



## Section 319

# NONPOINT SOURCE PROGRAM SUCCESS STORY

# West Virginia

## Success Countering Acid Mine Drainage in Cheat River Watershed

### Waterbody Improved

In the lower 20 miles of the Cheat River watershed near the Pennsylvania border, many of the streams have been so severely degraded by acid mine drainage that they are effectively dead. Restoration projects using limestone to help neutralize acidity before the water enters the river have helped to restore waters, allowing for a resurgence of the bass population.

### Problem

The lower 20 miles of the Cheat River have been impaired by acid mine drainage (AMD), making it one of the most severely degraded rivers in the state. Most of the damage is caused by underground and surface mines that were abandoned decades ago. As a result, the Cheat River was placed on the state's 303(d) list of impaired waters for metals.

### Project Highlights

In response to the AMD problems in the Cheat River, more than 20 representatives of state and federal agencies, academia, industry, citizen and conservation groups joined together to form the River of Promise (ROP) task force in May 1995. Chaired by Friends of the Cheat, the task force holds quarterly meetings to initiate and coordinate AMD remediation projects throughout the watershed. The National Mine Land Reclamation Center is an integral ROP partner, gathering water quality data, developing conceptual designs for projects, and conducting post-construction monitoring and evaluation.

As a result of ROP coordination efforts, various state, federal, and academic agencies have worked together to develop and implement projects in the Lower Cheat watershed to neutralize acid and reduce metals from abandoned mines. Together these programs are focusing on Greens Run (with a measured pH of 2.8 and an average acidity of 855 mg/L) and Pringles Run, both primary contributors of acid to the



Trap design using stone in wire mesh baskets to help aerate the water. It then flows through the short open limestone channel into the settling basin.



View of outlet from anoxic limestone drain through the short open limestone channel and into the settling basin.

Cheat River. Open limestone channels, limestone/steel stag check dams, and vertical flow ponds were installed to neutralize acidity and allow metals to settle out of the water before entering the creeks.



Limestone leach bed and outflow soon after completion in fall 2003.



Open limestone channel running through the woods with coloration starting to show iron precipitate.

## Results

Although it is still too early to know the full extent of the environmental results of these projects, recent data collected where the Cheat River enters Cheat Lake show that this once-acidic lake has a pH that ranges from around 6.5 to 7.5. Cheat Lake is now home to bass tournaments, a testament to improved water quality.

## Partners and Funding

Partners include the West Virginia Department of Interior's Office of Surface Mining Clean Stream Initiative, West Virginia Rivers Coalition, West Virginia Department of Environmental Protection (DEP) Nonpoint Source Program and Abandoned Mines Program, West Virginia Division of Natural Resources, Anker Energy, National Mine Lands Reclamation Center, Friends of the Cheat, and the U.S. Environmental Protection Agency, Region 3.

More than \$1.1 million in section 319 grants funded seven projects in the Cheat watershed with the National Mine Lands Reclamation Center and two projects in the watershed with the Abandoned Mines Lands Program in DEP. Section 319 funding also leveraged more than \$300,000 in matching Clean Stream Initiative funding. Some of these projects have been completed, while others are still under construction. Results show that the completed projects are reducing acid loads.

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U.S. Environmental Protection Agency  
Office of Water  
Washington, DC

EPA 841-F-05-004K  
August 2005