2007 Year in Review
for the
Eastern Pennsylvania Coalition
for Abandoned Mine Reclamation Program

The EPCAMR organization is an extensive network of volunteers, non-profits and supporting agencies at the county, state, local, and federal levels versed in reclaiming abandoned mine lands (AML) and restoring our watersheds impacted by abandoned mine drainage (AMD). We have also developed an exhaustive set of technical, educational, and financial tools and resources that are continually updated on our official website, www.OrangeWaterNetwork.org. *(Make note of the hyperlinks underlined in blue throughout this document, which will take you to more information).*

Robert Hughes, EPCAMR Regional Coordinator, posing in front of the Lykens Water Level Tunnel Discharge

The EPCAMR program staff are centrally located in the EPCAMR region, housed at the Luzerne Conservation District (LCD). The LCD, our local sponsoring organization, administers and supports our base level grant funding from the PA DEP Section 319 Program.

The Luzerne Conservation District continues to partners with EPCAMR to provide two (2) full time employees through their AMR Program: AML Program Manager, Robert Hughes and Watershed Outreach Coordinator, Michael Hewitt. Joe Looker, a part-time summer intern funded in part by the Office of Surface Mining, also joined the staff. The EPCAMR program staff are always available to answer any questions and concerns or to provide ideas and technical assistance on issues related to AMD / AML in northeastern and north-central PA.

2007 Initiatives:

Lykens Water Level Tunnel AMD Treatment Project-Wiconisco Creek Watershed:

The EPCAMR Program Staff in cooperation with the Dauphin Conservation District, USGS, Medco Corporation, PA Game Commission, Hedin Environmental and Skelly & Loy Engineering, Inc. completed

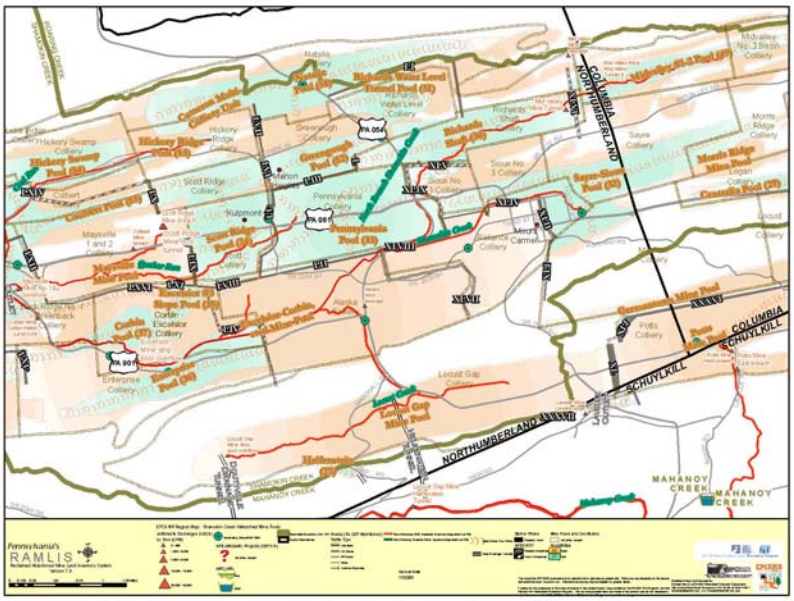
Dauphin County Conservation District staff overlooking the completed Lykens Water Level Tunnel Discharge Treatment System

construction of the system in of 2007. The Lykens Water Level Tunnel discharge is diverted into a fore bay basin to begin to precipitate the iron, then flows through an open limestone channel to a vertical flow wetland (VFW), and then to a final settling basin prior to discharging into Bear Creek. EPCAMR received a grant in the amount of approximately $70,000 (from OSM ASCI) to acquire the land for the treatment system, monitor the project's construction, and finally transfer the property over to the PA Game Commission to allow for perpetual treatment of the mine discharge. Other grants have been obtained for design and construction making the total estimated cost for Phase 1 about $354,000. Future plans include expanding the treatment area in a Phase 2 project to treat additional mine drainage that enters below the current project site.

Hicks Creek Natural Stream Channel Restoration Project:
EPCAMR was awarded a Growing Greener Grant for the Hicks Creek Stream Restoration Project in the winter of 2006 and began design and wetland delineation work in 2007. Construction and placement of Fluvial Geomorphologic (FGM) structures along the almost 2,000 linear foot stretch will begin in 2008 with a major goal to stabilize bank erosion from a highly erodible abandoned mine problem feature, provide a low flow channel and slow high flow surges through the area to mitigate flooding downstream. A secondary goal will be to restore flow to the creek which currently looses approximately 450 gallons per minute of water to the underground mines. With the arbitrary loss of $100,000 from the original tight budget of $550,000 submitted, secondary goals may be completed in a second phase of this project.

Iron Oxide Resource Recovery Initiative for NE PA:
EPCAMR has been the leader in Northeastern Pennsylvania to pioneer the idea of economical recovery of various metal oxides from AMD discharges, and or from AMD Passive Treatment Systems in Eastern PA. Armed with a baseline analysis of 25 large mine discharge metallurgical analysis and loading calculations completed in 2004 with the help of Hedin Environmental, EPCAMR Intern continued to collect iron oxides from several discharges. These samples were dried, ground into a pigment and distributed to local artists and school art programs. The "Anthrascapes" Gallery Showing was continued for a second year, this time in Scranton's AFA Gallery in Lackawanna County with over 40 new art pieces that used the iron pigment. EPCAMR also hosted a gallery showing at the Widman Gallery in the fall of 2007 in cooperation with Kings College, Luzerne County. EPCAMR has been working with EcoTech LLC to begin collecting iron precipitate from the largest discharge (based on flow) in Pennsylvania, Old Forge Borehole. Future plans for iron recovery also include the Scott Ridge Discharge (Site 19) to the Shamokin Creek in cooperation with the Northumberland County Conservation District and Dietz and Gourley LLC and the Packer #5 Discharge to Mahanoy creek in cooperation with Schuylkill Conservation District and Hedin Environmental.

Mine Pool Mapping Initiative:
Eastern Pennsylvania Coalition for Abandoned Mine Reclamation received a Growing Greener Grant of $150,000 to compile, update and fill in data gaps on location of mine pools in the Anthracite Region's Western Middle and Southern Coal Fields, with an emphasis on studying the economic benefits of reusing mine pool water and possibly reducing or eliminating discharges. New GIS layers are being developed based on Operation Scarlift, Bureau of Mines Reports and historical mining maps with the help of the Pottsville District Mining Office and the Wilkes-Barre BAMR Office. So far 4 layers are in development representing mine drainage tunnels, mine pool / basin boundaries, barrier pillars and infiltration points to learn about



A Map of Mine Pools in the Western Middle Anthracite Field

the underground effects of mining and potential for water storage in the Anthracite Region. Future development of additional layers may include a delineation of mine water flow directions / paths to show underground water movement from infiltration areas to discharge areas.

Also in the Shamokin Creek, studies are being done to evaluate the Scott Ridge Overflow and Coalbert Mine Breach (Sites 19 and 20) for possible treatment and reuse for the expanding industrial park as an alternative to the expensive public water. A hydrology study was completed for Big Mountain Discharge (Site 23) by Miser and Earle, Inc. which concluded that the Sterling and Big Mountain mine pools are somewhat interconnected as proven by a spike in pH and increased flow at certain times of the year coming from a fracture in the barrier pillar that was believed to completely separate the two.

Joe Looker, EPCAMR Office of Surface Mining Summer Intern

Stream Side and Abandoned Mine Land Cleanups:

The EPCAMR Program coordinated 6 separate cleanups in 2005 most in cooperation with DEP's new Clean Our Anthracite Lands and Streams (COALS) initiative. In Luzerne County, cleanups were along Hicks Creek in Exeter Borough, at the Avondale Mine Disaster in Plymouth Township, at the Lackawanna State Forest in Plymouth Township, Smiths Pond Road in Jackson Township, the Newport Cemetery in Newport Township and again at the Avondale Mine Disaster just before the memorial ceremony. 12.5 Tons of trash and 618 tires were removed from these sites by approximately 130 volunteers.

In Lackawanna County, there were a total of 9 COALS Cleanups in 2007. Two (2) of those cleanups were able to remove 40 tons of trash and 2 tons of tires. In Northumberland County, 35-40 students from Shickalemy School District cleaned up Pine Hill Road in Rockafeller Twp. Schuylkill County hosted their first COALS Cleanup in the spring of 2007.

Technical Assistance Summary:

The EPCAMR Program Staff continue to provide mapping assistance and gather statistics for various partners using GIS technologies through a Memorandum of Understanding with the Office of Surface Mining's Appalachian Region Technology Transfer Team. One tool that is being provided and updated is the RAMLIS GIS Tool, which shows abandoned mine land and reclamation GIS Layers for PA using ArcGIS, ArcReader or Google Earth Software all contained on a CD. RAMLIS (Reclaimed Abandoned Mine Land Inventory System) combines the PA DEP Bureau of Abandoned Mine Reclamation (BAMR) Database was with the Abandoned Mine Land Information System (AMLIS) Database to create both a state wide and a case-by-case view of the current status of Abandoned Mine Reclamation by PA DEP BAMR. EPCAMR teamed up with the Western PA Watershed Programs (now the Foundation for PA Watersheds) to produce and distribute over 150 CDs in 2007 alone. EPCAMR, DEP District Mining Offices, WPCAMR and the Western PA Watershed Program will be collecting more information to include reclamation done by other entities, Growing Greener, other funding sources, active mining operations, and other historical mining information for future development of the tool. EPCAMR also produced approximately **140** maps or datasets from GIS layers for partners in addition to the project above.

Operation and Maintenance Matters:

Operation and Maintenance of existing systems is an ongoing concern with watershed groups and development of maintenance manuals are key to smooth operation and continual funding. Several AMD Treatment Systems were damaged in the Flood of 2006 and had to be revamped, one of them was the newly constructed Audenreid Treatment System.

The Schuylkill Conservation District received $ ½ Million from FEMA to revamp the Audenried project in 2 phases (design is complete; repairs will start in spring of 2008). Also the Columbia County Conservation District received a grant from the Western PA Watershed Program and EPCAMR provided money from an OSM grant to replace approximately 1,500 tons of limestone that had been expended by normal operation

of the system. Currently the system is working at about 40% capacity, but is still producing good water quality results. The Oneida #1 Treatment System, a second system in the Catawissa Creek Watershed, received an Emergency Repair Grant from WPCAMR and funds from FEMA to repair the system. Repairs are complete and water quality has returned to pre flood results.

In Sullivan County the Mine Drainage Treatment System "B" was revamped with new compost to fix short circuiting through the vertical flow ponds.

In Schuylkill County, Phase 2 of the Bell Colliery Treatment System was completed with money from the Delaware River Basin Commission and Exelon, creating an additional 1 acre wetland to aid in settling of flushed metals from the Phase I ALD. The Reevesdale and Otto Treatment Systems were also improved with these funds.

Site 42 (Carbon Run SAPS) in the Shamokin Creek Watershed, was repaired with foundation money. Short-circuiting problems were fixed by redistributing the compost layer and adding more compost to the system, reducing the amount of oxygen rich water that reaches the limestone layer. Repairs are complete and water quality results have improved from the system.

Keeping Track of the Numbers – New Mine Drainage Treatment Projects:
The Bernice Mine Discharge Treatment System was completed in the fall of 2007 and is discharging treated mine drainage to the Loyalsock Creek in Sullivan County.

The Ayeslworth Creek Anoxic Limestone Drain (ALD) Treatment System was completed in the summer of 2007 which adds alkalinity to the mine water and discharges to Ayelsworth Creek with significant improvements in water quality of the Army Corps of Engineers maintained lake and eventually to the Lackawanna River, Lackawanna County.

Schuylkill Headwaters Association completed two (2) treatment systems in the Schuylkill River Watershed, Schuylkill County, PA. The Pine Forest ALD Treatment System was completed in the fall of 2007 with money from the DEP 319 Program, OSM, USGS and Reading Anthracite. Schuylkill Headwaters Association reports that the Mary D AMD Treatment Wetlands was about 60% completed by October 2007. This 5 acre wetland, built on a rundown ball field, will treat over 2,000 gallons per minute (gpm) of AMD flowing from the Mary D Overflow and the give the community a new recreation complex complete with baseball and soccer fields, bleachers, a parking lot, and an ice-skating pond.

Pocono Northeast RC&D Council completed the refit of the Orchard Limestone Drain Treatment System with a grant from Growing Greener in 2007. It can be seen directly from route 81 (south of the Pine Grove Exit) and is producing excellent water quality again for the Lorberry Creek in the Swatara Creek Watershed, Schuylkill County.

Several treatment systems began construction in the EPCAMR Region in 2007, including, system to treat the Mary D Borehole discharge in the Schuylkill River Watershed, Schuylkill County. The Schuylkill Headwaters association and PA DEP BAMR share leadership on this project which is west of the current wetland treatment system and will treat a larger flow (about 3,000 gpm). Several systems are also being designed, including the systems to treat the Neumister discharge in the Schuylkill River Headwaters, the Oneida #3 in the Catawissa Creek Headwaters, the Maysville Borehole (Site 21) and Scott Ridge Overflow (Site 19) in the Shamokin Creek Watershed, the Tracy Airhole in the Swatara Watershed and the Packer #5 in the Manahoy Creek Watershed.

Michael Hewitt, Watershed Outreach Coordinator taking GPS coordinates of the Coalbert Mine Breach

Reclamation to reduce AMD:
Deep mine drainage is produced when clean water, either ground water or surface water, infiltrates voids in underground mines and meets up with pollution producing materials. Not much can be done to stop ground water from entering underground mines, but surface water can often be diverted from known infiltration points on abandoned mine lands and reconnected to headwater streams. Several abandoned mine reclamation / active re-mining projects are not only reducing health and safety problems, but also keeping clean water on the surface in the EPCAMR Region. Three (3) projects were completed / in process in the Heckscherville Valley, Schuylkill County: Glen Dower (Mount Pleasant Problem Area), Mackeysburg (Heckscherville South) both completed by BAMR and the Repplier Pit (Coal Castle) in progress by Reading Anthracite. In the Lackawanna Valley, Powderly Creek and St. Johns Creek are being studied, with Lackawanna Watershed 2000 Grants, to restore flow and reduce sediment buildup. In Luzerne County, the Hicks Creek was awarded several Growing Greener Grants in 2006 to deal with restoration of flow and reduction / removal of sediment.

Outreach Summary: EPCAMR and WPCAMR Participated in and helped to host 12 Surface Mining Control and Reclamation Act (SMCRA) Townhall meetings run by the Department of Environmental Protection Bureau of Abandoned Mine Reclamation, in conjunction with the Citizens Advisory Council and the Mining and Reclamation Advisory Board in the Summer of 2007. The intent of the meetings was to enable the public to provide input to help in the decision-making process for expenditure of these funds. The decision to set aside funds for mine drainage abatement and treatment, and the appropriate level, must be weighed against the need to restore sites that impact the health and safety of the Commonwealth's citizens. The new law provides for a significant increase in funds available to the Commonwealth for abandoned mine reclamation. It also offers the Commonwealth the opportunity to set aside up to 30% of these funds for abatement and treatment of abandoned mine drainage. WPCAMR's Title 4 Video was shown and EPCAMR presented the RAMLIS GIS Tool as an educational prequel to the discussions.

Video documentaries were produced and distributed for the purpose of education and outreach on AMD and AML Issues in PA. Both EPCAMR and WPCAMR were involved and partnering watershed group projects were featured in 4 DVD videos in 2007. WPCAMR Produced the "Title 4 Basics" DVD. WPSU produced "Water and Endangered Resource". WVIA produced "Hope for Polluted Waters" and "Looking to the River", both which had live broadcast component where viewers could have questions answered by professionals who were involved with the making of the documentary.

2007 PA Statewide Conference on Abandoned Mine Reclamation: The 2007 Pennsylvania AMR Conference was hosted by the AMR Conference Committee July 20 & 21, 2007 at the Ramada Inn and Conference Center, State College, PA. Over 130 participants enjoyed the varied presentations and exhibits over the two day event. Highlights of the conference included discussions on the SMCRA Reauthorization, Draft Regulations and Roundtable Discussions, Operation, Maintenance and Replacement for AMD Treatment Systems and Permitting Considerations for AML/AMD Projects.

West Branch Susquehanna River Symposium III: The 3rd Annual West Branch Symposium was held April 27 & 28, 2007 at the Genetti Hotel, Williamsport, PA. The purpose of the West Branch Susquehanna Restoration Symposium is to promote the West Branch Susquehanna Restoration Initiative, which is aimed at the cleanup of abandoned mine drainage throughout the West Branch Susquehanna watershed. This event serves as a forum for the exchange of ideas regarding abandoned mine drainage abatement in the region and provides an excellent opportunity for networking among volunteers, technical experts, students, and others interested in restoring land and water impacted by abandoned mine drainage. A field tour to the Babb Creek AMD Remediation project was also available to attendees.

2007 Bloomsburg Fair: The EPCAMR Program Staff set up an exhibit that highlighted Priority 1 and 2 AML Problems across the EPCAMR Region and Historical Mining Accidents since 1870. The exhibit included maps and posters showing statistical information on anthracite mining. Informational DVD's mentioned above played in the background. Examples of wood stains, recycled colored mulch, dried iron

oxide in a bag, bandanas tie dyed with two colors of iron oxide, and sample jars of the wet iron hydroxide sediments were displayed to encourage visitors to pick them up and ask about them. EPCAMR's "Got AMD?" Tie Dye T-shirts and AMD Avengers Coloring Books were also available as a fundraiser. Nearly 60,000 people walked through the EPCAMR Exhibit in the County & State Building during the week and several people were encouraged to join local watershed groups and get involved with cleanup efforts.

EPCAMR also conducted over **30** informative presentations on AMD/AML issues to schools and colleges. Several of these also included outdoor field tours to show students what problems are in their community or hands on AMD Tie Dye activities where students use recovered iron oxides to make art. These tours, presentations and workshops literally reached thousands of students in 2007.

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