

Best practices

Disaster Mitigation Working in Pennsylvania



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Acid Mine Drainage (AMD) in Pennsylvania is a serious environmental problem. Solutions require innovative planning, engineering and funding.

“Once the flooding passed, the treatment system was able to re-start. The massive repair project successfully protected the facility.”

Protecting Aquatic Life in Pennsylvania



Audenreid Tunnel Treatment System

This is a story about a 16,150 foot tunnel drilled by the Glen Alden Coal Company from 1928 to 1931, and long decades of unintended consequences. The purpose of the tunnel investment was to lower the local water table without the use of pumps, and allow a network of deep mineshafts to follow tilted layers of shale and sandstone in pursuit of valuable anthracite coal. The Audenreid Mine Drainage Tunnel did its job, but the discharge water was acidic and loaded with fish-killing aluminum and other metals. For the next seventy-five years, the pollutants caused thirty-three miles of Catawissa Creek (near Hazelton, Pennsylvania) to be biologically dead. The polluted water continued to the Susquehanna River and on to Chesapeake Bay.

In recent years, a collaboration of government agencies, businesses and volunteer groups have worked tirelessly toward a solution. Earlier proposals to try sealing the tunnel were considered but rejected for a variety of reasons. Successful planning, engineering and fundraising eventually led to the design and construction of the Audenreid Tunnel Treatment System, capable of handling 9,000 gallons per minute of acid mine drainage (AMD).

The Columbia and Schuylkill County Conservation Districts and the Catawissa Creek Restoration Association began operating the completed facility in 2006. It includes three large concrete tanks filled with limestone



Audenreid Tunnel after blowout

Completed repairs and re-grading

rock to neutralize the acid and remove aluminum. An automatic flushing system then passes the treated water to settling ponds before eventual discharge to Catawissa Creek.

The tunnel typically discharges about 8,500 gallons per minute, but it's a large tunnel, 12' wide by 9' high, and can roar with 300,000 gallons per minute during periods of intense rain. A severe storm in 2006 caused the face of the hillside above the outlet to come down in an avalanche of rock and debris, burying part of the treatment facility under tons of material and leaving an unstable cliff.

In the aftermath of this event, the Federal Emergency Management Agency (FEMA) and Pennsylvania Emergency Management Agency (PEMA) worked together to coordinate delivery of \$1.8 million in funding for repairs. FEMA Public Assistance (PA) funding is typically used to help state and local governments repair disaster damaged roads, bridges, public buildings and so on. Sometimes additional project element investments can help limit or prevent future damage. The re-grading and terracing above the mine drain outlet was a somewhat unusual example of a repair and hazard mitigation project. It came with major engineering challenges, but protecting the Audenreid Tunnel Treatment System is extremely important for the future of the region.

The repair work was completed in 2009 and has been tested by subsequent storms, including 2011 Hurricane Irene and extreme rainfall during Tropical Storm Lee. Schuylkill County Natural Resource Specialist Wayne Lehman reported that, "Once the flooding passed, the treatment system was able to restart. The massive repair project successfully protected the facility."

The innovative mine drainage treatment system has allowed fish to return, along with recreational tourism. In recognition of its contribution to the health and economic sustainability of Schuylkill County, the project was awarded a 2007 Governor's Award for Environmental Excellence. It has also been an inspiration to others who want to take effective action to solve mine discharge pollution problems in their communities.

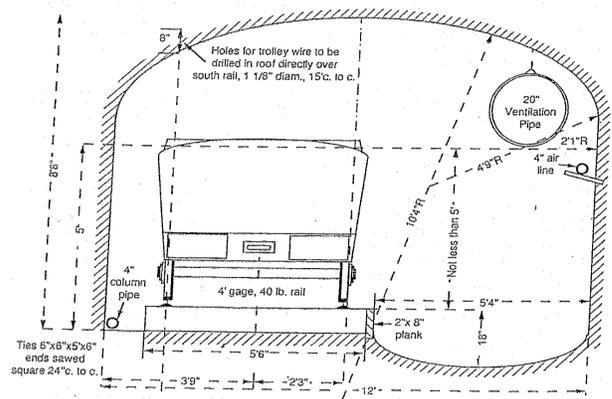


Figure 21. Cross section of the Audenried Tunnel (adapted from Huber, 1932).