



Workshops

#1 Mine Drainage Treatment Workshop Brent Means, OSMRE, and Jill Browning, Veolia Sunday, April 9, 2017, 8 – 5 pm. \$120.

Salon D. The course will be an overview of the chemistry of mine influenced waters as well as a review of some active treatment solutions for compliance with environmental regulations.

Agenda

- I. Geochemistry of Mining-Influenced Water (2 hr)**
 - 1. Hot Acidity Titrations
 - 2. Aluminum Chemistry
 - 3. Ferric Iron Chemistry
 - 4. Ferrous Iron Chemistry
 - 5. Manganese Chemistry
 - 6. Sulfur Chemistry
- II. Decarbonation (1 hr)**
 - 7. Why is it important?
 - 8. Scenarios when it is useful



- 9. Overview of decarbonation techniques
- 10. Geochemistry of CO₂ I

III. Active Mine

Drainage Treatment (1 hr)

- 11. Dense Sludge Technology
- 12. Clarification Technologies

IV. Selenium Removal (1 hr)

- 13. Selenium Chemistry
- 14. Biological
- 15. Physical Chemical

V. Sulfate and TDS Removal (1 hr)

- 16. Sulfate Desaturation
- 17. Low SO₄
- 18. Membranes: NF vs. RO
- 19. ZLD/Crystallization

#2 Android- and IOS-based Geo database Collection for Active and Abandoned Coal Mining Sites Andrew Schaer and Lukus Monette Sunday April 9, 2017 1 – 4 pm. \$20. Salon F.

The Office of Surface Mining, Technical Innovation and Professional Services (TIPS) is deploying training for Mobile GIS and GPS on different platforms for use in mining and reclamation. This includes ESRI ArcPAD



and Trimble TerraSync on various Windows operating systems and a whole suite of GIS apps for Apple IOS and Android devices. This workshop will provide an overview and demonstration of the existing and emerging mobile applications and show how they can be of use in mining and reclamation related field work.

With ArcPAD and TerraSync we will illustrate how we have been using the programs in SMCRA business practices. Using Apple iPads (and Android) we will demonstrate the use of ESRI Collector, PDF Maps and other GIS applications. During the last year, iPads and Android devices have been tested for collecting shapefiles and geodatabase information using the ESRI Collector. In addition, PDF Maps was used to interact with complex geo-referenced maps in often very remote field locations. This has been done with both internal Apple GPS systems and external Bad Elf and Trimble GPS systems. Using these systems complex database entry is easily accomplished in field with map grade GPS accuracy.

Participants may want to bring their own iPad, smartphone or similar mobile smart device.

#3 Passive Treatment Design, Implementation, and O&M Tim Danehy, BioMost, Inc.; Cliff Denholm, Stream Restoration Incorporated Sunday, April 9, 2017, 1 – 4 pm, \$50. Salon E.

This workshop will provide an overview of the treatment technologies used in watershed restoration and mine drainage treatment with a focus on the many types of passive treatment technology including cost estimation and operation and maintenance considerations.



- Treatment Overview
- Active Treatment
- Passive Treatment
- Passive Treatment Design and Implementation
- Water chemistry basics
- Acid vs. Alkaline Drainage
- Types of passive treatment
- Wetlands/Settling ponds
- ALDs
- VFPs
- TIFs
- HFLBs
- Other technology
- Cost estimation
- Operation and Maintenance
- Typical by treatment type
- Work required
- Typical schedule/planning
- Cost Considerations

#4 Natural Process for the Restoration of Drastically Disturbed Sites David Polster, Polster Environmental Services, Ltd. Sunday, April 9, 2017, 8 – 4 pm. \$150. Salon C.

This workshop will explore how natural processes, systems and functions can be used to restore sites that humans have disturbed such as large mines, industrial disturbances, landslides, shorelines and other disturbed sites. We will look at how natural systems recover and control erosion and steep, unstable slopes and how we can design



restoration treatments to mimic these processes. We will explore the natural processes that provide nutrients and nutrient cycling capacity to ecosystems and how these can be reestablished on drastically disturbed sites. In many cases restoration treatments based on these natural processes can be used to restore anthropogenic disturbances more easily and at a lower cost than traditional reclamation treatments. Examples will be drawn from the mining and heavy construction industry. This course will be of interest to those engaged in the restoration of disturbed sites. Managers or other personnel from large mines or other sites where disturbances must be reclaimed will be interested in this course. Regulators and others looking for effective restoration strategies will find this course useful. Participants will learn a variety of treatments to control erosion, re-establish vegetation and build soil-forming processes. Specific details are provided to address issues that are commonly found at mines and industrial sites (e.g. compaction, steep slopes, adverse soil texture, toxic materials and lack of organic). A course manual will be provided at no cost.

#5 Reclamation Standards, Bonding, and Compliance Inspections for Reclamation Success at a Large Western US Surface Coal Mine (Semi-arid Shortgrass Prairie) Anna Krzyszowska Waitkus, Environ. Consulting. Sunday, April 9, 2017, 1 – 4 pm, \$100. Wharf A&B.

The workshop will discuss regulatory performance standards, bonding, reclamation bond release procedures, and compliance inspections using a GIS/GPS approach for a western surface coal mine (semi-arid shortgrass prairie). The North Antelope Rochelle Mine (NARM), the largest surface coal mine in the US, will be used to demonstrate how State of Wyoming regulatory performance standards, along with best mine management practices resulted in successful mine reclamation and bond release. The workshop will cover three topics: regulatory environmental performance standards, reclamation bonding for coal mines in Wyoming, and the use of geospatial tools with field inspections for tracking regulatory compliance.



Regulatory performance standards

Specific information will be provided about Wyoming's environmental protection performance standards as they pertain to best mine management techniques such as:

- salvaging all suitable soil,
- locating, segregating and burying unsuitable overburden material,
- replacing backfill material and building post-mine topography,
- replacing soil material, and
- seedbed preparation and revegetation with methods using native plant species.

Reclamation bonding for coal mines in Wyoming

All coal mine permittees must obtain and update their reclamation bonds. As the permittee completes phases of reclamation by fulfilling specific criteria and performance standards they can apply for bond release through incremental bond release phases. There are four bond release phases (Area Bond, Phase 1, 2, and 3) for surface coal mines in Wyoming. The presenter will discuss:

- Bond release criteria and performance standards verification for specific bond release phases,
- Reclamation bond calculations for an Area Bond and incremental bond phases for the mine.

Field inspections and geospatial tools for tracking regulatory compliance

Regulations require documentation of areas that were verified and/or bond released through time. The Bond Release Geo-database (GIS/GPS approach) was developed for the NARM to support the tracking of areas that have satisfied various criteria and performance standards for the incremental bond release and complied with regulatory requirements and permit commitments.

This pioneering geo-database is the first spatially supported database developed in Wyoming for mined land reclamation bond release and inspection purposes. Examples will illustrate how the Bond Release Geo-database significantly reduces the time needed to track bond release progress, reach agreement between operator and regulator, and improve the state inspector's ability to assess reclamation adequacy and progress.

Field Trips

#1 Surface Mining and Post-mining Land Use Jeff Skousen, WVU; Dan Skaggs and Steve Pachol, MEPCO.

Tuesday, April 11, 1 – 5 pm. \$30.

A small 100-ac surface mine outside of Morgantown will be visited. Attendees will see mining equipment operating in the pit, observe the coal and overburden, and see reclamation practices including backfilling, topsoiling, and post-mining land use development. The second stop will be at the Steele Shaft Hydrated Lime Treatment Plant, and observe degassing of CO₂ from the water, slurry tank and mixing, and the clarifier for solids removal. The third stop will visit a 25-yr-old reclaimed area at Mylan Park where various post-mining land uses such as baseball and soccer fields, schools, recreation center, etc., have been established.



#2 Acid Mine Drainage Chemical Treatment Plants Mike Sheehan and Paul Ziemkiewicz, WVDEP and WVU.

Tuesday, April 11, 1 – 5 pm. \$30.

The West Virginia Dept. of Environmental Protection operates several AMD treatment systems in the Cheat River Watershed with several more in planning and construction. The first stop will be the T&T underground mine, which has an ammonia chemical treatment plant that is being converted to a large hydrated lime treatment under construction. A number of AMD sources in the Muddy Creek Watershed will be brought to the new plant for treatment. A second stop will be at Limestone Dosers, where lime is added to the stream for watershed restoration. Several systems will be visited and discussed with water analyses and costs.



#3 Passive Treatment of AMD Buck Neely and Tim Danehy, BioMost, Inc.

Tuesday, April 11, 1 – 5 pm. \$30.

Several treatment systems will be visited including: A multi-stage passive system installed near Kingwood, WV along the North Fork of Greens Run where highly acidic drainage with >100 ppm Fe and >60 ppm Al is treated with a series of TIFs, VFPs and wetlands. A system in the headwaters of Deckers Creek where two auto-flushing VFPs treat several acidic, aluminum-bearing discharges.



And a third, “semi-passive” system will be visited where the MixWell and A-Mixer technologies have recently been installed to enhance water-powered, lime-based, chemical treatment.

Contact bmi@biomost.com.



#4 Longview Power Plant Randy Maggard, MEPCO. Tuesday, April 11, 1 – 5 pm. \$30.

The 700-MW Longview coal-fired power plant was constructed in 2007 at a cost of \$2 billion. It uses a super-critical pulverized coal-fired boiler, a high efficiency turbine generator, and advanced integrated pollution control systems including particulate matter removal by filters, flue gas desulfurization system to remove SOx, NOx removal by a catalytic reduction system, and CO2 reduction. It is one of the cleanest burning power plants in the US. Attendees will observe the fuel supply system from an adjacent underground coal mine, tour the plant, and see the residual materials. <http://longviewpower.com/our-technology>



#5 ARRI Reforestation of Mined Lands – Flight 93 Site Scott Eggerud and Brad Edwards, OSMRE. Tuesday, April 11, 7:30 am – 5 pm, \$50.

On Tuesday morning, September 11, 2001, the U.S. came under attack when four commercial airliners were hijacked and used to strike targets on the ground. Nearly 3,000 people tragically lost their lives. Because of the actions of the 40 passengers and crew aboard one of the planes, Flight 93, the attack on the U.S. Capitol was thwarted. The Flight 93 Memorial Site and Visitor’s Center, near Shanksville, PA, will be visited. Attendees will also see that over 90,000 trees have been planted on 125 acres using the Forestry Reclamation Approach. Red oak, red maple, and white pine were the major species, and 5,000 “Restoration 1.0” American chestnuts have also been planted. Dutch-elm-disease-resistant American elms have also been planted and the higher elevations have had stands of red spruce planted. Tree planting activities may be ongoing and attendees may be able to plant trees. A common phrase used at the Memorial is “we are healing our souls by healing the land.” www.nps.gov/flni/



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Registration

**Sunday through Thursday,
April 9-13, 2017, 7 am to 5 pm**

The Registration Table will be open for the conference on all days. It is located at the front of the Platinum Foyer. Information and help can be obtained from those situated at the table.



Welcome Reception

**Sunday, April 9, 2017,
6 to 8 pm**

The Welcome Reception will be held in the MEC Lobby and the Platinum Foyer for all conference attendees. Reacquaint yourself with old friends and meet new ones as you talk with others at the reception.

Plenary Session

Monday, April 10, 8:50 am to 12 noon Salons D & E

The Plenary Session will be composed of three presentations that are intended to introduce all three organizations to attendees that are sponsoring this meeting. Jeff Skousen will give a history of the WV Mine Drainage Task Force, Pete Stahl will present the American Society of Mining and Reclamation goals and history, and Jim Burger will provide an introduction to the Appalachian Regional Reforestation Initiative.



ASMR Awards Luncheon

**Monday, April 10,
12 to 1:30 pm**

The ASMR Awards Luncheon is one of the highlights of the annual meeting. Awards are given for the William T. Plass Award, the

Barnhisel Reclamation Researcher of the Year Award, the Reclamationist of the Year Award, Pioneers in Reclamation Award, the Early Career Award, as well as student scholarship awards. The cost is included in the conference registration. Additional tickets can be purchased for \$25.

ARRI Awards Luncheon

Wednesday, April 12, 12 to 1:30 pm

The ARRI Awards Luncheon is an additional highlight for this year's meeting. Recognition will be given to the ARRI Excellence in Reforestation Awards. ARRI presents two awards within each state: one for AML (Title IV) and one for Active Operations (Title V). ARRI presents one Regional Award chosen from the state level award winners from each of the member states.

Early Career Professional Social

Monday, April 10, 7 pm

The Early Career Professionals will meet on Monday night, April 10, at 7 pm after the Monday Evening Reception at a nearby restaurant within walking distance of the hotel. The purpose of the event is to provide individuals who are just starting their careers in mining and reclamation an opportunity to interact with others in a similar situation. It will be a great opportunity for networking, learning, and gathering knowledge from others. Please sign up for the social either during pre-registration (\$10) or you may purchase a ticket at the meeting. Please contact Cindy Adams for further information (cindy@sgm-inc.com).

Poster Session and Music Reception

Tuesday, April 11, 2017

After the field trips on Tuesday, a reception and poster session will be held downstairs of the MEC Lobby. A reception and cash bar will also be available. Posters will be displayed and the presenters will be available to discuss their work with participants.

The Ron Retzer Trio will be providing music during and after the poster session. Ron Retzer, Bob Wolfe and Jennifer Galownia had been singing together in a touring group for two years, and decided to branch out as a trio in 2013. They perform music of all genres, classic ballads, country, oldies, southern gospel, and even some pop and rock and roll, too!



Silent Auction

All Week, Wharf Rooms

The organizers have collected and will be collecting items to contribute to ASMR's Silent Auction. Items will be on display in the Wharf A&B rooms where bidding can go on throughout the week. It will close at 11:30 am on Wednesday, April 12, 2017. The auction raises funds for student scholarships, presentation awards, and travel grants to our meetings.

Guest Activities



Monday and Wednesday, April 10 and 12, 2017

The Morgantown area has several unique historical and cultural attractions. Plans are being made to visit Prickett's Fort (<http://www.prickettsfortstatepark.com/>). The state park is a recreation of the original Prickett's Fort of 1774, which served as a refuge from Native American war parties on the western frontier of Colonial Virginia. Rebuilt in 1976 by the Prickett's Fort Memorial Foundation, the fort serves as a living history site where interpreters recreate the lifestyle with period attire and demonstrations of a variety of colonial crafts.



Another unique industry in the Morgantown area was glass making. The Davis-Lynch Glass Company (<http://davis-lynchglass.com/>) is the only factory left in Morgantown and plans are being made to visit the site. It is one of the few remaining hand-blown glass factories in the United States. The Company specializes in opal and crystal glass lampshades, globes and cylinders. It has its own decorating department. More information is available from Jeff and Debbie Skousen (jksousen@wvu.edu).

Wild Women of Reclamation



Monday, April 10, 7 am, Breakfast area and Salon F

Started in 2013, the Wild Women of Reclamation was organized to provide mentorship and professional development for women in the society as well as those in the profession. Every woman is welcome. Presentations are sometimes given on choosing a career path, juggling a career with family and community obligations, and mentoring. Each year we separate individuals into "more experienced" persons, i.e., greater than five years in a career, vs. "less experienced," i.e., less than five years. One person from each group is paired with one from the other group. Those mentors and mentorees are given the assignment to keep

in touch with each other throughout the coming year. Wild Women will convene on Monday at 7 am in Salon F (breakfast will be available). We have two incredible women as speakers on the agenda: Dr. Gwendolyn Geidel and Hannah Angel. There is no membership - just show up at 7 am in Salon F. For more information, please contact Michele Coleman (mcoleman@nbpower.com) or Cindy Adams (cindya@sgm-inc.com).

Haulin' ASMR



6:30 am, Sunday through Thursday

Haulin' ASMR is an informal running activity during each morning of the conference. It is a low-key running group that meets at 6:30 am. We usually run for 30-50 minutes depending on the conference schedule. The pace is approximately 5-6 mph, but is generally based on the ability of the participants. Some people stay with the group for part of the run and then branch off to either go faster, farther, or slow down. Running is a wonderful way to meet new people, get some exercise in the morning, and to explore the lovely trail system in Morgantown during the quiet of the morning. Remember to bring your running shoes to Morgantown in 2017!

The Waterfront Hotel is located on the Monongahela River Trail (<http://www.montrails.org/rail-trail-maps/>), which goes both north and south of the hotel. This trail also connects a short distance away to the Deckers Creek Rail Trail, a slightly upward climb through Morgantown. People with a desire to join the group for a short run should meet at 6:30 am in the Hotel Lobby. <http://www.morgantownwv.gov/residents/recreation/morgantown-biking-walking-trails/>



Program Overview

Sunday, April 9, 2017

Workshops

7 am to 5 pm	Registration	Platinum Foyer Entrance
9 am to 5 pm	ASMR NEC Meeting	Puskar Boardroom
8 am to 5 pm	#1 Mine Drainage Treatment Workshop	Salon D
1 pm to 4 pm	#2 Android- and IOS-based Geodatabase Collection	Salon F
1 pm to 4 pm	#3 Passive Treatment Design, Implementation and O&M	Salon E
8 am to 4 pm	#4 Natural Process for the Restoration of Disturbed Sites	Salon C
1 pm to 4 pm	#5 Reclamation Standards, Bonding and Compliance	Wharf A & B
1 pm to 5 pm	Exhibitor Set up	MEC/Platinum Foyer
6 pm to 8 pm	Opening Reception	MEC/Platinum Foyer

Monday, April 10, 2017

6:30 to 7:30 am	Haulin' ASMR	Hotel Lobby
7:00 am to 9 am	Continental Breakfast	Downstairs MEC
7:00 am to 8:30 am	Wild Women of Reclamation	Breakfast and Salon F
8:00 am to 5 pm	Speaker Ready Room	George Farmer Boardroom
8:00 am to 5 pm	Silent Auction	Wharf A&B
8:00 am to 5 pm	Exhibits	MEC/Platinum Foyer
9:00 am to 12 pm	Guest Tour	Registration Area

Monday Morning Plenary Sessions

8:50 to 9:00 am	Welcome – Charlie Miller and Louis McDonald	Salons D & E
9:00 to 9:30 am	History of the WV Mine Drainage Task Force – Jeff Skousen, Member of Task Force	
9:30 to 10 am	The American Society for Mining and Reclamation – Pete Stahl, President of ASMR	
10 to 10:30 am	Appalachian Regional Reforestation Initiative – James Burger, Science Team Member of ARRI	
10:30 to 11 am	BREAK	MEC/Platinum Foyer

	Salon D	Salon E
	Policy and Law	Reclamation Technology
11:00 to 11:30 am	Legislative Update on Mining, Reclamation and Water Quality in West Virginia Jason Bostic WV Coal Assn.	Why Aren't All Reclamationists Considered Ecological Engineers? Robert Nairn University of Oklahoma
11:30 to 12:00 pm	Future Reclamation Needs in a Changing Coal Sector Paul Ziemkiewicz West Virginia University	Overview and Update on Passive Treatment Systems Art Rose Penn State University (retired)
12 to 1:30 pm	ASMR Awards Luncheon	Downstairs MEC

Concurrent Technical Sessions

	Salon C	Salon D	Salon E	Salon F
1:30 to 3:00 pm	Social/Economic	ARRI, Forestry & Ecology	Active AMD Treatment	Reclamation Technologies
3 to 3:30 pm	BREAK			MEC/Platinum
	Salon C	Salon D	Salon E	Salon F
3:30 to 5:00 pm	Social/Economic	ARRI, Forestry & Ecology	Active AMD Treatment	Reclamation Technologies
5:30 to 8:00 pm	RECEPTION			MEC/Platinum
7:00 to 9:00 pm	Early Career Professional Social			Mt. State Brewing

Tuesday, April 11, 2017

6:30 to 7:30 am	Haulin' ASMR	Hotel Lobby
7:00 to 9:00 am	Full Breakfast	Downstairs MEC
8:00 am to 5 pm	Registration	Registration Area
8:00 am to 5 pm	Speaker Ready Room	George Farmer Boardroom
8:00 am to 5 pm	Silent Auction	Wharf A&B
8:00 am to 5 pm	Exhibits	MEC/Platinum Foyer
7:30 am to 5 pm	ARRI Field Trip Departure – Load Buses	Registration Area

Concurrent Technical Sessions

	Salon D	Salon E	
8:00 to 9:30 am	Imaging and Modeling	Passive AMD Treatment	
9:30 to 10:00 pm	BREAK		MEC/Platinum
10:00 to 11:30 am	Imaging and Modeling	Passive AMD Treatment	
11:30 am	BOX LUNCHESES		Registration Area

Tuesday Afternoon Field Trips

11:30 am	Field Trips – Load Buses			Registration Area
11:30 am to 5 pm	#1 Surface Mining, AMD, and Land Use	#2 AMD Chemical Treatment	#3 Passive Treatment	#4 Longview Power Plant
5:30 to 6:00 pm	Poster Set up			Downstairs MEC
6 to 9 pm	Poster Session, Reception, Music			Downstairs MEC

Wednesday, April 12, 2017

6:30 to 7:30 am	Haulin' ASMR	Hotel Lobby
7:00 am to 9 am	Full Breakfast	Downstairs MEC
8:00 am to 5 pm	Registration	Registration Area
7:00 am to 8 am	ARRI Core Team Meetings	Puskar Boardroom
7:00 am to 8 am	ARRI Science Team Meeting	Farmer Boardroom
8 am to 5 pm	Exhibits	Platinum Foyer
8 am to 5 pm	Speaker Ready Room	Farmer Boardroom
8 am to 5 pm	Silent Auction	Wharf A&B
9 am to 12 pm	Guest Tour	Registration Area

Concurrent Technical Sessions

	Salon C	Salon D	Salon E
8:00 to 10:00 am	Reclamation in Arid Regions	ARRI, Forestry & Ecology	Passive Treatment - Hydrology
10:00 to 10:30 am	BREAK		
10:30 to 12:00 pm	Reclamation for AMD Control / Beneficial Uses	ARRI, Forestry & Ecology	Imaging and Modeling
11:30 am	Silent Auction Winners		Wharf A & B
12 to 1:30 pm	ARRI Awards Luncheon		Downstairs MEC

Concurrent Technical Sessions

	Salon C	Salon D	Salon E
1:30 to 3:00 pm	Reclamation for AMD Control/ Beneficial Uses	ARRI, Forestry & Ecology	Imaging & Modeling
3 to 3:30 pm	BREAK		MEC/Platinum
3:30 to 5 pm	Reclamation for AMD Control / Beneficial Uses	Passive Treatment - Sulfate	Imaging & Modeling
	Free Evening		

Thursday, April 13, 2017

6:30 to 7:30 am	Haulin' ASMR	Hotel Lobby
7:00 am to 9 am	Continental Breakfast	Downstairs MEC
8:00 am to 12 pm	Registration	Registration Area
8:00 am to 10 pm	Exhibits – Tear Down at 10 am	MEC/Platinum Foyer
8:00 am to 12 pm	Speaker Ready Room	George Farmer Boardroom

Concurrent Technical Sessions

	Salon C	Salon D	Salon E
8 to 10:00 am	Surface Water - Hydrology	Surface Water – Aquatic Impacts	Groundwater and Mine Pools
10 to 10:30 am	BREAK		
10:30 am to 12:00	Surface Water - Modeling & Prediction	Surface Water - Aquatic Impacts	Passive AMD Control
10:00 to 11:30 am	Exhibitor Tear Down		MEC/Platinum
12:00 pm	Adjourn		
1:00 to 5:00 pm	ASMR NEC Meeting		Puskar Boardroom

Poster Session – Downstairs MEC

Tuesday, April 11, 2017 6 to 8 pm

Stand Level Nutrient and Carbon Content Across One Rotation of Loblolly Pine Plantations on a Reclaimed Surface Mine.

Angel*, Hannah. Z., J. P. Stovall, B. P. Oswald, Y. Weng, and H. M. Williams

Competition among understory plants varies depending on reclamation soil and fertilization. **Buss***, Jennifer, K. Stratechuk and B. Pinno.

Seasonal recovery of an Appalachian stream affected by acid mine drainage and municipal wastewater. Gaughan*, John, S. Rensel*, J. Hugo*, M. Whited*, W. H.J. Strosnider, P. M. Smyntek

Utilizing an Unmanned Aerial System and a High Resolution Multi-Spectral Sensor to Evaluate Ecosystem Health and Predict Surface Water Quality. **Holzbauer-Schweitzer***, K. Brandon, and R.W. Nairn

Reclassification of the Upper Little Juniata River Based on Continuous In-Stream Monitoring. **Long***, Stefan T., W. Strosnider and J. Eckenrode

Labware Evaluation for Selenium Sorption Experiments. **McGrail***, Rebecca K. and L.M. McDonald

Acid Mine Drainage Water Testing and Metals Analysis at Morris Creek, WV Serafin, Juliana and L. Cox

Geomorphic Reclamation and Landscape Heterogeneity: A landscape approach to quantify geomorphic stability and vegetation community diversity. Pennino*, Amanda, K. Fleisher, K. Vaughan, K. Hufford, T. Kelleners, J. Norton, Peter S., C. Strom

Evaluation of Risk Posed by Trace Metals in Soils of a Mining-Impacted Agricultural Watershed. **Sikora***, Amy Lynn and R.W. Nairn

Mass Transport Controls on Aluminum Removal in Limestone-Based Treatment Systems. Spellman Jr.* Charles, D. Madl, A. Rose, E. Zovinka, J. Bandstra, W. Strosnider

Drone Imagery Acquisition to Perform Volumetric Analysis for Landscape Mapping. Strager*, M. P., P. Kinder, J. A. Kimmert, and A. Hentz

Phosphorus, Iron and Trace Metal Interactions at the Sediment Layer-Water Column Interface: The Role of Recovered Mine Drainage Residuals. **Tang***, Zepei and R. W. Nairn

A Seasonal Comparison of the Passive Abandoned Coal Mine Remediation System at Wingfield Pines. **Valkanas***, Michelle and N. Trun

A Drivable Limestone Bed Constructed in a Botanic Garden. Watzlaf*, G. R., R. S. Hedin, and B. C. Hedin

Cluster planting: a new prescription for enhancing structural diversity in reclaimed boreal forest. Pinno*, Brad, A. Schoonmaker and R. Albrich

Pollution Loading Tracking to Characterize Success of an Anoxic Limestone Drain Installation on Lambert's Run, Southwestern Pennsylvania. **Mignogna***, Lydia, K. Tomkowski, and J. Vinglish



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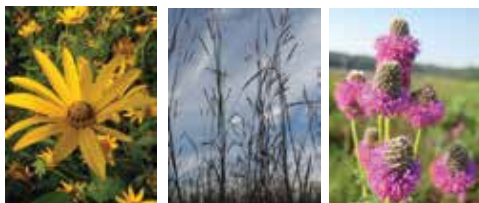
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Detailed Concurrent Sessions

Monday, April 10, 2017

Plenary Session 1. Salon D & E

8:50-10:30	<p>Welcome: Charlie Miller, Task Force & Louis McDonald, WVU Jeff Skousen, WVU & Task Force Member: History of the WV Mine Drainage Task Force Pete Stahl, UW & President ASMR: The Society for Mining and Reclamation James Burger, VT & ARRI Science Team Member: ARRI History and Purposes</p>	
10:30-11:00	<p>Break MEC/Platinum Foyer</p>	
	Plenary Session 2a. Salon D	Plenary Session 2b. Salon E
11:00-11:30	<p>Legislative Update on Mining, Reclamation and Waer Quality in WV. Jason Bostic, WV Coal Assoc</p>	<p>Why Aren't All Reclamationists Considered Ecological Engineers. Robert Nairn, Univ. of OK.</p>
11:30-12:00	<p>Future Reclamation Needs in a Changing Coal Sector. Paul Ziemkiewicz, WVU</p>	<p>Overview and Update on Passive Treatment Systems. Art Rose, PSU (retired)</p>
12:00-1:30	ASMR Awards Luncheon	Downstairs MEC

Colors designate Topic Areas in Sessions:

Orange - AMD

Blue – Water related

Green – Forestry, Wildlife

Yellow – Reclamation

Tan – Other, Social, Imaging, Economics

Names in Bold are in the student presentation competition

	Social & Economic Factors - Salon C	ARRI, Forestry & Ecology 1 - Salon D	Active Treatment - Salon E	Reclamation Technologies - Salon F
1:30-2:00	Governing Unconventional Legacies: Lessons from the Coalbed Methane Boom in Wyoming. K. Walsh (student)	Upland forest development in a reconstructed watershed after oil sands mining in northern Alberta, Canada. B. Pinno	Practical Outfall Mine Water Treatment Applications– Challenges and Solutions. B. Riley	Woods-run Chips as a Filter Sock Matrix. S. Grushecky
2:00-2:30	Bond release verification requirements for successful reclamation at Wyoming surface coal mines. A.K. Waitkus	Reclamation Experiments on the Allegheny Front: The Push for Bio-Energy, Habitat, and Timber. Bart Caterino (student)	A Geochemical Kinetics Module for AMD Treat to Estimate the Effects of Aeration on Rates of Decarbonation and Iron Oxidation. C. Cravotta	A Pathway to Walk-Away? – 30 Year Old Technology to Suppress Acid Rock Drainage Revisited. J. Gusek
2:30-3:00	Assessing the benefits of at source vs. in stream AMD treatment: Implications for managing water liabilities under the WVDEP's Bond Forfeiture Program. M.P. Sheehan	Surface and Subsurface Tillage Effects on Soil Properties and Tree Growth at an East Texas Lignite Surface Mine. Hannah Angel (student)	The Maelstrom Oxidizer - Astonishing Aeration System. J. Hayden	New Soil Reconstruction Method for Reclaiming Subsided Land with Yellow River Sediments. Z. Hu
3:00-3:30	Break MEC/Platinum Foyer			
3:30-4:00	Water Treatment: Planning for Forever, New Options. D.Eyde	Survival and Growth of Woody Plants on Four Reclaimed Mine Sites. Alexis Monteleone (student)	High Sulfate Mining Wastewater Treatment by Two-Stage Chemical Precipitation Process. K. Banerjee	Utilization of Extractable Soil Test Sulfate as an Indicator for Acid Producing Pyritic Sulfur. D. Lang

3:30-4:00	Local Government Entities in Improving AMD Impaired Waters. D.L. Wagner	The Effects of <i>Castor canadensis</i> (North American Beaver) Repopulation on a Mine Drainage Impacted Stream. Nicholas Shepherd (student)	A Case Study Evaluating Effluent Quality Following Chemical and Electrochemical Precipitation for Metals Removal from Acid Mine Drainage Water. B. Lesikar	Initial Evaluation of Ripper and Tillage Methods on Reclaimed Heavy Mineral Mine Soils. Z. Orndorff
4:00-4:30		Effect of Grading on Productivity of H-gh-Value Tree Species in Appalachian Surface Mines. Wesley Dement (student)	Water Management TD Business Meeting	Pollution Loading Tracking to Characterize Success of an Anoxic Limestone Drain Installation on Lambert's Run, Southwestern Pennsylvania. H. Patton (student)
4:30-5:00	Ecology, Forestry & Wildlife TD Business Meetings	Flight 93 National Memorial Reforestation Project. M. Tyree		Soils & Overburden, Geotechnical Engineering, International Tailings TD Business Meetings

Tuesday

7:30-8:00	ARRI/Flight 93 Field Trip Departs		Imaging & Modeling 1 - Salon D	Passive Treatment - Metals - Salon E
8:00-8:30		Geocoding locations of historic reclamation research sites using Google Earth. Ruopu Li	Zinc and Nickel Sorption and Desorption Using a Mixed Algae Community Collected from a Mine Drainage Passive Treatment System. Ellen Fielding (student)	
8:30-9:00		Georeferencing of American Society of Mining and Reclamation Proceedings: A New Tool and Patterns in Reclamation Research. Ashley Rovder (student)	Evolution of Trace Metal Removal Products in Field-scale Vertical Flow Bioreactors. J. Labar	
9:00-9:30		Detecting the Presence of Coal Mining Impacts by Predicting Acid Mine Drainage Impacted Streams Using Aerial Imagery. J. Bowman	Metal Reclamation Units (MRUs Wetlands in a Box) for AMD and Nutrient Cycling. C. Lennox	
9:30-10:00		Unmanned Aerial Vehicle (UAV) Survey for Year-End Mining Reclamation Estimation. M. Maguire	Advancements in Iron Terrace Design for Metal Mine Sites. J. Gusek	
10:00-10:30		Break		MEC/Platinum Foyer
		Student Presentations - Salon D	Passive Treatment AMD Control 1 - Salon E	
10:30-11:00		A Feasibility Study for the Automated Monitoring and Control of Mine Water Discharges. Christopher Vass (student)	Geochemical Controls on Limestone Utilization in Abandoned Mine Land Reclamation. P. Giri (student)	
11:00-11:30		Understanding Storm Response of AMD Impacted Streams. Zebulon Martin (student)	Effective Modification to the Design and Application of Constructed Wetlands and Limestone Beds. B. Means	

Tuesday, April 11, 2017 - Afternoon Field Trips

11:30-5:00	Field Trips – Box Lunch, Meet at Registration Table #1) Surface mining, AMD and Land Use #2) AMD Chemical Treatment #3) AMD Passive Treatment #4) Longview Power Plant
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Wednesday

	Reclamation in Arid Regions - Salon C	ARRI, Forestry & Ecology 2 - Salon D	Passive Treatment - Hydrology - Salon E
8:00-8:30	Objectives and Design Solutions of a 1000-year Evapotranspiration-Capillary Surface Barrier System. Z.F. Zhang	Some thoughts on planting native tree species in mine land reforestation. M. B. Adams	Challenges of Designing and Building a Passive Treatment System with Limited Topography, Hydraulic Head, and Available Land Area. R. Nairn
8:30-9:00	Revegetation success at several Montana sites using soil amendments. S.R. Jennings	Regeneration dynamics of seedling origin aspen: Working towards resiliency in forest restoration. Carolyn King (student)	Seasonal Storm-Induced metal transport dynamics Between Oxidative passive Treatment cells. Leah Oxenford (student)
9:00-9:30	Restoration Techniques to Increase Survival and Vigor of Wyoming Big Sagebrush Seedlings. Amy Jacobs (student)	Tree seedling survival after planting under varying treatments on reclaimed mine land. P. Boleman	Quantifying Hydraulic Conductivity in Mine Drainage Passive Treatment System Vertical Flow Bioreactors. Brian Page (student)
9:30-10:00	Soil changes during stockpiling and after reclamation at three Wyoming natural gas production areas. J. Norton	Growth Rates of Hardwood Trees Nine Years after Reclamation in Response to Substrates and Amendments. K. Dallaire	Iron Transport and Removal Dynamics in the Oxidative Unit of a Passive Treatment System: A Five-Year Performance Evaluation. Leah Oxenford (student)
10:00-10:30	Break MEC/Platinum Foyer		
	Reclamation for AMD Control & Beneficial Uses - Salon C	ARRI, Forestry & Ecology 3 - Salon D	Imaging & Modeling 2 - Salon E
10:30-11:00	Sludge Impact on the Stabilization of the Fire Road Mine in New Brunswick. M. Coleman	Establishment of Hybrid Poplar on a Reclaimed Mine Site in Southern West Virginia. A. Hass	Applying land forming to reclamation: A case study in Central Appalachia. L. Hopkinson
11:00-11:30	Reclamation of Refuse Piles using Fluidized Bed Combustion Ash in the Blacklick Creek Watershed, Pennsylvania. R. Martin	Loblolly Pine Survival and Growth on a Reclaimed Mineral Sands Mine in Southeastern Virginia. S. Klopff	Subsidence wetland formation and transition in the high ground water table coal mining areas. Z. Hu.
11:30-12:00	Transforming Abandoned Mine Lands into a Botanic Garden. G. Watzlaf	Ecological Restoration on the Mower Tract within the Monongahela National Forest, WV. C. Barton	3D Modeling of the Sand Coulee Basin Abandoned Mine Lands. K. Brown
12:00-1:30	ARRI Awards Banquet, Student Awards		Downstairs MEC
	Reclamation for AMD Control & Beneficial Uses - Salon C	ARRI, Forestry & Ecology II - Salon D	Imaging & Modeling I - Salon E
1:30-2:00	Metals got you Down? A Look at Effective Mining-Influenced Water Treat. P. Dugan	Conservation of Northern Long-eared Bat Habitat at an Aggregate Mine in Westmoreland County, Pennsylvania. C. Rocky	Exploration of a Multi-Sensor Approach for the Detection and Mapping of Coal Mine Fires in the United States. A. Sivitskis

2:00-2:30	Preventing Acid Rock Drainage Can Source Control Really Be Successful? P. Eger	Natural Processes for the Restoration of Large Mines. D. Polster	Communicating Maintenance of Acid Mine Drainage Treatment Projects in Ohio. S.D.L. Cornwell
2:30-3:00	What Happens to a Mine after Mining? Making Mine Land Reclamation More of a Community Asset. M. Korb	Cost-effective Strategies for the restoration of large disturbances. D. Polster	Coupling Technical Assistance with Student Service Learning in Mine Water Reclamation. K.J. Green
3:00-3:30	Break		MEC/Platinum Foyer
	Reclamation for AMD Control & Beneficial Uses - Salon C	Passive Treatment - Sulfate - Salon D	Imaging & Modeling I - Salon E
3:30-4:00	Production of an iron oxide product from mine water: 15 year report. R. Hedin	A Field Demonstration of an alternative coal waste disposal technology - Geochemical findings. P Behum	Development of International Standards for Mine Reclamation. W.L. Daniels
3:30-4:00	Yields and Ethanol Production Potential of Switchgrass and Miscanthus on Reclaimed Mine Lands. S. Scagline	Sulfate Removal in Biochemical Reactors and Scrubbers Treating Neutral Low-Metal Concentration Mine Influenced Water (MIW). G. Fattore	Carbon Dioxide: A Global Problem in Search of a Rational Global Solution. K.C. Vories
4:00-4:30	Native vegetation in reclamation: improving habitat and ecosystem function through using prairie species in mine land reclamation . R. Swab	Passive Treatment of Sulfate from Mine-Influenced Water. B.T. Thomas	Development of a low-cost remote water quality monitoring system in acid mine drainage impaired watersheds. N. Kruse
4:30-5:00	JASMR Editorial Board Meeting	Three Year Performance Evaluation of a Sulfate Reducing Bioreactor for Mine Water Treatment in PA: Sulfate Removal, Sulfide Control, and TDS Reduction. W. Walker	Land Use Planning & Design TD Business Meeting

Thursday

	Surface Water - Hydrology - Salon C	Surface Water - Aquatic Impacts - Salon D	Groundwater and Mine Pools - Salon E
8:00-8:30	Hydrological and Geophysical Methods to Investigate Streamflow Losses and Restoration Strategies in Abandoned Mine Lands of Schuylkill River Watershed, Pennsylvania, USA, 2012-2015 C. Cravotta	Relationship between aqueous and sediment chemistry and biological recovery across a gradient of acid mine drainage impairment. N. Kruse	Groundwater Modeling Used to Design of a Tailings Impoundment Removal near Yellowstone National Park. T.H. Henderson
8:30-9:00	Mine Reclamation Applications of a New Water Budget Model: Wetbud. W. L. Daniels	The Appalachian stream syndrome: complex local conditions and regional metacommunity degradation caused by the accumulation of multiple stressors. E. Merriam	Seasonal Recharge and Groundwater Storage in a Below Drainage Mine-pool. E. Perry
9:00-9:30	Assessing How Hydrologic Isolation of Coal Mine Spoils Affects Streamflow Mechanisms and Water Chemistry Using Open Source Wireless Technology. S. Fulton student	The Impacts of Acid Mine Drainage Remediation Projects on Water Quality, Aquatic Macroinvertebrate, and Fish Populations in the Deckers Creek Watershed, Monongalia and Preston Counties, West Virginia. N. Revetta	North Branch Potomac River Mine Pool Assessment Study. N.D. Pointon

9:30-10:00	Seasonal recovery of an Appalachian stream affected by acid mine drainage and municipal wastewater. M. Whited	Water quality and biotic condition in mining-influenced Appalachian headwater streams: an overview of a long-term study. S. Schoenholtz	Groundwater tracing in mine pools above the Cabin Creek oilfield in Kanawha County, West Virginia. A. Schaer
10:00-10:30	Break		MEC/Platinum Foyer
	Surface Water - Modeling & Prediction - Salon C	Surface Water - Aquatic Impacts - Salon D	Passive AMD Control 2 - Salon E
10:30-11:00	Field Predictors for TDS Generation Potential from Appalachian Mine Spoils. D. Johnson	Effects of Longwall Mining on Aquatic Resources at the Bailey Mine in Southwestern Pennsylvania. M. Shema	Passive Treatment of Highly Contaminated Iron-Rich Acid Mine Drainage. C. Neculita
11:00-11:30		Selenium Dynamics in Mining-Influenced Headwater Streams of Central Appalachia. K. Whitmore (student)	The Complicated Role of CO ² in Mine Drainage Treatment. R. Hedin
11:30-12:00		Water Quality and Freshwater Mussel Status in Mining-Influenced Virginia-Tennessee Rivers. C. Zipper	
12:00-1:00	Adjourn		



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