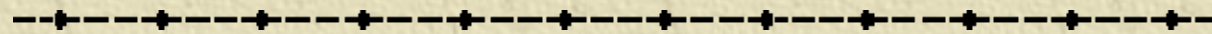
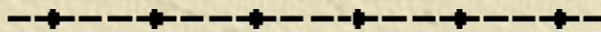




West Virginia Watershed Management



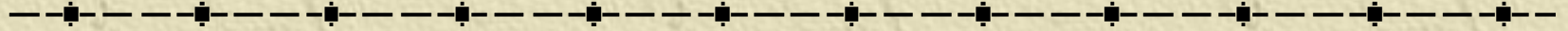
Implementing
watershed improvement projects
at the local level



Goal: Water Quality Improvement



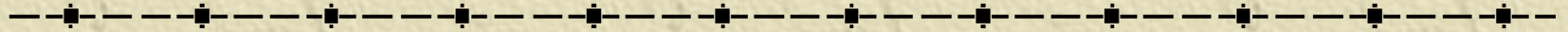
Issue: Nonpoint Source Pollution



What does this mean?



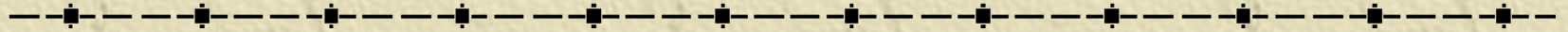
Regulated vs. Voluntary



Point Source Pollution comes from the end of a pipe and can be monitored and permitted through the NPDES permit program

Nonpoint Source Pollution comes from runoff of the land and cannot be pinpointed to a specific point or

We have stream that do not meet water quality standards and the pollution is cause by a single or multiple nonpoint sources of pollution.



Inadequate sewage systems



Poor drainage planning and road access







Agriculture





Nature vs. man







Resource extraction







Acid Mine Drainage





Urban Stormwater Runoff





NUTRIENTS & BACTERIA

Lowers dissolved oxygen, chokes waterways with vegetation and results in an unpleasant looking and smelling stream.



IRON AND ALUMINUM PRECIPITATES

When large volumes of rocks containing sulfide minerals are exposed air and water the iron and aluminum falls out creating highly acidic or highly alkaline water.



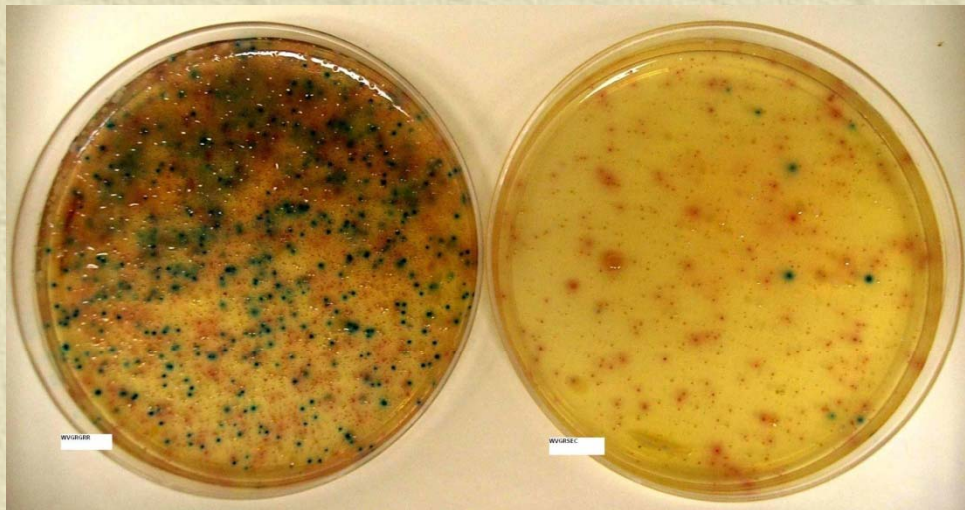
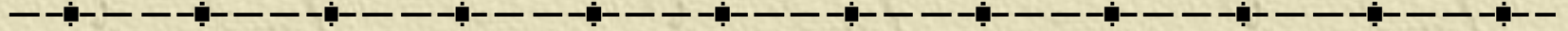
SEDIMENT

Destroys habitat for fish and insects as well as fills stream channel which causes increased flooding.




FECAL COLIFORM

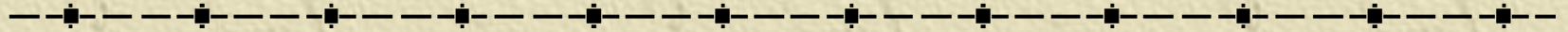
High quantities of fecal coliform bacteria suggest the presence of disease causing agents.



How do we fix this?

- 
-
- ✦ Create an awareness of watershed health
 - ✦ Identify the problems
 - ✦ Recruit stakeholders
 - ✦ Formulate a plan
 - ✦ Secure funding
 - ✦ Implement projects
 - ✦ Start over

Tools:



- ✦ State and federal programs
- ✦ Watershed volunteers / interested citizens
- ✦ Local interest
- ✦ Basin Coordinators and Environmental Specialist



State and Federal Programs

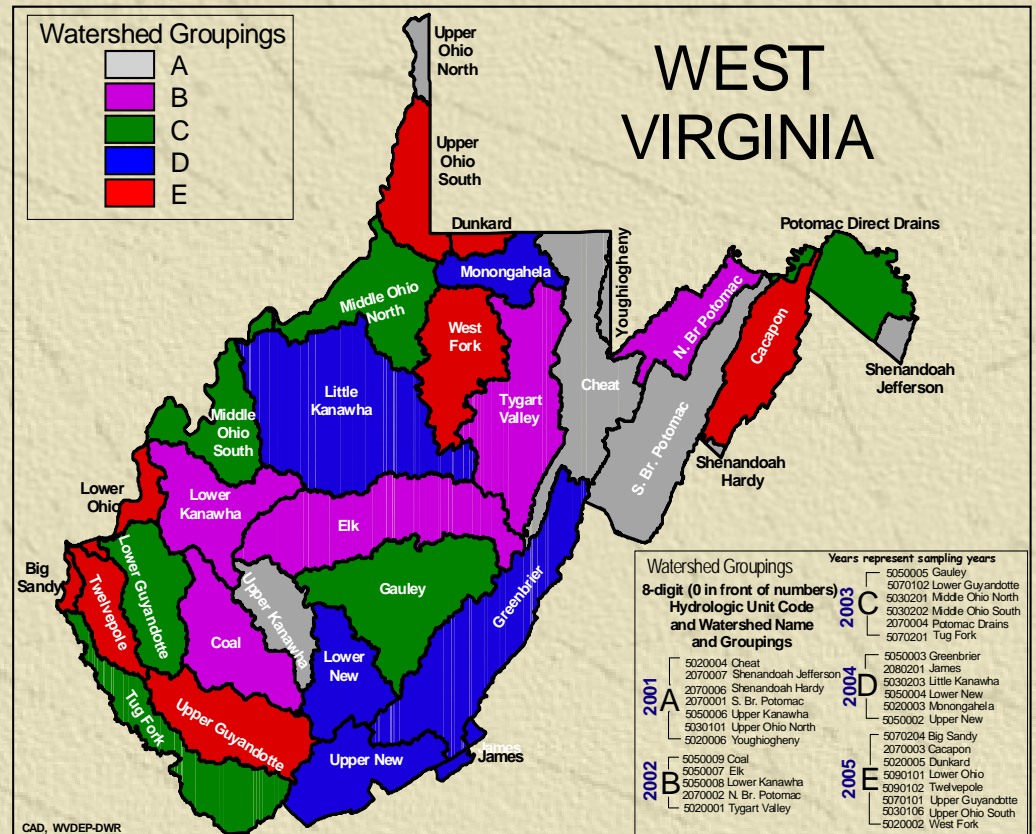
Save Our Streams

- ✦ Volunteer Monitoring
- ✦ Training citizens to become watch dogs
- ✦ Local data collection, surveying, and knowledge of the streams



The Watershed Management Framework

- ✦ Cycle for monitoring and permitting
- ✦ Cycle for TMDL development
- ✦ Forum for prioritizing watersheds for multi-agency coordinated implementation



Non Point Source Program

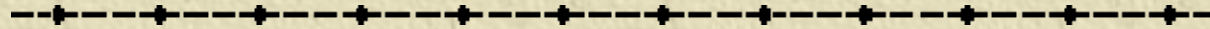


- ❖ Education and Outreach
- ❖ Technical Assistance
- ❖ Financial Assistance
- ❖ Demonstrations
- ❖ Regulatory Support
- ❖ Watershed Based Plans
- ❖ Implementation Projects

Stream Partners Program



- ✦ Grants to support volunteer watershed associations
- ✦ Technical assistance with project development
- ✦ Organizational support



The Process



Watershed Project Teams

✦ Review TMDL

✦ Watershed Planning

✦ Prioritize Watersheds

✦ Create funding partnerships

✦ Identify Stakeholders

✦ Implement

Morris Creek of the Upper Kanawha

- ✦ AMD treatment
- ✦ Stream and watershed clean up
- ✦ Sediment survey and dirt road restoration





Buckhannon River of the Tygart



- ✦ AMD treatment
- ✦ Oil and gas road repair and training
- ✦ Agriculture management plans
- ✦ Acid precipitation treatment



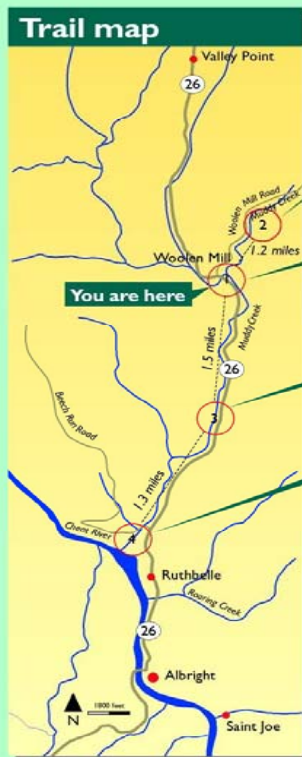
Cabin Creek of the Upper Kanawha River

- ✦ AMD treatment with local partners
- ✦ Sediment survey and planning
- ✦ Sewer line extension and hook up





Cheat River



Friends of the Cheat has chosen four sites along streams in the area to help the public learn about the impacts of coal-mining on the Cheat River Watershed. There are River of Promise Trail signs to direct you to each site.

Site 2 – Muddy Creek runs clear at this bridge, in marked contrast to site #1 after pollution enters the stream.

Site 1 – Martin Creek joins Muddy Creek at this bridge. Learn why these streams are orange and what is being done to bring them back to life.

Site 3 – The Virginia Iron Furnace is part of the history of industrial use of water power.

Site 4 – Fishermen, swimmers, and paddlers using the Cheat River are hoping for cleaner water in the future. Learn about a reclaimed mining site across the river and the history of Ruthbelle.

The Cheat Festival site is located off Beech Run Road, which intersects Route 26 at a narrow angle. It is best approached from the south. A good location to turn around is Appalachian Wildwater, 0.6 miles south of Beech Run Road. Signs here explain the origins and mission of Friends of the Cheat.

✦ AMD treatment

✦ Recreational development

✦ Cheat Festival



Little Sandy Creek of the Elk River

- ✦ Oil and gas and forestry road restoration and education
- ✦ Survey to identify failing septic systems
- ✦ ATV education





Upper Guyandotte River



- ✦ Metal collection and clean up
- ✦ Monitoring and education
- ✦ Wastewater treatment



South Branch Potomac

-
- ✦ Natural stream restoration demonstration
 - ✦ Gas well road restoration
 - ✦ Agriculture BMPs



Opequon Creek Project Team

- ✦ Riparian plantings
- ✦ Rain barrel workshops
- ✦ Rain gardens
- ✦ Stream clean ups
- ✦ Watershed Based Plan

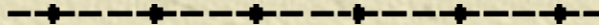




09/05/2006



The Key to Success



Local Interest and Support

✦ Watershed volunteers

✦ One paid support person

✦ Partners from the community

✦ Agency field staff

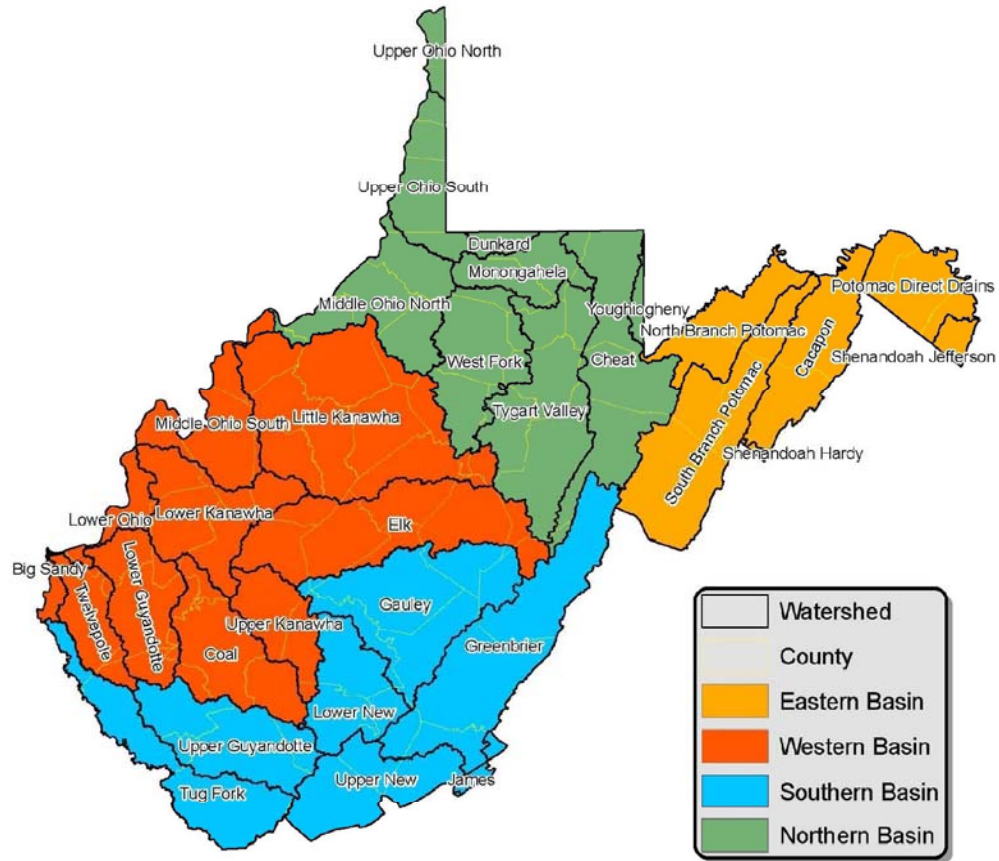
✦ Watershed plan

✦ Monitoring and data collection

✦ Outreach and Education

✦ Financial partnerships

West Virginia Stream Partners and Nonpoint Source Program Regional Divisions

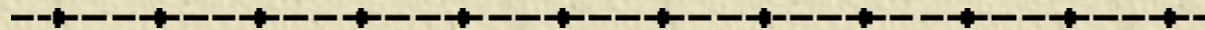


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