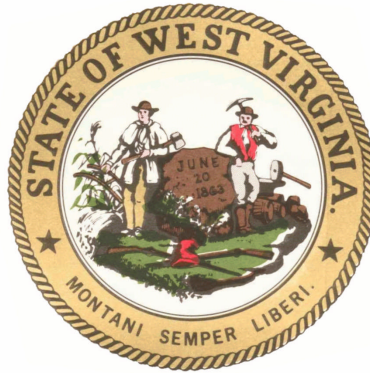


**State of West Virginia  
Source Water Assessment and  
Protection Program  
Source Water Assessment Report**

**Red Sulphur PSD  
Monroe County  
PWSID: WV3303206**



**Prepared by:**

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

**Date: March 2005**

**Surface Water Public Water Supply Systems  
Source Water Assessment and Protection Program (SWAPP)  
Susceptibility Report**

Prepared by the  
West Virginia Bureau for  
Public Health, Source  
Water Assessment and  
Protection Unit

Date Prepared: Tuesday,  
March 16, 2005

**What is the Purpose of a Susceptibility Report?**

A susceptibility report identifies the most significant potential contaminant sources that could threaten the quality of your public water supply. Your susceptibility ranking does not imply poor water quality. Regular water tests best reflect actual water quality. This report will be used by public water supply systems with a surface water source. In addition, this report will enhance West Virginia's existing watershed approach to water quality improvement and protection. Table 1 provides you information on your public water supply.

**What is SWAPP?**

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

- inventory land uses within the recharge areas of all public water supplies;
- assess the susceptibility of drinking water sources to contamination from these land uses; and
- publicize the results to provide support for improved protection of sources.

Table 1: Public Water Supply (PWS) Information

PWS Name	RED SULPHUR PSD
PWS Address	BOX 697 PETERSTOWN, WV 24963
PWS ID Number	WV3303206
County	MONROE
System Type	COMMUNITY

The West Virginia Bureau for Public Health (BPH) is undertaking this task. The rankings of susceptibility of your intake (s) to potential contamination are listed in Table 2.

Table 2: Intake Information

Facility Name	Source Name	Design Meets Regulations	Susceptibility Ranking
Red Sulphur PSD	Rich Creek	Yes	High

The BPH Central Office assessed the source for Red Sulphur PSD. A file review and field survey were used to conduct the assessment.

**What is my Source Water Protection Area (SWPA)?**

Unlike ground water aquifers, which have a natural protective layer above them, 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 contaminant the drinking water at the intake. Because of this, the SWPA consists of two types of delineations.

- **Watershed Delineation Area**

The first type of delineation is the Watershed Delineation Area (WSDA). Figure 1 shows the extent of the WSDA, which covers approximately 26 square miles in the Upper New River Watershed. The WSDA includes the entire watershed area upstream of the intake up to the boundary of the West Virginia state border, or a topographic boundary. The perimeter of the catchment area provides the water to the water supply intake.

- **Zone of Critical Concern**

The second type of delineation is the Zone of Critical Concern (ZCC). Figure 2 shows the ZCC area, which covers approximately 1796 acres. The ZCC is a corridor along streams within the WSDA area that warrants a more detailed inventory and management due to its proximity to the surface intake and to the susceptibility to potential contaminants. The ZCC is calculated 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. The ZCC width is 1,000 feet from each bank of the principal stream and 500 feet from each bank of the tributaries draining into the principal stream.

### **What is Susceptibility?**

Susceptibility is a measure of your intake's potential for contamination from land uses and activities within the SWPA at concentrations that pose a concern. The purpose of the susceptibility analysis is to provide a pointer to what action a public water system should take to further define and reduce susceptibility. This may include recommendations for a more detailed inventory and assessment, monitoring work, or an indication of the type and intensity of source water and other protection activities needed.

The possibility of a release from potential contaminant sources is greatly reduced if best management practices (BMP's) are used. However, the susceptibility determination for your intake did not take into account whether BMP's are being used.

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

### **How Was The Water Supply Susceptibility Determined?**

Your intake (s) susceptibility is based on the following:

#### **Resource Characterization**

The purpose for conducting the Resource Characterization analysis of the delineated SWPA is to obtain an understanding of its physical, biological, chemical, and hydrological characteristics. Four resource characteristics were evaluated:

- The potential for surface runoff to occur;
- The ease that surface runoff transport material can be delivered into the stream;

- The movement through the SWAP area; and
- The biological and chemical health of the surface water resource in the SWAP area.

- **Potential for Surface Runoff to Occur**

The soil types present in the watershed area and the associated soil properties have a direct influence on the potential for surface runoff to occur. As infiltration rate of soil increases, (more precipitation soaking in rather than running off) the contaminant load associated with the reduced runoff should decrease. Table 3 provides a summary of the associated soil groups.

Table 3: Summary of Soil Associations in the WSDA

Soil Associations	Soil Drainage	Topographic Setting
Teas-Calvin-Litz	Moderately well to well drained	35 to 70 percent slopes
Shaly Litz-shaly Montevallo-Clarksburg	Well drained	35 to 70 percent slopes

- **Ease of movement of material into the Stream System (Rate of Overland Material Transport):**

The size, shape, and slope of the SWAP area have a direct influence on material transported by surface runoff. In general, the longer the overland travel distance and travel time that surface runoff has taken in order to reach a stream channel, the greater the chance it has to deposit and filtrate the contaminants that may occur. Table 4 provides an analysis of the size, shape, and slope.

Table 4: Hydrologic Setting

Size of WSDA Area (sq/mi.)	26
Shape of WSDA Area	Long & Wide
Stream Length (Main Stem) (mi)	1.5
Average Watershed Slope	10 to 30 %

- **Movement of Water through the Watershed Area**

A number of physical and natural factors can influence the movement of water through the SWAP area. The pattern and development of the drainage network of the SWAP area directly influence the rate of water movement. Evaluation of the hydrologic cycle will provide an indication of the amount of annual rainfall that is absorbed into the ground or becomes runoff. Table 5 summarizes the total mileage of streams contained in the WSDA, average stream gradients of the main stem, average rainfall, the nearest relevant USGS stream gauge, distance to gauge, topographic position of gauge, annual mean discharge, high flow, and low flow.

Table 5: Movement of Water

Number of Stream Miles	37
Average Stream Gradient (Main Stem)	75 ft/mi
Average Rainfall	44
Nearest Relevant USGS Stream Gauge	NA
Distance to Relevant USGS Stream Gauge (mi)	NA
USGS Stream Gauge Topographic Position	NA
Annual Mean Discharge (cfs)	NA
High Flow (cfs)	NA
Low Flow (cfs)	NA

### **Summary of Chemical and Biological Water Quality Results from the West Virginia DEP**

During the reporting period from 2000-2002, 66 stream segments totaling 446.77 miles were assessed in the Upper New River watershed for the 305b report, as a requirement of the Federal Clean Water Act. Of the 446.77 stream miles assessed, 142.80 (32.2%) were fully supporting all assessed uses, 171.77 (38.4%) were fully supporting but threatened for at least one, and 132.2 (29.6%) were impaired for one or more uses. Considering major and moderate/minor impacts, the principal causes of impairment in the watershed are fecal coliform (56.3 miles), unknown cause (48.6 miles), and siltation (34 miles). Considering both major and moderate/minor impacts, the principal sources of pollution in the watershed are Unknown Source (87.3 miles) and abandoned mining (10.9 miles). Land use activities in the Upper New River Watershed are generally forestry and recreation related, with areas of coal and gas extraction.

Within the Upper New River watershed, no streams are currently under fish consumption advisory. Ten streams totaling 132 miles from the Upper New River watershed are on the current 303(d) list. Currently none of these listed streams have had TMDL's completed.

*Note: This section applies to the entire watershed. Therefore, the numbers presented may not reflect conditions that exist in the portion of the watershed area specific to the plant intake.*

### **POTENTIAL SIGNIFICANT CONTAMINANT SOURCES (PSCS'S):**

#### **Inventory of Potential Significant Contaminant Sources**

The purpose of providing an inventory of certain types of land uses, potential significant contaminant sources, and activities within the SWAP area is to aid in reducing the risk posed to the public drinking water supply. The following subsections provide information regarding the methodology used to generate the inventories.

The inventory portion of the SWAP consists of two steps:

- The first step is the broad inventory based primarily on regulated and existing databases. The inventory consists of a general land use analysis, the identification of regulated activities in the delineated WSDA areas, and an analysis of road and rail crossings adjacent to the streams in the WSDA area.
- The second step is the detailed inventory of PSCS's in the ZCC. The detailed source inventory is conducted to identify PSCS's that were not captured in the broad regulated source inventory and to field verify the PSCS's in the ZCC. PSCS's located during the inventory are found on Figure 2.

A detailed risk-assessment of the PSCS's was beyond the scope of this survey because of minimal data and resources. Local decision makers should do the detailed risk analysis because they are better suited to make the bridge from assessment work to protective strategies. The West Virginia SWAP program can provide guidance to the decision makers and help in prioritizing the PSCS sources.

- **Existing (primarily regulated) Database Review**

Table 6: Summary of existing (primarily regulated)

Table 6 is a summary of existing PSCS's based on public information obtained from various federal, state, and local agencies that maintain environmental regulatory databases. These databases provide information about the regulatory status of a property and incidents involving use, storage, spilling or transportation of oil, and hazardous materials.

	NUMBER	PERCENT
WSDA	2	100
ZCC	0	0

- **Summary of the Detailed Inventory**

Table 7 is a summary of the detailed inventory of potential contaminant sources in the ZCC. The detailed source inventory was conducted to identify PSCS's that were not identified in the existing database review and to verify the location of the PSCS within the ZCC.

Table 7: Summary of PSCS within the ZCC

Potential Contaminant Source	TOTAL PSCS'S	PERCENT
AGRICULTURE	1	33
RESIDENTIAL	0	0
MUNICIPAL	0	0
COMMERCIAL	1	33
INDUSTRIAL	1	33

- **Transportation Network**

A summary of the transportation network is shown in Table 8. This information can be used to aid in planning for transportation related accidents that could result in contamination of the source water in the delineated WSDA. Table 9 is a summary of the transportation network stream crossings in the WSDA. Please note that miles of train tracks could be less due to decommissioning of tracks.

Table 8: Transportation Network Summary for WSDA

	<b>Within 100 feet of stream</b>	<b>Total</b>
Miles of Interstate	0	0
Miles of Primary	0	6.3
Miles of Secondary	0	44
Miles of Train Tracks	0	0

Table 9: Transportation Network Stream Crossings in the WSDA

	<b>Train Tracks</b>	<b>Interstate</b>	<b>Primary Roads</b>	<b>Secondary Roads</b>
Number of Stream Crossings	0	0	2	6

- **General Land Use**

The general land use analysis will provide an indication of which land uses predominate throughout the SWAP area, near the intake, or adjacent to the rivers, streams, lakes, and reservoirs. The land use in the SWAP area is Woodland, and Pasture.

### **SWAPP Area Assessment and Protection Activities**

Analysis of the Resource Characterization and potential significant contaminant sources of the SWAP area for the Red Sulphur PSD indicates that the water supply is susceptible to possible future contamination mainly because it is derived from a surface water source.

#### **Recommendations:**

- ✓ Protection efforts should focus on the collection of additional information on the point and non-point sources present to evaluate the risk;
- ✓ Work with the Department of Health and Human Resources, other state agencies and local officials to make sure your intake is included in local regulations and inspections efforts;
- ✓ Restrict access to the intake area and post the area with Drinking Water Protection Area signs;
- ✓ Address any biological contaminant issues; and
- ✓ Protection options need to be actively considered to further evaluate and manage all potential contaminant sources and the Red Sulphur PSD public water supply should place a high priority on protecting its supply source.

## **NEXT STEP – SWAP Protection Plan**

The next step in source water protection planning is to prepare a SWAP protection plan. The SWAP protection plan incorporates this source water delineation assessment report and three additional sections: Contingency Planning, Alternative Sources, and Management Planning.

### **Contingency Planning**

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

### **Alternative Sources**

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

### **Management Planning**

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

## **Need additional information?**

Additional information or sources of information can be obtained by calling or visiting the BPH web site at [www.wvdhhr.org/bph/swap](http://www.wvdhhr.org/bph/swap) or phoning 304-558-2981.

## **Glossary:**

Best Management Practices (BMP's) are operational procedures used to prevent or reduce pollution.

Public Water System (PWS) is a system for the provision to the public of pipe water for human consumption, if such system has at least 15 service or regularly serves an average of at least 25 individuals daily at least 60 days of the year.

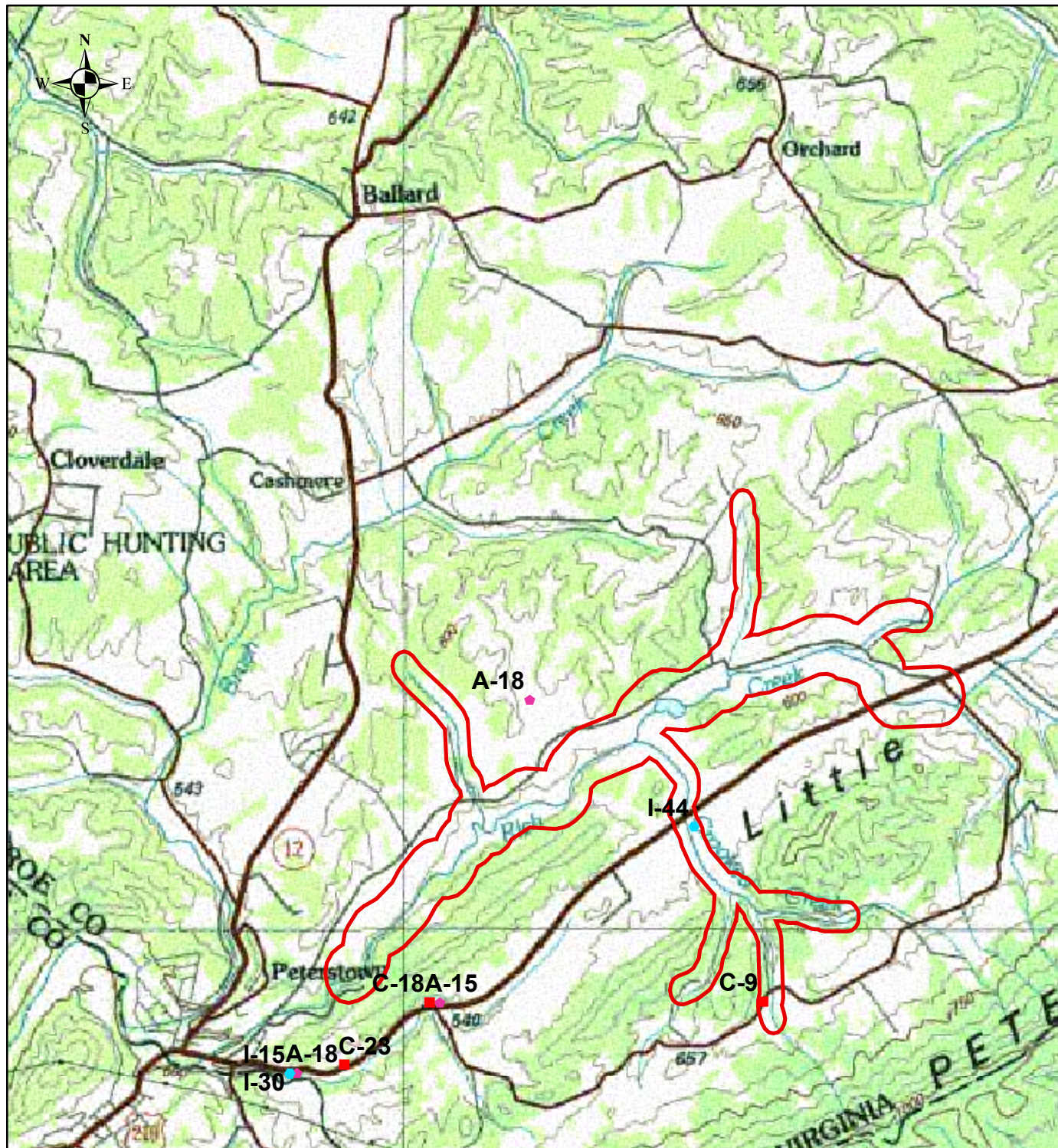
Water Quality Data is used to help assess both the potential pathogen contamination and other compliance monitoring (Nitrates) parameters associated with public water supply wells.

Potential Significant Contaminant Source (PSCS) is a facility or activity that stores, uses, or produces



chemicals or elements, and has the potential to release contaminants identified in the state program within a source water protection area in an amount, which could contribute significantly to the contaminants of the source waters of the public water supply.

***Disclaimer - The coverage's presented in this program are under constant revision as new sites or facilities are added. They may not contain all the potential or existing sites or facilities. The West Virginia Bureau for Public Health is not responsible for the use or interpretation of this information. Please report any inaccuracies on either the map or inventory by phoning 304-558-2981.***



### Map Key

#### Potential Contaminant Sources

- Agriculture
- Commercial
- Industrial
- Municipal
- Residential
- Zone of Critical Concern

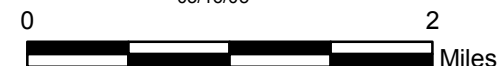


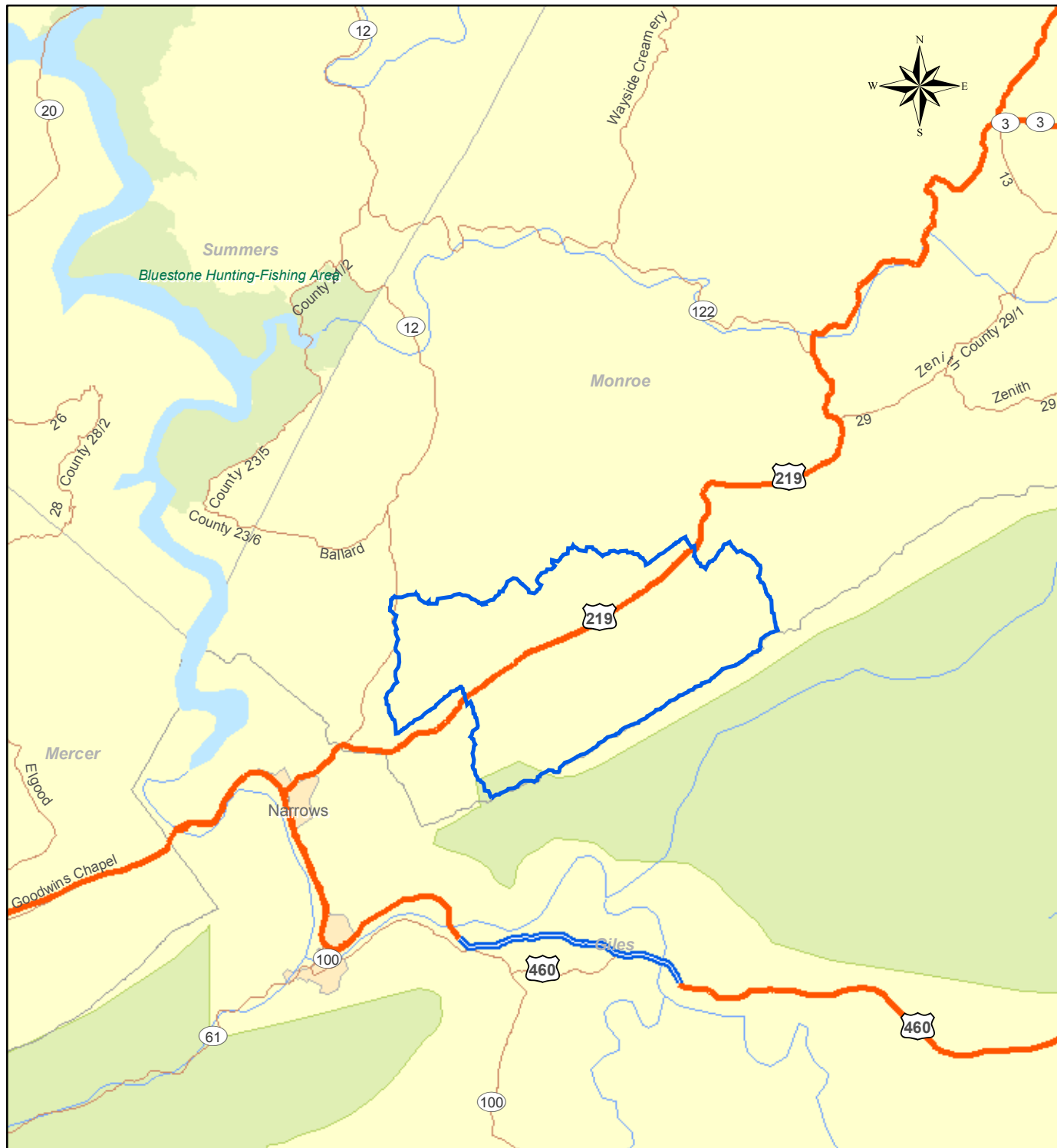
This map is provided as a public service by the West Virginia Bureau for Public Health. The Bureau makes NO representation regarding completeness or accuracy of the data hereon. Efforts are made to verify and update the data used to generate this map. However, with data sets of this size and nature,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

Source locations not included for reasons of security


## Red Sulphur PSD Zone of Critical Concern WV3303206 Monroe County

Scale: 1:60,000  
Drawn by: JF  
03/16/05





## Map Key

 Watershed Delineation Area



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## Red Sulphur PSD Watershed Delineation Area WV3303206 Monroe County

Scale: 1:200,000  
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