

MINE DRAINAGE TREATMENT TECHNOLOGIES AND PRACTICES WORKSHOP FOR ABANDONED MINE LANDS – Morgantown, WV

March 2, 2010 – Planning and Implementation Issues

Welcome and Introductions (12:15-12:45) [Nancy Pointon]

1. Abandoned Mine Land Reauthorization & Funding for Acid Mine Drainage - Presentation by OSM (12:45-1:15) [Fred Sherfy]

- AML Reauthorization & AMD Funding – Changes in program funding sources and their application to AMD abatement and treatment
- AMD Set-Aside – Qualified Hydrologic Unit

1.1 Brief AMD Set-Aside Overview from each State Program – Presentations by KY, MD, OH, VA, WV, PA with Q&A Session (1:15 – 5:00) [Moderator Fred Sherfy]. Presenters –Ed Boone (KY), Mike Garner (MD), Mitch Farley (OH), Eric Cavazza and Michael Korb (PA), Roger Williams (VA), Eric Coberly (WV).

- State's approach to Qualified Hydrologic Units
- Interaction/Partnering with Watershed or Other Grass Roots Groups
- Coordination with Other Federal and State Programs

Wrap-Up [Nancy Roberts]

March 3, 2010 – Planning and Implementation Issues

Continental Breakfast (7:30 - 8:00) [Nancy Pointon]

2. *Project Planning and Development - Panel Discussions [Moderators and Note-takers – Nancy Pointon and Nancy Roberts]*

2.1 *Watershed Restoration Plan Development – Panel with MD & PA (8:00 – 9:00) [Moderator – Pointon, Panel members –Connie Lyons Loucks & Pam Milavec]*

- Restoration Goals
- Project/Plan Evaluation and Project Selection

Questions and topics for discussion:

What criteria are used to prioritize projects and/or watersheds?Some possible criteria are: total number of sites per watershed, concentration of sites, value of aquatic communities within the watershed, human communities in close proximity to the project or watershed, population density, public interest, current and or historical use of the waterway (public drinking, fishing, and swimming).

How are watersheds defined?

Restoration Goals – What criteria is used to define the goals or success? Aquatic community numbers, aquatic community diversity? Restoration of one community or two

communities, increased usage of stream...Water quality goals...What standards are being used? Possible standards: EPA Drinking water, Best Management Technology, site specific standards based on statistics, background water quality. Water quality changes such as decrease concentrations in total dissolved solids, specific conductance and/or a select group of parameters.

Project Goals – Are there required project goals? NPDES limits, background water quality, pre-mining conditions, upgradient conditions

Locating and identifying Projects and Sites – How to locate AMD in underground mine water and determine extent and best method to capture flow

2.2 Pre-design water sampling and monitoring – Panel with WV, OH and KY (9:00 – 10:00) [Moderator – Pointon, Panel members – [Sheila Vukovich](#), [Mary Ann Borch](#) and [Jason Robinson](#)]

- Frequency and Duration, Sampling Analyses, Data Interpretation, etc.

Questions and topics for discussions:

Are field parameters collected and evaluated? For field and lab parameters - What are the standard parameters? What are the “extra” parameters and when do you collect and analyses for them, what site conditions dictate additional sampling. Flow measurements – types and frequency. Databases, approach to setting up database, background data collection and seasonal variability in water sampling. Monitoring data, frequency and types. Evaluation of data – when does it occur and what types of analyses are being used.

Break (10:00 – 10:15)

2.3 Pre-design site evaluations – Presentation by OH (10:15 – 11:00) [Moderator – Roberts, Presenter - Scott Hindall] Presentations- [1](#) and [2](#)

- Exploratory Drilling, Exploratory Excavations, Soil Testing, etc.

Questions and topics for discussion:

Who conducts them? Are they standardized or site-specific? Is there a database on previous and current evaluations? What type of data is collected? Where is the water quality data stored and what is the cost of the data analyses? Discuss project experience in amount of data collected and its value to the site design. Lessons Learned.

2.4 Realty/Access Issues (Good Samaritan Law) – Panel with PA and WV (11:00 – 12:00) [Moderator – Roberts, Panel - David Fromell & Eric Coberly]

Questions and topics for discussion:

What types(s) of agreements are the various states entering into with private landowners who own the property where an AMD treatment facility/system is to be built?

Is anyone recording these agreements at the local courthouse?

What rights and/or restrictions are imposed on that landowner? For instance could that landowner remove the treatment system on their property if they wanted to?
Does the agreement provide for continued access for O&M?
How do you handle a situation where the treatment system needs major rehabilitation or modification (possible requiring additional property impacts)?
How do you handle the sale of a property with a treatment system from one property owner to another?
Are you incorporating design features into treatment systems to lessen a property owner's liability such as fences, underwater berms, etc?

In- house Lunch (12:00- 1:30)

March 3, 2010 - Technical Issues

3. Project Design, Construction and Post-Construction – Passive Treatment (1:30 – 5:00)*[Moderator – Brent Means, Panel members – Joe Mills (MD), Mitch Farley (OH), Dave Broschart (WV), Greg Smith (WV), Mike Sheehan (WV), David McCoy (WV), Max Scheeler (PA) and Todd Wood (PA)]*

- Discuss Passive Treatment Technologies - Case Studies, Successes, Failures, and Lessons Learned
- Current Sizing and Selection Criteria for each treatment type
- Permitting Issues - Wetland & Waterway Encroachments, NPDES Stormwater Management, NPDES Discharge Permits, Others
- Construction Issues
- Design Modifications during Construction
- System Costs (cost calculations, funding source and responsibility)
- Operation and Maintenance (Both Short Term and Long Term)
- Sampling and Monitoring
- Data Analysis and Availability (such as Web Applications)
- O&M Costs (cost calculations, funding source and responsibility)
- System Rehabilitation/Replacement

Break (3:00 – 3:15)

Questions and topics:

Which states are utilizing passive treatment for mine drainage? What types? How many?

What types of water quality and flows are being treated?

Which states are completing designs in-house? Which states are using consultants to complete project designs?

Does anyone have a case study they would like present/discuss?

What permits are being obtained for these systems?

What construction issues have you experienced? Have you had to make design modifications during construction? If so, what types of changes were required?

Do you compile project costs for these projects? If so, in what form? (Database, bid summaries, spreadsheet, other)

How are you planning for operation and maintenance (both short term and long term)?
How is O&M being funded? Who is completing the O&M?
Is sampling and monitoring of the systems being completed on a regular basis? Is there a sampling and monitoring plan development for each site or is there a generic plan for all sites? Who is completing the sampling and monitoring?
Is the sampling and monitoring data being regularly analyzed? If so, by whom? Is the data being made available to other governmental agencies and/or the public? Is anyone providing this information with web applications?
How are maintenance concerns identified and by whom? (Regular inspection frequency, complaints, local groups, etc.)
Do you track O&M costs? What funding source(s) are being used to fund O&M? How are O&M costs predicted and revised if necessary?
Who has experience with system rehabilitation/replacement? Is anyone establishing long-term O&M and system replacement funds? What analysis is completed to determine if a system is rehabilitated, replaced or abandoned?

Reference List of Types of Passive Treatment for Moderator

- Aerobic Wetlands
- Settling Ponds/Basins (a.k.a. - Oxidation/Precipitation Basins or OPBs)
- Anoxic Limestone Drains (ALDs)
- Oxic Limestone Drains (OLDs)
- Steel Slag Beds
- Vertical Flow Ponds (a.k.a.- VFPS, SAPS, VFW, RAPS, or other acronyms)
- Sulfate Reducing Systems (a.k.a. - bioreactors or SRBs)
- Open Limestone Channels (OLCs)
- Diversion Wells
- Oxic Limestone Beds (Manganese Oxidizing Beds, Pyrolusite Beds, OLBs)
- Aeration Terraces (Low pH Iron Oxidizing Beds)

Wrap-Up [Lois Uranowski]

March 4, 2010 - Technical Issues

Continental Breakfast (7:30 – 8:00)

4. Project Design, Construction and Post-Construction – Active Treatment (8:00 – 11:30) [Moderator – Brent Means, Panel members – Mitch Farley (OH), Dave Brochart (WV), Mike Sheehan (WV), David McCoy (WV), Dan Sammarco (PA), Joe Mills (MD)]

Discuss Active Treatment Technologies - Case Studies, Successes, Failures, and Lessons Learned

- Current Sizing and Selection Criteria for each treatment type
- Permitting Issues - Wetland & Waterway Encroachments, NPDES Stormwater Management, NPDES Discharge Permits, Others
- Construction Issues
- Design Modifications during Construction
- System Costs (cost calculations, funding source and responsibility)
- Operation and Maintenance (Both Short Term and Long Term)

- Sampling and Monitoring
- Data Analysis and Availability (such as Web Applications)
- O&M Costs (cost calculations, funding source and responsibility)
- System Rehabilitation/Replacement

Break (10:00 – 10:15)

Questions and Topics:

Which states are utilizing active treatment for mine drainage? What types? How many? Manned vs. un-manned?

What types of water quality and flows are being treated?

Which states are completing designs in-house? Which states are using consultants to complete project designs?

Does anyone have a case study they would like present/discuss?

What permits are being obtained for these systems?

What construction issues have you experienced? Have you had to make design modifications during construction? If so, what types of changes were required?

Do you compile project costs for these projects? If so, in what form? (Database, bid summaries, spreadsheet, other)

How are you planning for operation and maintenance (both short term and long term)?

How is O&M being funded? Who is completing the O&M?

Is sampling and monitoring of the systems being completed on a regular basis? Is there a sampling and monitoring plan development for each site or is there a generic plan for all sites? Who is completing the sampling and monitoring?

Is the sampling and monitoring data being regularly analyzed? If so, by whom? Is the data being made available to other governmental agencies and/or the public? Is anyone providing this information with web applications?

How are maintenance concerns identified and by whom? (Regular inspection frequency, complaints, local groups, etc.)

Do you track O&M costs? What funding source(s) are being used to fund O&M? How are O&M costs predicted and revised if necessary?

Who has experience with system rehabilitation/replacement? Is anyone establishing long-term O&M and system replacement funds? What analysis is completed to determine if a system is rehabilitated, replaced or abandoned?

Reference List of Active Chemical Treatment (Chemicals and Processes) for Moderator

- Chemical Reagents (Acid Neutralizers, Oxidants, Flocculants & Coagulants)
 1. Acid Neutralizers
 1. Sodium Based Neutralizers
 1. Caustic Soda (Sodium Hydroxide)
 2. Soda Ash (Sodium Carbonate)
 2. Calcium Based Neutralizers
 1. Limestone (Calcium Carbonate)
 2. Hydrated Lime (Calcium Hydroxide)
 3. Quicklime (Calcium Oxide)
 3. Ammonia Based Neutralizers
 1. Anhydrous Ammonia
 4. Magnesium or Potassium Based Neutralizers

2. Oxidants
 1. Hydrogen Peroxide
 2. Chlorine or Hypochlorite
 3. Potassium Permanganate
 4. Atmospheric O₂
3. Flocculants and/or Coagulant
- Types of Chemical Feed Systems
 1. Dosers (Tipping Buckets, others)
 1. On-stream vs. Off-stream
 2. Water Wheels
 3. Chemical Drips
 4. Silos with Vibrating Feeders
 5. Others
- Mixing
 1. Mechanical Mixers
 2. Static devices
 3. In-stream
- Mechanical Aeration
 1. Mechanical Aerators
 2. Static devices
- Settling
 1. Round Clarifiers
 2. Rectangular Clarifiers
 3. Inclined-Plate Clarifiers
 4. Ponds
 5. Others
- Sludge Dewatering
 1. Vacuum Filter Press
 2. Belt Press
 3. Others
- Sludge Handling/Disposal
 1. Beneficial Re-use
 2. Landfilling
 3. Underground Mine Disposal
 4. Other
- Telemetry/Remote Monitoring

5. Final Discussions and Wrap- Up (11:30 – 12:00) [Nancy Pointon]