

Ongoing WPCAMR Projects for Fiscal Year 2007-08

A. Focus Area Topics

WPCAMR is involved with a number of focus area topics that have general applicability to the AMR community. Our involvement for a topic typically lasts over an extended period of time. The extent of involvement varies from one focus area topic to the next. Typically our involvement fluctuates temporally: at the one extreme we may be fully immersed and spend considerable resources, and at others enter an "ear to the ground" mode monitoring developments, and anything in between. We generally have 4 motives in becoming involved in a focus area topic:

- a. Understanding the topic
- b. Providing and acquiring resources to advance the topic
- c. Providing guidance to help steer the topic where appropriate
- d. Educating the AMR community about the topic

Current topics include:

1. Providing for Operations and Maintenance of AMD passive treatment systems

The majority of AMD passive treatment systems in PA don't have adequate resources for operations and maintenance (O&M) needs over the long haul. A partial answer is provided by local watershed groups who've taken responsibility for some of the routine O&M activities, but who generally lack the financial and organizational wherewithal to provide all needs. WPCAMR is acting in concert with other entities to provide ways of addressing the long term O&M issue for AMD passive treatment systems.

2. Analysis / Recommendations / Education involving PA's use of new SMCRA funding

WPCAMR has long recognized the importance of the federal legislation known as the Surface Mine Control and Reclamation Act (SMCRA) to AMR and worked in concert with others over the course of many years to see it reauthorized and extended. In December 2006, revamped SMCRA legislation was passed in which significantly enhanced and flexible AMR funding will be dispersed for at least for an additional 15 years. With the new legislation, DEP's Bureau of Abandoned Mine Reclamation's AMR program is also undergoing an overhaul. WPCAMR's involvement with this process resulted in a degree of expertise regarding SMCRA, and allowed us to act in an advisory role in certain aspects of DEP's own planning process. WPCAMR is particularly concerned in issues dealing with the AMD Set-Aside program, strategies on getting the biggest bang for the buck, O&M, the roles of watershed groups, and with cooperation among entities having a stake in AMR & AMD. We see this involvement continuing for some time.

3. Wetlands permitting issues in regards to constructing passive treatment systems

When constructing AMD passive treatment systems, existing wetlands need to be identified in the construction area. If found, they either need to be avoided, or if avoidance is not possible, to obtain a permit that will detail the terms involved with wetland disturbance. Over the years this permitting process has often been a common stumbling block to treatment system construction, adding both time and expense to ultimate project implementation. Much of what is at issue is the appearance of regional inconsistencies in how the regulating agencies apply rules in wetlands permitting. This ongoing issue has witnessed various efforts toward resolution over the years with some limited progress being made. The latest direction being pursued is for the Commonwealth to obtain a general permit for wetlands mitigation. While this appeared to be "the answer", the process has been slowed by a change in personnel. WPCAMR will stick with this issue until there's a final resolution.

4. Prevailing Wage issue as it pertains to constructing passive treatment systems

Most all public works construction projects (including AMD treatment systems) are required to pay workers "the prevailing wage" which approximates the local union scale for a particular trade. In PA, prevailing wage applies to public projects exceeding \$25,000, a figure established in 1961 and unchanged since. A complaint made by

many implementing AMD treatment systems is that costs are drastically increased by having to pay prevailing wage. A legislative compromise being explored is to apply an inflation-based adjustment to the \$25,000 threshold figure so that limited reclamation dollars can go further. Other publicly funded entities also have similar concerns. WPCAMR views this as a relevant issue and one that needs to be considered carefully.

5. Watershed Organization Sustainability

The early days of PA's Growing Greener nurtured a nascent watershed movement by supporting grassroots "watershed groups" as local ambassadors of the environment. Modest investments in these groups demonstrated the willingness of environmental involvement at the local level and in many cases the ability to extend the reach and effectiveness of governmental agencies such as PA's DEP. As funds to support these groups dried up, we also witnessed a corresponding attrition in the ranks of the watershed community. WPCAMR recognizes the very real value of watershed groups and is endeavoring to better understand the dynamics of keeping these organizations viable and finding resources to enable their ongoing success.

6. Supporting a robust Remining program

One of the most effective tools of AMR is the mining industry itself. In the unregulated days of underground coal mining, a significant amount of coal was left behind to support the roofs of coal mines. Typically a host of environmental problems were also left behind that may express themselves for decades afterwards. Remining is the process of employing modern surface mining methods to remove the remaining coal, while generally improving the environmental scars in the process. However, legislation was needed and passed to relieve the coal operators from assuming all the liabilities created by the former unregulated mining operations before current mining operators would venture into the remining activities.

Another variant on what is considered to be remining is the removal of waste coal piles. In the unregulated days of coal mining, not all mined material brought to the surface was coal, but also contained other kinds of rock that needed to be separated from the coal. The separation process was far from perfect and much coal was discarded along with the unwanted rock. Over time, the waste piles grew to be giants, sometimes measured in millions of tons. If enough coal by percentage is present in the waste, it may be economically viable to separate the coal from the non-coal waste to make a profit. More commonly these days, is the ability to directly burn the waste coal mixture in specialized power plants built to accommodate this type of fuel. Either way the operator is obliged to remove the material and reclaim the site to modern standards.

Remining is responsible for a substantial amount of reclamation work on abandoned mine sites, and without taxpayer dollars. WPCAMR strongly supports remining as a cost effective way of achieving AMR and takes opportunities to disseminate information of the positive remining work being done by the coal mining industry.

7. Orphan Coal Refuse Piles

Some coal refuse piles will never attract coal operators willing to remove them because they don't have the proper mix of attributes (especially percentage of burnable coal) in order to turn a profit. For these piles other alternatives are needed. We see two distinct classes. One involves providing a subsidy for piles that may be close to having the proper mix of attributes for profitable removal but still falling short. The other involves re-grading the pile and capping it with suitable materials to prevent infiltration of water and air and soils to foster growth of vegetation. At present, not much attention has been given to these coal refuse coal piles. WPCAMR hopes to bring more attention to them, and especially those that contribute significantly to AMD formation.

8. Innovations in AMR

The magnitude of the AMR problem in Pennsylvania is such that for the foreseeable future there will be a large imbalance between demand for reclamation and resources to accomplish it. Investments in innovations for AMR reclamation methodologies may allow the available resources to go much further. WPCAMR, to the extent reasonable, fosters innovative approaches to AMR.

9. Possible Stream Delisting Candidates

Considerable work has been made in remediating the ill effects of AMD in many of Pennsylvania's streams since the mid 1990s. However, there has been no systematic effort made in actually measuring the improvements made as a consequence of these efforts, which would include successful remediation and return of function to water bodies. To aide in the identification of improved streams that may qualify for removal from listing as

impaired waters, WPCAMR is actively using its network of local contacts to determine streams and stream segments that have potentially improved enough to warrant a more thorough investigation.

10. Promoting the Appalachian Regional Reforestation Initiative

Spawned by OSM, the Appalachian Regional Reforestation Initiative (ARRI) is a coalition of groups, including citizens, the coal industry, and government, dedicated to restoring forests on coal mined lands in the Eastern United States. ARRI advocates using a technique known as the Forestry Reclamation Approach, or FRA, to plant trees on reclaimed coal mined lands. Highly productive forestland can be created on reclaimed mine lands under existing laws and regulations by using the Forestry Reclamation Approach. WPCAMR is a member of ARRI and promotes the FRA approach to increase the forested lands on previously mined lands.

11. Coal Mining History and Heritage

For some time we've noticed that many involved in AMR activities are also interested in the history and heritage of the Age of Coal in Pennsylvania. We believe the link in the opposite direction can (or potential can) be operative, and might be used to spur new interest in AMR activities. Our 2008 AMR conference contains a session devoted to PA's coal mining heritage. We've also devoted articles in our email newsletter, Abandoned Mine Posts, to the topic. As additional opportunities avail themselves, we intend to further foster that linkage.

12. The Beneficial use of Minepool Water

Past underground coal mining activities have resulted in the formation of a huge number of man-made aquifers known as minepools. Many billions of gallons of water (mostly polluted) reside in thousands individual minepools in Pennsylvania alone, and represent both dangers and potential opportunities. WPCAMR is interested in exploring and fostering methodologies to beneficially use this water as a resource where practical.

13. Success Stories

Environmental success stories are important to those who enjoy the successful project, to those who partner with and fund the project, and the environmental community at large. WPCAMR endeavors to showcase AMR success stories, primarily with our email newsletter, Abandoned Mine Posts, and increasingly with our Video Diaries feature.

14. Free or Low Cost Software for use by Watershed Groups

Watershed groups are often posed with the problem of doing more with less. Free and low cost software can be useful in making a watershed organization more productive at a minimal cost. Although a plethora of free and low cost software exists performing a variety of functions, much of what is available is not particularly valuable. Determining products of value can exact its own cost. WPCAMR is constantly on the lookout for software that may improve a group's productivity. When a good product candidate program is recognized, we evaluate it by using it ourselves. We recommend only those products that have proven to be useful for our own needs and those we believe are appropriate for use by watershed groups.

B. Vehicles for Information Dissemination and Educating about AMR

1. Websites

a. AMRClearinghouse.org

A website dedicated to issues of AMR and aimed primarily at grass-roots watershed organizations. Covering a variety of topics, it is often either a "first stop" or a "one-stop-shop" for those looking for "not-too-technical" information on AMR.

b. WPCAMR.org

This is the organizational website of WPCAMR. It includes the usual fare such as organizations purpose, history, and on-going projects. In addition it includes a variety of information not commonly displayed on most other organizations websites. It includes the history of WPCAMR quarterly meetings since 2003; it displays key organizational documents relevant to WPCAMR's operation such as 501(c)(3) status, bylaws,

tax returns, and audits. We strive to operate in an open and transparent manner and our website allows us to demonstrate that.

c. TreatMineWater.com

This website supports the annual PA statewide AMR conference and has become an integral part in supporting it, both leading up to the conference with all information needed to attend and afterward with reference materials derived from the conference. We maintain each year's sub-website as an archive. Every other year when WPCAMR is the conference's lead organization, we also completely develop and maintain this website.

2. E-mail Newsletter Abandoned Mine Post

Abandoned Mine Posts, is a free email subscription newsletter which provides a variety of timely topics and information related to abandoned mine reclamation. Each issue is designed to be short and limited to one or two topics and can cover such diverse subjects as mine drainage chemistry, geology, biology, policy updates, and innovations in mine drainage treatment, mining history, and the positive results of grassroots reclamation efforts. It's a good venue to tout success stories of environmental improvement relating to AMR and AMD. "Video Diaries", an AMP feature, particularly lends itself to showcasing environmental successes and those who've spearheaded them at the local level. This venue also has the advantage of having low overhead and is inexpensive to produce. AMP's success to date encourages us to continue and expand its reach.

3. Annual Statewide AMR Conference

Every year since 1999, a loose coalition of groups involved in AMR issues in PA have put on a conference centered on AMR topics and aimed primarily at the grassroots watershed movement. While the themes of the conference change from year to year, its overall goal of providing a forum for information exchange on AMR issues and topics has endured. Solutions for treating or abating abandoned mine drainage have received a perennial focus. Although aimed toward watershed volunteers, the conference invariably attracts a diverse audience from government, industry, academia, and the non-profit sector, usually with attendance of around 200. The conference does not have a dedicated funding source, but relies fully on grants, donations, in-kind contributions, and conference fees. The all volunteer conference planning committee is usually comprised of about a dozen people representing various non-profit organizations, government agencies, and industry. The lead organization role alternates annually between WPCAMR (2008 lead) and its sister organization EPCAMR from the eastern anthracite coal region.

4. WPCAMR Quarterly Meetings

WPCAMR's quarterly membership meetings serve the purposes of the organization, but just as importantly are a venue for information exchange on AMR topics in the bituminous coal region of western PA. Lively discussions help to keep those attending up-to-date with the latest happening in the AMR world.

5. Meetings and events

WPCAMR takes advantage of various meeting and events to provide information on AMR issues and available services. The level to which this is done varies with the situation.

C. Grant Administration

WPCAMR currently administers the following grants:

- 1. \$123,500 DEP 319 funding for WPCAMR operations for the 2007-08 fiscal year.**
- 2. "Quick Response Program" provides funding for emergency repairs for publicly funded AMD passive treatment systems** and other Growing Greener eligible BMP's. The program has a timely approval and reimbursement process so that systems can operate with a minimum of down time. \$450,000 has been made available through Growing Greener.

3. **WPCAMR is the sponsor for a \$5,000 Growing Greener grant to the South Sandy Watershed** Association in Venango County for startup and development purposes.
4. **“Monitoring Support for Passive Treatment Systems” has been funded by two separate Growing Greener grants totaling \$266,000.** Funding is provided to perform laboratory analysis of water samples characterizing the function and performance of publically funded AMD passive treatment systems. Watershed groups who take advantage of the program are also enrolled in "Datashed", an Internet based data management system that works as a repository for information for AMD passive treatment systems. This grant has also provided funds for development of "Datashed".
5. **WPCAMR is the fiscal sponsor of a \$38,743.84 OSM Watershed Cooperative Agreement Program (WCAP)** grant for well plugging in Farmington Township in Clarion County.

WPCAMR sponsors 4 DEP Innovative Treatment Grants collectively totaling \$912,094:

6. **Limestone Upflow Pond Optimization**
This project develops optimal flushing strategies for limestone upflow ponds treating low pH, high aluminum AMD discharges to keep limestone dissolution rates high over extended periods and to prevent plugging.
7. **In-situ Treatment of Mine Pools using Sulfate Reducing Bacteria**
It has been shown that under the proper conditions AMD can be mitigated using sulfate reducing bacteria which in turn promises to be a way to treat AMD at its source, e.g. in underground mine pools. To work, sulfate reducing bacteria (which include a multitude of strains) need an energy source (food) to do their job. This study will match various strains of mine pool indigenous sulfate reducing bacteria with various energy sources (carbohydrates from available commercial waste streams) to help determine optimal in-situ treatment strategies.
8. **Activated Iron Solids Treatment and Recovery of Large Flow AMD Discharges**
This pilot study explores a new and innovative AMD treatment approach to actively and economically treat high flow (1 to 30 million gallons per day) AMD containing high ferrous iron (> 20 mg/L) and recover the iron as a high-density (20 to 30% solids) iron oxide solid with purity exceeding 95%. The innovative approach advances the Activated Iron Solids (AIS)/Sequencing Batch Reactor (SBR) treatment process to the next generation promising greater efficiencies and lower costs of treatment.
9. **Enhanced Iron Removal for Recovery from Aerobic Ponds Using Retrofit Lasaire Aeration**
This is a demonstration project employing a grid of pressurized tubing submerged in an AMD settling pond. Tiny holes in the tubing allow air to escape and provide enhanced aeration to oxidizing ferrous ions and for purging carbon dioxide, resulting in increased efficiency.

D. Other Programs

1. **Consortium for Scientific Assistance to Watersheds (C-SAW)**
To help local watershed groups achieve their goals of watershed protection, several organizations have joined forces to form the Consortium for Scientific Assistance to Watersheds (C-SAW). C-SAW is a team of scientists available to provide technical assistance to watershed groups. C-SAW can provide technical assistance in three main areas: Watershed-Specific Technical Assistance, Mentoring Assistance, and Quality-Control Assistance for water-quality and macroinvertebrate monitoring programs. C-SAW assistance is provided at no cost to eligible groups. WPCAMR is a member of the service providers.