

# Hope for the Future

*A story of young people, abandoned mine drainage and a new vision for Clearfield's water resources*

By Paul Zeph, Office of Water Management, DEP

“We as a civilization have made a real mess of our planet.

Luckily, there is still much we can do to fix it. It's amazing how much of an effect cleaning the garbage out from in and around streams, creeks and rivers has.”

These words are from a Clearfield Area High School student talking about his school's watershed club – a hands-on education and action program that evolved from a teacher's experience as a child growing up surrounded by strip mines.

Today more than 50 students get together regularly to learn about water chemistry and abandoned underground coal mines. They study what happens when acidic rock is exposed to water and oxygen underground, creating tributaries that have the pH of vinegar. The students then understand why so many of the streams they see around them in Clearfield County are orange and strangely devoid of life.

The young people of Clearfield



**INDUSTRIAL LEGACY** Pennsylvania still suffers with more than 180,000 acres of abandoned mine lands that drain highly acidic water into local streams and lakes.

have inherited this seemingly hopeless situation. It's what they've grown up knowing, and it's been that way as long as anyone in Clearfield can remember. Unfortunately, that's the legacy of living above a coal seam that was, and still is, mined for electric-generating power plants.

Mike Gill, a geography teacher at Clearfield High, grew up on a farm surrounded by coal mining and saw damaged lands daily. His parents, however, nurtured a passion for nature which helped direct Mike into a career of teaching about the land with a desire to involve young people in better understanding their



**FACE OF THE PROBLEM** One of the many polluted seeps entering Montgomery Run with high levels of acidity and iron oxide.

physical and natural environment. In 2003, he had the opportunity to attend a Chesapeake Bay Foundation teacher workshop to get some ideas on how to involve students with stream monitoring and watershed cleanup activities.

With assistance from Donna Carnahan of the county conservation district and chemistry teacher Dave Domico, Mike launched a watershed club with about a dozen interested students. Initial funding from local and state grants helped him purchase test kits and supplies, and the team began taking students out to local streams to learn about water pollution first hand by examining the streams' chemistry and biological life.

Another student tells the story of how she got involved: "I was tired of going to the library and reading every day during club period. So I went to one watershed club meeting – I was hooked. Not only were the teachers who ran the club my favorites, but they made me feel like my contribution meant something."

The initial enthusiasm was short-lived, however. Like many start-up programs, the grant money was limited and soon ran out. Field trip funds also became scarce, bringing the club to a grinding halt. By this time, Rachel Kester had arrived as the new Clearfield County Conservation District Watershed Specialist, and picked up where Donna left off.

Rachel, it turns out, grew up in Clearfield County seeing first-hand how people mistreat damaged streams that they assume are hopelessly dead from what's known as acid mine drainage. She's devoted her career to helping people see a different future for these polluted local streams and the larger rivers that receive the acidic water from the tributaries. Her crystal ball sees streams with a more natural pH teeming with aquatic insects and full of native brook trout.

Rachel went to work helping Dave to write grants and seek out the funding needed to keep the program alive. At a meeting

## DEP Invests in Abandoned Mine Reclamation Projects

DEP completed 57 abandoned mine reclamation projects in 2008 that reclaimed more than 960 acres of mine-scarred lands and will restore life to dead streams. In a recent DEP press release, Acting Secretary John Hanger said abandoned mine lands endanger the public and limit economic development and recreational opportunities in former mining communities. "We are reclaiming more than just abandoned mine lands – we are reclaiming entire communities that have struggled for years to overcome the scars of our industrial past," Hanger said. "The projects completed in 2008 pumped \$32 million into Pennsylvania's economy and provided millions more in indirect benefits by returning former wastelands to productive use, eliminating significant safety hazards, and restoring life to long-dead streams."

In addition to the projects completed in 2008, another 47 reclamation projects are underway in Pennsylvania that will reclaim 1,710 acres of abandoned mine lands at a projected cost of nearly \$57.8 million. The largest source of funding for the reclamation of mine sites in Pennsylvania is the federal Abandoned Mine Lands Fund, which is overseen by the U.S. Office of Surface Mining. Other funding sources include Growing Greener grants, which are used primarily to fund mine drainage projects through local watershed groups, and forfeitures of reclamation bonds that are posted by mining companies to cover the cost of reclaiming mine sites if the company is unable or unwilling to complete site restoration once mining is finished.

Pennsylvania has approximately 180,000 acres of abandoned mine lands dating back to when coal mining began in the Commonwealth in the 1700s. More than two billion tons of waste coal sits in piles across the state and an estimated 4,600 miles of rivers and streams are degraded by mine drainage. For more information, visit [www.depweb.state.pa.us](http://www.depweb.state.pa.us), keyword: Abandoned Mines. **(B)**



**TESTING THE WATER** Students collect aquatic insects and other stream organisms in Montgomery Run to determine the health of the stream.

of the Susquehanna West Branch Coalition, she told me her story and her dream of instilling hope in the hearts and minds of Clearfield’s young people. She knows that when one stream is brought back to life and trout return for the first time in generations, it shows students they don’t have to live out their lives surrounded by polluted, acidified streams that serve as garbage dumps and sewers.

She also knows that one watershed club helping to clean up one stream can lead to another stream, then another club in another school, and more streams, and more clubs— well, you get the picture you can also see what drives Rachel to help Mike and Dave get the support needed to keep their fledgling watershed club alive.

As it turns out, the Pennsylvania Department of Environmental Protection has a new initiative, called the Mid-Atlantic Highlands Action Program, which was looking for just such a program to assist

in the Appalachian region of Pennsylvania. With a \$3,000 grant for new supplies and buses to get the students out in the field, the club was back in business!

Early on, local volunteers from the Senior Environment Corps had been helping to teach the basics of water monitoring, and staff from the Chesapeake Bay Foundation had added some additional instruction. With the state-level infusion of support and interest, new partners have joined in the effort. Two science teachers at the school have volunteered as advisors, and the school district is providing support for field trips. Local businesses have pledged annual financial help to defray costs. And the students are getting in line to join!

They’re learning and having fun, but also making visible changes around Clearfield, particularly along their primary adopted stream, Montgomery Run. An annual spring cleanup is removing tons of trash

*(Continued on page 48)*

## Past Practices Created Today’s Problems

Talk to anyone who grew up in Pennsylvania’s bituminous and anthracite coal regions, and chances are they will be familiar with the terms yellow boy, honey pile, red dog, gob pile, ash dump and sulfur creek. These are the nicknames given to the coal mining scars left behind after the coal was mined, and the company went out of business.

Once upon a time, a stream running orange with iron from mine drainage was a sign of prosperity - a sign that meant a productive coal mine was in operation nearby. The mine may have been productive, but the stream was dead, serving only as an industrial toilet, a “sulfur creek.”

Few people knew exactly why the sulfur creeks were orange and devoid of life. It had something to do with the mines, but the mines were a way of life and it looked like the sulfur creeks and the boney piles (mounds of waste coal) were here to stay.

Abandoned mine drainage (AMD) usually contains iron that smothers the stream bed and stains it bright orange, destroying aquatic habitat. AMD sometimes contains aluminum that stains stream beds white and poisons aquatic life. Passive treatment systems are designed to remove iron and aluminum.

It took fewer than 100 years for the careless coal mining practices of the past to degrade much of Pennsylvania’s streams and landscapes. When an increasing number of mines were no longer productive, they were often abandoned - a problem today’s generations now face.

In 1977, Congress passed the Surface Mining Control and Reclamation Act (SMCRA), establishing laws and taxes which require present-day coal mine operators to take responsibility for

*(Continued on page 48)*



*(Continued from page 41)*

investment with a higher yield that entails an unwarranted level of risk or restriction.

A local government's first priority should always be the safety of its investment over growth, especially in times of economic uncertainty. Helping Pennsylvania's local governments maintain the security and availability of their funds is PLGIT's goal, as it is the mission of any LGIP in their service to their respective local government entities. **(B)**

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*(Continued from page 45)*

from the watershed. A neglected hiking trail along the stream is being reconstructed to enable others to enjoy the beautiful forest that surrounds its headwaters. Students constructed a kiosk at the post office in Hyde next to the Run to keep residents informed about events and stream conditions.

The headwaters of Montgomery Run flow into a reservoir that supplies Clearfield's drinking water, so everyone is learning important lessons about protecting the water and watershed they depend on for daily life. Involvement with the club is also promoting leadership initiatives and future career choices. One club member so far has served as an intern with the conservation district, and club members are organizing watershed education activities for the annual Earth Day celebration at school.

Mike is not just looking at Clearfield's streams and the Susquehanna West Branch; his focus is on the entire Chesapeake Bay. "None of these efforts" says Mike "could be completed without

the assistance and cooperation of a large number of organizations teaming up together for a good cause. Let's hope local efforts such as these can continue and only expand in years to come."

Clearfield has good reason now to have hope for a future with clean water. **(B)**

*(Continued from page 45)*

the reclamation and restoration of the land that they temporarily disturb while mining coal. Because of SMCRA and other incentives, modern-day coal operators now play an important role in maintaining our environment.

But more work still needs to be done to heal the scars of the past. **(B)**

*This information is adapted from the Western Pennsylvania Coalition for Abandoned Mine Reclamation's web site. For more information, visit [www.wpcamr.org/mission/problem.html](http://www.wpcamr.org/mission/problem.html).*

*(Continued from page 47)*

women who have been stopped for speeding. Both men and women drivers who have been stopped for speeding in the last year are about 25 percent more likely to believe that it is safe to drive up to 20 mph over the speed limit than those who have not.

"This is probably because people who habitually speed are not significantly deterred by being stopped for speeding," Mannering said. "They might become slightly more conservative, but it doesn't slow them down to the level of people who are inherently more conservative."

The findings also showed that people get progressively more conservative about speeding as they age. A 25 year-old driver is 75 percent more likely to think it is safe to drive up to 20 mph over the speed limit than a 50 year-old driver. **(B)**

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