

Source Water Protection

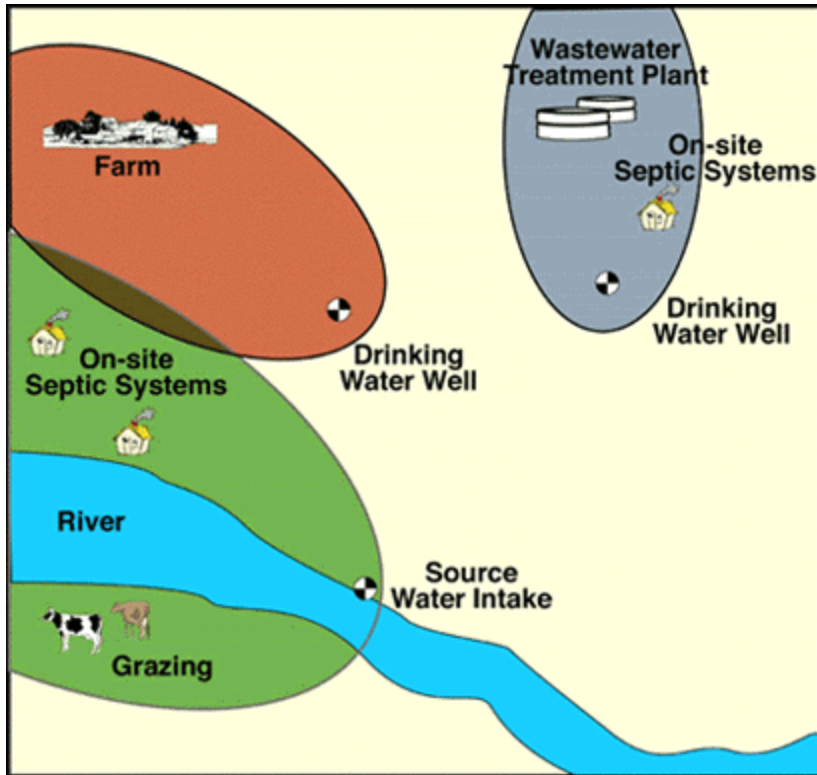


Image source: EPA, Source Water Assessments,
<http://cfpub.epa.gov/safewater/sourcewater/sourcewater.cfm?acton=Assessments>

West Virginia Water Resources Training Workshops

Presented by the Interstate Commission on the
Potomac River Basin

Sponsored by the West Virginia Department of
Environmental Protection

With funding from the American Reinvestment
& Recovery Act

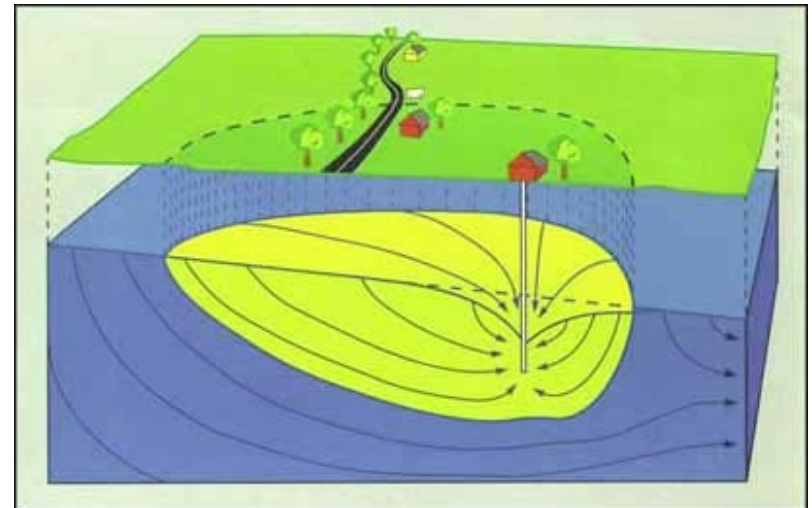
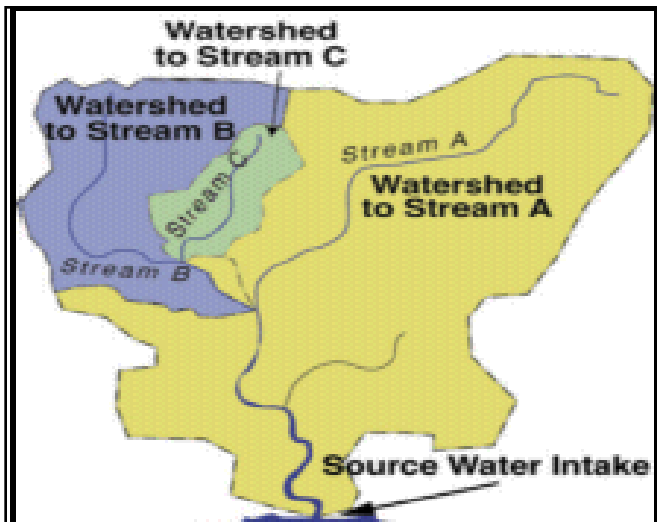


Outline

- What are source waters?
- Why should we protect them?
- Source water protection in WV
- Local source water assessments
- Protecting your source water

Source Water

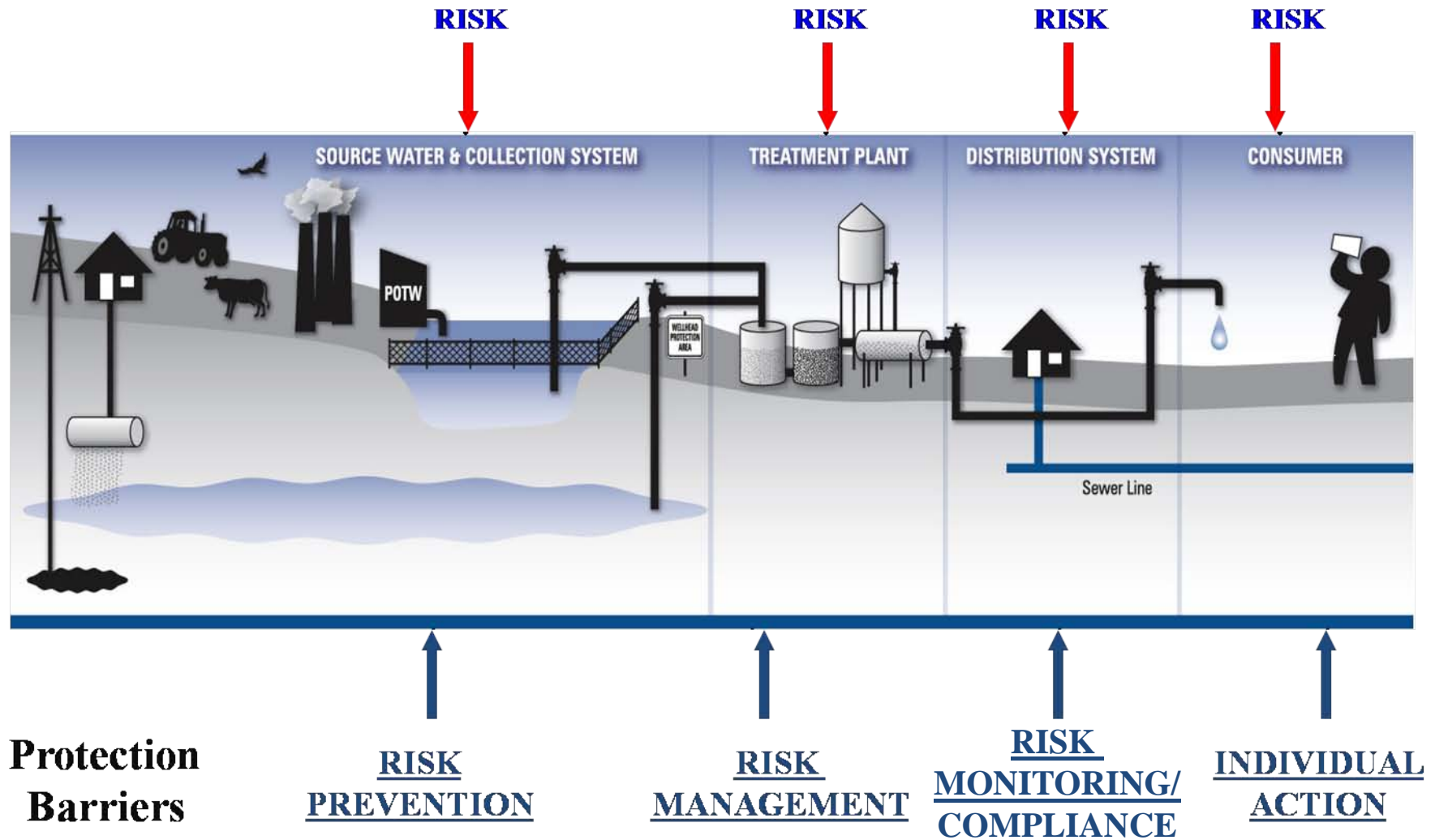
Any water – surface or ground water –
that ends up as drinking water



Why protect source waters?

- Protect public health
- Reduces cost
 - fewer contaminants = less treatment
- Precautionary measure

Why protect source waters?



Federal source water protection

- Safe Drinking Water Act
 - Drinking water standards
 - Public water supply supervision
 - Wellhead protection
 - Source water assessments
 - 1996 amendments
 - Does not require protection

<http://cfpub.epa.gov/safewater/sourcewater>

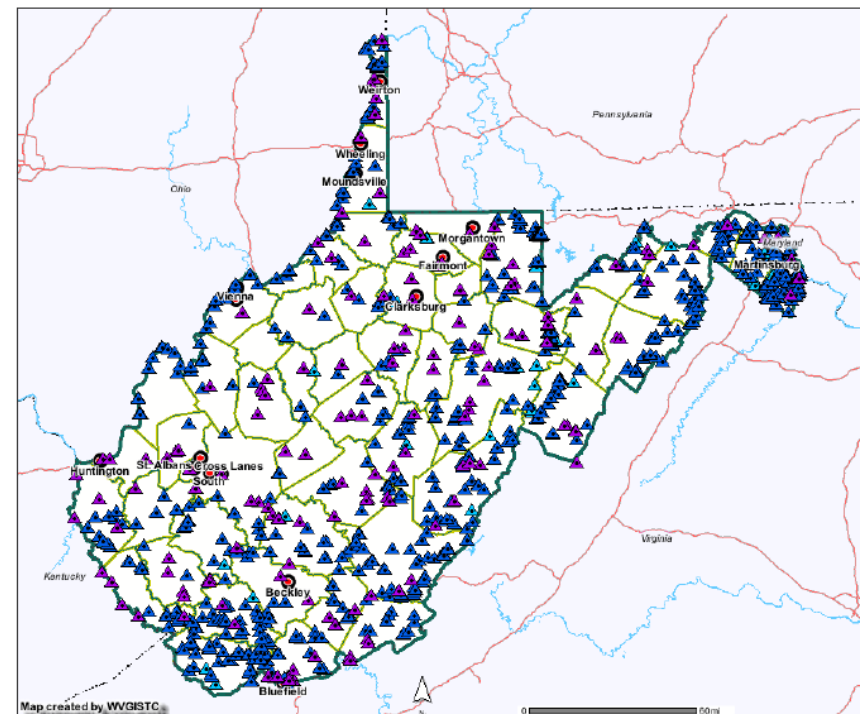
Source water protection in WV

- State level
 - WV Department of Health and Human Resources
 - Source Water Assessment and Wellhead Protection Programs
 - Source water assessments
- Local level
 - Source Water Protection Plans

<http://www.wvdhhr.org/oehs/eed/swap>

Active Public Water Systems

- ~ 1.4 million served by Public Water Supplies
 - Community Systems – 329
 - 184 Groundwater
 - 128 Surface Water (~76% of population)
 - 17 GWUDI
 - Non-Community System – 641
 - 619 Groundwater
 - 14 Surface Water
 - 8 GWUDI
- (as of 10/1/09)



Public Water Sources



GWUDI



Surface Water



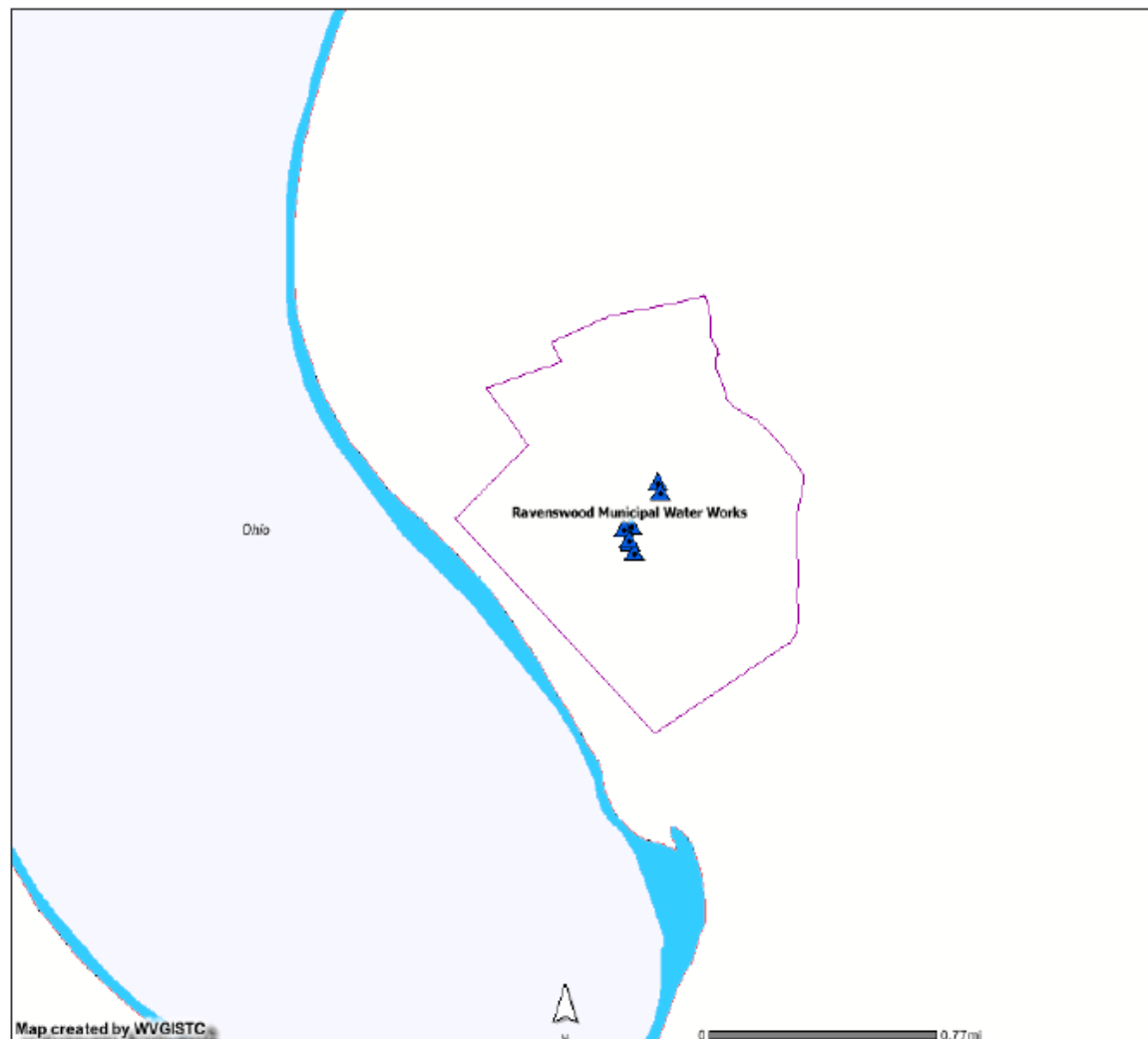
Ground Water

Source Water Assessments

- Where does your water come from?
 - Boundaries of drainage area that supplies water at intake
 - Zone of contribution to a wells
- What and where are the potential sources of contamination?
- What level of risk do they pose?
- How can the risk be minimized?

DHHR Source Assessment and Wellhead Protection Program

Delineation – Wellhead Protection Area



Map Legend

Potential Contaminant Source Inventory

- Agriculture (green circle)
- Commercial (red circle)
- Industrial (brown circle)
- Municipal (blue circle)
- Residential (yellow circle)

Public Water Systems

- Non-Community (light green square)
- Non-Transient Non-Community (light yellow square)
- Community (dark green square)

Public Water Sources

- GUDI (blue triangle)
- Ground Water (dark blue triangle)
- Surface Water (purple triangle)

Protection Watershed

- Secondary Wellhead Protection Area (yellow outline)
- Wellhead Protection Area (purple outline)
- Zone of Critical Concern (red outline)

Note:

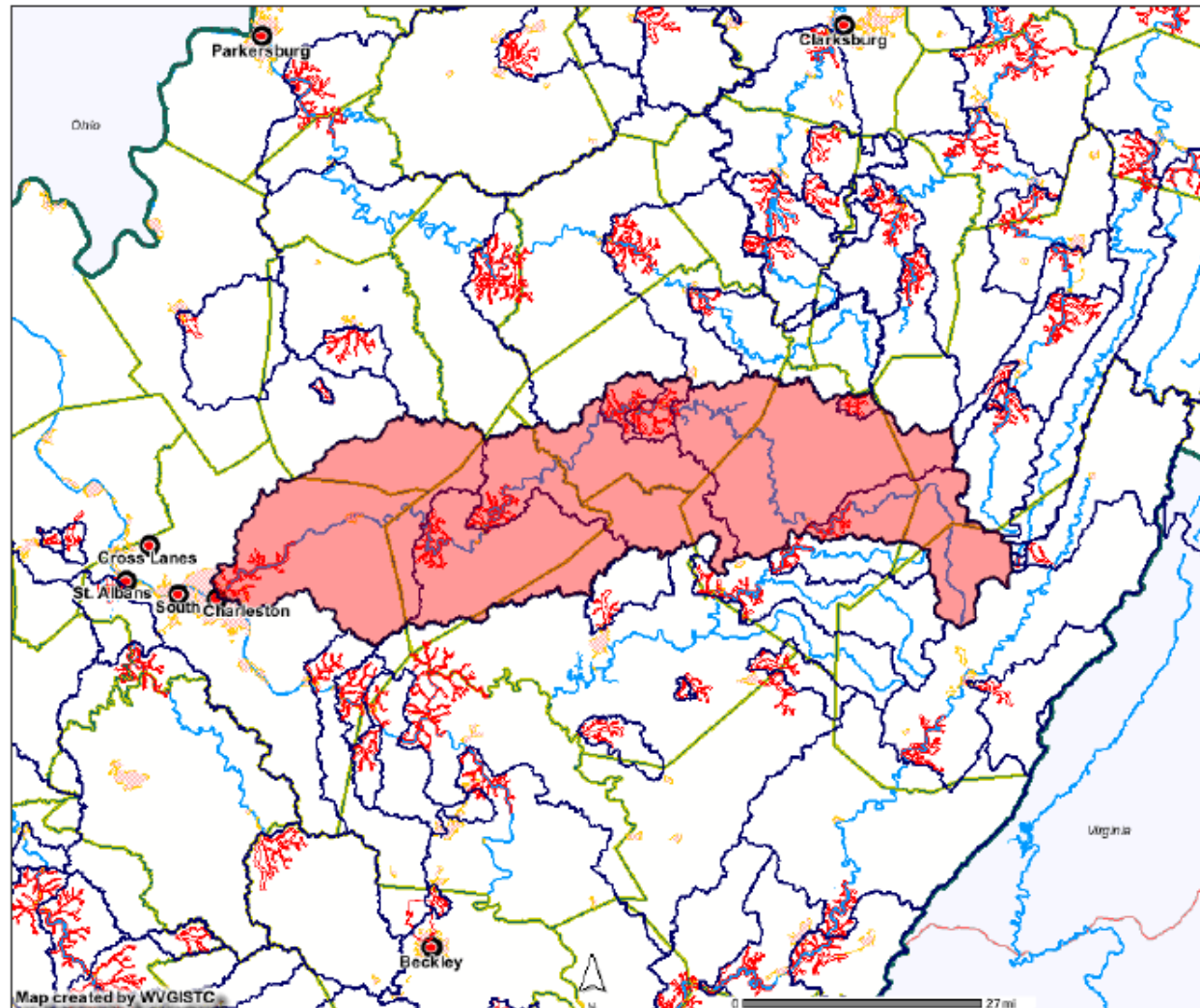
On-The-Ground Inventories-Surveys done by the community and others at any time.

Regulated Sites: denoted with an 'R' are from EPA/DEP regulatory databases.

*See PCS Index for information on Regulated Sites

DHHR Source Assessment and Wellhead Protection Program

Delineation – Watershed Area



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Public Water Systems

- Non-Community
- Community
- Non-Transient Non-Community

Public Water Sources

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- Surface Water
- Ground Water

- Protection Watershed
- Secondary Wellhead Protection Area
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- Zone of Critical Concern

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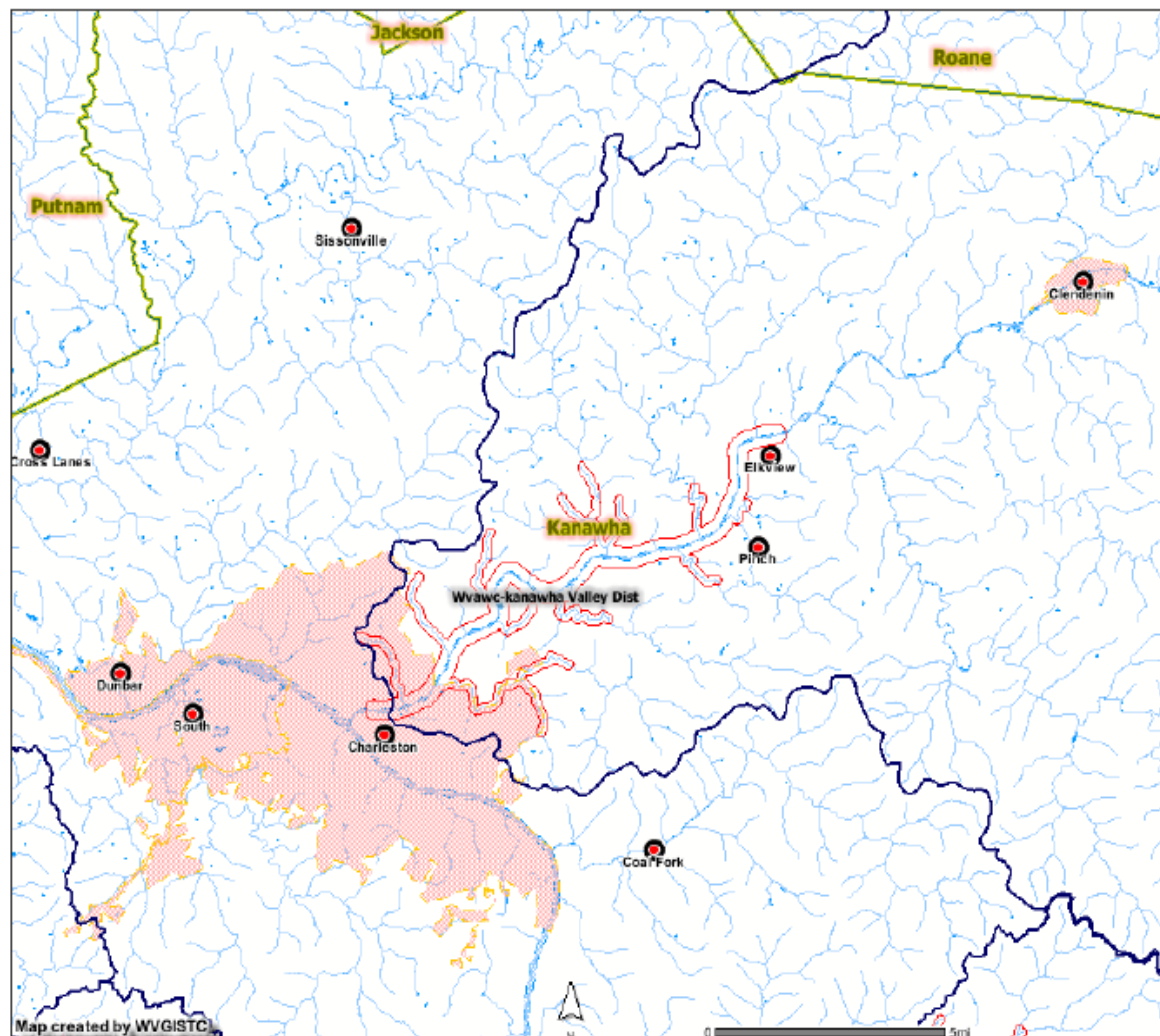
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DHHR Source Assessment and Wellhead Protection Program

Delineation – Zone of Critical Concern Area



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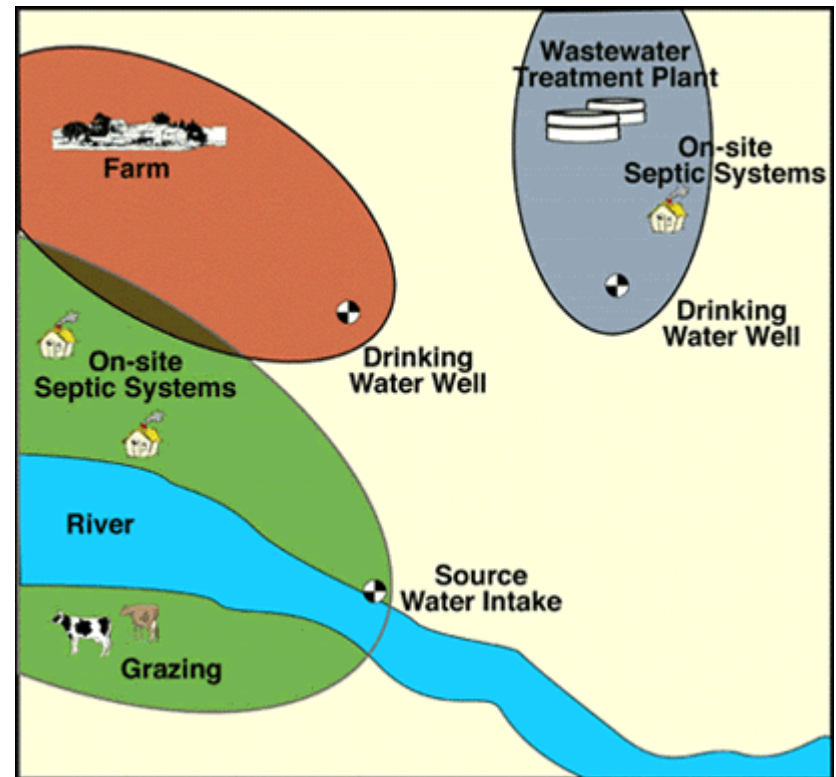
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Potential Contaminant Sources (PCS)

- Urban/Suburban/Rural
 - stormwater
 - deicing salts and chemicals
 - landfills
 - septic tanks
- Agriculture
 - pathogens
 - nutrients
 - chemicals
- Hazardous spills
- Security threats
- Mining activities

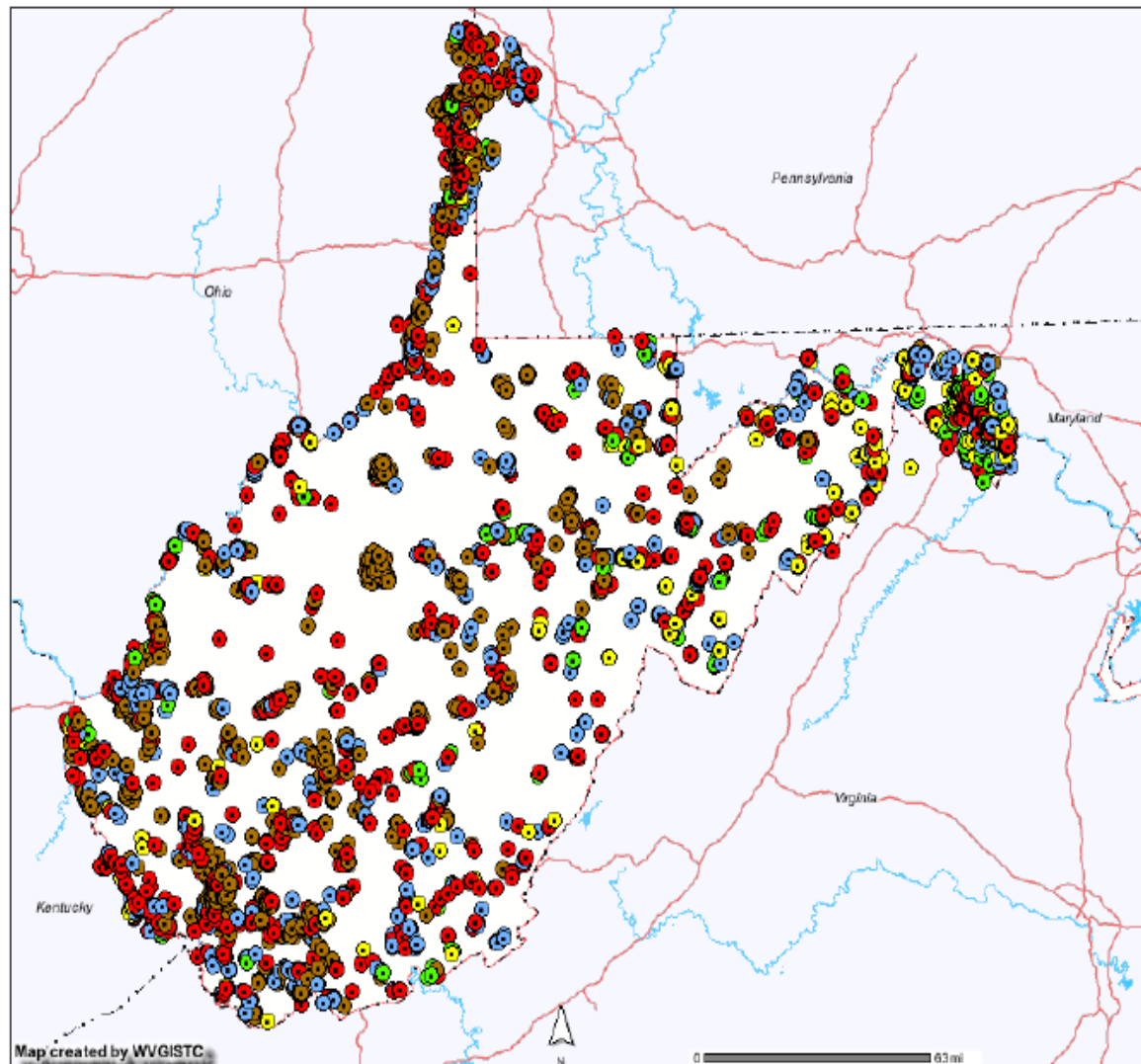


Contaminant information sources

- Permit registries
 - NPDES
- Toxic Release Inventory
- Superfund sites
- Underground storage tanks
- Land use
- Community knowledge

DHHR Source Assessment and Wellhead Protection Program

Potential Contaminant Sources



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Susceptibility analysis

- Risk posed by contaminant
- Distance to intake
- Runoff dynamics
- Risk of release
- Existing protection measures

Protecting your source water

- Education and outreach
 - Water supply signs, consumer confidence reports
- Emergency and contingency planning
- Address specific contaminant
 - Water quality monitoring
 - Discharge permits
 - Waste management
 - Land use planning
- Source water protection plans

Your Water. Your Decision.



A quick guide for communities
committed to safe drinking water

www.ProtectDrinkingWater.org

Your water. Your decision.

How you govern can determine what you drink. Consider your community's efforts in these key areas: development patterns, pricing options, and stewardship. Then get the details you need for action from the websites below.

Development Patterns

Planning land use at the watershed level protects sources of drinking water by conserving and protecting land where development would harm source water. Consider promoting development in already developed areas or in less environmentally sensitive areas. Consider:

More green space. Preserving open space helps protect drinking water sources, especially contiguous areas such as stream corridors, wetlands and recharge areas. Redevelopment and compact development can help preserve critical open space.

More natural vegetation. Preserving natural vegetation - especially within green space areas and along rivers and lakes - lowers pollution. Planting new trees and vegetation also reduces runoff.

Less pavement. Reducing impervious surfaces, such as pavement and concrete, through pervious paving materials, narrower streets, and parking decks, decreases runoff and recharges the ground water supply. Development guidelines or incentives to promote green infrastructure can help.

Up-to-date local policies. Comprehensive plans, open space plans, low-impact development requirements, building permits and zoning tools can encourage development that protects drinking water supplies.

Learn more at www.ProtectDrinkingWater.org/Growth

January 2010



Budget & Pricing

A community can help avoid over-use of valuable water resources and pollution by setting water, sewer, and septic utility rates to reflect the true costs of safe drinking water. Such full-cost pricing can consider lifecycle costs, environmental protection, and future investments to put safe and clean water policies on a more sustainable long term footing. Here's how it can happen:

Budget your water. Forecast the quantity and quality of drinking water you will be needing in a generation or more, and then budget the costs of protecting and treating the water sources you will be tapping and plan for how this limited resource might be protected and extended.

Recover your costs. When setting water, sewer, and septic utility rates, localities can think beyond the costs of pipes and chemical processes to include such expenses as securing and protecting future sources of tap water and system maintenance.

Determine lifecycle costs. Consider all the costs of water and wastewater treatment (including the delivery and collection systems, operation, and management), not just the initial investment. This will help you gauge the true cost of development.

Learn more at www.ProtectDrinkingWater.org/Costs

Stewardship

A local government's own actions can set the tone for source water protection. Here are steps some communities have taken:

Efficient infrastructure. Roads, water and sewer systems, and other infrastructure can be designed and maintained to reduce runoff, pollution, and water loss.

Think regionally. Drinking water sources don't stop at political boundaries. Partnering with neighboring communities can help ensure your water sources are clean and abundant.

Expand monitoring. Checking stream and ground water quality can give communities meaningful information about the state of their drinking water.

Behavior change. Some communities adjust services and reach out to citizens to influence individual behaviors that collectively have an impact on water quality.

Be a role model. Local governments can demonstrate commitment to source water protection through actions such as recycling vehicle wash water, using alternative road treatments that reduce pollution, and supporting community household household waste collection.

Learn more at www.ProtectDrinkingWater.org/Stewardship

Where To Find Out More

Get information about protecting sources of drinking water and link to influential organizations. Source Water Collaborative, www.protectdrinkingwater.org

A Planner's Guide: How today's land-use decisions can protect tomorrow's water supply. Source Water Collaborative, www.protectdrinkingwater.org

Resource for source water assessments and other protection tools. Environmental Protection Agency, www.epa.gov/safewater/protect.html

Information on low impact development techniques and strategic planning. www.lowimpactdevelopment.org

Learn how to use GIS Tools to link land use decisions to water resource protection. A Brief from National Association of Counties, www.naco.org/techassistance under "Water Resources Management"

Education for local officials on land use and natural resource protection. Nonpoint Education for Municipal Officials (NEMO), nemo.uconn.edu

A Source Water Protection Tool for Municipal Officials. New England Interstate Water Pollution Control Commission, www.neiwppcc.org/sourcewateroutreach

Assistance on planning for and financing land conservation. The Trust for Public Land, www.tpl.org/tier2_kad.cfm?folder_id=3129

Sourcewater
COLLABORATIVE

American Planning Association • American Water Works Association • Association of Metropolitan Water Agencies • Association of State and Interstate Water Pollution Control Administrators • Association of State and Territorial Health Officials • Association of State Drinking Water Administrators • Clean Water Fund • Environmental Finance Center Network • Farm Service Agency/U.S. Department of Agriculture • Ground Water Protection Council • National Ground Water Association • National Rural Water Association • North American Lake Management Society • River Network • Rural Community Assistance Partnership • The Groundwater Foundation • The Trust for Public Land • U.S. Environmental Protection Agency • U.S. Forest Service, Northeastern Area • U.S. Geological Survey • Water Systems Council

www.yourwateryourdecision.org

Regional protection efforts

Potomac River Basin Drinking Water Source Protection Partnership

- 20 voluntary members
- Share common concerns
 - Urban, agriculture, emerging contaminants, disinfection by-products, hazardous spills
- Leverage individual efforts
- Raise awareness



www.potomacdwspp.org

DWSPP Activities

- **Ag Issues –**
Cryptosporidium
- **Urban Issues –** road salts, water quality standards
- **Emerging Contaminants –** pharmaceutical take-back event, track research and legislation
- **Early Warning/
Emergency Response –** hazardous spill response, communications

A Little Less Salt, Please

By Joseph K. Hoffman
Rockville
Sunday, April 12, 2008;

We know that too much salt in our diets is bad for our health. But few recognize the impact that excessive salt on our roads has on local waterways and our sources of drinking water. The end of winter presents an opportunity to plan for sensible salting and integration of new technologies to reduce road salt usage. Increased use of road salts allows commuters to drive more safely and reduces time lost to weather, but these benefits come at a cost to our drinking water sources. Icy roads can be tackled with less harmful chemicals and with better information on road conditions, allowing for precise application of salt.

Salt carried in runoff can cause peak chloride concentrations in some urban streams to approach 25 percent of the salt concentration of seawater. These levels can harm or destroy aquatic life, particularly in small streams. Chloride persists long after the last snowflake, as dissolved road salt infiltrates into groundwater and into local streams. This increased level can last through the summer, often at a level more than 100 times greater than in unaffected forest streams. Average annual chloride concentrations increase with the spread of impervious surfaces, making the concentrations found in suburban and urban watersheds extremely harmful to freshwater life.

In addition to environmental impacts, salt can also contaminate drinking water supplies. After winter storms, observations at water treatment intakes in the Potomac River and in adjacent water supply watersheds, such as the Washington Suburban Sanitary Commission's Patuxent basin, include increases in chloride, ammonia (to counter an increase in salt during the treatment process), sediment and total organic carbon. The highest annual levels of chloride in the Potomac River are detected after winter storms. Local water utilities have observed increased sodium levels in pre-treated Potomac River water during the past 12 years. Winter weather-related runoff can affect the taste of drinking water, corrode plumbing infrastructure, complicate treatment challenges and, potentially, increase costs.



Trucks spread salt along Route 7 near Leesburg in February last year. (By Tracy A. Woodward -- The Washington Post)
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Funding Opportunities

- WV SWAP Grant Program
<http://www.wvdhhr.org/oehs/eed/swap/grants>
- Drinking Water State Revolving Fund
- Clean Water State Revolving Fund
- EPA 319 grants (non-point source pollution)
- Land conservancies
- USDA programs

WV Source Water Protection Grants

- Protection planning team
- Research hydrology
- Delineate for new intakes
- Update contaminant inventory
- Implementation strategy
- Revise ordinances
- Emergency response plans, early warning systems
- Educational outreach
- Security measures

Source water protection resources

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<http://www.wvdhhr.org/oehs/eed/swap/>