow untreated sewage to contaminate the surface water source. Untreated sewage contains total coliform, particularly E. coli, along with other bacteria and parasites that could negatively impact human health if treatment processes are not adjusted to address the contamination. |
| Power Line, Pipeline, and Highway Rights-of-Way | 4 | Right-of-ways are typically maintained with herbicides that can migrate into the water supply. Highway road salt use can also migrate into the water supply. |
| Vehicle Maintenance Areas with Fuel Storage and Junkyard | 5 | Oils, antifreeze, and other automobile fluids can cause contamination of water sources if not cleaned up and disposed of properly. Above ground and Underground Storage Tanks (USTs), particularly those at historic sites, may leak and contaminate groundwater sources. In addition, stormwater runoff from industrial and commercial sites, including wood products companies may also contain automotive fluids and other substances that if not managed properly could contaminate water resources. |
| Fish kills and intersex fish concerns in the Potomac River and Shenandoah River watersheds | 6 | Fish kills and intersex fish have been observed in areas of the Potomac and Shenandoah River watersheds. Many theories exist to explain the fish kills and intersex fish all relating to excess nutrients and contaminants in the watershed, such as poultry and livestock waste, commercial fertilizers, and pharmaceuticals and personal care products discharged through septic and waste water treatment plants. The United States Geological Survey (USGS) has conducted several studies to try to determine the potential cause. |

Table 9. Priority PSSC Management Strategies

| PSSC or Critical Area | Management Activity | Responsible Protection Team Member | Status / Schedule | Comments | Estimated Cost |
|--|--|------------------------------------|-------------------|----------|----------------------------------|
| Fish kills and intersex fish concerns in the Potomac River and Shenandoah River watersheds | Keep abreast of any further monitoring and research performed by the USGS or other agencies/groups. See Table 10 below for additional strategies related to education and outreach about pharmaceuticals. | Pendleton County PSD | Ongoing | | Meeting with officials. |
| Highway Traffic and Maintenance | Continue to coordinate with emergency officials to be better prepared in the event of a hazardous spill. Explore the possibility of erecting signs within the SWPA to alert motor carriers of the emergency number(s) to call should a spill occur. Contact carriers that transport materials within the SWPA and identify the types of materials commonly transported. This information will be used to inform and properly prepare emergency response personnel. | Pendleton County PSD | Ongoing | | Signage, meeting with officials. |

Table 9. Priority PSSC Management Strategies

| PSSC or Critical Area | Management Activity | Responsible Protection Team Member | Status / Schedule | Comments | Estimated Cost |
|------------------------|--|------------------------------------|-------------------|--------------------------|-------------------------------|
| Agricultural Land Uses | <p>WV Rural Water Association has on staff, Lew Baker, funded through the USDA's Farm Service Agency to assist in Source Water Protection and the development of plans that outline voluntary measures that local farmers can implement to protect water. Mr. Baker may be able to work with the operator to further develop education/outreach activities to communicate with the local livestock owners. Mr. Baker can be contacted at (304) 201-1689 or lbaker@cityynet.net. 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 best management practices (BMPs) for nutrient management, pesticide use, pest management, waste oil disposal, safe chemical handling and/or safe chemical storage. Consider working with the local Future Farmers of America members to distribute educational materials and BMPs information. Work with these agencies, the livestock owners, and WV Rural Water Association to restrict direct access to the source water by livestock.</p> | Office Manager / Water Department | Ongoing | Nothing new at this time | Meeting with property owners. |

Table 9. Priority PSSC Management Strategies

| PSSC or Critical Area | Management Activity | Responsible Protection Team Member | Status / Schedule | Comments | Estimated Cost |
|---|---|------------------------------------|-------------------|---|--|
| <p>Vehicle Maintenance Areas with Fuel Storage and Junkyard</p> | <p>Communicate with facility owners the need for them to properly dispose of oil and other automobile products. Ask them to follow regulations and institute BMPs to contain and clean up spills. One such regulation is installing secondary containment around above ground storage tanks and/or chemical storage areas. Monitor compliance with state environmental regulations. Provide owners or operators with copies of material on underground storage tank maintenance. Consider whether fuel distributors are compliant with rules regarding USTs and leaking underground storage tanks (LUSTs). If you suspect an issue with an UST or LUST, contact the W/DEP at (304)926-0499 and ask for the Underground Storage Tank Staff for an inspection. Determine if stormwater management at commercial/industrial facilities includes oil/grease separators. Remind owners/operators to maintain the separators and dispose of petroleum products responsibly to prevent them from entering water resources. Inquire about facilities' GPPs and ask that the facilities consider the source water in planning and implementing BMPs.</p> | <p>Pendleton County PSD</p> | <p>Ongoing</p> | <p>Containment Tanks have been utilized at several of the facilities.</p> | <p>Meetings with property owners. Educational hand out material.</p> |

Table 9. Priority PSSC Management Strategies

| PSSC or Critical Area | Management Activity | Responsible Protection Team Member | Status / Schedule | Comments | Estimated Cost |
|---|--|------------------------------------|-------------------|----------|--------------------------|
| Power Line, Pipeline, and Highway Rights-of-Way | Contact the electric utility to determine the herbicides used within the ROW and any other chemicals used. Herbicide labeling is developed with guidance from the USEPA providing information on application. This guidance has been developed with public health in mind and may list restrictions for application to prevent herbicide migration into water supplies. Communicate the boundaries of the SWPA to raise awareness with utility company to ensure BMPs. | Pendleton County PSD | Ongoing | | Meetings with officials. |
| Power Line, Pipeline, and Highway Rights-of-Way | n/a | n/a | Not Started | | |
| Power Line, Pipeline, and Highway Rights-of-Way | n/a | n/a | Not Started | | |

Table 9. Priority PSSC Management Strategies

| PSSC or Critical Area | Management Activity | Responsible Protection Team Member | Status / Schedule | Comments | Estimated Cost |
|--------------------------------|--|------------------------------------|-------------------|--|-------------------------------|
| Septic Tanks and Sewer Systems | <p>Work with the county health department to identify areas in the SWPA where home owners may need to install septic system or service existing systems. Consider teaming with community to identify areas that would benefit from a cluster system or waste water line extension to eliminate straight pipes and/or malfunctioning septic systems. Meet with local sewer system operators to review the system's standard operating and emergency procedures.</p> | Office Manager / Sanitarian | Ongoing | Team knows of some unregulated tanks – plan on contacting. | Meeting with property owners. |

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. Pendleton Co Psd(Brandywine) 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 |
|---------------------------------|--|------------------------------------|-------------------|---------------------|----------------|
| CCR-Pharmaceuticals | <p>Due to recent heightened concerns about the effects of pharmaceuticals in surface water bodies, include in the 2012 CCR information about pharmaceuticals and how to properly dispose of them. Obtain and distribute pamphlets developed by the Ohio River Valley Water Sanitation Commission regarding pharmaceutical disposal. This pamphlet can be viewed and possibly ordered from: http://orsanco.org/index.php/brochures</p> | Pendleton County PSD | Ongoing | Provide as required | Mailouts |

Table 10. Education and Outreach Implementation Plan

| Education and Outreach Strategy | Description of Activity | Responsible Protection Team Member | Status / Schedule | Comments | Estimated Cost |
|--|--|------------------------------------|-------------------|--|-----------------|
| <p>Drinking Water Protection Signs</p> | <p>Erecting Drinking Water Protection Signs along highways is a common awareness strategy in some states and recommended by the USEPA. Signs are placed to alert the public to the SWPA and about what to do in case of accidental spills. The WW Division of Highways (WVDOH) has not approved the placement of signs along or adjacent to state highway rights of way for the purposes of source water protection, except for specific sensitive areas. If you believe erecting signs along a state highway is imperative to your source water protection, please contact Cindy Cramer P. E., Director, Traffic Engineering Division at 304-558-3063. She may be reached via e-mail: Cindy.L.Cramer@ww.gov. If approved the WVDOH may place and maintain signs along state highways at mutually acceptable locations. In addition, the WVDHHR recommends erecting awareness signs in public areas and along city streets not associated with state highways. If interested in erecting Drinking Water Protection Signs, contact the WVDHHR SWAP program at 304-</p> | <p>Pendleton County PSD</p> | <p>Ongoing</p> | <p>Protection signs have been installed at some tank locations</p> | <p>Signage.</p> |

Table 10. Education and Outreach Implementation Plan

| Education and Outreach Strategy | Description of Activity | Responsible Protection Team Member | Status / Schedule | Comments | Estimated Cost |
|---------------------------------|--|------------------------------------|-------------------|---|--|
| | 558-2981. The WVDHHR may distribute standard signs or provide financial support through a Source Water Protection Grant. The water system will be responsible for erecting and maintaining the signs in public areas and along city streets. | | | | |
| Drinking Water Protection Signs | n/a | n/a | Not Started | | |
| Media Campaign | Work with the local television stations to post source water and drinking water fact bulletins on public access television. | Pendleton County PSD | Not Started | Review the possibility of adding social media as a source | Meeting with the stations – air time. Web design. |
| Media Campaign | n/a | 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 | <p>Send a letter and/or brochure providing educational information to residences and businesses. 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. See Appendix E for example letters and brochure that can be customized. Funding for the brochures may be available through the Wellhead and Source Water Protection Grant Program. Several organizations provide information and resources on the internet, related to certain source water concerns and PCSs. The utility will consider obtaining these materials when needed, to educate the community. Examples of these resources are described below. 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: http://www.yourwaterdecision.org and may assist in community planning and development. USEPA Water Sense Simple Steps to</p> | Entire team | Ongoing | Additional information to be reviewed from WWRWA. | Additional Handouts. |

Table 10. Education and Outreach Implementation Plan

| Education and Outreach Strategy | Description of Activity | Responsible Protection Team Member | Status / Schedule | Comments | Estimated Cost |
|------------------------------------|---|------------------------------------|-------------------|--|----------------|
| | 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: http://www.epa.gov/watersense/docs/ws_simplestps508.pdf | | | | |
| Brochures, Pamphlets, and Letters | n/a | n/a | Not Started | | |
| Brochures, Pamphlets, and Letters | n/a | n/a | Not Started | | |
| Brochures, Pamphlets, and Letters | n/a | n/a | Not Started | | |
| Brochures, Pamphlets, and Letters | n/a | n/a | Not Started | | |
| Partner with Watershed Association | Partner with local watershed associations or other civic groups. These groups may have similar goals and available volunteers that can integrate source water protection into their efforts. | Pendleton County PSD | Not Started | Contact local Watershed groups to get them involved. | |

Table 10. Education and Outreach Implementation Plan

| Education and Outreach Strategy | Description of Activity | Responsible Protection Team Member | Status / Schedule | Comments | Estimated Cost |
|---------------------------------|---|------------------------------------|--------------------|--|--|
| <p>School Curricula</p> | <p>Work with the school system to incorporate source water activities into the school curricula. One example of school curricula is Project WET. For more information regarding free workshops to educate area teachers on Project WET, visit http://www.dep.wv.gov/WWE/getinvolved/WET/Pages/default.aspx, or contact the WDEP at 304-926-0495. In addition, the USEPA offers free educational materials for teachers and students, including classroom lessons, fact sheets, and interactive games and activities, for grades K-12. These materials can be accessed at the following websites. For general source water protection: http://www.epa.gov/safewater/kids/index.html. For water conservation: http://www.epa.gov/watersense/resources/educational_materials.html. Similar protection and conservation related resources can be found at the Groundwater Foundation website; http://www.groundwater.org/kc/kc.html. Visit school or invite students for a plant tour to tie in with school curricula. Ask the school to include message in school newsletter to raise awareness about</p> | <p>Pendleton County PSD</p> | <p>Not Started</p> | <p>Approach school system to see if there is interest.</p> | <p>Meeting with schools – educational material</p> |

Table 10. Education and Outreach Implementation Plan

| Education and Outreach Strategy | Description of Activity | Responsible Protection Team Member | Status / Schedule | Comments | Estimated Cost |
|-------------------------------------|---|------------------------------------|-------------------|--|----------------|
| | source water protection and conservation. | | | | |
| School Curricula | n/a | n/a | Not Started | | |
| School Curricula | n/a | n/a | Not Started | | |
| School Curricula | n/a | n/a | Not Started | | |
| Consumer Confidence Report | The water system publishes a Consumer Confidence Report (CCR) annually, as required by the Safe Drinking Water Act, which is sent to all water customers. Information concerning the Source Water Assessment is included in the CCR. In the future, the system will include a reference to this source water protection plan and how customers can access a copy. | Pendleton County PSD | Ongoing | Provide as required | Mailouts |
| Consumer Confidence Report | n/a | n/a | Not Started | | |
| Emergency Planning and Coordination | Participate with local fire departments and County Emergency Services on a regular basis. This will ensure that all the agencies are in constant communication with one another and prepared in the event of an emergency. | Pendleton County PSD / OES | Ongoing | Continue coordination with both entities | |

Table 10. Education and Outreach Implementation Plan

| Education and Outreach Strategy | Description of Activity | Responsible Protection Team Member | Status / Schedule | Comments | Estimated Cost |
|---------------------------------|---|--|-------------------|--|----------------|
| Public Meeting | Hold 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. This meeting could be structured as a water fair/public event with drinking water displays and activities. This can be combined with activities of the local watershed associations. | Entire Protection Team | Ongoing | Add SWPP to the agenda of council meetings to invite public and update information | |
| County Fair and Festivals | Consider providing information on source water protection for the County Health Department's booth at the County Fair, should they have one. | Pendleton County PSD / Health Dept / OES | Not Started | Review the possibility of getting a booth. | Booth rental |
| Plant Tours | Provide tours of the water plant to interested organizations such as watershed groups, schools, and civic organizations. Tours will be offered as requested. Organize a tour with local Emergency Responders to make them familiar with the facilities in the event of an emergency. | Pendleton County PSD | Not Started | Need to schedule an event to see if there is interest | |
| Plant Tours | n/a | 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 Pendleton Co Psd(Brandywine) 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. Pendleton Co Psd(Brandywine) Water Shortage Response Capacity

| | |
|---|---|
| Can the water utility isolate or divert contamination from the intake and groundwater supply? | Yes |
| 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: | Manually closing valves |
| 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? | 6.8 days on average production, 1.99 days based on single day peak production |
| Describe the process to close the intake: | Manually close valve |
| Describe the treated water system's storage capacity of the water system: | 1 – 70,000 gallon tank 2 – 100,000 gallon tanks |
| Gallons of storage capacity (raw water) | 0 |
| Gallons of storage capacity (treated water) | 0 |
| Is the Utility a member of WWRWA Emergency Response Team?: | Yes |
| Is the Utility a member of WV-WARN?: | Yes |
| List other agreements to provide receive assistance in case of emergency: | n/a |

11.2. OPERATION DURING LOSS OF POWER

Pendleton Co Psd(Brandywine) 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: | There is currently a 400 amp manual transfer switch in place that would allow generator hook up for the entire plant including the intake structure. |
| What do you have (KW)? | 65.00 |
| What do you need (KW)? | 65.00 |
| Can you connect to a generator at the treatment facility?: | Yes |
| Please provide a scenario that best describes your system: | There is currently a 400 amp manual transfer switch in place that would allow generator hook up for the entire plant including the intake structure. |
| What do you have (KW)? | 65.00 |

| | | | |
|--|--|--------------------|---------------|
| What do you need (KW)? | 65.00 | | |
| 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?: | No | | |
| Hours: | | | |
| Gallons: | | | |
| Provide a list of suppliers and alternate suppliers that could provide fuel in the event of an emergency: | | Supplier | Phone Number |
| | Fuel | Franklin Oil | (304)358-2354 |
| | Generator | OES National Guard | (304)358-3889 |
| 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: | The WTP is set up with a manual transfer switch that would allow the usage of a rental (tow behind) generator to operate the plant in case of extended power outage. | | |

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. Pendleton Co Psd(Brandywine) 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 Pendleton Co Psd(Brandywine)

| | |
|--|--|
| 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: | The Naval Base was being reviewed for a potential change in ownership that is no longer in the works. The existing WTP has the capacity to cover any foreseeable growth over the next 5 years. |

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 Pendleton Co Psd(Brandywine) PSC Annual Report.

Table 14. Water Loss Information

| | | |
|---|--|------------|
| Water pumped - Total Gallons: | | 14,711,000 |
| *Water purchased - Total Gallons: | | 0 |
| Total gallons of water pumped and purchased: | | 14,711,000 |
| Total gallons of water loss accounted for except main leaks: | Mains, plaint, filters, flushing, etc - Total Gallons: | 506,940 |
| | Fire department - Total Gallons: | 28,000 |
| | Back washing - Total Gallons: | 0 |
| | Blowing settling basins - Total Gallons: | 0 |
| Total Accounted for Water Loss | | 534,940 |
| Unaccounted for lost water - Total Gallons: | | 3,076,710 |
| Water sold - Gallons: | | 10,434,350 |
| Water Lost From Main Leaks: | | 665,000 |
| Total Gallons of Unaccounted for Lost Water and Water Lost from Main Leaks: | | 3,741,710 |
| Total percent unaccounted for water | | 25 |
| Describe the measures to correct water loss greater than 15%: | Accounting for water used for backwashing, flushing, and fire department usage will provide a more accurate estimate of percent water loss. All of the District's water systems combined only have a 10.6% water loss based on the 2014 PSC annual report. The Brandywine system has reduced their overall water loss in the recent years. | |

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.

Pendleton Co Psd(Brandywine) 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? | Email notifications | |
| Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled? | No | |
| Are you prepared to detect potential 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 |
| | Cornwell Engineering Group | (757)873-1534 |
| | WVDHHR | (304)558-3530 |
| | Reliance Laboratories | (304)842-5285 |
| 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: | | Grab samples |
| Provide or estimate the capital and O&M costs for your current or proposed early warning system or upgraded system. | Capital Cost: | 68,778 |
| | O&M Cost: | 9,187 |
| 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

Pendleton Co Psd(Brandywine) 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. Pendleton Co Psd(Brandywine) 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 Pendleton Co Psd(Brandywine) 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 Pendleton Co Psd(Brandywine)'s Source Water Protection Plan. Any supporting documentation or other materials that the utility considers relevant to their plan can be found in **Appendix E**.

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

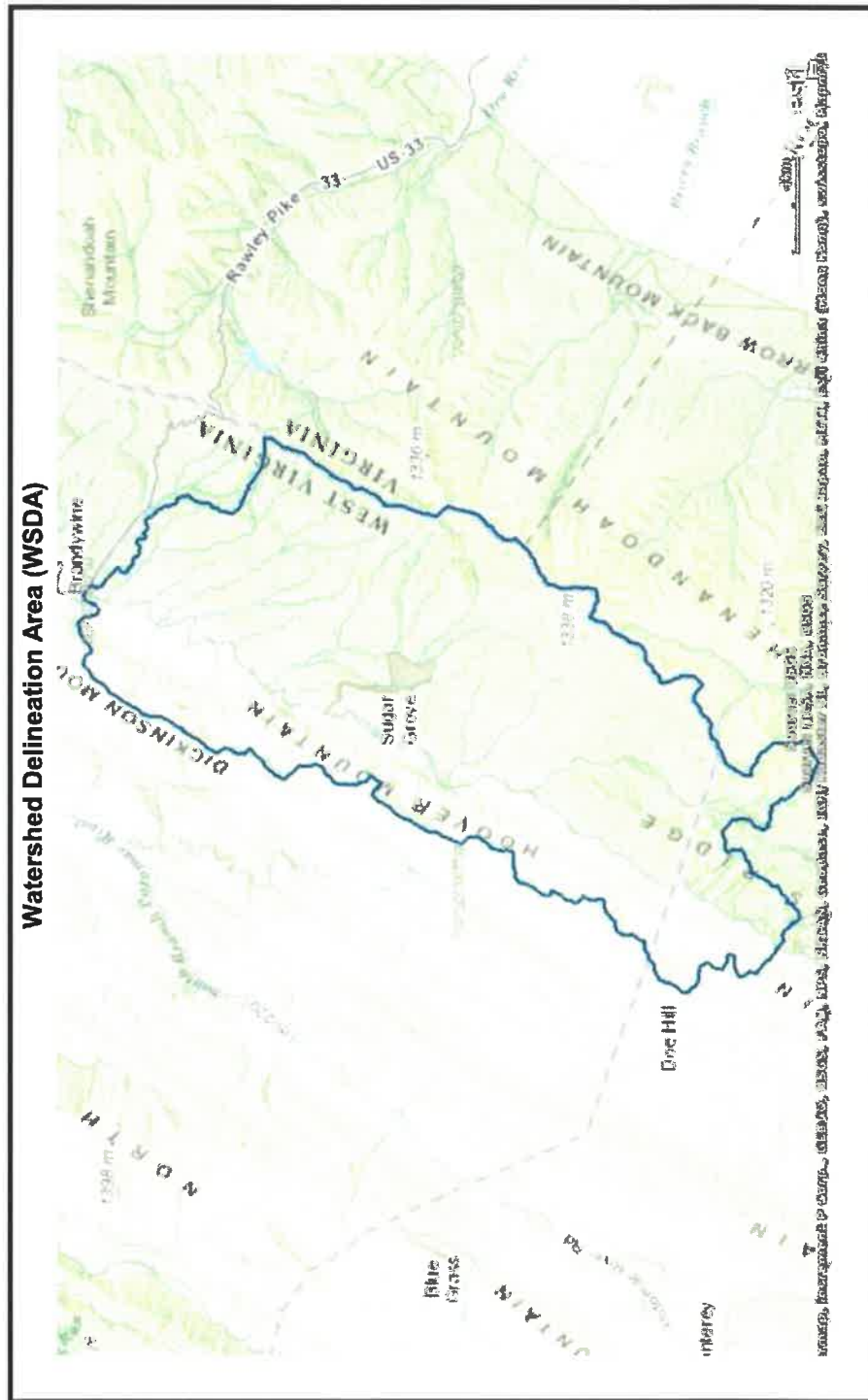
APPENDIX A. FIGURES AND TABLES

Water Source / Delineation

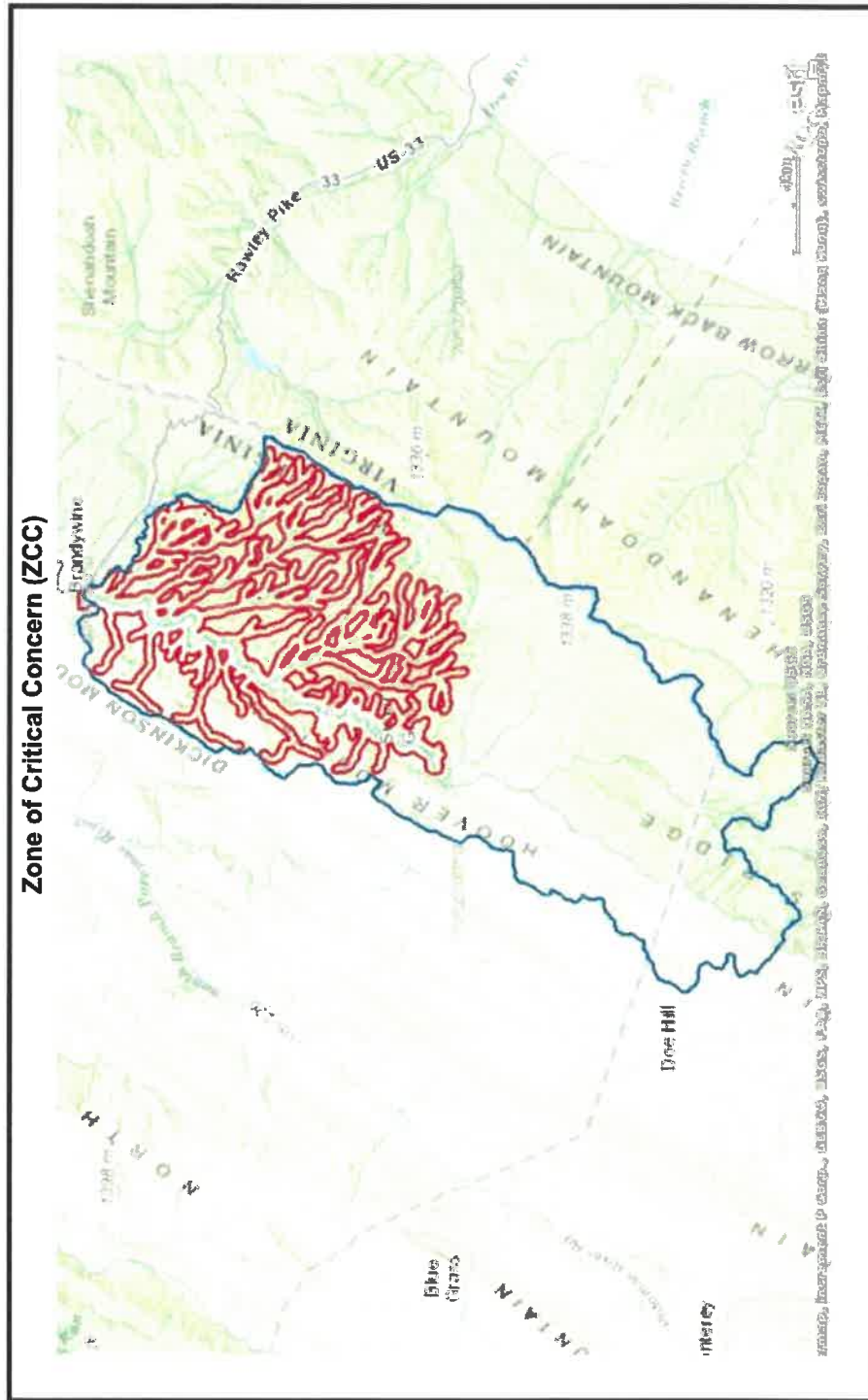
Surface Water Sources

Intake: South Fork

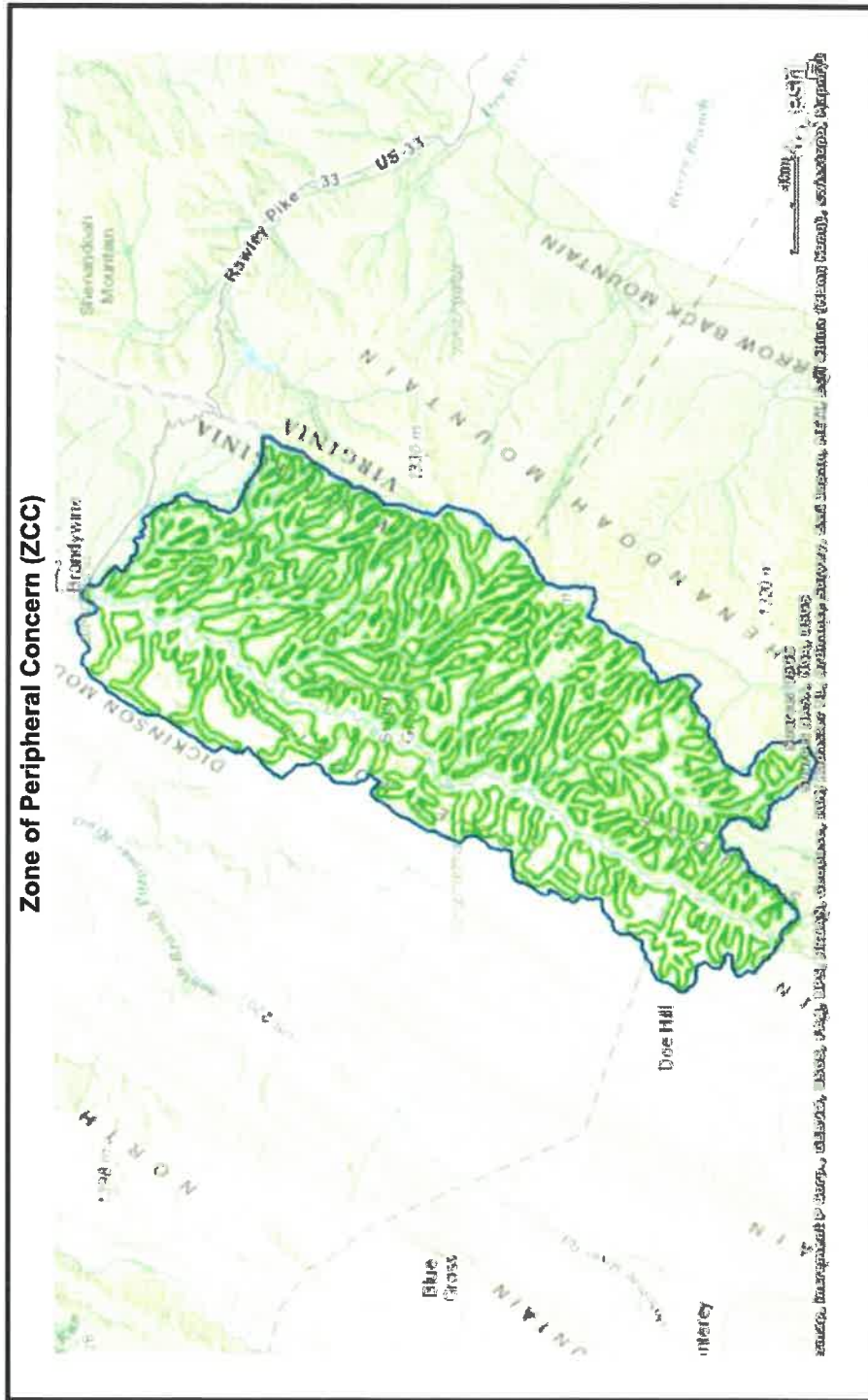
Map of watershed delineation area



Map of zone of critical Concerns



Map of zone of peripheral Concerns

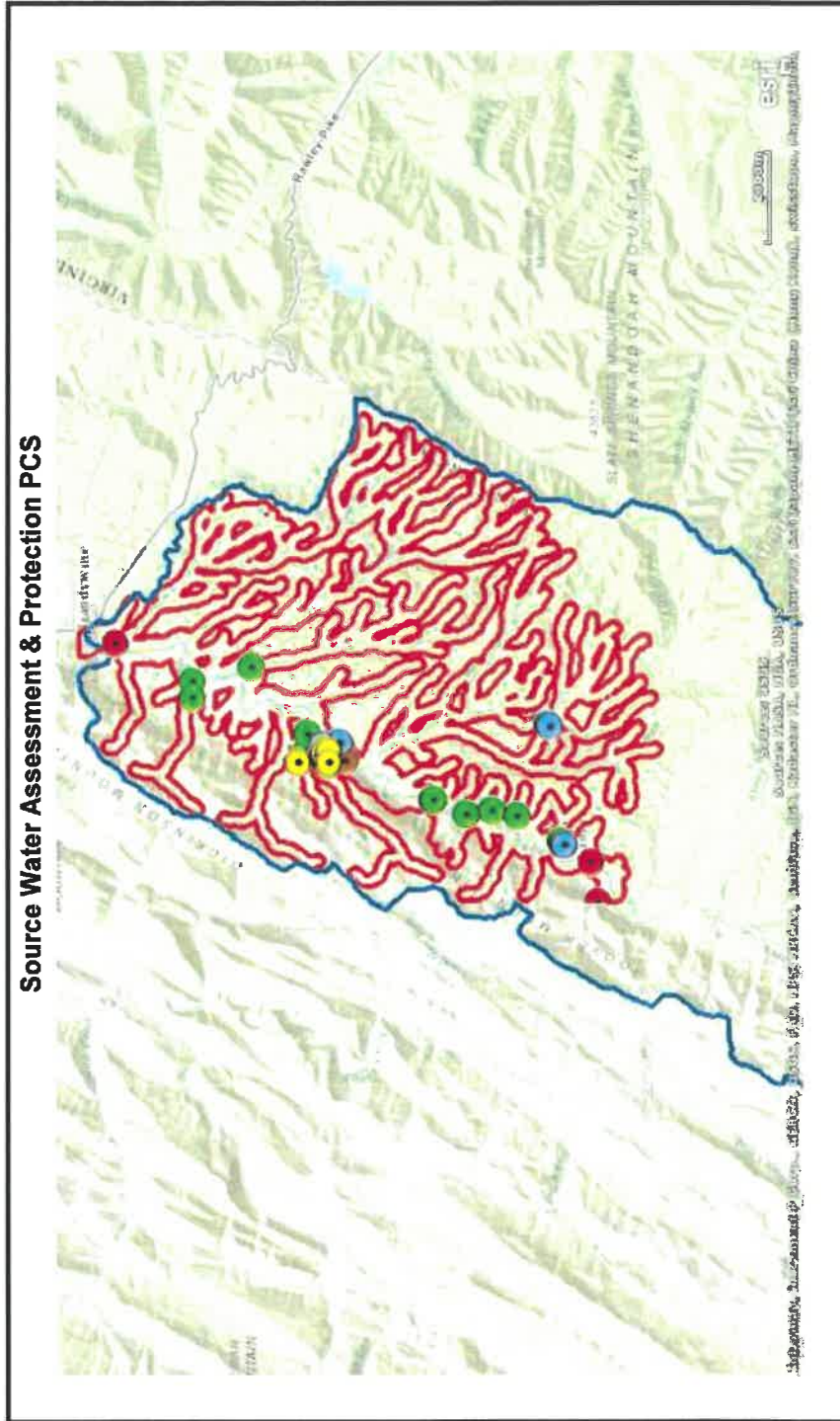


PSSC Maps

Local and Regional PSSC Map

Map of Locally Identified PSSCs

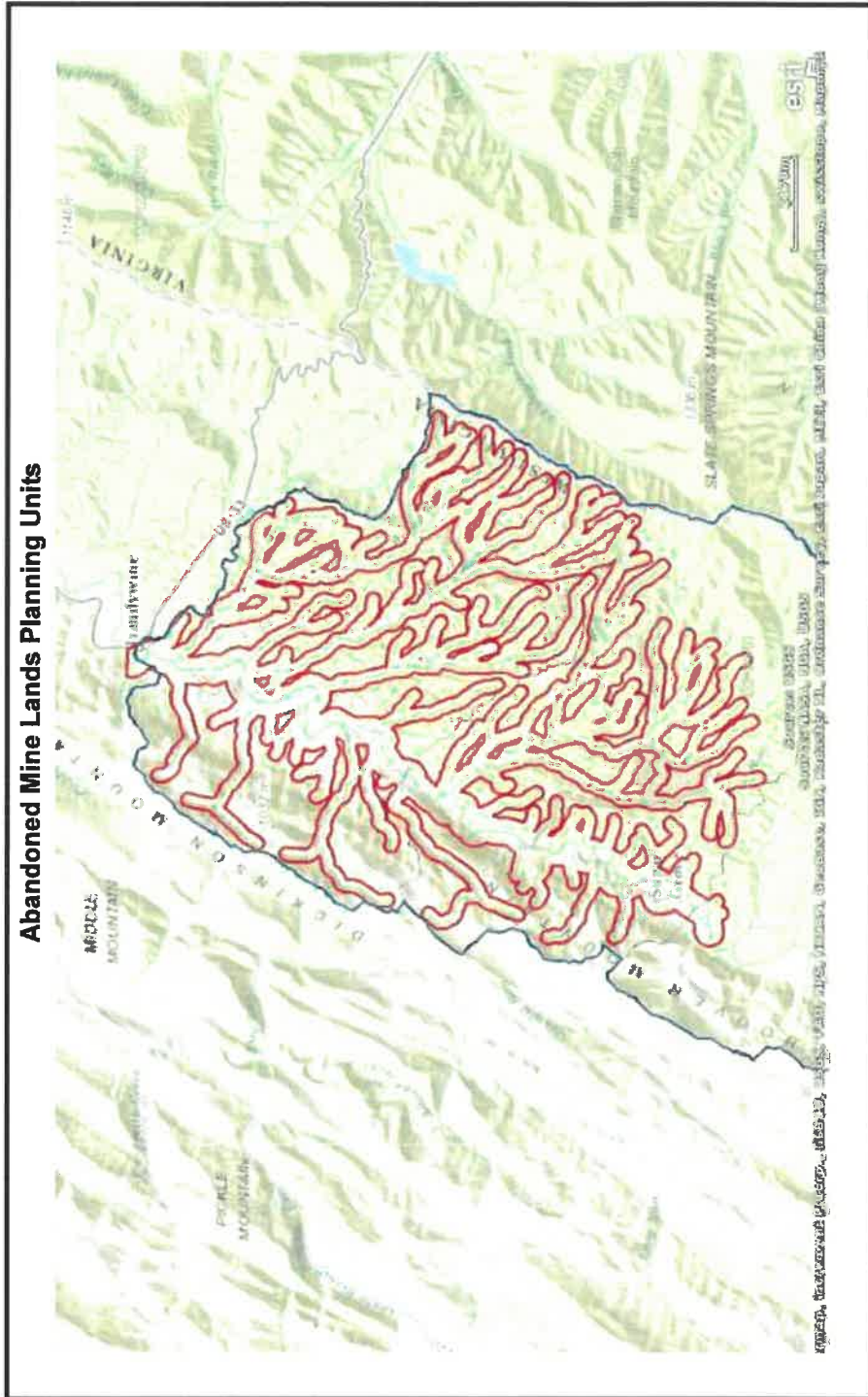
Source Water Assessment & Protection PCS

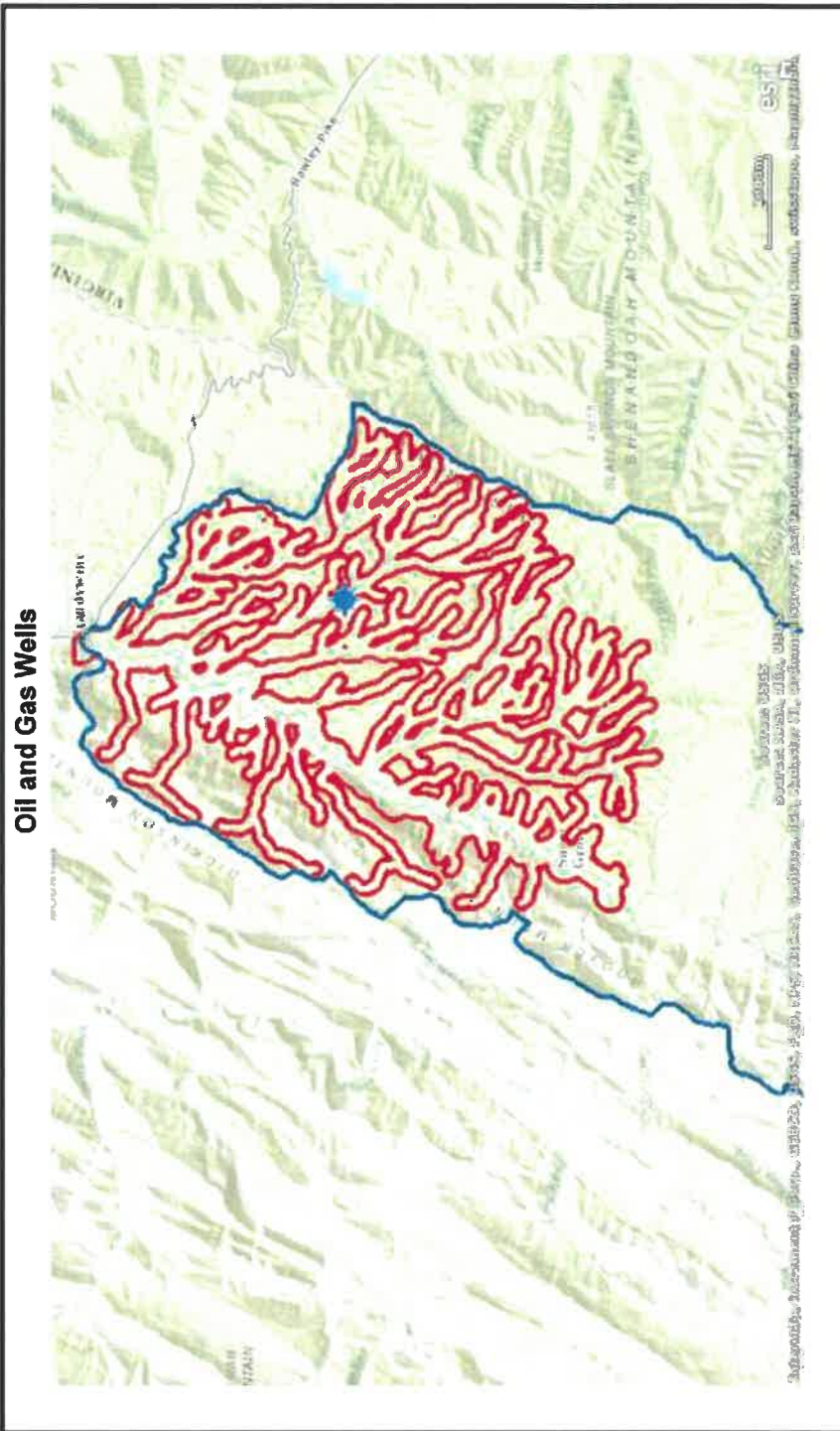


Regulated PSSC Map

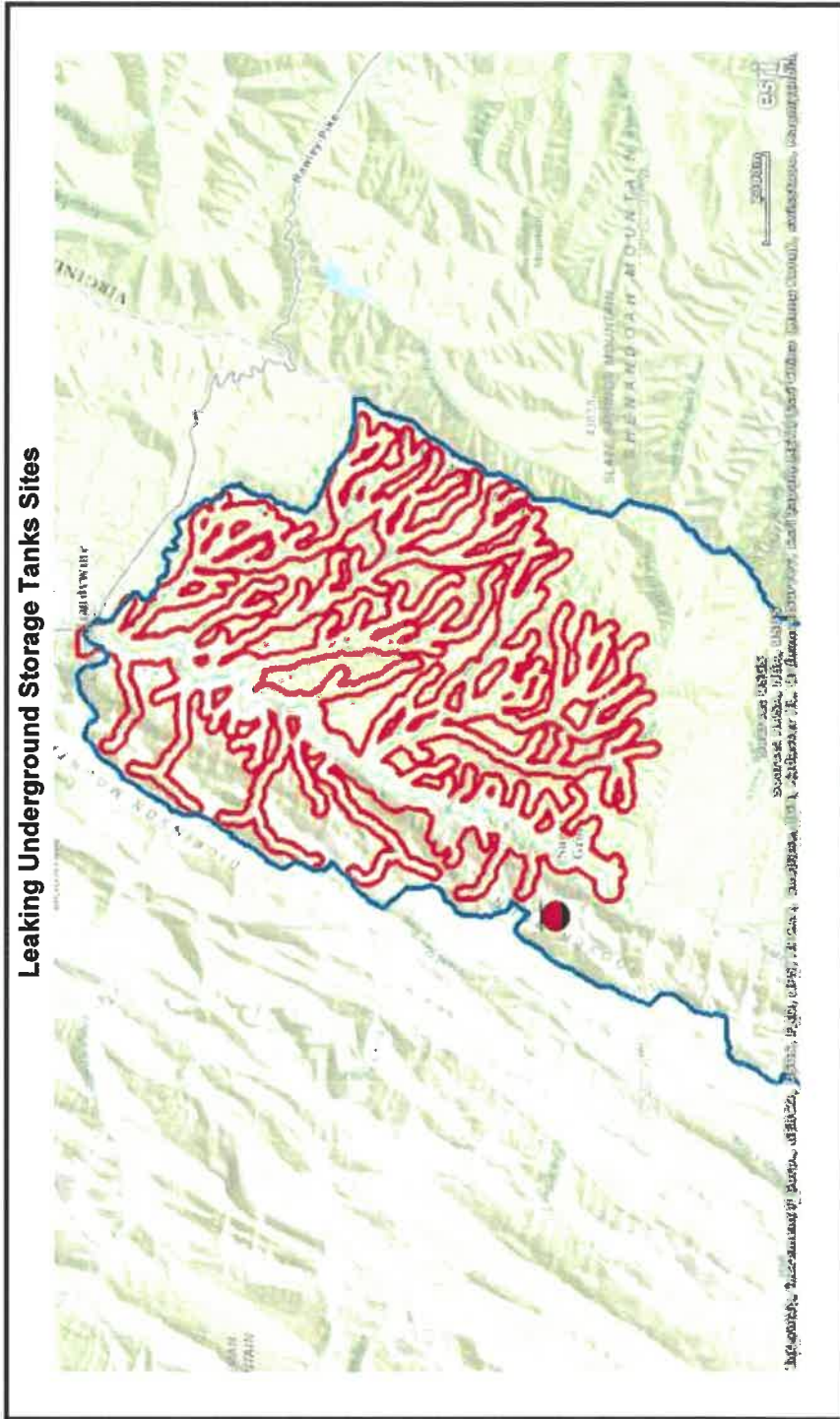
Map of Regulated PSSCs

Abandoned Mine Lands Planning Units

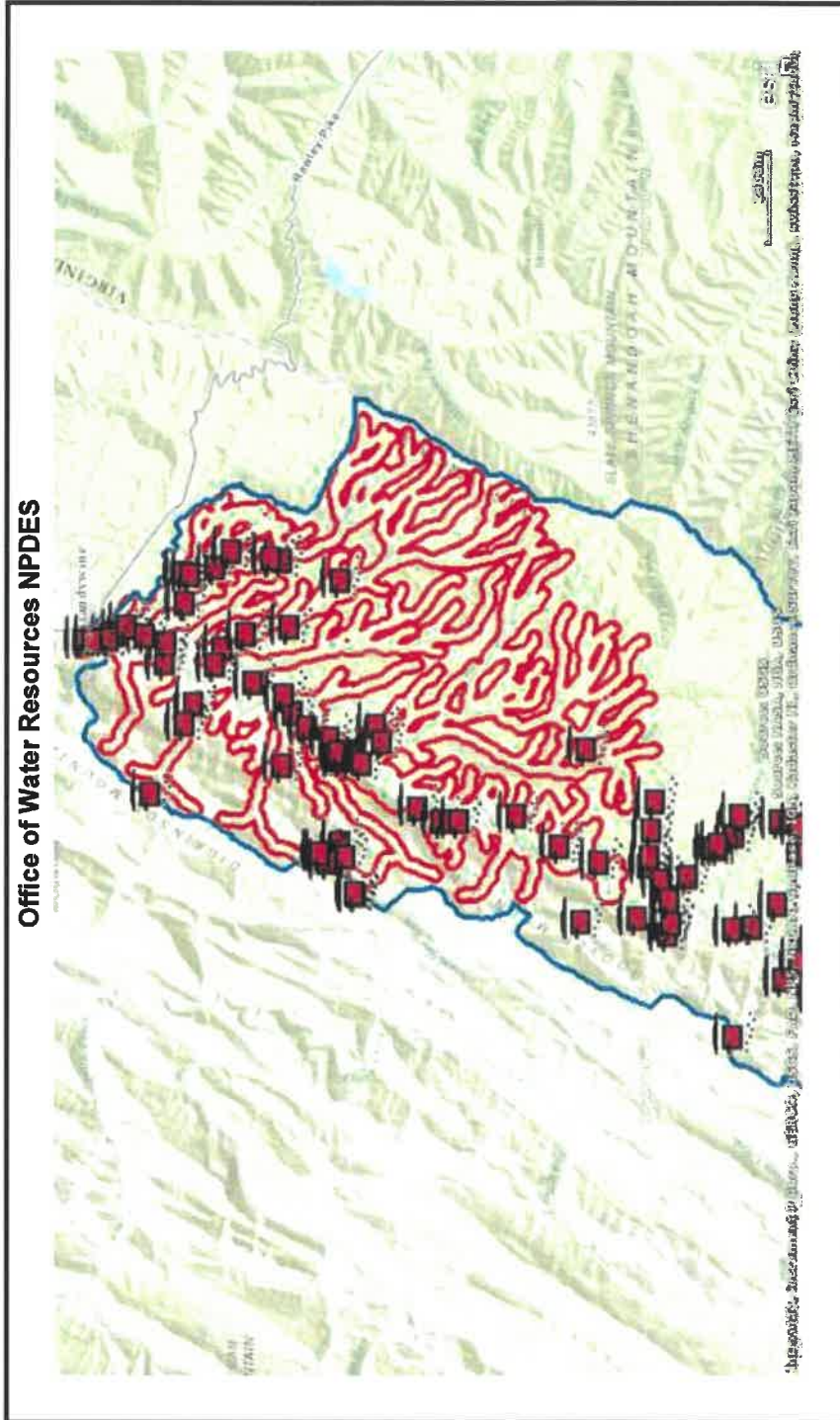




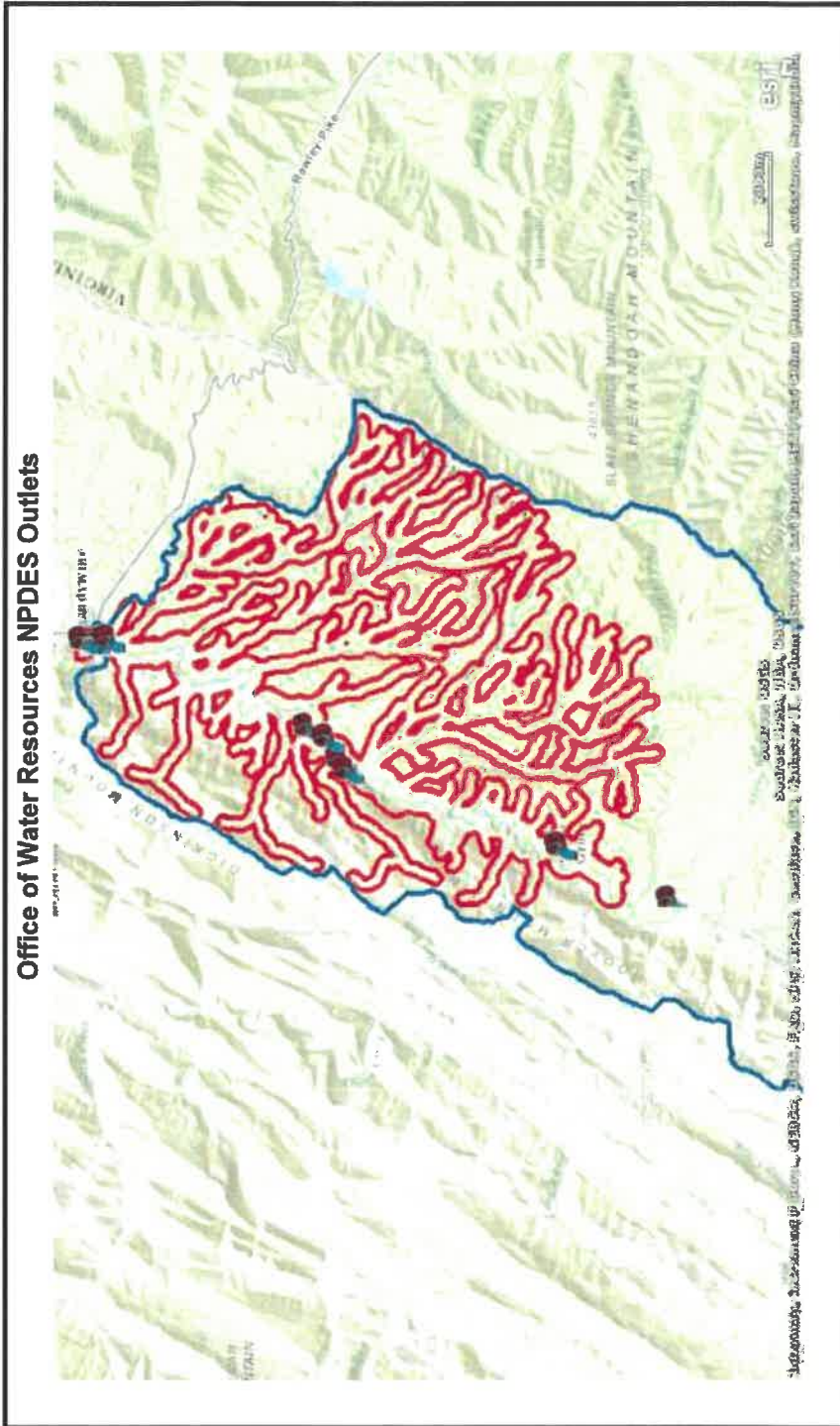
Leaking Underground Storage Tanks Sites



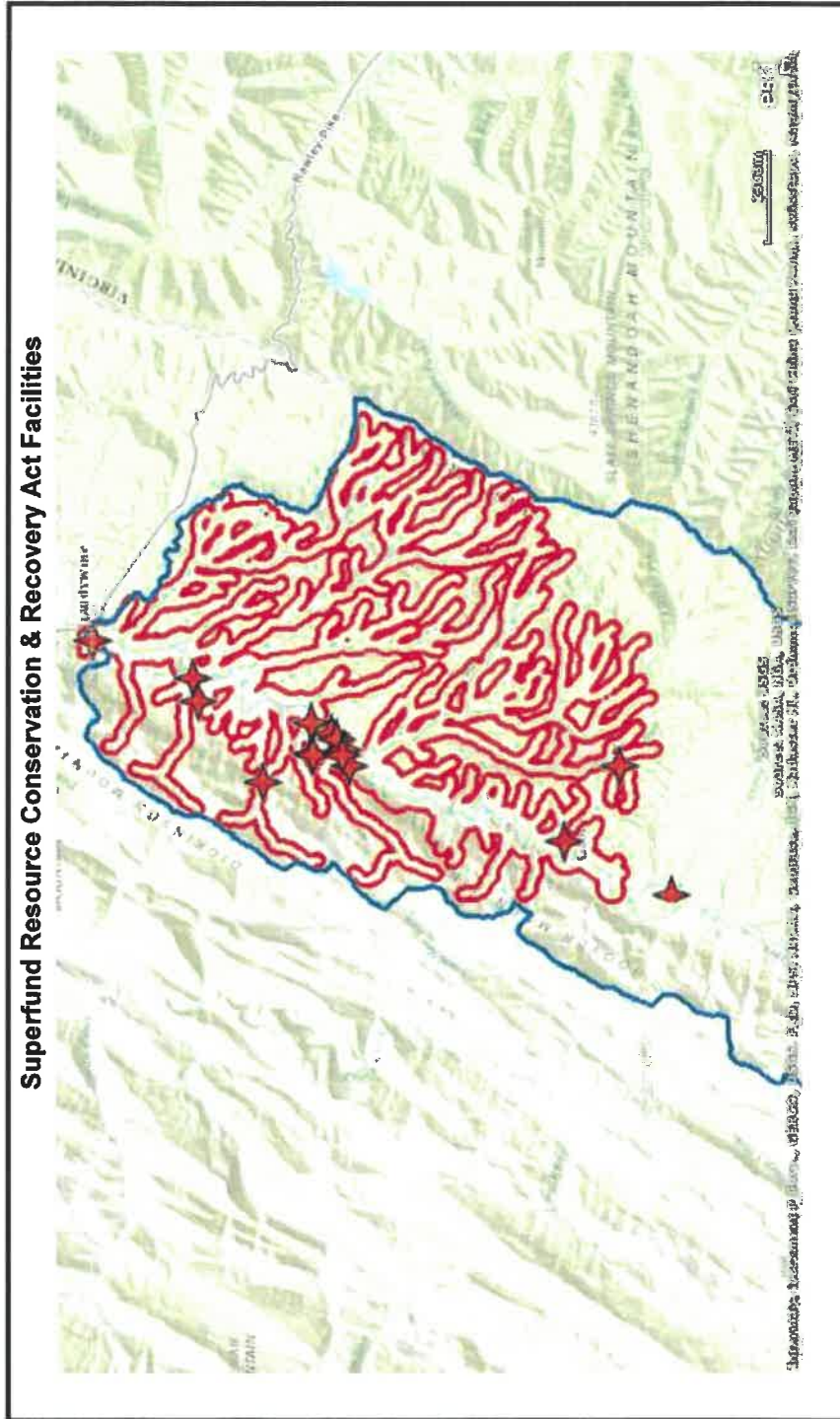
Office of Water Resources NPDES



Office of Water Resources NPDES Outlets



Superfund Resource Conservation & Recovery Act Facilities



PSSC Lists

Local and Regional PSSC List

Table 7. Locally Identified Potential Sources of Significant Contamination (PROVIDED BY UTILITY)

| PSSC Number | Map Code | Site Name | Site Description | Comments |
|----------------------------|----------|------------------------|---|-----------------------------------|
| | | Broad Run Poultry Farm | Poultry Farm – Also known as Tim Rex Road | New poultry farm in the watershed |
| KNOWN PSSC'S IN APPENDIX A | | | | |
| | | | | |
| | | | | |

List of Locally Identified PSSCs

| SOURCE WATER ASSESSMENT & PROTECTION PCS | | | EHS_GIS_SQLSDE_GISTA_SWAP_PCS_SITE_NAME | EHS_GIS_SQLSDE_GISTA_SWAP_PCS_SITEDescription |
|--|-------------|-------------|--|---|
| OBJECTID | X | Y | | |
| 1 | 649950.9188 | 4271247.89 | Large pasture with horses | Pasture* |
| 2 | 650467.9542 | 4271211.143 | Pasture | Pasture* |
| 3 | 648521.0238 | 4267214.545 | Kiser Acres turkey farm | Animal Feedlots |
| 4 | 651715.3164 | 4274077.706 | Mountain Mist Farm, 2 barns and manure shed | Confined Animal Feeding Operations |
| 5 | 651323.0895 | 4274081.149 | Hively Gap Farm Poultry Farm | Confined Animal Feeding Operations |
| 6 | 652094.4192 | 4272629.822 | Pam Waggy Farm | Confined Animal Feeding Operations |
| 7 | 648876.649 | 4268067.776 | Brandywine Turkeys farm | Confined Animal Feeding Operations |
| 8 | 648485.9353 | 4265925.623 | River Bank farm with 3 barns | Confined Animal Feeding Operations |
| 9 | 648591.8931 | 4266590.781 | George Crider poultry farm | Confined Animal Feeding Operations |
| 10 | 648837.6692 | 4268016.071 | Brandywine Turkeys farm | Confined Animal Feeding Operations |
| 11 | 648521.0238 | 4267214.545 | Kiser Acres Poultry Farm | Confined Animal Feeding Operations |
| 12 | 647853.4879 | 4264843.438 | James and Linda Rexrode poultry farm with 3 barns | Confined Animal Feeding Operations |
| 13 | 652638.5867 | 4276063.023 | Above Ground Fuel Tanks | Above Ground Storage Tanks |
| 14 | 647367.1215 | 4264054.748 | Atco gas station and store with 1 gas pump | Gas Stations |
| 15 | 646334.5487 | 4263865.264 | Penco Bowers Store gas station and post office with one pump | Gas Stations |
| 16 | 650076.1871 | 4270840.477 | Morrison's Recycling Yard, junkyard with scrap metal | Junk yards, scrap and auto |
| 17 | 649819.7753 | 4270247.504 | Habitat for Humanity package plant | Permitted Discharge Pipe (outfall) |
| 18 | 647766.0997 | 4264781.993 | DOH yard stormwater permit | Permitted Discharge Pipe (outfall) |
| 19 | 650245.9422 | 4270374.054 | Sugar Grove Navy Base | Military Base (past and present) |
| 20 | 647765.056 | 4264753.444 | DOH road maintenance depot with gravel stockpiles | Road maintenance depots/deicing operations |
| 21 | 650791.4556 | 4265194.991 | Old well | Wells: abandoned |
| 22 | 650774.892 | 4265187.231 | Old well | Wells: abandoned |
| 23 | 650188.056 | 4270810.049 | Sugar Grove Navy Base water intake | Other |
| 24 | 649965.4389 | 4270905.553 | Not Found Water Plant Discharge | Drinking Water Treatment Plants |
| 25 | 649935.7217 | 4270914.377 | Not Found Water Treatment Plant | Drinking Water Treatment Plants |
| 26 | 650069.3807 | 4270731.268 | Houses with some adjacent pasture or hay | Septic Systems (leach field)* |
| 27 | 649993.5639 | 4270796.166 | House | Septic Systems (leach field)* |
| 28 | 649720.5573 | 4271386.439 | Farm House | Septic Systems (leach field)* |
| 29 | 649776.0767 | 4270710.831 | House | Septic Systems (leach field)* |
| 30 | 649664.1571 | 4270666.175 | House | Septic Systems (leach field)* |
| 31 | 650025.1732 | 4270651.109 | Farm House | Septic Systems (leach field)* |
| 32 | 649739.742 | 4270624.294 | House | Septic Systems (leach field)* |

Regulated PSSC List

List of Regulated PSSCs

ABANDONED MINE LANDS PLANNING UNITS

| OBJECTID | x | y | STATES | NFHAP_UNIT |
|----------|-------------|-------------|--------|---|
| 1 | 651090.9942 | 4265185.874 | WV | Little Fork-South Fork South Branch Potomac River |
| 2 | 645857.2787 | 4257513.305 | VA,WV | Brushy Fork-South Fork South Branch Potomac River |
| 3 | 649671.1953 | 4276230.712 | WV | Hayes Gap Run-South Branch Potomac River |
| 4 | 652856.8475 | 4271052.036 | WV | Miller Run-South Fork South Branch Potomac River |
| 5 | 648386.6949 | 4274532.345 | WV | Smith Creek-South Branch Potomac River |
| 6 | 643360.6539 | 4264169.073 | VA,WV | Whitehorn Creek-Thorn Creek |
| 7 | 655765.6423 | 4273433.306 | WV | Hawes Run-South Fork South Branch Potomac River |
| 8 | 638950.9408 | 4252872.979 | VA,WV | Davis Run-Bullpasture River |

OIL AND GAS WELLS

| OBJECTID | x | y | PERMITID | RESP_PARTY |
|----------|----------|-----------|----------|----------------------|
| 1 | 653962.7 | 4270278.8 | 7100009 | EAST RESOURCES, INC. |
| 2 | 653962.7 | 4270278.8 | 7100009 | EAST RESOURCES, INC. |

LEAKING UNDERGROUND STORAGE TANKS SITES

| OBJECTID | x | y | WVID__ | Leak__ | Facility_Name |
|----------|-------------|------------|---------|--------|---------------|
| 1 | 645875.4523 | 4264839.51 | 3604444 | 06-024 | BOWER'S STORE |

OFFICE OF WATER RESOURCES NPDES

| x | y | permit_id | fac_name | issuedate | expiredate | sub_desc |
|-------------|-------------|-------------|---|------------|------------|--|
| 648906.7533 | 4274999.464 | WVR107064 | Red Barn Farms Poultry House | 6/19/2014 | 1/3/2018 | Storm Water Construction (NOI) |
| 652722.7332 | 4276738.325 | 0537-02-071 | Fox's Pizza Den (Ronnie & Betty Kimble) | 7/23/2003 | 10/14/2013 | 5W32 - Septic Systems(Drain Field Disposal Mthd) |
| 651181.1935 | 4273930.999 | WVR105555 | Hively Gap Farm | 6/22/2011 | 1/3/2018 | Storm Water Construction (GP) |
| 650649.5677 | 4271102.34 | WVG551203 | Sugar Grove, WV NSGA | 1/12/2001 | 9/23/2015 | Sewage General |
| 649846.0518 | 4270267.41 | WVG551394 | South Fork Crossing Subdivision | 10/23/2006 | 9/23/2015 | Sewage General |
| 652777.5493 | 4276095.687 | 0467-02-071 | South Fork Vol. Fire Dept. Inc. (Fire/Cook House) | 2/3/2003 | 3/21/2018 | 5W32 - Septic Systems(Drain Field Disposal Mthd) |
| 650399.0779 | 4270562.36 | WVR105377 | P-205 EMERGENCY SERVICES CENTER | 3/2/2011 | 1/3/2018 | Storm Water Construction (GP) |
| 647788.2145 | 4264741.08 | WVG980093 | Sugar Grove Sub-Station | 11/3/2009 | 10/10/2016 | WV DOH+MUN |
| 652732.3211 | 4276514.912 | WVG640111 | Brandywine WTP | 8/9/2006 | 7/18/2018 | Water Treatment Plant (GP) |
| 646459.8033 | 4261986.245 | WVG610629 | BOWERS GARAGE | 3/29/1996 | 3/31/2014 | Storm Water Industrial (GP) |

OFFICE OF WATER RESOURCES NPDES OUTLETS

| OBJECTID | x | y | permit_id | fac_name | issuedate | expiredate | sub_desc |
|----------|-------------|-------------|-------------|---|------------|------------|--|
| 1 | 649846.0518 | 4270267.41 | WVG551394 | South Fork Crossing Subdivision | 10/23/2006 | 9/23/2015 | Sewage General |
| 2 | 652732.3211 | 4276514.912 | WVG640111 | Brandywine WTP | 8/9/2006 | 7/18/2018 | Water Treatment Plant (GP) |
| 3 | 650649.5677 | 4271102.34 | WVG551203 | Sugar Grove, WV NSGA | 1/12/2001 | 9/23/2015 | Sewage General |
| 4 | 649577.754 | 4270106.552 | WVG551203 | Sugar Grove, WV NSGA | 1/12/2001 | 9/23/2015 | Sewage General |
| 5 | 652777.5493 | 4276095.687 | 0467-02-071 | South Fork Vol. Fire Dept. Inc. (Fire/Cook House) | 2/3/2003 | 3/21/2018 | 5W32 - Septic Systems(Drain Field Disposal Mthd) |
| 6 | 647788.2145 | 4264741.08 | WVG980093 | Sugar Grove Sub-Station | 11/3/2009 | 10/10/2016 | WV DOH+MUN |
| 7 | 646459.8033 | 4261986.245 | WVG610629 | BOWERS GARAGE | 3/29/1996 | 3/31/2014 | Storm Water Industrial (GP) |
| 8 | 652722.7332 | 4276738.325 | 0537-02-071 | Fox's Pizza Den (Ronnie & Betty Kimble) | 7/23/2003 | 10/14/2013 | 5W32 - Septic Systems(Drain Field Disposal Mthd) |
| 9 | 647786.9658 | 4264808.81 | WVG980093 | Sugar Grove Sub-Station | 11/3/2009 | 10/10/2016 | WV DOH+MUN |
| 10 | 652777.5493 | 4276095.687 | 0467-02-071 | South Fork Vol. Fire Dept. Inc. (Fire/Cook House) | 2/3/2003 | 3/21/2018 | 5W32 - Septic Systems(Drain Field Disposal Mthd) |
| 11 | 650398.5687 | 4270589.453 | WVR105377 | P-205 EMERGENCY SERVICES CENTER | 3/2/2011 | 1/3/2018 | Storm Water Construction (GP) |

SUPERFUND RESOURCE CONSERVATION & RECOVERY ACT FACILITIES

| OBJECTID_1 | PRIMARY_NA | LOCATION_A | SUPPLEMENT | CITY_NAME | COUNTY_NAM |
|------------|--|--------------------------------|-----------------------|-------------|------------|
| 1 | NAVSECGRUACT SUGAR GROVE | 38 DEG 34 MIN 21 SEC N | 79 DEG 16 MIN 27SEC W | SUGAR GROVE | PENDLETON |
| 2 | HIVELY GAP BRIDGE S336-21/9-0 | UNKNOWN | | SUGAR GROVE | PENDLETON |
| 3 | P-205 EMERGENCY SERVICES CENTE | UNKNOWN | | SUGAR GROVE | PENDLETON |
| 4 | NAVAL RADIO STATION | NSGA SUGAR GROVE | PWD CODE: N45 | SUGAR GROVE | PENDLETON |
| 5 | BRANDYWINE WATER SYSTEM | PO BOX 861 | | FRANKLIN | PENDLETON |
| 6 | SUGAR GROVE SUB-STATION | COUNTY ROUTE 21 | | SUGAR GROVE | PENDLETON |
| 7 | US NAVY INFORMATION OPERATIONS COMMAND SUGAR GROVE RANGE | 63 HEDRICK DR | | SUGAR GROVE | PENDLETON |
| 8 | BRANDYWINE WATER TREATMENT PLA | WV RTE 21 & RTE 33 INTERSE | N | BRANDYWINE | PENDLETON |
| 9 | NAVY INFORMATION OPERATIONS COMMAND (NIOC) SUGAR GROVE | WV RTE 21, MIDWAY BETWEEN SUGA | | SUGAR GROVE | PENDLETON |
| 10 | BOWERS GARAGE | P. O. BOX 3 | | SUGAR GROVE | PENDLETON |
| 11 | BRANDYWINE | UNKNOWN | | UNKNOWN | PENDLETON |
| 12 | FRANKLIN TO SUGAR GROVE TRANSM | RT 21 (SUGAR GROVE RD) | | SUGAR GROVE | PENDLETON |
| 13 | HIVELY GAP FARM | HC 74 BOX 35B | | BRANDYWINE | PENDLETON |
| 14 | SOUTH FORK CROSSING SUBDIVISIO | UNKNOWN | | SUGAR GROVE | PENDLETON |
| 15 | SOUTH FORK CROSSING SUBDIVISIO | UNKNOWN | | BRANDYWINE | PENDLETON |

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 B

Proposed Ground Monitoring Worksheet

| |
|--|
| Describe the type of early warning detection equipment that could be installed, including design: |
| Multi-parameter Universal Controller with the capability of monitoring several different parameters. The controller is mounted on a panel that also serves as a trough. A separate pump is necessary to pump the raw water to and through the trough. The trough is capable of receiving up to 6 different probe sensors that can monitor parameters such as: Oil and gas, pH, temperature, conductivity, DO, turbidity, nitrates, ammonium, or organics. The controller would be programmed to alarm the operators through the existing telemetry when any of the monitored parameters got above a certain point. |
| Where would the equipment be located?: |
| The equipment would be mounted, out of the weather, at the control panel above the raw water intake at the South Fork of the South Branch of the Potomac River. |
| What would the maintenance plan for the monitoring equipment entail?: |
| Daily checkup of the monitoring equipment. The probe/sensors can be unscrewed from the trough and wiped down as needed. The trough can also be wiped out or flushed as needed. |
| Describe the proposed sampling plan at the monitoring site: |
| Water would be drawn directly from South Branch of the South Fork of the Potomac River to the panel/trough with a single tap for a drain line. The controller would be continuously monitoring the water through the trough based on the probes mentioned above. If a parameter would go beyond the acceptable limits, the telemetry would alarm the Operators who in turn could shut down the intake before any contaminated water could reach the plant. |
| Describe the proposed procedures for data management and analysis: |
| The data gathered during the continuous monitoring could be added to the existing telemetry (SCADA) system. The telemetry would time stamp the information received and create a trending line graph for each parameter. The graph would be based on the time of sample and level. This would allow the District to see a base line and any changes that occur on a daily basis. |

APPENDIX C. COMMUNICATION PLAN TEMPLATE

Pendleton Co Psd(Brandywine)

PWSID: WV3303613

Authorizing Signature: Darrell Bodkin

Contact Phone Number: (304)358-7897

Contact Email Address: dbodkin@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

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

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

TIERS REPORTING SYSTEM

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

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

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

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

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

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

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

| Tier | Tier Category | Risk Level | Tier Summary |
|------|---------------------|----------------|---|
| A | Announcement | Low | The water system is issuing an announcement to the public and public agencies about an incident or event that could pose a threat to public health and safety. Additional information will be provided as it becomes available. |
| B | 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 |
|------------------|------------------------------|---------------|---------------------|
| Darrell Bodkin | Pendleton Co Psd(Brandywine) | (304)358-7897 | dbodkin@hotmail.com |
| French Moates | Pendleton Co Psd(Brandywine) | (304)249-5647 | f_469@yahoo.com |

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

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

COMMUNICATION TEAM DUTIES

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

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

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

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

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

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

INCIDENT / EVENT COMMUNICATION PROCEDURE

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

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

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

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

As the flow chart indicates, several iterative cycles will occur after the initial threat assessment, including communication with local agencies and the public, further investigation of the incident, possible implementation of

the water system's contingency plan, and eventual elimination of the threat and a return to normal operations.

Communication activities during this period will include:

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

| | | | | |
|---|---|---------------|---------------------|--------------|
| | Name | Phone | Email | |
| Designated spokesperson: | Darrell Bodkin | (304)358-7897 | dbodkin@hotmail.com | |
| Alternate spokesperson: | French Moates | (304)249-5647 | f_469@yahoo.com | |
| Designated location to disseminate information to media: | Pendleton County Community Building 200 Confederate Road Franklin, WV 26807 | | | |
| Method of Contact: | word of mouth radio | | | |
| Media Contacts: | Name | Title | Phone Number | Email |
| | WKCY | | (540)434-1777 | |

Emergency Service Contacts

| | Name | Emergency Phone | Alternative Phone | Email |
|-----------|---------------------------------|-----------------|-------------------|---------------------------------|
| Police | Pendleton County Sheriff Office | (911)___-___ | (304)358-2214 | pcsdlaw@pendletoncommission.com |
| Fire | Brandywine VFD | (911)___-___ | (304)249-5232 | |
| Ambulance | Brandywine Rescue Squad | (911)___-___ | (304)249-5939 | |
| Hazmat | Brandywine VFD | (911)___-___ | (304)249-5232 | |
| Other | | | | |
| Other | | | | |
| Other | | | | |

Sensitive Populations

| | | | | | |
|---|-----------------------|-----------------|-----------------------|-----------------|-------------------------------|
| Other Communities that are served by the Utility: | Brandywine | | | | |
| Major User/Sensitive Population Notification | Name | Emergency Phone | Alternative Phone | Email | |
| | Brandywine Elementary | (304)249-5381 | | | |
| | Fox's Pizza | (304)249-5136 | | | |
| | Cabin Restaurant | (304)249-5056 | | | |
| EED District Office Contact | Name | Phone | Email | | |
| | Alan Marchun | (304)725-9453 | alan.f.marchun@ww.gov | | |
| OEHS Readiness Coordinator | Lee Orr | (304)356-4290 | | | |
| Downstream Water System Contacts | Water System Name | Contact Name | Emergency Phone | Alternate Phone | Email |
| | City of Moorefield | Jim Iman | (304)530-6067 | (304)851-2284 | jim.iman@townofmoorefield.com |
| 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 Rrocedures: | Bruce Minor | Emergency Management | (304)358-3889 | tact12000@yahoo.com |
| Staff Responsible for Keeping Confidential PSSC Information and Releasing to Emergency Responders. | Bruce Minor | Emergency Management | (304)358-3889 | tact12000@yahoo.com |

Emergency Response Information

| | | |
|--|----------------------------|---------------|
| List Laboratories available to perform sample analysis in case of emergency. | Name | Phone |
| | WVDHHR | (304)558-3530 |
| | Cornwell Engineering Group | (757)873-1534 |
| 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?: | No | |
| When was the emergency response plan developed or last updated?: | | |

EMERGENCY CONTACT INFORMATION

State Emergency Spill Notification

1-800-642-3074

Office of Emergency Services

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

Charleston, WV- (304) 558-5380

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

www.wvdhhr.org/oehs

Readiness Coordinator - Lee Orr

Phone: 304-356-4290

Cell: 304-550-5607

E-mail: 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

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

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

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

The incident involves the following situation at this location:

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

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

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

State Water System ID# _____ Date Distributed: _____

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

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

Entire Water System or Other: _____

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

What should I do?

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

What happened?

- The problem is related to _____

What is being done?

- The water system is taking the following action: _____

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

- _____

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

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

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

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____

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

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

Entire Water System or Other: _____

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

What should I do?

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

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, colors, sheen, etc. – please contact _____ at _____ or _____ at _____.

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

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____

APPENDIX D. SINGLE SOURCE FEASIBILITY

Water Source Alternative:

| Back up intake | |
|--|----------------------------|
| Name of Alternative: | Back up intake |
| Brief Description of the Alternative: | Back up intake |
| Feasible?: | No |
| Provide Cost Estimate: | \$0 |
| 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% |
| Interconnection | |
| Name of Alternative: | old Sugar Grove Naval Base |
| Brief Description of the Alternative: | old Sugar Grove Naval Base |
| Feasible?: | Yes |
| Provide Cost Estimate: | \$108,750 |
| Would this alternative supply 100% of your needs?: | No |
| Economic Criteria - Operation and Maintenance Costs: | 3 |
| Economic Criteria - Capital Cost: | 3 |
| Technical Criteria - Permitting: | 3 |
| Technical Criteria - Flexibility: | 2 |
| Technical Criteria - Resilience: | 0 |
| Technical Criteria - Institutional Requirements: | 2 |
| Environmental Criteria - Environmental Impacts: | 3 |
| Environmental Criteria - Aesthetic Impacts: | 3 |
| Environmental Criteria - Stakeholder Issues: | 0 |
| Final Score: | 75.00% |
| Treated water storage | |
| Name of Alternative: | Treated water storage |

| | |
|---|------------------------------|
| Brief Description of the Alternative: | Treated water storage |
| Feasible?: | No |
| Provide Cost Estimate: | \$0 |
| 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% |
| Tank for Raw Water Storage | |
| Name of Alternative: | Raw Water Storage |
| Brief Description of the Alternative: | Raw Water Storage |
| Feasible?: | No |
| Provide Cost Estimate: | \$0 |
| 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: | Flood Control Spring |
| Brief Description of the Alternative: | Flood Control Spring |
| Feasible?: | Yes |
| Provide Cost Estimate: | \$0 |
| Would this alternative supply 100% of your needs?: | No |
| Economic Criteria - Operation and Maintenance Costs: | 2 |

| | |
|--|--------|
| Economic Criteria - Capital Cost: | 1 |
| 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: | 2 |
| Environmental Criteria - Stakeholder Issues: | 0 |
| Final Score: | 66.78% |

Feasibility Study Narrative

Note: Complete appropriate Early Warning Monitoring form for your system in Appendix B (Line 71).

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**.

Communication Plan

Pendleton County PSD (Brandywine) 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 source water supply or 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. Pendleton County PSD (Brandywine) will update the Communication Plan as needed to ensure contact information is up to date.

Procedures should be in place for 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 Pendleton County PSD (Brandywine) 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.

Appendix E. Feasibility Study Narrative

Backup Intake – There is no viable option for a backup intake due to the location of the WTP. A backup intake at the WTP would simply pull water from the same source and is therefore not an option.

Interconnect – The Pendleton County PSD (Brandywine) system does not have another public utility in a realistic area to make an interconnection with. However, the old Sugar Grove Naval Base does have a Water Treatment Plant on its property. The WTP could provide a temporary water source in the case of emergency.

Treated Water Storage – The District has two (2) days of treated storage capacity at max production and nearly seven (7) days at average production between the three (3) treated water storage tanks currently in the distribution system. The maximum production rate of 135,000 gallons was only 1 of 8 times that the plant production eclipsed 100,000 gallons over the 1 year sample period. The average production rate of nearly 40,000 gallons is a more accurate representation of the systems operation and therefore, the system has more than adequate treated water storage capacity.

Raw Water Storage – The Brandywine WTP currently has a 105,000 gallon presediment basin. However, the tank/basin is setup as a presediment basin only. The WTP can only access the top 8' of the basin with the existing telescopic valve. This is roughly 31,000 gallons of raw water which is 75% of an average day production. This accessible raw water storage plus the amount of treated water storage capacity makes it unnecessary to add more storage capacity at this time.

Other – Flood Control Spring – The Brandywine WTP could receive water from a nearby Flood Control Dam as a backup source in case of emergency. This has been an option that the District has discussed with OES. They could have water hauled to the WTP and dumped directly into the presediment basin for treatment. This option will cost out an intake structure and appurtenances to get the water to the WTP.

Matrix Document

| Feasibility Matrix | | Pendleton County PSD (Brandywine) | | PWSID: 3303613 | | Mar-16 | | Matrix Completed By: | | Corrone Associates, Inc. | |
|--|--|---|-------------|--|-------------|-----------------------|-------------|----------------------|-------------|---|-------------|
| Criteria | Question | Backup Intake | Feasibility | Interconnect | Feasibility | Treated Water Storage | Feasibility | Raw Water Storage | Feasibility | Other (Name of Alternative) | Feasibility |
| O and M Costs | What is the total current budget year cost to operate and maintain the PWSU (current budget year)? | \$141,763.00 | 0 | \$141,763.00 | 0 | \$141,763.00 | 0 | \$141,763.00 | 0 | \$141,763.00 | 0 |
| | Describe the major O&M cost requirements for the alternative? | (Describe) | 0 | Pumps at the Natural Base | 3 | N/A | 0 | N/A | 0 | Include Structure and new piping | 1 |
| | What is the incremental cost (\$/gal) to operate and maintain the alternative? | \$0.00 | 0 | \$5,012.00 | 3 | \$0.00 | 0 | \$0.00 | 0 | \$3,072.00 | 3 |
| | Cost comparison of the incremental O&M cost to the current budgeted costs (%) | 0.00% | 0 | 3.96% | 3 | 0.00% | 0 | 0.00% | 0 | 2.51% | 3 |
| Describe the capital improvements required to implement the alternative. | O and M Feasibility Score | | 0.0 | | 3.0 | | 0.0 | | 0.0 | | 2.3 |
| | What is the total capital cost for the alternative? | \$0.00 | 0 | \$106,750.00 | 3 | \$0.00 | 0 | \$0.00 | 0 | \$1,218,000.00 | 1 |
| | What is the annualized capital cost to implement the alternative, including land and easement costs, convenience tap fees, etc. (\$/gal) | \$0.00 | 0 | \$5,136.00 | 3 | \$0.00 | 0 | \$0.00 | 0 | \$37,527.00 | 1 |
| | Cost comparison of the alternative annualized capital cost to the current budgeted costs (%) | 0.00% | 0 | 3.62% | 3 | 0.00% | 0 | 0.00% | 0 | 40.88% | 1 |
| Permitting | Capital Cost Feasibility Score | | 0.0 | | 3.0 | | 0.0 | | 0.0 | | 1.0 |
| | Provide a listing of the expected permits required and the permitting agencies involved in their approval. | (List and Describe) | 0 | Health Permits - BPH | 3 | N/A | 0 | N/A | 0 | Health Permits - BPH, EPA, Washington Permit - WPCOM, WQCOM, State Permit - DEP | 3 |
| | What is the timeframe for permit approval for each permit? | (List the timeframe for approval for each permit listed above) | 0 | Health Permits - 30 days | 3 | N/A | 0 | N/A | 0 | Health Permits - 30 days, DOH - survey board, APDES - 6 months | 2 |
| | Describe the major requirements in obtaining the permits (environmental impact studies, public hearings, etc.) | (Describe all major requirements for approval for the listed permits) | 0 | Detailed Plans and Specifications | 3 | N/A | 0 | N/A | 0 | Detailed Plans and Specifications | 2 |
| Flexibility | What is the likelihood of successfully obtaining the permits? | (Describe) | 0 | Very Likely | 3 | N/A | 0 | N/A | 0 | Very Likely | 3 |
| | Does the implementation of the alternative require regulatory exceptions or variances? | (Yes/No/Describe) | 0 | None Expected | 3 | N/A | 0 | N/A | 0 | None Expected | 3 |
| | Permitting Feasibility Score | | 0.0 | | 3.0 | | 0.0 | | 0.0 | | 2.6 |
| | Will the alternative be needed on a regular basis or only used intermittently? | (Describe) | 0 | Intermittently | 2 | N/A | 0 | N/A | 0 | Intermittently | 2 |
| Resilience | How will implementing the alternative affect the PWSU's current method of treating and delivering potable water including meeting the drinking water treatment plant's design flow and storage, with the alternative, from the likelihood of alternative byproducts? | (Describe) | 0 | None Expected. However, if Natural Base changes, the may change. | 1 | N/A | 0 | N/A | 0 | None Expected | 3 |
| | Feasibility Feasibility Score | | 0.0 | | 1.5 | | 0.0 | | 0.0 | | 2.3 |
| Resilience | Will the alternative provide any advantages or disadvantages to meeting seasonal changes in demand? | (Describe) | 0 | None Expected | 0 | N/A | 0 | N/A | 0 | No | 2 |
| | How resilient will the alternative be to extreme weather conditions such as drought and flooding? | (Describe) | 0 | None Expected | 0 | N/A | 0 | N/A | 0 | Backup/Alternate source | 2 |

| Criteria | Question | Backup Intake | Feasibility | Interconnect | Feasibility | Treated Water Storage | Feasibility | Raw Water Storage | Feasibility | Other (Name of Alternative) | Feasibility |
|----------|---|-----------------|-----------------|-------------------------------|-----------------|-----------------------|-----------------|-------------------|-----------------|-------------------------------------|-----------------|
| | Will the alternative be responsible to meet the growing needs of the service area? | [Describe] | 0 | No growth expected | 0 | N/A | 0 | N/A | 0 | No growth expected | 3 |
| | Resilience-Feasibility Score Identify any agreements or other legal instruments with governmental entities, private institutions or other PWSU required to implement the alternative. | [Describe] | 0.0 | User Agreement with Neal Base | 0.0 | N/A | 0.0 | N/A | 0.0 | None Expected | 2.3 |
| | Are any development/planning restrictions in place that can act as a barrier to the implementation of the alternative. | [Yes/No] | 0 | None known at this time | 0 | N/A | 0 | N/A | 0 | None Expected | 3 |
| | Identify potential land acquisition and easements requirements. | [Describe] | 0 | None expected | 0 | N/A | 0 | N/A | 0 | Line Easements and Inlets structure | 2 |
| | Institutional Requirements-Feasibility Score <i>Institutional Criteria</i> | | 0.0 | | 2.0 | | 0.0 | | 0.0 | | 2.7 |
| | Identify any environmentally sensitive areas or habitats that might be impacted by the alternative. | [Describe] | 0 | None Expected | 0 | N/A | 0 | N/A | 0 | None Expected | 3 |
| | Environmental Impacts-Feasibility Score Identify any visual or noise issues caused by the alternative that may affect local land uses? | [Describe] | 0.0 | None Expected | 3.0 | N/A | 0.0 | N/A | 0.0 | None Expected | 3.0 |
| | Identify any mitigation measures that will be required to address aesthetic impacts? | [Describe] | 0 | None Expected | 3 | N/A | 0 | N/A | 0 | inlets structure | 2 |
| | Aesthetic Impacts-Feasibility Score Identify the potential stakeholders affected by the alternative. | [Describe] | 0.0 | None Expected | 3.0 | N/A | 0.0 | N/A | 0.0 | None Expected | 2.0 |
| | Identify the potential issues with stakeholders for and against the alternative. | [Describe] | 0 | [Describe] | 0 | [Describe] | 0 | [Describe] | 0 | [Describe] | 0 |
| | Will stakeholder concerns represent a significant barrier to implementation for assistance of the alternative? | [Describe] | 0 | [Describe] | 0 | [Describe] | 0 | [Describe] | 0 | [Describe] | 0 |
| | Will stakeholder concerns represent a significant barrier to implementation for assistance of the alternative? | [Yes/No] | 0 | [Yes/No] | 0 | [Yes/No] | 0 | [Yes/No] | 0 | [Yes/No] | 0 |
| | Stakeholder Issues-Feasibility Score | | 0.0 | | 0.0 | | 0.0 | | 0.0 | | 0.0 |
| | Comments | Comments | Comments | Comments | Comments | Comments | Comments | Comments | Comments | Comments | Comments |

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.

Instructions: Using the expanded instructions in the "FEASIBILITY STUDY GUIDANCE DOCUMENT", complete the white and gray input cells. Rank each criteria based on the evidence provided and best professional judgment. Rank the criteria 0-3, assuming 0=not feasible and 3=most feasible. The password to edit/cell is "steep".

| Feasibility Matrix | | Pendleian County PSD (Brandywine) | | | | PWSID: 3303613 | | | | Date: 4/24/30 | | | | Completed By: Cerrone Associates, Inc. | | | | | | |
|----------------------------------|---------------------------------|-----------------------------------|-------|--------------------|----------------|------------------------|-------------|------------------------|----------------------------|---------------|--------------------|----------------|-----------------------|--|-------|---------|----------------|-------|-------------|----------|
| | | Economic Criteria | | Technical Criteria | | Environmental Criteria | | Environmental Criteria | | Final Score | Total Capital Cost | Comments | | | | | | | | |
| Alternative Strategy Description | Operation and Maintenance Costs | Capital Costs | Total | Total % | Weighted Total | Permitting | Flexibility | Resilience | Institutional Requirements | Total | Total % | Weighted Total | Environmental Impacts | Stakeholder Issues | Total | Total % | Weighted Total | | | |
| | Backup Intake | 0.0 | 0.0 | 0.0 | 0.0% | 0.0% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | 0.0% | 0.0 | 0.0 | 0.0 | 0.0% | 0.0% | 0.0% | |
| Interconnect | 3.0 | 3.0 | 6.0 | 100.0% | 40.0% | 3.0 | 1.5 | 0.0 | 2.0 | 6.5 | 54.2% | 21.7% | 3.0 | 0.0 | 6.0 | 66.7% | 13.3% | 75.0% | \$108,750.0 | Comments |
| Treated water storage | 0.0 | 0.0 | 0.0 | 0.0% | 0.0% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | 0.0% | 0.0 | 0.0 | 0.0 | 0.0% | 0.0% | 0.0% | \$0.0 | Comments |
| Raw Water Storage | 0.0 | 0.0 | 0.0 | 0.0% | 0.0% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | 0.0% | 0.0 | 0.0 | 0.0 | 0.0% | 0.0% | 0.0% | \$0.0 | Comments |
| Other-(Name of Alternative) | 2.3 | 1.0 | 3.3 | 55.6% | 22.2% | 2.6 | 2.5 | 2.3 | 2.7 | 10.1 | 84.2% | 33.7% | 3.0 | 0.0 | 5.0 | 55.6% | 11.1% | 67.0% | ##### | Comments |

Scoring:

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

APPENDIX E. SUPPORTING DOCUMENTATION