

NAAML P

NATIONAL ASSOCIATION OF ABANDONED MINE LAND PROGRAMS

NEWSLETTER

Spring 2015 Vol. 37 No. 1

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UPCOMING MEETINGS

2015 NAAML P CONFERENCE
Santa Fe, NM September 27 - 30

MISSION STATEMENT

1. To provide a forum to address current issues, discuss common problems and share new technologies regarding abandoned mine land reclamation;
2. To foster positive and productive relationships between the states and tribes represented by the Association and the federal government;
3. To serve as an effective, unified voice when presenting the states'/tribes' common viewpoints; and
4. To coordinate, cooperate and communicate with the Interstate Mining Compact Commission, Western Interstate Energy Board and all other organizations dedicated to wise use and restoration of our natural resources.

Dear Membership,

What a busy time it has become for the Association and its member states and tribes. We recently held our Winter Business Meeting in Orange Beach, Alabama. While the fog caused travel problems for many, we were able to have a very productive meeting. Thanks to Chuck Williams and all of his staff for their fine work in organizing the meeting.

During the business meeting, there were a lot of programmatic, legislative, and budget issues covered during the all-day meeting. Sterling Rideout, Assistant Director for OSMRE, and Yolande Norman, Chief, PSD, Division of Reclamation Support, traveled from Washington D.C. to provide the Association with updates on the budget, sequestration, legislative proposals and rulemakings, progress of the OSM Priority Documentation and Cost Estimation Teams, and the progress OSM is making on reviewing and implementing the recommendations of the three Government Efficiencies Work Groups. The three work groups (SMCRA Program Financial Stability, Training/TIPS Sustainability, and Program Efficiency) finalized their reports and recommendations and forwarded them on to OSM last July. It was disappointing and a little disheartening to learn that OSM has chosen to backburner these recommendations for the time being.

Greg Conrad, Executive Director of the IMCC, provided updates and his perspective on the proposed FY2016 OSM and DOI budgets, our joint efforts with IMCC to end sequestration of our AML grants (including the status of the response from OMB to our written inquiry outlining our case for why AML grants should be exempt from sequestration), proposed legislation including reform of the 1872 Mining Law (including a hardrock AML program), and the latest Good Samaritan bills/activity. He also supplemented OSM's update on OSM rulemakings and updated the group on the CERCLA 108(b) financial responsibility issue. Finally, Greg provided his thoughts and perspective on Reauthorization of Title IV of SMCRA.

Open discussions took place during the meeting on several issues including federal budget sequestration; the OSM Government



Efficiencies Workgroups; regional consistency in OSM's review of ATP requests for waterline projects; reclamation of priority 3 Features; MSHA jurisdiction at AML project sites; and a grant modification proposal.

We heard our first update during the meeting of the activities of our newly formed SMCRA Reauthorization Committee whose primary role is to coordinate, communicate, and cooperate with IMCC and OSM in order to develop a unified voice and define common ground in representing the states and tribes for reauthorization of Title IV of SMCRA. The committee is working under the direction and guidance of co-chairs Murray Balk (KS) and Brian Bradley (PA) whom I would like to thank for taking on this challenging assignment. I would also like to thank all who are serving on the committee and subcommittees as a lot of work for these groups still lies ahead. As a result of the current talk and activity surrounding reauthorization, the Association voted during the meeting to schedule a special meeting to further discuss and develop a strategy for SMCRA Reauthorization. That meeting has now been scheduled for June 10 in St. Louis, Missouri.

We heard updates from all of the other standing committees of NAAML P during the meeting as well; and I would also like to thank everyone who is serving on each of these committees as the strength of our Association is tied to active participation of all of our members and the work of these committees.

I participated in a meeting with MSHA at their headquarters in Arlington, VA on March 17th to discuss MSHA Jurisdiction at AML Project sites including both AML Enhancement Rule Projects and Title IV Funded AML Projects. IMCC and several other state AML programs also participated in the meeting either in-person or via conference call. MSHA began the meeting by sharing a legal analysis that all AML sites with a few narrow exceptions would fall under their jurisdiction which could have major impacts on all state and tribal AML Programs. The meeting was more educational than results oriented and ended with MSHA indicating that they need to do more research on the issue before issuing their final position on the matter. MSHA provide no timeline for completing their analysis and ultimate decision on MSHA jurisdiction at AML sites, so stay tuned.

I, along with Greg Conrad of IMCC, also attended a meeting on April 2nd at the White House in Washington D.C. to meet with Jason Walsh of the White House Chief of Staff Office, Dan Schory of the Office of Management and Budget, OSM Director Joe Pizarchik, and various members of their respective staffs. Also in attendance were representatives from several stakeholder groups including Trout Unlimited, the Foundation for PA Watersheds, and the Appalachian Citizens Law Center. The purpose of the meeting was to both provide input and to learn more about the proposed AML Economic Revitalization (AMLER) portion of the Power+ Plan proposed in the President's FY2016 budget. While reauthorization of Title IV of SMCRA was not included in the President's FY2016 proposed budget, there was an acknowledgment of a willingness of the Administration to work with Congress on any proposals for reauthorization and recognition that there may be a "strategic necessity" to address full AML reauthorization as part of the POWER+ Plan. The Administration, however, is still focused on moving forward expeditiously with the AMLER portion of the plan. The majority of the meeting was focused on the POWER+ Plan proposal itself, and in particular, a proposal jointly put forth by NAAML P and IMCC as an alternative to what the Administration has advanced. As of the time of this writing, it is uncertain how and in what form the AMLER proposal will move forward.

Looking ahead, things are moving along with the 37th Annual NAAML P Conference being hosted jointly by the New Mexico and Navajo Nation AML Programs. The conference is being held in beautiful and historic Santa Fe, New Mexico from September 27-30, 2015 in downtown Santa Fe at the La Fonda Hotel on the Plaza. I would like to thank in advance all of the staff from both programs who are working hard to make this year's conference a success; and I look forward to seeing all of you there for both the conference and the annual business meeting.

In closing, I'd like recognize the dedicated contributions to NAAML P from a long-time contributor who is leaving our ranks. Wayne Van Buren is retiring from the Arkansas Program after a long and dedicated career of over 38 years of service (35 of those years in AML). We wish Wayne all the best in retirement.

Looking forward to seeing everyone in St. Louis, Missouri in June and Santa Fe, New Mexico in September!

Take care,

Eric Cavazza, President

*New Mexico Abandoned Mine Land Program in association with
the Navajo Abandoned Mine Lands Program
cordially invite you to*



The 2015 Annual National Association of Abandoned Mine Land
Programs Conference

~Register Now~

www.naamlp2015.com

Date: September 28-30, 2015

La Fonda Hotel, Santa Fe, New Mexico

Featured tours:

- Pueblo San Cristóbal archaeological site
- Harding Pegmatite Mine/Mesa Prieta Petroglyph Project/High Road to Taos Byway
- Madrid, Turquoise Hills, and Leonora Curtin Wetland Preserve
- Bandelier National Monument and Los Alamos
- Pre-conference tour to museums and cultural centers
- Golf event at Black Mesa Golf Course

Subject matter includes:

- Cutting edge reclamation techniques from across the country
- Geomorphic reclamation
- Revegetation research and success stories
- Hardrock safeguarding methods
- Bat habitat and preservation
- The latest in GPS and GIS technologies
- And much, much more . . .

2015 NAAML P Conference - September 28-30

The conference will be held in beautiful and historic **Santa Fe, New Mexico**. It falls between two great events, the **Santa Fe Wine & Chile Fiesta** and **Albuquerque Balloon Fiesta**. Conference facilities and lodging will be in downtown Santa Fe at the **La Fonda on the Plaza**.

The **La Fonda on the Plaza**, 100 E. San Francisco St., Santa Fe, NM 87501, will be offering rooms to all conference attendees at the prevailing federal government rate, which is currently \$94.00 per night plus taxes. These rates are available to conference attendees for three days before and after the conference dates, based upon availability. All hotel reservations received between the cut-off date of Friday, August 28, 2015, and the arrival date of Sunday, September 27, 2015, will be accepted on a space and rate available basis.

To reserve a room, please contact the **La Fonda Hotel** at (800) 523-5002 and reference "NAAML P". Space is limited so make your reservation soon!

If the La Fonda Hotel gets booked to capacity, the **La Posada de Santa Fe** will be used as an overflow hotel option.



La Fonda on the Plaza

Albuquerque Balloon Fiesta, Oct. 3-11



Getting There

Air Travel

Santa Fe Municipal Airport (SAF) currently has non-stop service from Dallas/Ft. Worth and Los Angeles (**American Airlines**) and Denver (**United Airlines**).

Santa Fe is a one hour drive from Albuquerque and is easily accessible via the **Albuquerque International Airport** (ABQ) with frequent shuttle service to Santa Fe. **Southwest Airlines** has many flights into ABQ and is often excluded from major travel websites.

Airport Shuttle

For transport between **Albuquerque International Airport** and the hotel in Santa Fe, we have negotiated a discounted rate for our group with two different shuttle companies.

Sandia Shuttle Express is offering round-trip transportation at a rate of \$40 per person. You can call them at (888) 775-5696 or visit the website at <https://www.sandiashuttle.com/> Use the promo code "NAAML P".

Roadrunner Shuttle & Charter is offering attendees a 12% discount off regular rates. Visit <http://rideroadrunner.com/>, email kathy@RideRoadRunneR.com or call (505) 424-3367 for details or book your reservation. Use the promo code "NAAML P".

Parking

We encourage those flying in to take the shuttle instead of renting a car. The hotel is in a convenient downtown location near the historic Plaza and dozens of restaurants. Overnight guests of NAAML P will receive a special rate of \$10.00 per day, over the dates of the conference, for overnight parking at LA FONDA'S garage. NAAML P attendees who day park will receive a special day rate of \$2.50 per hour, with a maximum cap of \$10.00 to park in LA FONDA'S garage. We are unable to accommodate large vans or motor coaches in the LA FONDA garage.

Santa Fe Wine and Chile Fiesta, Sept. 23-27



Conference Schedule

Sunday – September 27th

Registration -Fun Hike - Evening Reception

Monday – September 28th

Registration -Plenary Session -Technical Sessions -Awards Banquet

Tuesday – September 29th

Full Day of Tours -BBQ at **Santa Fe Farmers Market**

Wednesday – September 30th

Technical Sessions -Conference ends at noon



Hiking around Santa Fe

Featured Tours

- **Pueblo San Cristóbal** archaeological site • **Harding Pegmatite Mine/Mesa Prieta Petroglyphs/High Road to Taos Byway**
- **Madrid, Turquoise Hills**, and **Leonora Curtin Wetland Preserve** • **Bandelier National Monument** and **Los Alamos**
- Golf event at **Black Mesa Golf Course** • Pre-conference tour to museums, cultural centers and more

Call For Papers/Presentations

NAAMLPLP is issuing a Call for Papers/Presentations to be presented at the 2015 NAAMLPLP Annual Conference. The NAAMLPLP looks forward to an informative and memorable conference.

Abstract proposals should be submitted in PDF format on or before June 1, 2015. Abstracts should be 300 words or less, Times New Roman 12 font, and should include the presentation title, along with the presenters name, title, organization or company, business address, phone number and email address. Abstracts should be emailed to: mhyazzie@frontiernet.net

Suggested AML topics include, but are not limited to:

Reclamation / Safeguarding/Project Implementation -Revegetation/Reforestation Success -Partnerships in Reclamation -Abandoned Uranium Mines -Vandalism of Safeguarded Mines -Mine Fire or Mine Subsidence Projects -Abandoned Mine and Quarry Safety and Health -Backfilling Blocked Shafts or Shafts with False Bottoms -Innovative/Unique Reclamation Techniques -Stream Restoration/Geofluvial Design -Physical safety hazard remediation techniques -Beneficial use of Waste Materials & CCB use at AML Sites -Dam Safety and Slope Stability -Post Reclamation/Safeguarding Inspections -Sediment and Erosion Control and SWPPPs -Monitoring and Maintenance techniques and implementation

Remining / AML Enhancement -AML Projects and Incidental Coal Extraction -Coal Refuse Reprocessing

Acid Mine Drainage -AMD Characterization -AML or AMD Case Studies -Resource Recovery from AMD

Technology -Geophysical Methods or Investigations -Integration of GPS/GIS/LiDAR Technologies -Digital Collection of AML data -Inventory Techniques -Technology innovations for AML problem analysis and project implementation

Environmental -Endangered Species Issues -Wildlife Habitat Enhancements -Wetland Mitigation -Permitting Issues at AML Sites -Impacts of White Nose Syndrome on AML remediation -Remediation of environmental impacts from AML sites

Cultural / Historical -Coal Mining Heritage/Historic Preservation Topics -Archeological issues and preservation at AML sites -Property Access Issues/Good Samaritan Laws -Citizen Involvement in AML issues/projects -Mining History

Economics / Policy -AML Program Policy Issues -AMLIS -OSM Oversight -TIPS/NTTP Training -Partnership Coordination -NEPA and/or Public Participation -Economic Development at AML Sites -Grayfields and/or Brownfields and AML -SMCRA renewal -Overall Public Relations

Selected presenters will be notified by July 1, 2015, and final presentation material will be due on or before August 31, 2015. Details pertaining to the final presentation format, speaker guidelines and other presentation information will be provided to authors and/or presenters at the time of abstract acceptance.

If you are with a State or Tribe and intend to present please indicate if you are applying for an OSM award or participating in the NAAMLPL business meeting on the third day of the conference. Presentations are anticipated to be 20 minutes with five minutes of questions to follow.

It is the opinion of the NAAMLPL planning committee that the conference agenda contains 13.5 hours of Continuing Education Units (CEU) or Professional Development Hours (PDH). For those wishing to utilize this opportunity, copies of sign in sheets for technical program components will be provided upon request after the conference concludes.

For information or questions contact:

Melvin H. Yazzie, Senior Reclamation Specialist Phone: (505) 368-1220 Fax: (505) 368-1227 mhyazzie@frontiernet.net

Mailing address for 2015 NAAMLPL Conference:

EMNRD-MMD
New Mexico AML Program
1220 South St. Francis Drive
Santa Fe, NM 87505

Garden Ground Highwalls - Fayette County, WV

Located in southern West Virginia, this 388-acre Fayette County site is adjacent to the community of Glen Jean and sits atop the plateau bordering the New River Gorge National Park. The hazards associated with this site were a result of surface and underground coal mining operations that were conducted in the area from the 1940's to 1963 by the New River Coal Company and Red Parrot Coal Company in the Sewell and Castle Coal seams. The names of the underground coal mines were Collins Underground Coal Mine, Dunn Loup Coal Mine, Garden Ground Underground Coal Mine and Turkey Knob Underground Coal Mine. Past mining had left miles of dangerous highwalls that averaged 30 feet in height, numerous mine openings called portals, hazardous structures, and non-reclaimed coal refuse.

This area was a dangerous attraction to local ATV users, hunters, campers, and hikers, and was visited frequently. Large numbers of ATV trails crisscrossed the area adjacent to the unstable highwalls and up steep embankments. Riders could have easily been injured or killed by rock falling from the highwalls or overturning ATV's. This area was planned to be used by the Summit Bechtel Reserve (SBR), home of the Boy Scouts of America Camp Arrow for a national high adventure camp. These hazards had to be quickly eliminated prior to construction of the camp to eliminate hazards to construction workers and the tens of thousands of participants associated with the camp.



Typical dangerous high wall prior to project

The reclamation plan first consisted of the initial placement of sediment control devices. Super silt fence was placed below the slopes of the areas to be disturbed. The areas were timbered and the timber placed in stockpiles easily accessed by other contractors responsible for hauling timber to be utilized in the (SBR) construction. The sites were then cleared and grubbed as work proceeded.

The original material from the contour strip mining had been stacked in places along the strip bench or cast over the hill below the remaining benches. This same material was to be utilized in backfilling the highwalls. After the material was cleared of organics, the material was excavated by large excavators and placed on the benches. Then it was pushed in 2' horizontal lifts and compacted to 90% of maximum dry density. The backfilled material was blended into the existing landscape at the top of the highwalls to create a smooth transition. This work was paid per cubic yard of material as determined by the average end cross sectional method. Some material was trucked to areas requiring additional backfill as needed but was paid at the same method and rate.



Backfilling operations

The numerous mine portals were excavated and the installation of mine seals proceeded. Bat gate mine seals were installed in open portals. The bat gate seals consisted of 36-inch diameter HDPE pipes with angle iron gates installed in the outlet end. Pipe was used because the highwalls that contained the bat gates were to be backfilled and the bat gate pipes were to be extended through the backfill accordingly. The pipes were backfilled with No. 4, 1/2" to 1 3/4" size, non-calcareous stone bulkhead under the highwall opening. The pipes were backfilled with compacted on-site soil material to where the pipe day lighted. Portals to receive wet mine seals were excavated slowly to insure mine blowouts did not occur. Wet mine seals were constructed similar to the bat gate mine seals but had double 12" drain pipes and not the 36" HDPE pipe. All the portals drained to constructed channels. All mine seals were paid "per each" at a rate depending on the bid cost.

Under-drains were constructed in areas where water was encountered so the finished construction would remain stable. The 3' x 3' under-drains consisted of the same stone used in the mine seal bulkhead stone and 6" diameter perforated pipe and were wrapped in filter cloth. The under-drains discharged to

constructed channels. Drainage channels were constructed at locations to pick up drainage from the site and from above the site to divert surface runoff and minimize erosion problems. Low velocity channels were grass lined. High velocity channels were lined with 6" minimum to 18" maximum rock riprap. The channels discharged to natural drainways. Culvert pipes were placed where channels crossed access roads. The pipes consisted of high density polyethylene pipes and varied from 18 inch diameter to 48 inches in diameter.

Some concrete structures were located within the construction limits. The structures were demolished into 2' maximum size pieces and buried in a designated disposal area. Steel associated with the structures became the property of the contractor and was recycled.

Refuse encountered was regraded in place to a stable slope and covered with a 12" layer of topsoil that was readily available from highwall excavation work. The whole area was hydro-seeded as slopes were brought to grade. Seed mix included Orchardgrass, Birdsfoot Trefoil, Red Clover, Annual Rye, Winter Wheat and Black Locust. Wood cellulose fiber was used on steep slopes and straw mulch used on flatter slopes. Summers became very hot and dry and water trucks were used at night to help establish vegetation. Sediment control devices were used throughout the project as were required in the NPDES Construction Storm-water General Permit and as needed. These devices included super silt fence, straw wattles, triangular silt dikes, sediment traps and erosion control matting. Over one million dollars was spent to control erosion and sediment on the project.

Construction activities unique to this project, in addition to the sheer size, were the staging of the project in order to not interfere with numerous other contractors on the same property constructing the (SBR). Also unique were the timing requirements to have the AML work completed in areas in order to prevent delays in the Boy Scout camp construction. Another unique construction activity was the rock being provided by a rock borrow site that was being utilized for the construction of the scout camp. The rock within the highwall areas was sandstone but was of poor quality. The rock degraded quickly when exposed to the elements. There was a high point within the (SBR) area that was drilled by others and the rock within a certain level consisted of a good quality sandstone and in large quantity. This rock was excavated, screened and hauled to locations to be utilized by all contractors. There was no purchase price for this Abandoned Mine Lands project. All contractors bidding on this project were made aware that the rock would be provided. The contractors were required to pick up the rock and

transport it to the locations required. A third construction activity unique to the project was the requirement that the super silt fence not be removed under the contract but left in place to help control sediment for other contractors working in the area and would be removed by them. There was a variety of equipment utilized in the completion of this project. Caterpillar D-10's, D-9's, D-8's were used to backfill the highwalls. Caterpillar D-6's were used for final grading and tracking slopes. Caterpillar 330 and 345 excavators were used for pipe installation and ditch construction.

Summary: The objective of this project was to eliminate any hazards at the site that could pose a threat to residents or children and adults attending functions associated with the Boy Scouts of America. This objective was achieved and the Boy Scouts of America's Summit Bechtel Family National Scout Reserve was constructed on time in order to host the National Scouting Jamboree in July of 2013 and will host future jamborees and scouting functions for decades to come. The 2013 National Scout Jamboree was the 18th national Scout jamboree held by the Boy Scouts of America from July 15, 2013 to July 24, 2013. It was the first national Scout jamboree held at the Summit Bechtel Reserve in West Virginia and the first jamboree to include Venturers as participants. Projected attendance was over 50,000 Boy Scouts, Venturers, volunteers and staff. This jamboree was operated more like a World Scout Jamboree with sub-camps that promoted maximum interaction. The Summit will also be the venue of the 24th World Scout Jamboree in 2019 hence the 2013 event was intended to also be an effective test of the venue's capabilities.

Terradon Corporation was the design consultant hired to provide the design plans and construction specifications for the project. The consultant worked closely with the Office of Abandoned Mine Lands to insure the associated hazards were addressed effectively and were also cost effective. The consultant also coordinated with the Boy Scouts' of America to insure the construction would proceed in a timely manner so none of the future construction by their contractors would be delayed by AML work and that none of the AML work would interfere with the Scouts plans for the (SBR). This included placing backfill in order not to interfere with planned roads to be constructed and drainage path discharge locations that would not interfere with other structures. Certain areas were also to be reclaimed first so the construction could be completed in time for other contractors to begin scout camp construction. The total design package included 456 sheets of design drawings.

The reclamation plan consisted of the elimination of hazards associated with the site in order to accommodate the

future construction by others of the planned (SBR). This reclamation work was done in consideration of the plans for the camp in order not to disrupt, block, delay or add to the cost of the future construction. Plans for the future Scout Camp were being changed continually, so the construction plans for the AML work was adjusted accordingly and necessary. The majority of the area was heavily timbered. Therefore cutting and stockpiling the timber, along with burning the remaining organic material, was a major task.



Bat friendly mine closure extensions

The project was divided into two contract areas. Eastern Arrow Corporation Inc. and ATC Associates Inc., now Cardo ATC Associates Inc., were the two construction contractors that were the winning bidders for the project and performed the construction work. Eastern Arrow Corporation Inc. was responsible for Highwalls (A) through (I) which amounted to a total of six miles of highwall and ATC Associates Inc. was responsible for Highwalls (J) through (N).

Funding: The project was funded by the Office of Abandoned Mine Lands federal grant.

The project utilized Lidar mapping paid for and supplied by the Boy Scouts of America. The Scouts had already had the mapping developed for work on the future camp.

All rock for the project was also supplied by the Boy Scouts of America from a nearby rock borrow site. Rock from the highwalls to be backfilled was of poor quality and weathered quickly. Rock from a nearby point that was higher in elevation contained good quality, highly durable rock.

The initial benefit from the project was to eliminate the hazards to the public and future contractors that would be working at the site along with providing hundreds of jobs for those associated with the project.

The long-term reclamation benefits to successfully complete this project were to accommodate the future construction by others of the Boy Scouts of America's camp which would provide a safe environment for the Scouts, and an economic and social boost for the local area and the state of West Virginia. Without the hazard elimination, the camp could not have been built at this location.

The Garden Ground Highwalls project addresses the reclamation of all the high priority AML problems in accordance with the spirit and intent of Title IV of SMCRA. The project's location is on land that now houses the Boy Scouts of America's Summit Bechtel Family National Scout Reserve. The project will serve to protect the health, safety and enjoyment of all attendees.

Federal, state and local government officials, public residents, and tens of thousands of scouts have visited the site since the completion of this reclamation. The opening of the SBR and has made them aware of the efforts of the Abandoned Mine Lands program through project work signs or word of mouth.

Much was learned by AML personnel and contractors working on a project of this size with so many aspects, timing coordination on a massive scale. We learned what works well, what does not, as well as how adjustments can be made.

As a result of this project, a partnership has been created between the Boy Scouts of America and the WV DEP Office of Abandoned Mine Lands. The WV DEP was asked to participate at the inaugural jamboree as well as subsequent annual events (Jamborees and High Adventure Camps) held at Summit Bechtel Reserve, including the World Jamboree in 2019. This partnership provided, and will continue to provide, a venue for AML staff to educate thousands of Boy Scouts, Scout leaders and volunteers in the various aspects of SMCRA such as Stay Out Stay Alive, environmental problems associated with AML sites, reclamation techniques and careers associated with reclaiming these sites. A unique patch was created specifically for the inaugural jamboree that Scouts could earn after completing an exercise facilitated by WV DEP staff. This exercise included a six-station geocaching event and education session. The education session was highlighted by discussing the reclamation that occurred prior to

the Boy Scouts arrival. This patch quickly became a "hot commodity" at the Jamboree and resulted in over 1,000 Scouts, leaders and volunteers becoming AML educated over a period of 10 days. For years to come, this reclaimed abandoned mine land site will provide public education and outreach for AML programs at a scale larger than could have previously been imagined.



Backfilled high wall with armored drainage

Construction Quantities

- Backfilled 13.2 miles of dangerous highwall
- Installed 95 mine seals including 57 bat gate mine seals
- Demolished 3 structures
- 2,589,936 cubic yards of excavation
- 95 mine seals various types
- Reclaimed 2 acres of coal refuse
- Constructed 62,931 linear feet of channel
- Installed 15,020 linear feet of pipe
- 388 acres of vegetation established
- Installed over \$1 million in sediment control structures

Project Start Date: August 3, 2010

Project Completion Date: December 9, 2013

Construction Cost: \$11,727,424.40

Robert Rice, Chief
West Virginia Department of Environmental Protection
Office of Abandoned Mine Lands & Reclamation

Complete Removal of Gob Piles: Getting It Right the Second Time



1982: This 12 acre P2 DPE feature slid in 1943 covering portions of the adjacent coal camp

Personal stories in *Memories from Dante: The Life of a Coal Town* recall heavy spring rains of June 16, 1943 and a disastrous slide from a coal waste or gob pile. Material from the lower Straight Hollow gob pile pushed a two-family house off its foundation and moved it onto railroad tracks. The stories relate the miraculous survival of an eighteen month old girl and a bird dog called Lady.

The recent Straight Hollow Gob Pile Removal project accomplished complete removal of the Straight Hollow gob pile and four additional piles in the watershed. Potentials for instability and combustion are now eliminated.

Following the Secretary of the Interior's approval of Virginia's permanent regulatory program and state reclamation plan, the Department of Mines, Minerals and Energy (DMME) received its first AML grant in April 1982. One project in the grant was the Straight Hollow Gob Pile, with a goal to stabilize the pile and prevent slides such as the one that occurred in 1943.

The design for the 1982 Straight Hollow Gob Pile included grading, constructing diversions, and grouted channels, topsoiling, and establishing a permanent vegetative cover. The project was successful. DMME proudly displayed before and after photos of the project area.

The excellent vegetative cover and apparent surface stability masked the pile that remained in place. In 2008, exploration into the pile revealed combustion throughout the pile. The surface indicator was a dieback of vegetation, and drilling revealed combustion at depths. DMME and the surface owner agreed the ultimate fate of the piles was combustion, vegetative failure, and inherent instability.

DMME implemented AML enhancement to accomplish complete removal of the piles. The contractor marketed incidental coal from the piles and used proceeds to offset the cost of reclamation. The contractor used unmarketable material to reclaim adjacent Priority 3 Highwalls.

DMME incorporated the suggestions of OSM in developing a plan for project reclamation. OSM suggested and DMME accepted plans for controlling sediment, monitoring water quality above and below the piles, testing unmarketable material for acid base accounting, and analyzing unmarketable material for combustion potential. The project was completed without any problems.

As the piles consist of waste coal and rock, marketing opportunities are not always readily available. The final opportunity came with construction of a coal fired power plant that is specifically designed to use gob in its fuel blend.

The project has taken 7 years to complete, but DMME again is proud of the accomplishments and costs. To satisfy the enhancement rule for government financing, a DMME contractor planted native hardwoods over the project area in March and April of 2015. DMME's cost was \$8,800. Accomplishments include complete removal of 21 acres of gob piles, backfilling 1500 feet of highwall, and eliminating one hazardous equipment and facility feature.

The first reclamation during the 1980s was successful in its surficial objectives, but DMME now has it right for all time through the Straight Hollow Gob Pile Removal Project.

2015: Pile completely removed and planted with native hardwoods



Richard Davis, AML Projects Coordinator
Virginia Department of Mines Minerals and Energy

Using Unmanned Aircraft Systems For Reclamation

The State of New Mexico Abandoned Mine Land Program (N.M. AMLP) is exploring remote sensing techniques to monitor change in land cover and stream morphology at reclamation projects. Unmanned aircraft systems (UAS) promise high resolution imagery, flexible deployment, and relatively low cost at focused areas. We examined the use of an UAS to supplement revegetation and stream channel morphology monitoring at the Dillon and Dutchman Canyons, once part of a larger coal mining site, of Vermejo Park Ranch in northern New Mexico. As a result of N.M. AMLP geomorphic reclamation work, meanders and dynamic stability have been restored to sections of streams once straightened and degraded by historic coal mining practices. Coal waste had been redistributed and covered with topsoil by earth moving equipment, drainages added, and conditions created to reestablish wetlands to mitigate net loss. Seeding, planting, and natural establishment of native plants were used in the process of revegetation. Due to record rains within a year of the finished reclamation efforts, the area experienced flooding that scoured the planted stream channel. The dynamic nature of weather and its impacts on the rate of revegetation necessitates adaptive on-ground monitoring and invites the use of frequent remote sensing methodology for that purpose.



Figure 1.
The Trimble UX5 Aerial Imaging Rover used in aerial mapping.

A Trimble UX5 Aerial Imaging Rover, fixed wing UAS with 1 meter wing span and electric pusher propeller (figure 1), was deployed at the site in August, 2014. A 16.1 MP compact camera with custom 15mm lens was used to take high-resolution images along a programmed flight-path over the 0.16 square mile reclamation site in approximately 30 minutes (figure 2). The resulting data was used to map topography of the post-construction reclamation as well as assist in revegetation



Figure 2.
The new stream pathway after geomorphic reclamation of Dillon Canyon, Vermejo Park Ranch, as seen by an unmanned aircraft from approximately 600 feet high above ground, clearing utility lines and the highest peak.

mapping. A large number of overlapping mono ortho-imagery taken by the UX5 was used to generate a point cloud of XYZ values after photogrammetric processing. Ground control produced a mean 0.44 (\pm 0.23) foot vertical accuracy and sensor resolution of 0.13 foot horizontal accuracy. One foot contours were then created from the topographic model. Vegetation height was summarized from the point cloud by subtracting the digital elevation model based on ground points from the digital surface model based on all points including those classified as vegetation. Each point had been attributed with RGB values

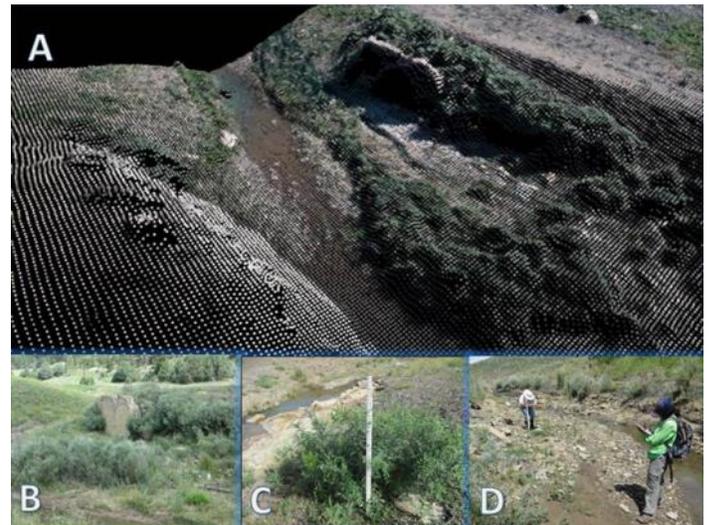


Figure 3.
A) Point cloud of XYZ locations and RGB imagery values of a section of the stream in Dillon Canyon. A 3D representation view in Global Mapper vers. 15.2. B) Photo on the ground of the same section with closeup of willows (5-10 feet tall) and archaeological structures. C) Data validation samples included measures of vegetation species, height, diameter, and GPS location. D) Stream cross-section measurements were taken for a comparison to topographic surface model.

from the aerial images and was used to identify characteristic classes (figure 3). ArcGIS 10.2.1 LiDAR tools facilitated visualization of canopy height of the mid to tall trees contained within the reclamation (figure 4). Ground validation included vegetation sampling and stream channel cross-sections (fig. 3).

The increased spatial resolution of a UAS compared to both traditional aerial photogrammetry and satellite imagery we expect will add significant value to reclamation monitoring. The high resolution technique also improved mining and archaeological feature detection.

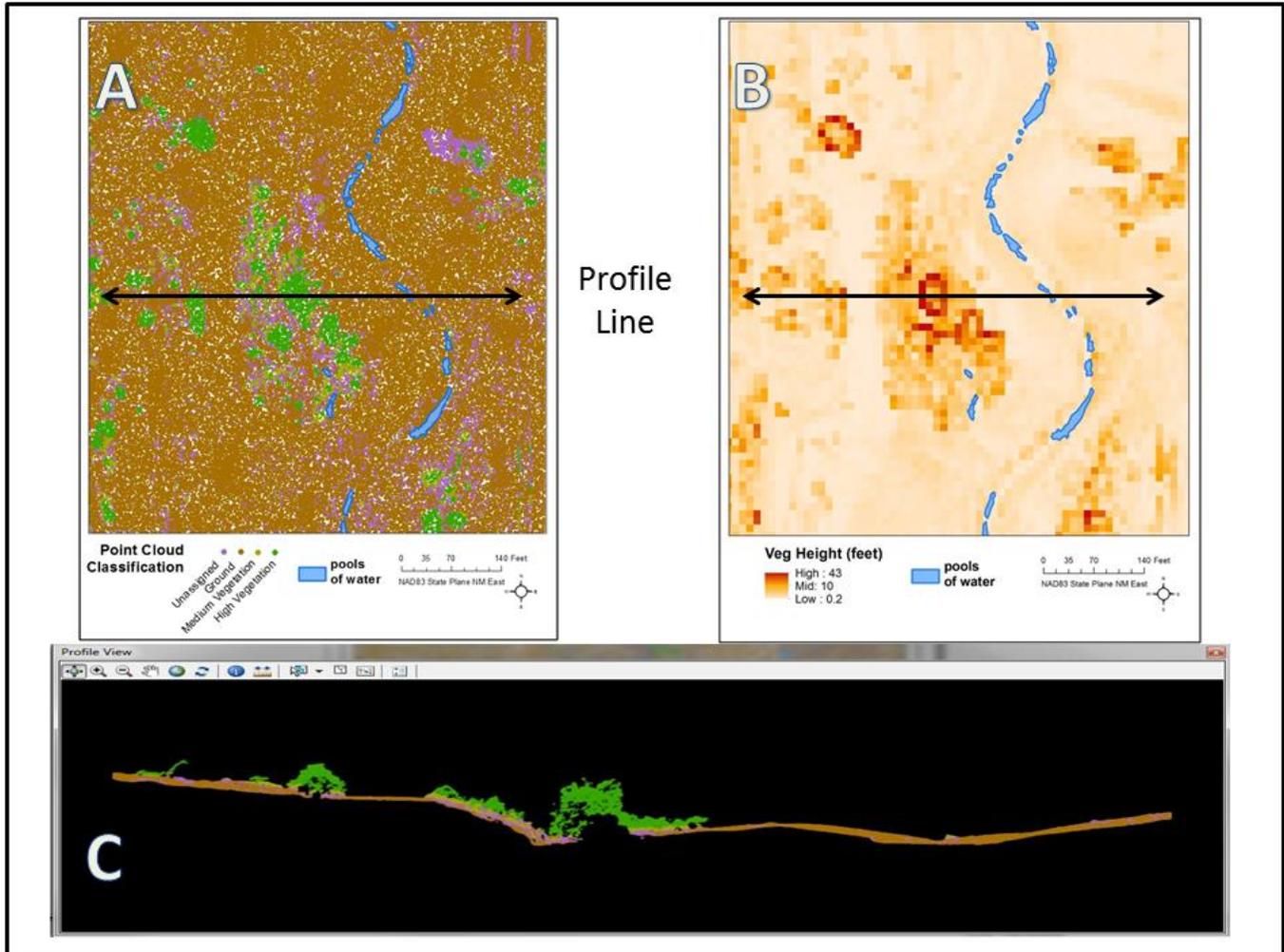


Figure 4. Canopy height analysis using ArcGIS 10.2.1 LiDAR tools. A) The point cloud was initially classified into ground, unassigned, medium and high vegetation. B) A vegetation height map was created by subtracting a digital elevation model based on ground points from a digital surface model based on all points that included vegetation. C) An elevation profile view created in ArcMap based on the point cloud classification.

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NEWSLETTER ARTICLE SPECIFICATIONS

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