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

Revised Report

Parkview Woodland MHP PWSID WV3301966 Jefferson County



Prepared by:

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

May 23, 2014

TABLE OF CONTENTS

| Introduction | 3 |
|--------------------------------------------------------------------------------------------------------------|-------------|
| What is the Purpose of this Revised Report? | 3 |
| Table 1 Public Water Supply Information | 3 |
| What is my Well's Source Water Protection Area? | 4 |
| What is SWAP? | 4 |
| What is Susceptibility? | 4 |
| How Was my Well's Susceptibility Determined? | 4 |
| Table 2 Source of Your Drinking Water - Hydrogeologic Setting Table 3 Physical Integrity of Well | 5 6 |
| Water Quality and Water Treatment Information | 6 |
| Evaluation of Significant Potential Sources of Contamination | 6 |
| Historic Land Use and Land Use Changes | 7 |
| Regional Water Supply and Sewage Treatment | 7 |
| Above Ground Storage Tanks (AST) | 7 |
| Underground Storage Tanks (UST) | 7 |
| Overview of Leaking Underground Storage Tanks (LUST) | 7 |
| Table 4 Potential Contaminant Sources Table 5 Regulated Facilities | 8 13 |
| Next Step: | 17 |
| Need additional information? | 17 |
| *DISCLAIMER | 18 |
| Figure 1: Parkview Woodland MHP Location Map | 18 |
| Figure 2: Parkview Woodland MHP Source Water Protection Area with PCS Locations (Topogr Map Background) | raphic |
| Figure 3 Parkview Woodland MHP Source Water Protection Area with PCS Locations (2011 Ac Photo Background) | erial 20 |
| Figure 4 Parkview Woodland MHP Aerial Photographs (1988) | 21 |
| Figure 5 Parkview Woodland MHP Land Use Change (1988-2011) | 22 |
| Figure 6 Parkview Woodland MHP Geologic Map | 23 |
| Appendix A USEPA and WVDEP Regulated Sites | 24 |
| Glossary of Terms | 26 |

GROUND WATER PUBLIC SUPPLY SYSTEMS SOURCE WATER ASSESSMENT AND PROTECTION (SWAP) PROGRAM REPORT

Prepared by: West Virginia Department of Health and Human Resources (WVDHHR), SWAP Program

INTRODUCTION

What is the Purpose of this Revised Report?

A Source Water Assessment Report was previously prepared for Parkview Woodland MHP by West Virginia Department of Health and Human Resources, Bureau for Public Health, Office of Environmental Health Services, Source Water Protection Unit in December 2002 and March 2013. Parkview Woodland MHP is located approximately 2.5 miles North of Ranson, Jefferson County, West Virginia along State Route 9 (See Figure 1).

Additional database PCS and regulated facility information has been added to the assessment report. This revised assessment report is based on this recently updated information as well as other available information. The original assessment delineated an area of 3,460 acres as the Source Water Protection Area (SWPA). This March 2013 revised report reconfigured the original protection area to include 6,130 acres.

This concept of source water protection is a preventative approach and complements the effort of proper treatment and disinfection by the individual water supply systems. This assessment is one step in a multilevel approach to ensure a safe future supply of water by understanding what potential threats exist.

This Source Water Assessment Public Summary is to provide information to support local and state efforts to protect public drinking water source and to maintain a safe and dependable water supply for the protection of human health by preventing contamination. The costs of these preventative measures will rarely exceed the cost of remediating a public water supply once it is contaminated.

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

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

| PWS Name | Parkview Woodland MHP |
|------------------|---------------------------------|
| Address | P.O. Box 339 |
| City, State, Zip | Greencastle, Pennsylvania 17225 |
| PWSID# | WV3301966 |
| County | Jefferson County |
| System Type | Community |

Table 1 Public Water Supply Information

What is my Well's Source Water Protection Area?

A well(s) source water protection area (SWPA) is the land around the well where protection activities should be focused. The SWPA is the area that is likely contributing water to the well. Please refer to Figure 2 for your SWPA.

What is SWAP?

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

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

The WVDHHR SWAP will complete all of these components of a source water assessment.

What is Susceptibility?

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

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

How Was my Well's Susceptibility Determined?

Your well field's susceptibility is based on the following parameters:

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

| Well Name | Geologic Setting/Sensitivity | | | |
|-----------------------|-----------------------------------------------------------------------------------|--|--|--|
| Well WL001 | | | | |
| Well WL002 | Karst Area/ High Sensitivity Valley and Ridge (fracture)/ Moderate Sensitivity | | | |
| Well WL003 (inactive) | valley and Ridge (fracture)/ Moderate Sensitivity | | | |

Table 2 Source of Your Drinking Water - Hydrogeologic Setting

The Parkview Woodland MHP water system serves a population of approximately 287 people. The supply is from two source wells. Total raw water production is approximately 16,000 GPD. The source wells are located in a Karst area and the Valley and Ridge Province/ area of West Virginia.

Karst areas consist of underlying karstified limestone or dolostone with subterranean drainage. The Valley and Ridge Province/ area consists of complex faulted blocks that contain either localized-confined or localized unconfined aquifers, or lack of aquifers. The aquifers may be porous media or fractured rock. The source well is located along the east limb of the Massanutten Syncline. Rock units within the SWPA include those of the Stonehenge Limestone of the Beekmantown Group and the Elbrook and Conococheague Formations. Major structural features (axis of anticlines and synclines) are oriented in a northeast/southwest direction.

Limestones, present within the protection area, are subject to possible solution channel and sinkhole development. Surface waters can enter the ground water regime very quickly via direct injection through sinkholes or other fracture or solution openings. The type of flow in karst areas is described as being conduit flow and is delivered via strike oriented cave passages or along fault planes and fault passages.

The original delineation, established by WVDHHR consultant RK&K comprised an area of 3,460 acres. The March 2013 revised report reconfigured the boundaries of the protection area to include 6,130 acres. This new delineation was defined using site specific and regional data for the system. WVDHHR used hydrogeologic mapping based on the original groundwater flow model developed by RK&K, local geologic structure, probable direction of regional ground water flow based on published reports (see reference list below), bedrock lithology, regional dye trace data, and topography to define the area of possible source water contribution to the wells.

The estimated land area (approximately 6,130 acres) that may contribute water to the wells is depicted in the attached map (Figure 2) as the Source Water Protection Area. However, source water and contaminant sources may originate from greater distances than encompassed by this interim delineation. Future revisions to the SWPA may occur as additional geohydrologic information becomes available.

References

Kozar, M. D., and Weary, D. J., 2009, Hydrogeology and ground-water flow in the Opequon Creek watershed area, Virginia and West Virginia: U.S. Geological Survey Scientific Investigations Report 2009-5153, 61 p.

Geohydrology and water quality of the Leetown Area, West Virginia, by Mark D. Kozar, Kurt J. McCoy, David J. Weary, Malcolm S. Field, Herbert A. Pierce, William B. Schill, and John A. Young: U.S. Geological Survey Open-file Report 2007-1358, 100 p, http://pubs.usgs.gov/of/2007/1358.

Kozar, M. D., Hobba, W. A., and Macy, J. A., 1991, Geohydrology, water availability, and water quality of Jefferson County, West Virginia, with emphasis on the carbonate area: U.S. Geological Survey Water-Resources Investigations Report 90-4118, 93 p.

| Table | 3 | Physic | cal I | ntegrity | of | Well |
|-------|---|--------|-------|-----------|-----|------|
| Iunic | ~ | I Hyph | cui i | incegincy | ••• | |

| Well Name | Completion Date | Completion Report | Well/ Casing Depth (feet) | Grout | Source Integrity |
|-----------------------|--------------------|----------------------|------------------------------|---------|------------------|
| Well WL001 | Unknown | No | 415/83 | Yes | Meets Standards |
| Well WL002 | Unknown | No | Unknown | Unknown | Unknown |
| Well WL003 (inactive) | Unknown | No | Unknown | Unknown | Unknown |

Wells may vary in their construction characteristics and in the geologic rock types in which they occur. The lack of an effective grout and sanitary seals are avenues by which contaminants from nearby surface water bodies or overland runoff can percolate to wells.

Water Quality and Water Treatment Information

The Ground Water Under the Direct Influence (GWUDI) assessment evaluates contaminants that may enter the water drawn directly from the well. Parkview Woodland MHP Wells WL001 and WL002 were designated NOT GWUDI by letter dated February 14, 2001.

The contaminants addressed in this assessment include those regulated under the Safe Drinking Water Act as well as those the WVDHHR has determined may present a concern to public health. The latest analysis for a variety of bacterial, organic, nitrate, synthetic and inorganic contaminants in the water after treatment have yielded values below the maximum contaminant level (MCL) as regulated by the Safe Drinking Water Act. Because sampling requirements are for treated water, the lack of water quality impacts does not necessarily indicate a lack of contamination. This determination is limited by the sampling that is performed for the water system.

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

EVALUATION OF SIGNIFICANT POTENTIAL SOURCES OF CONTAMINATION

The inventory for Parkview Woodland MHP consists of approximately 139 significant Potential Contaminant Sources (PCS) of which 54 are considered higher threats to ground water. Please refer to Table 4 for a listing of identified PCSs and Figures 2 and 3 for their locations within the SWPA. Regulated facilities and activities are listed in Table 5 and located on Figures 2 and 3, if present within the SWPA.

Some PCSs that are located outside of the SWPA may be included for information purposes. Water supply wells are not identified on the map for security reasons. Some facilities are not located on the SWPA map as they occur over broad geographic areas (agricultural fields, highways, and railroad right-of-ways).

Each significant potential source of contamination has been analyzed and prioritized (low, medium, and high, unless otherwise noted) relative to its potential to impact the water supply. It is important to note that the links between the PCS and the primary contaminant types are not intended to be comprehensive, but only those commonly associated with the PCS. Any potential source may have one or more types of contaminants associated with the chemicals indicated. Threat rankings are a combination of the perceived risk of the release of a contaminant from a land use area, the migration route of the contaminant to the well and the relative public health risk of the contaminant itself. The risk rankings are based on the general nature of their activities and the contaminants associated with them, not on facility specific information, such as

management practices. This ranking does not take into consideration any unforeseen releases or the dynamics of new PCS's within the delineated SWPA.

A detailed risk assessment of PCS's was beyond the scope of what could be accomplished with available resources and data. A detailed risk analysis is more meaningful when prepared by local decision makers as the bridge from assessment work to protection strategies.

Historic Land Use and Land Use Changes

Historic land use within the SWPA has been primarily agricultural including orchards, various crops, hay production, dairy farms, and livestock grazing. Aerial photographs were examined to determine major changes in land use that have occurred during the last 20 years.

Between 1988 and 2011, 338 additional acres were converted from agricultural land to moderate to high density housing, manufacturing facilities, or business locations representing an increase of 87.8%. In 1988, 6.3% of SWPA area was developed and in 2011, 11.8%. Figure 5 illustrates these changes.

Regional Water Supply and Sewage Treatment

Ground water is a primary source of drinking water supply to both private and public water systems within the SWPA. The area is served by individual wastewater treatment plants (four listed in PCS inventory). There are still individual septic systems and at least three WVDEP regulated UIC septic systems within the SWAP.

Above Ground Storage Tanks (AST)

Above Ground Storage Tanks are regulated by the WVDEP under 47CSR58 (Groundwater Protection Rule) and are subject to specific standards. Any facility using an AST is required to develop and implement a Groundwater Protection Plan. The WVDEP Guidance Document for AST (2010 revision) is attached for your information. You should contact the WVDEP Groundwater/UIC Program office for current requirements and further advice at 304-926-0499.

Underground Storage Tanks (UST)

All Underground Storage Tanks should be located and a determination made as to operating status, whether it presently contains material, or if it has been or should be removed. Contact the WVDEP UST Program office at 304-926-0499 for current operational and abandonment requirements and further advice.

Overview of Leaking Underground Storage Tanks (LUST)

Commercial and industrial development is concentrated along the State Route 9 corridor and south of Route 9, along County Route 8. High intensity urban development occurs at Shenandoah Junction.

The WVDEP LUST inventory includes nine sites in Kearneysville (outside and northwest of the SWPA) and one in Shenandoah Junction (on the northeast boundary of the SWPA). A confirmed release was recorded on January 21, 1998 at the Shenandoah Junction site, with cleanup started on January 21, 1998 and listed as completed on October 17, 2002. Cleanup is listed as completed at six of the nine Kearneysville sites.

Note: The WVDEP LUST Inventory does not provide location coordinates - only physical addresses are provided. Other facilities may be present in your source water protection area. Please contact the WVDEP for more information at 304-926-0499. A current list of LUST sites is maintained by the WVDEP and can be obtained online at http://www.dep.wv.gov/dlr/oer/lustmain/Pages/default.aspx. To obtain additional information on any of the LUST sites, you may submit a Freedom of Information Act (FOIA) request to DEPFOIA@wv.gov.

Table 4 Potential Contaminant Sources

| Sequential No. | Map Code | PCS Description | PCS Name | PCS Category | Associated Chemicals | Threat to GW |
|----------------|----------|--------------------------------------|--------------------------------------|--------------|----------------------|-----------------|
| 1 | R-4 | Residential (mobile home park) | Residential (mobile home park) | Residential | VOC, SOC, NN | Н |
| 2 | M-19 | Railroad Tracks (right of way) | Railroad Tracks (right of way) | Commercial | M, VOC, SOC, PH | Н |
| 3 | A-5 | Crops: Corn, Soybean, Wheat | Crops: Corn, Soybean, Wheat | Agriculture | NN, SOC, MP | L |
| 4 | M-29 | Wastewater Treatment Plant | Wastewater Treatment Plant | Municipal | M, VOC, MP, TO | L |
| 5 | C-43 | Repair Shops (appliances) | Gilleys AC Repair | Commercial | PH, VOC, SOC | Н |
| 6 | R-4 | Residential (single family homes) | Residential (single family homes) | Residential | VOC, SOC, NN | Н |
| 7 | M-29 | Sewer Lift Station | Wastewater Treatment Plant | Municipal | M, VOC, MP, TO | L |
| 8 | M-23 | Sewage Lift Station | Sewage Lift Station | Municipal | M, VOC, MP, TO | Н |
| 9 | A-5 | Crops: Corn, Soybean, Wheat | Crops: Corn, Soybean, Wheat | Agriculture | NN, SOC, MP | L |
| 10 | A-12 | Farm Equipment | Farm machinery areas | Agriculture | PH, VOC | L |
| 11 | A-12 | Farm | Farm machinery areas | Agriculture | PH, VOC | L |
| 12 | M-29 | Sewer Lift Station | Wastewater Treatment Plant | Municipal | M, VOC, MP, TO | L |
| 13 | A-22 | Other (grain elevator) | Other (grain elevator) | Agriculture | ND | ND |
| 14 | A-7 | Crops: other | Crops: other | Agriculture | NN, MP, SOC | L |
| 15 | I-41 | Wood preserving/treatment facilities | Wood preserving/treatment facilities | Industrial | M, VOC, SOC | Н |
| 16 | C-7 | Car dealerships | Guys Buick Pontiac | Commercial | PH, VOC | Н |
| 17 | R-4 | Residential (single family) | Residential (single family) | Residential | VOC, SOC, NN | Н |
| 18 | R-4 | Residential (single family) | Residential (single family) | Residential | VOC, SOC, NN | Н |
| 19 | R-4 | Residential (single family) | Residential (single family) | Residential | VOC, SOC, NN | Н |
| 20 | R-4 | Residential (single family) | Residential (single family) | Residential | VOC, SOC, NN | Н |

| Sequential No. | Map Code | PCS Description | PCS Name | PCS Category | Associated Chemicals | Threat to GW |
|-------------------|----------|--------------------------------------|------------------------------------|--------------|------------------------|-----------------|
| 21 | A-7 | Crops: other | Crops: other | Agriculture | NN, MP, SOC | L |
| 22 | A-17 | Other Animal Facilities | Other Animal Facilities | Agriculture | MP | L |
| 23 | R-4 | Residential (single family) | Residential (single family) | Residential | VOC, SOC, NN | Н |
| 24 | A-7 | Crops: other | Crops: other | Agriculture | NN, MP, SOC | L |
| 25 | A-6 | Crops: orchards | USDA | Agriculture | NN, SOC | L |
| 26 | I-20 | Machine and metalworking shops | DALB | Industrial | M, VOC, HM, PH, SOC | Н |
| 27 | C-1 | Above Ground Storage Tanks | McDaniel Hardwood Products | Commercial | PH, VOC | М |
| 28 | I-32 | Sawmills | McDaniel Hardwood Products | Industrial | PH, VOC, SOC | М |
| 29 | I-41 | Wood preserving/treatment facilities | McDaniel Hardwood Products | Industrial | M, VOC, SOC | Н |
| 30 | C-10 | Construction areas | Snyder Environmental | Commercial | M, T, PH, VOC, SOC, HM | М |
| 31 | C-1 | Above Ground Storage Tanks | Snyder Environmental | Commercial | PH, VOC | L |
| 32 | C-1 | Above Ground Storage Tanks | Two Tanks | Commercial | PH, VOC | L |
| 33 | C-3 | Auto repair shops | McCarthy Tire and Automotive | Commercial | PH, M, VOC, HM, SOC | Н |
| 34 | C-25 | Junkyards (Scrap and Auto) | McCarthy Tire and Auto | Commercial | PH, VOC, M, HM | Н |
| 35 | C-47 | Tire Dumps | McCarthy Tire & Auto | Commercial | М | L |
| 36 | C-44 | Research laboratories | Jefferson County Health Department | Commercial | M, VOC, SOC | Н |
| 37 | C-3 | Auto repair shops | State Police Barracks | Commercial | PH, M, VOC, HM, SOC | Н |
| 38 | M-23 | Sewer Lines (lift station) | Sewer Lines | Municipal | M, VOC, MP, TO | Н |
| 39 | I-44 | Other | Arpin Logistics | Industrial | ND | ND |
| 40 | I-44 | Other | Royal Venders | Industrial | ND | ND |
| 41 | I-20 | Machine and metalworking shops | Mountain State Machine Tools | Industrial | M, VOC, HM, PH, SOC | Н |

| Sequential No. | Map Code | PCS Description | PCS Name | PCS Category | Associated Chemicals | Threat to GW |
|-------------------|----------|--------------------------------|---------------------------------------|--------------|------------------------|-----------------|
| 42 | R-4 | Residential (single family) | Residential (single family) | Residential | VOC, SOC, NN | Н |
| 43 | C-53 | Warehouse | Warehouse | Commercial | ND | ND |
| 44 | A-15 | Greenhouses/Nurseries | Appalachian Fruit Research Station | Agriculture | MP, NN | L |
| 45 | C-48 | UST (fuel oil) | Appalachian Fruit Research Station | Commercial | PH, VOC | Н |
| 46 | I-3 | Chemical Storage | Appalachian Fruit Research Station | Industrial | PH, M, VOC, SOC | Н |
| 47 | I-14 | Hazardous Waste Storage | Appalachian Fruit Research Station | Industrial | PH, R, M, VOC, SOC | Н |
| 48 | I-3 | Chemical Storage (pesticides) | Appalachian Fruit Research Station | Industrial | PH, M, VOC, SOC | Н |
| 49 | C-48 | UST (gasoline/diesel) | Appalachian Fruit Research Station | Commercial | PH, VOC | Н |
| 50 | A-6 | Crops: orchards | Appalachian Fruit Research Station | Agriculture | NN, SOC | L |
| 51 | R-4 | Residential (single family) | Residential (single family) | Residential | VOC, SOC, NN | Н |
| 52 | C-10 | Construction areas | Construction areas | Commercial | M, T, PH, VOC, SOC, HM | М |
| 53 | C-41 | Railroad Tracks and Yards | Outside Burr Industrial Park | Commercial | PH, M, VOC, SOC | Н |
| 54 | R-4 | Residential (single family) | Residential (single family) | Residential | VOC, SOC, NN | Н |
| 55 | C-53 | Warehouse | Warehouse | Commercial | ND | ND |
| 56 | C-53 | Other | S & G Plumbing | Commercial | ND | ND |
| 57 | M-23 | Sewer Lines (lift station) | Sewer Lines | Municipal | M, VOC, MP, TO | Н |
| 58 | C-53 | Warehouse | Automated Merchandising Systems, Inc. | Commercial | ND | ND |
| 59 | C-53 | Other | Kubic Construction | Commercial | ND | ND |
| 60 | C-53 | Other | Todd Electric | Commercial | ND | ND |
| 61 | C-53 | Other | Schonsted Instrument Co. | Commercial | ND | ND |
| 62 | I-20 | Machine and metalworking shops | Automated Merchandising Inc (AMS) | Industrial | M, VOC, HM, PH, SOC | Н |

| Sequential No. | Map Code | PCS Description | PCS Name | PCS Category | Associated Chemicals | Threat to GW |
|-------------------|----------|-----------------------------------|-----------------------------------|--------------|----------------------|-----------------|
| 63 | M-21 | Schools | T.A. Lowery Elementary | Municipal | SOC, D, VOC, PH | L |
| 64 | C-53 | Other | Schwanns | Commercial | ND | ND |
| 65 | C-53 | Other | Premier Follfillment & Processing | Commercial | ND | ND |
| 66 | A-15 | Greenhouses/Nurseries | R&L Landscape Center | Agriculture | MP, NN | L |
| 67 | C-53 | Warehouse | Warehouse | Commercial | ND | ND |
| 68 | C-14 | Fleet/truck/bus Terminals | Apple Valley Waste | Commercial | M, VOC, HM, SOC, PH | Н |
| 69 | C-40 | Printer/Publisher | Avalanche Graphics | Commercial | VOC. SOC | М |
| 70 | C-53 | Warehouse | Sur-Loc Flooring Systems | Commercial | ND | ND |
| 71 | C-53 | Waste Collection/Transfer Station | Apple Valley Waste | Commercial | ND | ND |
| 72 | M-23 | Sewer Lines | Burr Industrial Park | Municipal | M, VOC, MP, TO | Н |
| 73 | C-53 | Other | Other | Commercial | ND | ND |
| 74 | R-4 | Residential (single family) | Residential (single family) | Residential | VOC, SOC, NN | Н |
| 75 | A-15 | Greenhouses/Nurseries | Jones Nursery and Florist | Agriculture | MP, NN | L |
| 76 | A-7 | Crops: other | Crops: other | Agriculture | NN, MP, SOC | L |
| 77 | M-18 | Railroad Tracks (right of way) | CSX RR | Municipal | M, VOC, SOC, PH | Н |
| 78 | A-7 | Crops: other | Crops: other | Agriculture | NN, MP, SOC | L |
| 79 | M-21 | Schools | Jefferson High School | Municipal | SOC, D, VOC, PH | L |
| 80 | M-29 | Wastewater Treatment Plant | Jefferson County High School | Municipal | M, VOC, MP, TO | L |
| 81 | A-15 | Greenhouses/Nurseries | Jefferson County High School | Agriculture | MP, NN | L |
| 82 | M-32 | Other | Jefferson County Middle School | Municipal | ND | ND |
| 83 | R-4 | Residential (single family) | Residential (single family) | Residential | VOC, SOC, NN | Н |

| Sequential No. | Map Code | PCS Description | PCS Name | PCS Category | Associated Chemicals | Threat to GW |
|----------------|----------|--------------------------------------------------|---------------------------------|--------------|----------------------|-----------------|
| 84 | M-29 | Wastewater Treatment Plant | Wastewater Treatment Plant | Municipal | M, VOC, MP, TO | L |
| 85 | M-23 | Sewer Lines (lift station) | Sewer Lines | Municipal | M, VOC, MP, TO | Н |
| 86 | M-23 | Sewer Lines (lift station) | Sewer Lines | Municipal | M, VOC, MP, TO | Н |
| 87 | C-18 | Gas Stations | Hendrick Grocery | Commercial | PH, M, VOC, SOC | Н |
| 88 | C-3 | Auto repair shops | Jim's Circle Transmissions | Commercial | PH, M, VOC, HM, SOC | Н |
| 89 | C-44 | Research laboratories | Hydrochem Laboratories | Commercial | M, VOC, SOC | Н |
| 90 | M-29 | Wastewater Treatment Plant | Hazel MHP WWTP Discharge | Municipal | M, VOC, MP, TO | L |
| 91 | M-17 | Railroad Tracks (right of way) | Northfolk and CSX Interchange | Municipal | M, VOC, SOC, PH | Н |
| 92 | A-19 | Pesticide/fertilizer/petroleum storage/transport | Twin Ridge Orchard | Agriculture | PH, NN, SOC, VOC | L |
| | M-7 | Highway (State Route 9) | Highway (State Route 9) | Municipal | PH, VOC, M | М |
| | M-7 | Highway (County Route 8) | Highway (County Route 8) | Municipal | PH, VOC, M | М |
| | M-30 | Wells: Abandoned | Wells: Abandoned | Municipal | VOC, SOC, MP, PH, NN | Н |
| | M-5 | Drinking Water Treatment Plants | Drinking Water Treatment Plants | Municipal | D | L |

Table 5 Regulated Facilities

| Sequential No. | Map Code | PCS Description | PCS Name | PCS Category | Associated Chemicals | Threat to GW |
|-------------------|----------|--------------------------------|--------------------------------------|--------------|------------------------|-----------------|
| R1 | R-7 | DEP Regulated UIC | 84 Lumber | Residential | M, VOC, SOC, TO, NN | Н |
| R2 | D-6 | TRI | Royal Vendors | Database | HM, M, VOC, SOC, R | Н |
| R3 | D-6 | TRI | DALB Inc. | Database | HM, M, VOC, SOC, R | Н |
| R4 | D-6 | TRI | Automated Merchandising Systems Inc. | Database | HM, M, VOC, SOC, R | Н |
| R5 | R-7 | DEP Regulated UIC | Uvilla-Snyder Environmental Services | Residential | M, VOC, SOC, TO, NN | Н |
| R6 | R-7 | DEP Regulated UIC | Hydrochem Laboratory | Residential | M, VOC, SOC, TO, NN | Н |
| R7 | D-3 | NPDES Registry ID 110054993888 | 84 Lumber, Ranson | Database | All | L |
| R8 | D-3 | NPDES Registry ID 110046134198 | American Heritage East | Database | All | L |
| R9 | D-3 | NPDES Registry ID 110055031950 | Ranson Storage, LLC | Database | All | L |
| R10 | D-3 | NPDES Registry ID 110046135286 | Wild Rose Subdivision | Database | All | L |
| R11 | D-3 | NPDES Registry ID 110046140323 | Ranson Retail II, LLC | Database | All | L |
| R12 | D-3 | NPDES Registry ID 110054990685 | Chick-Fil-A, Ranson | Database | All | L |
| R13 | D-3 | NPDES Registry ID 110055015503 | McKinney's Auto Repair | Database | All | L |
| R14 | D-4 | RCRA Registry ID 110007876977 | Essick MFG CO | Database | PH, R, HM, M, VOC, SOC | Н |
| R15 | D-3 | NPDES Registry ID 110046130860 | Currie Station | Database | All | L |
| R16 | D-3 | NPDES Registry ID 110055016771 | The Crofts at Shepherdstown | Database | All | L |
| R17 | D-3 | NPDES Registry ID 110054953895 | Locust Knoll Farm Subdivision | Database | All | L |
| R18 | D-3 | NPDES Registry ID 110054959425 | WV 9 0.11 MI. S WV 115 TO 0.70 | Database | All | L |
| R19 | D-4 | RCRA Registry ID 110000344413 | DALB Inc. | Database | PH, R, HM, M, VOC, SOC | Н |
| Sequential | Map Code | PCS Description | PCS Name | PCS Category | Associated Chemicals | Threat to |

| No. | | | | | | GW |
|-----|-----|--------------------------------|----------------------------------------|----------|------------------------|----|
| R20 | D-3 | NPDES Registry ID 110046125117 | DALB Site Plan Building Expansion | Database | All | L |
| R21 | D-3 | NPDES Registry ID 110022900609 | Royal Vendors | Database | All | L |
| R22 | D-4 | RCRA Registry ID 110005574752 | Mountain State Machine Tool | Database | PH, R, HM, M, VOC, SOC | Н |
| R23 | D-3 | NPDES Registry ID 110054898296 | 0.70 MI S OF JEFF CO 20 TO 0.1 | Database | All | L |
| R24 | D-3 | NPDES Registry ID 110054963054 | Jefferson High School | Database | All | L |
| R25 | D-3 | NPDES Registry ID 110014433167 | Jefferson County School Bus Garage | Database | All | L |
| R26 | D-3 | NPDES Registry ID 110046602459 | Rockwell Mini Storage | Database | All | L |
| R27 | D-3 | NPDES Registry ID 110055035563 | SUR-LOC Flooring at Burr Business Park | Database | All | L |
| R28 | D-3 | NPDES Registry ID 110055019750 | Burr Business Park | Database | All | L |
| R29 | D-4 | RCRA Registry ID 110005551250 | Appalachian Research Station | Database | PH, R, HM, M, VOC, SOC | Н |
| R30 | D-3 | NPDES Registry ID 110054991764 | Lot 23- BURR Industrial Park | Database | All | L |
| R31 | D-3 | NPDES Registry ID 110055013355 | LOT 22 BURR Ind. Park & No | Database | All | L |
| R32 | D-3 | NPDES Registry ID 110055015111 | BURR Industrial Park, Lot 24 | Database | All | L |
| R33 | D-3 | NPDES Registry ID 110054966293 | BURR-Bardane Industrial Park R | Database | All | L |
| R34 | D-3 | NPDES Registry ID 110055004301 | Apple Valley Waste | Database | All | L |
| R35 | D-3 | NPDES Registry ID 110054992273 | Automated Merchandising System | Database | All | L |
| R36 | D-3 | NPDES Registry ID 110046137612 | BURR Industrial Park – Lot 44 | Database | All | L |
| R37 | D-4 | RCRA Registry ID 110002098159 | Automated Merchandising Systems Inc. | Database | PH, R, HM, M, VOC, SOC | Н |
| R38 | D-3 | NPDES Registry ID 110055007120 | Lot 43B BURR Industrial Park | Database | All | L |
| R39 | D-3 | NPDES Registry ID 110046135071 | Tackley Basin Construction | Database | All | L |
| R40 | D-3 | NPDES Registry ID 110054977389 | Appalachian Fruit Res. Center | Database | All | L |

| Sequential No. | Map Code | PCS Description | PCS Name | PCS Category | Associated Chemicals | Threat to GW | |
|----------------------------------------------------------------------|----------|--------------------------------|--------------------------------|--------------|----------------------|-----------------|--|
| R41 | D-3 | NPDES Registry ID 110054939117 | Blackford Village Temporary Co | Database | All | L | |
| R42 | D-3 | NPDES Registry ID 110055004837 | BURR Business Park Lot 24 Site | Database | All | L | |
| R43 | D-3 | NPDES Registry ID 110010880733 | SJPS Incorporated | Database | All | L | |
| See also the "Overview of Leaking Underground Storage Tanks" Section | | | | | | | |

Note: Regulated facility location information is derived from external databases and has not been field confirmed or verified and is subject to error. The West Virginia Bureau for Public Health is not responsible for the use or interpretation of this information.

You may check on the status of USEPA regulated facilities by going to the USEPA Envirofacts link and entering the necessary query information - <u>http://www.epa.gov/enviro/html/fii/fii_query_java.html.</u> The name of the facility and the registry ID are provided in the Regulated Facility table of the SWAR.

See Appendix A for an explanation of regulated activities

Index to Associated Chemicals is as follows:

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

- NN Nitrate/Nitrite
- VOC Volatile Organic Compounds
- HM Heavy Metals
- M Metals
- SOC Synthetic Organic Compounds

Index to Threat Ratings:

- H High
- M Medium
- L Low
- ND Not Determined

- T Turbidity
- TO Taste and Odor precursors
- R Radionuclides
- PH Petroleum Hydrocarbons
- D Disinfection byproducts
- ND Not Determined

Based on this summarized narrative and susceptibility review for each well, the overall susceptibility for Wells WL001, WL002, and WL003 of the Parkview Woodland MHP indicates a high susceptibility to the identified potential sources of contamination for each well.

For this susceptibility analysis, the State combined the inventory results with other relevant information to decide how likely a water supply may become contaminated by the identified potential sources of contamination. This step makes the assessments useful for communities, since it provides information that local decision-makers use to prioritize approaches for protecting the drinking water supply. It does not mean that these wells are currently contaminated or that these wells are going to be contaminated in the near future, but the potential does exist.

RECOMMENDATION FOR YOUR SOURCE WATER ASSESSMENT AND PROTECTION ACTIVITIES

The following list provides specific recommendations for your source water assessment and protection activities.

- An aquifer protection management program should be developed for the well. Preferably, the protection plan should be developed for the entire SWPA with the cooperation of neighboring towns, county, and state agencies. It is recommended that protection and management efforts should focus on obtaining additional information on the sources present to evaluate their risk.
- Plan for and complete the proper abandonment of all inactive supply wells.
- Reduce existing chronic threats by obtaining further detailed information concerning Leaking Underground Storage Tanks (LUST's) or other Underground Storage Tanks (UST's) within the SWPA that are now in service or were in the past. This information should include the type of leak detection and corrosion protection currently being used at the facility.
- Investigate what types of preventative pollution measures are being conducted by the industrial or commercial facilities located within the SWPA. Some facilities may already have developed their Groundwater Protection Plan (GPP) for their facility.
- Inspect the SWPA regularly.
- Implement Land Use Planning tools to influence future developments within the SWPA. One way to accomplish this is to join forces with the county to adopt a zoning ordinance that would govern certain uses that are considered high threats to ground water.
- Provide maps of the SWPA to the County Planning Commission or other appropriate county agency to make them aware of the location of proposed development in relation to the water supply source.
- Establish funds to purchase land banks of critical areas (e.g. around sinkholes, wells, springs) to preserve the areas from future development.
- Support and encourage the implementation of Best Management Practices for agricultural areas including grazing lands, crop production farms, and orchards. In addition, support information can be provided to residents and commercial users to encourage the reduction in over use of common pesticides and fertilizers.

- Implement systems for regular collection of hazardous waste from residents. For example, the Eastern Panhandle Soil Conservation District and the Berkeley County Solid Waste Authority has helped organize amnesty days in the past where residents could bring in all types of hazardous wastes without threat of punishment.
- Encourage and implement public education about your water supply regarding its susceptibility to contamination and ways to protect. This could come in the form of brochures containing information and advice about ground water and the local terrain. For example, the Berkeley County Health Department has an on-going educational program that is presented to all fourth graders in the county.
- Support and encourage the identification of contamination incidents by citizens.
- Include information regarding contamination and source water protection in mailings to homeowners, including non-emergency contact information. Reduce the amount of septic systems in use by extension of the public sewer system or other approved systems.

NEXT STEP:

Parkview Woodland MHP should review the PWS's existing Source Water Protection Plan and incorporate the additional information contained in this revised Source Water Assessment. Staff from the WVDHHR is available to assist you in making any necessary changes. Please contact the Source Water Protection Program at 304-558-2981.

NEED ADDITIONAL INFORMATION?

To obtain additional information and/or links, visit the WVDHHP Web site at http://www.wvdhhr.org/oehs/eed/swap/ or call the SWAP Program at 304-558-2981.

*DISCLAIMER

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

Maps contained in this source water assessment report are 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 presented thereon. Efforts are made to verify and update the data used to generate the maps. However, with data sets of this size and nature, eliminating all errors is difficult. Thus, the user assumes total responsibility for verification.

Please report any inaccuracies on either the map or inventory by calling the SWAP Program at 304-558-2981.



Figure 1: Parkview Woodland MHP Location Map



Figure 2: Parkview Woodland MHP Source Water Protection Area with PCS Locations (Topographic Map Background)

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Figure 3 Parkview Woodland MHP Source Water Protection Area with PCS Locations (2011 Aerial Photo Background)

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Figure 4 Parkview Woodland MHP Aerial Photographs (1988)

Parkview Woodland MHP Source Water Assessment Report May 23, 2014

Page 21 of 27



Figure 5 Parkview Woodland MHP Land Use Change (1988-2011)

Parkview Woodland MHP Source Water Assessment Report May 23, 2014



Figure 6 Parkview Woodland MHP Geologic Map

Parkview Woodland MHP Source Water Assessment Report May 23, 2014

APPENDIX A USEPA AND WVDEP REGULATED SITES

CERCLIS:

The Superfund program was created by the Comprehensive Environmental Response, Compensation, and Liability Act, amended by the Superfund Amendments and Reauthorization Act. The acts established authority for the government to respond to the release/threat of release of hazardous wastes, including cleanup and enforcement actions. Long-term cleanups at National Priority List sites last more than a year while short term /emergency cleanups are usually completed in less than a year. CERCLIS is a database used by the U.S. Environmental Protection Agency to track activities conducted under its Superfund program. CERCLIS contains data on potentially hazardous waste sites that have been reported to the EPA. Sites are investigated because of a potential for releasing hazardous substances into the environment are added to the CERCLIS inventory. EPA learns of these sites through notification by the owner, citizen complaints, state and local government identification, and investigations by EPA programs other than Superfund. Specific information is tracked for each individual site.

NPDES:

The National Pollutant Discharge Elimination System (NPDES) database identifies facilities permitted for the operation of point source discharges to surface waters in accordance with the requirements of Section 402 of the Federal Water Pollution Control Act. Point sources are discrete conveyances such as pipes or man-made ditches. Industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into public waters.

RCRA:

This database has records for all hazardous waste, generators, and transporters as defined by the Resource Conservation Recovery Act (RCRA). Hazardous waste as defined by RCRA is waste material that exhibits ignitability, corrosivity, reactivity, or toxicity. Hazardous waste comes in many shapes and forms. Chemical, metal, and furniture manufacturing are some examples of processes that create hazardous waste. RCRA tightly regulates all hazardous waste from "cradle to grave" (i.e., from manufacture to disposal).

TRI:

The Toxics Release Inventory (TRI) is a publicly available EPA database that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities. This inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and expanded by the Pollution Prevention Act of 1990.

WVDEP Regulated Sites

Abandoned Mine Sites:

Abandoned mine features compiled by the Office of Abandoned Mine Lands and Reclamation (AMLR) of the West Virginia Department of Environmental Protection. The AMLR eliminates damage that occurred from mining operations prior to August 3, 1977 and is funded by the AML fund. It corrects hazardous conditions and reclaims abandoned and forfeited mine sites. Typical AML features include highwalls, portals, refuse piles, and mining structures such as tipples.

AST:

Use of Above Ground Storage Tanks (AST) in West Virginia is regulated by 47CSR58. The WVDEP has developed this guidance document as a guide for the construction, installation, use, and maintenance of ASTs. Questions concerning this document and use of ASTs should be directed to the West Virginia Department of Environmental Protection's Division of Water and Waste Management at 304-926-0495.

Coal Dams:

Point and polygonal mining related impoundments regulated by the West Virginia Department of Environmental Protection's (WVDEP) Division of Mining and Reclamation (DMR).

LUST:

The WV DEP became the lead agency for administering the Leaking Underground Storage Tank (LUST) Program with the federal Environmental Protection Agency (EPA)'s authorization in September 1997. Since then, the WV DEP has overseen the cleanup of released regulated substances, primarily petroleum products. Such releases can originate from overfilling, spilling, or leaking tanks and piping. **To report a release from an underground storage tank system, contact the Office of Environmental Remediation at 304-238-1220, ext. 3506.** After hours releases should be reported to the statewide emergency spill line at 800-642-3074.

Solid Waste Facilities:

Municipal and non-municipal waste landfills and waste transfers stations are regulated by the West Virginia Department of Environmental Protection's (WVDEP) Division of Waste Management.

Oil and Gas Wells:

The Office of Oil and Gas maintains records on active and inactive oil & gas wells. It also manages the Abandoned Well Plugging and Reclamation Program.

UIC:

The Underground Injection Control (UIC) program is designed to ensure that fluids injected underground will not endanger drinking water sources. The Division of Water and Waste Management regulates Class 5 wells. These wells include agriculture drainage wells, improved sinkholes, industrial disposal wells, stormwater wells and septic systems that have the capacity to serve 20 or more people. The following state codes address UIC regulations; 47CSR9, 47CSR13 and 47CSR55. The Division of Mining and Reclamation oversees all mining UIC permits.

UST:

The purpose of the Underground Storage Tank (UST) Section is to regulate underground storage tanks that contain petroleum or hazardous substances to determine compliance with state rules and federal regulations. West Virginia has had full program approval from EPA since February 1988.

GLOSSARY OF TERMS

Alluvium - Sediments deposited by moving rivers.

- Aquifer A formation, group of formations, or part of a formation that contains sufficient saturated permeable materials to yield sufficient, economical quantities of water to wells and springs.
- Conjunctive Delineation In cases where a "ground water" source is designated as Ground Water Under the Direct Influence (GWUDI), an additional delineation in addition to the five (5) year time of travel/recharge delineation for ground water will be completed. The additional delineation will account for stream segments outside of the ground water delineation in cases where the area of surface influence is known or reasonably suspected. It should be noted in karst situations particularly, the surface link is not always an adjacent stream, but could come from a stream miles away. In these cases a conjunctive delineation may not always be performed.
- Contamination The addition to water of any substance or property preventing the use of reducing the usability of the water for ordinary purposes such as drinking, preparing food, bathing, washing, recreation, and cooling
- Flood Plain Any land area susceptible to inundation by floodwater from any source.
- GWUDI or "Ground Water Under the Direct Influence" is defined by the EPA as water beneath the surface of the ground with either a significant occurrence of insects or other macro organisms, algae, or large diameter pathogens such as Giardia lambia or Cryptosporidium or other water characteristic such as turbidity, temperature, pH or conductivity.
- Hydrogeologic Setting Evaluates the sensitivity of an aquifer. The likelihood of a contaminant reaching a well or spring is a function of the ground water flows patterns, the rate of flow, the distance to the source and the hydraulic characteristics of the contaminant. The technical factors include the well(s) pumping rate and spring flow, the direction, slope and elevation of the water table, transmissivity and storativity characteristics of the aquifer, overlaying material and recharge rate for ground water systems.
- 100-year Flood Plain The area adjoining a river, stream, or water course covered by water in the event of a 100 year flood.
- 100 -year Flood The flood having a one percent chance of being equaled or exceeded in magnitude in any given year. Contrary to popular belief it is not a flood occurring once every 100 years.
- Karst A term denoting a formation containing soluble rocks, underground solution passages, sinkholes and springs.
- Infiltration The process of, or fluids, entering the soil and recharging aquifers rather than becoming runoff.
- Maximum Contaminant Level (MCL) Defined as the maximum permissible level of a contaminant in water, which is delivered to any user of a public water system.
- Physical Integrity of the Well or Spring This analysis evaluates and reviews the integrity of the well or spring structures needed to protect the water source from a potential contaminant source(s). It is recognized that protective well construction characteristics can prevent the occurrence of contamination even in the presence of potentially significant contaminant sources. The design and construction of a well should include casing without cracks; tight joints between lengths of casing; adequate grout between the casing and bore hole and location (floodplain or flooding area). A spring must be protected with "shoe box" type lid enclosure that is screened and locked to prevent unauthorized entry. Surface water runoff diversion and land use of the recharge area are paramount elements to evaluate. These features provide reasonable assurance that contaminants will not enter the well or spring through any pathway, and allow operators to focus on the potential for contaminants to migrate through the aquifer and enter into the well(s) or spring. However, even a well(s) and springs constructed to the most exacting standards may

lose structural integrity with time. Maintenance records of remedial improvements also will be reviewed in evaluation of integrity.

- Potential Contaminant Source (PCS) A facility or container or route of travel that could release a sufficient amount of a harmful contaminant that upon entering an aquifer or surface stream could contaminate it past the level of human health concerns.
- Public Water System is any water system or water supply which regularly supplies or offers to supply, piped water to the public for human consumption, if serving at least an average of twenty-five (25) individuals per day for at least sixty (60) days per year, or which has at least fifteen (15) service connections.
- Recharge Water entering the upper end of a groundwater flow system.
- Remediation The removal of contaminants from soil and/or ground water.
- Sensitivity of the Source Water Protection Area (SWPA) refers to the hydrologic or hydrogeologic characteristics that affect the transport of the contaminant from a source of contamination to a well or intake.
- Source Water Assessment and Protection (SWAP) Program The program established by the 1996 Amendments to the Safe Drinking Water Act (SDWA) which expanded the initial Wellhead Protection Program to all public drinking water supply systems including surface water systems. This program is to assess, preserve, and protect the source waters which are used to supply water for public drinking water supply systems and to provide a long term availability of an abundant supply of safe water in sufficient quantity for present and future citizens of the State. This program also enables the water supply owners, consumers, and others to initiate and promote actions to protect their drinking water supplies with the developed information.
- Source Water Protection Area (SWPA) refers to the area delineated by the State for a public water system, or including numerous public water systems, whether the source is ground water, surface water or both, as part of the West Virginia SWAP approved by the EPA under section 1453 of the Safe Drinking Water Act.
- Susceptibility The likelihood that a release from a PCS would contaminate and render unusable a drinking water supply such as aquifers or surface steams.
- Unconfined Aquifer An aquifer over which there is no confining layer.
- Water quality Available data will be evaluated to help direct protection activities. If the water quality impact is known, evaluating the source(s) present may help to determine the origin of the contamination and where immediate protection efforts should be focused
- Well(s) refers to ground water intakes including the well structure (i.e., casing, etc) and wellhead.
- Wellhead Protection Area (WHPA) The surface and subsurface area surrounding a water well or well field, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well field. This area is delineated by the State for ground water source public water systems. The former Wellhead Protection Program (WHPP) is now part of the Source Water Assessment and Protection (SWAP) Program.