



NATIONAL ASSOCIATION OF ABANDONED MINE LAND PROGRAMS

**NEWSLETTER**

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**UPCOMING MEETINGS**

**OSM/State Meeting On  
 SMCRA Amendments 2006**  
 Jan. 30 - 31, 2007  
 St. Louis, MO

**NAAML P Winter Meeting**  
 Feb. 28 - Mar. 2, 2007  
 Santa Fe, New Mexico

**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 Compact Commission, Western Interstate Energy Board and all other organizations dedicated to wise use and restoration of our natural resources.

*Message From the President*

Greetings members and friends of the NAAML P! I hope to serve the membership well as your new President of the Association. I look forward to working with Loretta Pineda as Vice President and Steve Herbert as Secretary/Treasurer and the rest of the Association. Thank you for your support and continued friendship.

The 2006 year ended with some very good news as the 109th Congress passed the Tax Relief and Health Care Act of 2006, which included the Surface Mining Control and Reclamation Act Amendments of 2006. The National Association of Abandoned Mine Land Programs in concert with the Interstate Mining Compact Commission, National Governors Association and the Office of Surface Mining have worked very hard to communicate the need for reauthorizing the AML Program under Title IV of SMCRA. More on that later...

I want to commend the State of Montana for an outstanding conference held in Billings this September. Vic Anderson, John Koerth and staff did an absolutely great job. I cannot say enough about the quality of the pre-conference tour, technical sessions and field trips. The annual conference has again proven to be a great forum for showcasing innovative reclamation techniques, the exchange of ideas, partnering and networking. A special thanks to Montana's Governor Brian Schweitzer for speaking at the conference and providing us with an insightful glimpse of how the U.S. can reduce its dependence on foreign oil through conservation, wind power and increasing domestic coal and oil production.

The OSM AML Reclamation Award winners this year should be very proud of their good work. Congratulations to Montana, Maryland, Iowa, Pennsylvania and North Dakota for a job well done. I would also like to



*President John Husted, Ohio*

extend a special acknowledgement to Mike Sharp as the recipient of the Stan Barnard Award. Mike's contribution and level of dedication to the Association has been significant. Thank you Mike!

I was pleased to see the Association reaching out to new partners at this year's conference. The Bureau of Land Management and the State of California attended the technical sessions and the business meeting while considering joining the Association. I support these new relationships, as we need to continue to stay active in developing new strategies for partnering to increase non-coal funding of AML hazards while pursuing our traditional SMCRA funding sources. A bit of good news to report since the conference... the State of California has decided to join the Association!

As we discuss the benefits of partnering, I am impressed with how OSM has made improvements to their class selection

for training and technical support to meet the needs of the States and Tribes. This was illustrated during the business meeting as OSM's Sarah Donnelly and Paul Clark spoke of the classes in the NTTP and TIPS program now being offered and the services available from the Office of Technology Transfer. Mike Kastl, who was awarded the Dave Bucknam Training Award at the conference, highlights that spirit of cooperation and partnering between OSM, the States and Tribes.

Back to AML Reauthorization...with the passage of Surface Mining Control and Reclamation Act Amendments of 2006 the States and Tribes will now need to direct their attention to exactly what the new law means to the respective AML Programs.

By October 2007, issues like annual AML pay-outs, new regulations and policy guidance will all need to be finalized by OSM. To that end, the Association will be meeting with OSM in January 2007 to start the framework for working through these issues.

I am pleased that AML Reauthorization has provided the States and Tribes with new opportunities to plan and achieve the goal of cost effective abandoned mine land reclamation for the citizens of the United States.

**John Husted, President**

## Billings Conference A Success!!

Montana Proceeded On with the highly successful 28th Annual NAAMLP Conference in Billings, September 24-26. Two hundred twenty-two registered attendees experienced Yellowstone County in the fall plus a distinctive Montana barbeque where food was cooked with agricultural implements. The Conference featured 50 technical sessions, workshops, and panel discussions with topics ranging from Source Control of Acid Mine Drainage to Federal AML Programs Outside OSM, to Waste Management and Hydrology. The trial Conference format of separating the technical sessions from the conference tours was well received with both the technical sessions and the tours being well attended. Conference tours included Montana mines, AML projects, and local cultural sites.

### *Pre-conference Tour*



*Richard Opper, Director, Montana Department of Environmental Quality, welcoming conference attendees on Monday, September 25.*

Montana's effort and pride in accomplishment was evident throughout the Conference and evidence of Montana's work ethic was reinforced when Montana won OSM's National Reclamation Award for the Comet Mine Reclamation Project.

The Pre-Conference tour of Mining and Reclamation on the Beartooth Plateau attracted 18 people plus 3 Montana staff members. Snow on the 10,947 foot Beartooth Pass competed with bugling elk at Mammoth Hot Springs for the best tour highlights. Acid mine drainage source control, Stillwater Mine's "good neighbor agreement" and coal mine reclamation in Yellowstone National Park were just more icing on the cake.

A Post-Conference tour was given to the Zortman and Landusky mines reclamation project, located in the Little Rocky Mountains, just south of the Fort Belknap Reservation. The 26 attendees experienced more of Montana's great open spaces. After touring the reclamation project the group traveled onto the Reservation through Mission Canyon. The grass covered reclaimed areas and acid mine drainage treatment facilities at the mine were contrasted with the tribe's Sun Dance Lodge and tribal recreation areas, some of which are in danger from encroaching acid water discharges from the now closed mine.

Extra copies of the Conference Proceedings are available. Contact John Koerth at [jkoerth@mt.gov](mailto:jkoerth@mt.gov).



*Outgoing President, Mark Mesch, is given a thank you gift by John Husted and Loretta Pineda.*

## Oklahomans Claim Barnard and Bucknam Awards

OCC's Abandoned Mine Land Reclamation (AML) staff received both awards presented at the 28th Annual Conference of the National Association of Abandoned Mine Land Programs (NAAML) held in Billings, Mont., Sept. 24-27.

Dr. Mike Sharp, director of the Information Technology Division of the Oklahoma Conservation Commission (OCC), received the "Stan Barnard Award." The award is presented in memory of Stan Barnard, past AML Association president and administrator for the AML Division in Wyoming. The award is given to an individual who exhibits "Stan-like" qualities of outstanding dedication, commitment, and hard work toward the enhancement of the National Association of AML Programs. Sharp serves on several NAAML committees and chairs the Abandoned Mine Land Information Systems (AMLIS) committee. He participated in the development and implementation of two AML courses and is an instructor of five Office of Surface Mining (OSM) courses. Sharp formed the AML Users Group to encourage OSM to provide computer hardware, software and training support to AML Programs for designing reclamation projects. Sharp has testified before Congress on behalf of "minimum program" AML states (like Oklahoma and seven other states whose coal production falls below the amount needed to generate \$1.5 million in reclamation funds taxed at the rate of 15 cents per ton on underground-mined coal, 35 cents per ton on

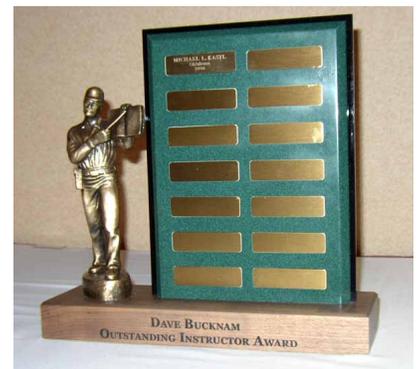


*Stan Barnard Award*

surface-mined coal and 10 cents per ton on lignite coal) to appropriate the annual \$2 million allocation, as mandated in Public Law 95-87.

Mike Kastl, director of OCC's AML Division, received the other award, the Dave Bucknam Outstanding Instructor Award. This was the first year to present the award honoring Dave Bucknam, director of Colorado's AML Reclamation Program, who succumbed to cancer in 2004.

"Dave had a passion for training and was chairman of the Association's Training Committee," Kastl said. Bucknam is credited as having been the driving force in the initiation, development and instruction of the first OSM-AML course and helped implement several AML design courses. "Dave was the ultimate instructor, who had the knack of engaging his students in discussion and imparting to them his many AML experiences," Kastl said. Of the 189 instructors teaching a variety of OSM courses each year, Kastl was selected to receive the first Bucknam award. Kastl had worked with Bucknam and others to develop the first OSM-AML course offered to state and tribal AML staff. The purpose of the course was to provide identification, planning, design, implementation, maintenance and evaluation of actual reclamation project work. Kastl helped launch the course for the first time as an instructor with Bucknam and Alan Krap (OSM staff member from Washington, D.C.) in Norton, Va., in May 1991. In the years since, Kastl has had the opportunity to teach, with Bucknam and other instructors, hundreds of students in several states.



*Dave Bucknam Award*



Montana Governor Brian Schweitzer and his dog Jag. Keynote address, September 25.



Conference participants from South Africa with Loretta Pineda, Colorado AML.



Mike Kastl, Oklahoma AML Program Director, recipient of the Dave Bucknam Outstanding Instructor Award with Dave's wife Susan, and son Alan.



Mike Sharp, Oklahoma AML Program, receiving the Stan Barnard Memorial Award from Greg Conrad, Executive Director of IMCC and previous Barnard Award winner.



Oklahoma AML Program staff. L to R: Mike Sharp, Dianne Ireton, Charlotte Stieber, Mike Kastl.



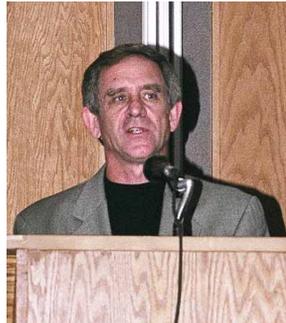
*Mark Mesch, NAAMLPL President addresses conference banquet attendees.*



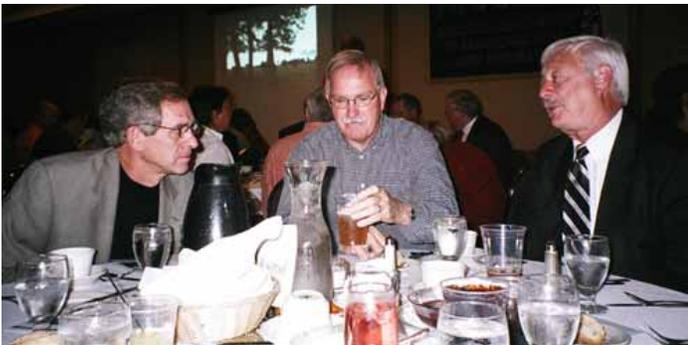
*Murray Balk, Section Chief, Kansas Surface Mining Section, giving invocation before banquet.*



*Mike Sharp, Oklahoma AML Program, after receiving the Stan Barnard Memorial Award.*



*Mike Kastl, Oklahoma AML Program Director after receiving the Dave Bucknam Memorial Award.*



*AML Association Banquet. Danny Lytton, Chief, OSM Division of Reclamation, provides Mike Kastl and Pat Park with OSM "insider" information.*



*National AML Association Business Meeting on Wednesday, Sept 27. (L to R) John Husted - Ohio, NAAMLPL Vice President; Mark Mesch - Utah, NAAMLPL President; Loretta Pineda - Colorado, NAAMLPL Secretary/Treasurer.*



*Al Klein, OSM Western Region Director, presenting Ben Quinones, Montana Mine Waste Cleanup Bureau, with the National Award.*



*Connie Lyons, Maryland Bureau of Mines - Acid Mine Drainage Treatment at the McDonald Mine.*



*Richard Davis, Virginia Department of Mines - Reclamation on the Cheap: Virginia's Implementation of the AML Enhancement Rule.*



*Henk Coetzee, Council for Geoscience, Pretoria, South Africa - Risk Assessment of Contaminated Sediments Downstream of Witwatersrand Gold Mine.*



*Kristin Brown, Colorado Division of Minerals and Geology - Groundwater Source Controls and Abatement of Acid Mine Drainage at Colorado AML Sites.*



*Al Klein, OSM Western Region Director, presenting Michael Garner, Maryland Bureau of Mines, with the OSM Category II National Award.*

*Al Klein, OSM Western Region Director, presenting Eric Cavazza, Pennsylvania Bureau of AML, with the OSM Appalachian Regional Award.*



*Al Klein, OSM Western Region Director, presenting Julia Jeske, Iowa Mines and Minerals Bureau, with the OSM Mid-Continent Award.*

*Al Klein, OSM Western Region Director, presenting Bill Dodd, North Dakota AML Division, with the OSM Western Region Award.*



## Indiana Sends Thanks For Conference



*From Marvin Ellis- Indiana AML Program Field Operations Coordinator*

“The Montana staff did an excellent job in terms of their planning. Their hospitality was second to none. The pre-conference tour made the trip. The people of Billings and Montana in general were polite and very helpful.

*From Licia Weber – Indiana Geological Survey*

Attending the NAAMLPLP over the years has been insightful, inspirational, and informative, not to mention just plain fun. Montana just did a great job in hosting this year’s conference. It is gratifying to see the big picture of the Mined Lands Programs

and participate in celebrating the many accomplishments of the states and tribes. The people that make up the programs are hard-working, dedicated, and definitely out-of-the-ordinary folks. I’m glad to be in their company, and the meetings continue to leave me feeling good about the work we do.

*From Russ Miller – OSM Indianapolis Field Office*

I enjoyed the Billings Conference very much. The Montana staff did a great job hosting this conference providing good facilities with dining and shopping amenities, worthwhile tours with historic and other points of interest (a real plus), and informative technical sessions. Getting the Governor to address the group doesn’t often happen, let alone one that is a captivating speaker. Most importantly, however, I appreciated the opportunity for personal contact with other AML folk from all over, many of whom I have known for years.

*From Ellen Miller – Guest of husband Russ*

As a tag-along spouse, I appreciate associating faces and personalities with names I’ve heard mentioned. My knowledge of the scope – and challenges – of AML work is much greater. I’ve met new friends and seen new places. I’m glad I went.

*From Steve Herbert – Indiana AML Program*

Montana did a wonderful job of making all of us feel welcome and relaxed. The tours were outstanding and I will not soon forget the opportunity that I had to hike through the region and see sights new to me. I genuinely learned a great deal from some of the technical sessions that I am finding helpful today. Thanks to all Montana staff for all the hard work.

## Conference Host Montana Wins Overall National Award

The Overall National Award was claimed by the Montana Department of Environmental Quality (DEQ), Abandoned Mine Section, for Comet Mine and Mill site. One of the oldest mines in the Basin-Cataract Mining District, it was first mined about 1880, yielding copper, gold, zinc and silver while its mill served neighboring mines.

Closed and dismantled in 1941, a sterile stream, abandoned mine pits and eroded toxic waste piles were ever-present reminders of the past activities at the 35 acre site. When reclamation began, heavy metals and metalloids including lead, zinc, copper, and arsenic had degraded water quality in High Ore Creek and significant amounts were being transported downstream to the Boulder River. In fact fish could survive only 72 hours in High Ore Creek. The area was a danger to wildlife, livestock, and people.

A cooperative effort by the state of Montana, Bureau of Land Management, twenty private landowners, Montana Conservation Corps, the Western Resource Institute, and several contractors resulted in the restoration of four miles of stream channel on High Ore Creek, and the reclamation of the Comet Mine and Millsite as well as other mines in the watershed. High Ore Creek,



*(Standing from left) Keith Large, Montana DEQ; Marty Bennett, Pioneer Technical Services; Duane Shumaker, Shumaker Construction; Ben Quinones, Montana DEQ; Al Klein, OSMRE Western Regional Coordinating Center; Mike Browne, BLM; Vic Andersen, Montana DEQ; Kevin Rauch, Olympus Technical Services, (kneeling from left) Joe Aline, Shumaker Construction; and John Koerth, Montana DEQ.*

located east of the town of Basin in Jefferson County, Montana, flows through the abandoned Comet Mine and Mill site and into the Boulder River. Mill tailings and waste rock, from about 400,000 tons of ore milled at the Comet Mine, filled a large area of the High Ore Creek Valley and were retained behind a tailings impoundment dam. Failure of the dam allowed mine wastes to erode and be transported downstream to the Boulder River. A spring run-off washout of the tailings in 1996 was repaired with an interim action that led to the excavation and removal of 300,000 cubic yards of tailings contaminated with lead, zinc, copper and arsenic.

The wastes removed from the stream channel and flood zone were placed into the adjacent pit area. Removal of the tailings source area was followed up with removal of streamside tailings material previously washed out of the impoundment and carried downstream. This phase of the project included the removal of approximately 62,000 cubic yards of streamside tailings and waste-rock over a 4-mile length of stream channel. Reclamation included stream channel and floodplain reconstruction, and revegetation with native plant species.



Water quality in the High Ore Creek and Boulder River watersheds has been monitored since 1997 by the Montana Bureau of Mines and Geology (MBMG). The MBMG compared post-reclamation analytical results with pre-reclamation water quality data to determine the success of the Comet Mine and High Ore Creek reclamation projects. Analyses conclude that post-reclamation heavy metals/metalloids concentrations are substantially lower than pre-reclamation conditions.

## Pennsylvania Claims Appalachian Reclamation Award

Pennsylvania's Department of Environmental Quality, Bureau of Abandoned Mine Reclamation, took the Appalachian Regional Award for its reclamation of the Monongahela South No. 1 highwall mine located in Washington County. Extreme innovation and expertise were required to stabilize the highwall and make the area safe for the public.

The Monongahela South No. 1 project eliminated an 800-foot long dangerous highwall that presented a severe health and safety hazard for the members of St. Anthony's Roman Catholic Church in Monongahela. The highwall averaged 40 feet high and, due to weathering of the exposed highwall face, was extremely unstable. The highwall also posed a hazard to persons living in residential properties and walking the city streets that were located immediately above the top of the highwall. The project was designed by GAI Consultants, Inc. and constructed by Alex E. Paris Contracting, Inc. The final project cost was \$ 1,457,925.57. Because of the many buildings and roads in the immediate proximity of the highwall, reclamation options were limited. The ultimate reclamation plan incorporated the needs and interests of many people and groups and the completed project showcases the kind of exemplary reclamation that can be accomplished by the AML Program.



*(From left) Eric Cavazza, Pennsylvania Bureau of Abandoned Mine Reclamation; Rod Fletcher, Pennsylvania Bureau of Abandoned Mine Reclamation; and Al Klein, OSMRE Western Regional Coordinating Center.*



## Mid-Continent Award Goes To Iowa's Trinkle Project

Iowa's Department of Agriculture and Land Stewardship won the Mid-Continent Regional Award for exemplary reclamation at the Trinkle Reclamation Project in southern Iowa. At this 100 acre site, a dangerous long-mine wall, toxic gob piles and hazardous water bodies were replaced by grassland supporting a growing wildlife population. Acid mine drainage from the stripped land which clogged streams and impacted roadways, bridges and nearby farmland, has been corrected.

The \$1.6 million project came in under the original budget, including addressing issues uncovered during construction. The owners' goals were to mitigate the environmental hazards and create an opportunity for restoration of the land for grazing and wildlife habitat. Even before construction of Phase I was completed in December 1998, the ponds were frequently used by geese, wild turkey, deer, coyote, and other wildlife, and provided habitat for thousands of frogs. Adjacent landowners downstream from the project have benefitted due to the elimination of erosion which caused clogging of streamland on their property. The 100-acre abandoned, hazardous coal strip mine site with acid water and dangerous terrain has been transformed into safe well-vegetated grassland that supports a growing wildlife population.



*(From left) Russ Schroeder, Shive-Hattery Engineering; Julia Jeske, Iowa Mines and Minerals Bureau; and Al Klein, OSMRE Western Regional Coordinating Center.*



## North Dakota Wins Western Award

Dangerous sinkholes have been a frequent problem for residents in and around Garrison, North Dakota (population 1318) for many years. These sinkholes have resulted from sudden collapse of abandoned underground coal mines that operated near Garrison from about 1912 to 1926. Although sinkholes are an obvious hazard, undermined lands that have not yet collapsed presented a much more insidious danger to the residents of Garrison. At least two major highways and three residential and commercial subdivisions at Garrison are undermined. The North Dakota Public Service Commission has conducted reclamation projects in an attempt to stabilize these collapsing underground mines to prevent destructive and dangerous subsidence before it occurs.

The principal reclamation technique used was pressurized grout remote backfilling. In this technique, a cementitious grout is pumped under pressure through holes drilled into the mine cavities to fill them and reduce the likelihood of collapse. Pressurized grout remote backfilling is not a spectacular technique and, although no changes occurred on the surface, approximately 16.8 million pounds of grout were pumped beneath homes streets and highways at Garrison.

Abandoned Mine Land (AML) reclamation work at Garrison began in 1983 with a project just south of the city limits, where about 70 dangerous sinkholes were filled with dirt. About 30 more sinkholes were filled in 1999 and more were filled in 2002, 2003, 2004 and 2005.



In 1997, exploratory drilling was conducted along North Dakota Highway 37 and McLean County Highway 15 near Garrison. This drilling confirmed the presence of collapsing underground mined workings. A deep sinkhole opened on the shoulder of Highway 15 in 2001. Pressurized grout

remote backfilling began in 2002 with the first of a four year project series to address the highest priority AML problems at Garrison.



*(From left) Bruce Beechie, North Dakota AML Division; Susan Wefald, North Dakota Public Service Commission; Bill Dodd, North Dakota AML Division; and Al Klein, OSMRE Western Regional Coordinating Center.*



# Maryland Wins First Ever Category II National Award

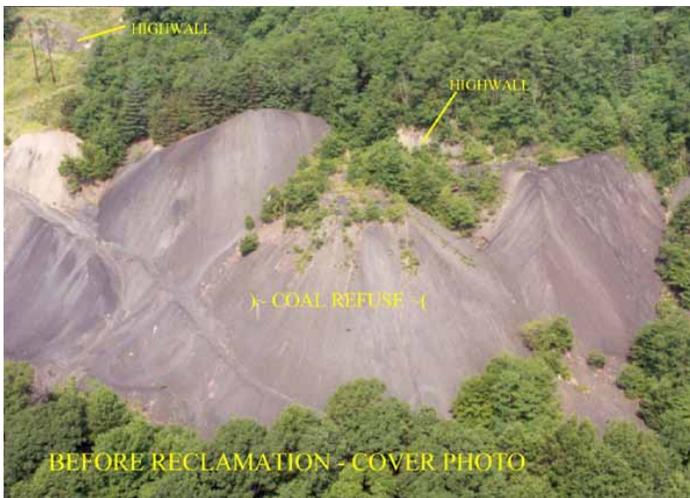
Beginning with the 2006 Awards the OSM awarded two national awards: one going to the overall national winner and a second, new award going to a small program. The new award is referred to as the Category II National Award. It is apparent by the winning entry that small program reclamation yields big results.

The Category II National Award recognized Maryland Department of Environment, Bureau of Mines, for their reclamation and acid mine drainage treatment at the Shallmar Coal Refuse in Garrett County, Maryland. Mined first by pick and shovel this area was mined until 1977. Abandoned, deep mine portals were in danger of collapsing, abandoned highwalls were within 300 feet of a road and nearly 300,000 cubic yards of coal waste had been dumped down slope from the mine leaving an unstable refuse bank behind the town of Shallmar. Acid drainage was uncontrolled and ditches had to be constructed to protect the town from refuse bank runoff during rainstorms.

Using OSM Clean Streams and Watershed Cooperative funds as well as AML monies, Maryland Bureau of Mines contractors sealed two mine portals, removed 140,000 cubic yards of unstable coal refuse, installed a water powered doser to reduce acidity and revegetated 17.5 acres with trees and grass.



(From left) Constance Anne-Lyons, Maryland Bureau of Mines; John E. Carey, Maryland Bureau of Mines; Michael Garner, Maryland Bureau of Mines; and Al Klein, Director, OSMRE Western Regional Coordinating Center.



## The Big Gorilla In The Corner Is Gone: The Raccoon Creek Partnership Completes the Flint Run AMD Remediation Project

The Raccoon Creek Partnership has been trying to remediate or treat acid mine drainage (AMD) in the Raccoon Creek Watershed for over a decade. The abandoned mine lands are pervasive in the 683 square mile watershed in Southeast Ohio. The Raccoon Creek Partnership has concentrated its efforts in areas such as Little Raccoon Creek and the Headwaters of Raccoon Creek where historic mining has caused the most water quality impairments. In particular, Little Raccoon Creek has a stretch of about 10 stream miles where nearly every tributary entering the creek is acid or laden with metals.

The Partnership knew that to improve water quality in Little Raccoon Creek it would eventually have to address the infamous Broken Aro abandoned mine site, located mostly in the Flint Run subwatershed. The Little Raccoon Creek Acid Mine Drainage Abatement and Treatment Plan (2001) identified Flint Run as the largest contributor of acid to Little Raccoon Creek. This several square mile pre-SMCRA surface mine site contains abandoned underground mines, numerous acid strip pits, coal slurry impoundments, and unreclaimed mine spoil. One site in particular, in the Flint Run headwaters where the tippie and coal washing facility was located generates the most acidity, over 90% of the acid load in all of Flint Run. The main Flint Run valley was dammed and filled with coal slurry, sometimes over 80 feet deep during mining operations. In addition, several strip pits stored water around the rim of the valley leaching water year round into the slurry valley fill. This contributed groundwater to the slurry, which was documented to contain acidities over 10,000 milligrams per liter. This site generated surface water with an average load of over 200 pounds per day of acid or 36 tons of acid per year.

Brett Laverty, currently a Raccoon Creek Projects Manager with the Vinton SWCD, completed a two year study at the site for his master's thesis in Geological Sciences at Ohio University. The Partnership, through Ohio University's Institute for Local Government Administration and Rural Development (ILGARD), applied for a EPA 319 grant to fund the project. The grant was accepted and reclamation at the site began in late 2004. Due to the complexity and scale of the project it was broken up into two phases: Flint Run East and Lake Milton. Both projects were innovative in



the fact that they utilized passive AMD treatment systems to treat AMD water and then use that treated water to generate additional alkalinity in a steel slag bed to buffer other AMD at the site. The Flint Run East treatment approach consisted of removing all acidic strip pits along the rim of the valley fill. Water from an underground mine feeding the strip pits was then treated with a daisy chain of passive treatment systems including a vertical flow pond, wetland ditch, a limestone leach bed, and then finally through a steel slag leach bed. The Lake Milton treatment system utilizes a vertical flow pond to treat water entering Lake Milton (15 acres) where it is then run through a steel slag leach bed.

Although post treatment data analysis is in the initial phase, water quality has improved dramatically due to the AMD treatment systems. Surface water at the Flint Run East final site discharge has went from a pH of typically in the 2 – 3 range to over 7 the last few months. Acid loads have been reduced by over 65% on average over the past five months, but recent samples show a net alkaline discharge and net alkaline conditions in Little Raccoon Creek downstream of Flint Run.

When it was all said and done in the summer of 2006, the project had two grant sponsors (ILGARD and Ohio Valley RC&D) with funding contributed by EPA 319 Clean Water Act grants, the ODNR-DMRM abandoned mine land program, and the OSM Appalachian Clean Streams Initiative program. The total cost of constructing the project was approximately \$2.3 million, and well over \$2.5 million including all project costs.

Water quality monitoring over the next years will tell us how successful the project is at treating AMD at the Flint Run site but addressing such a large AMD site was bold and courageous by the Raccoon Creek Partnership. Addressing AMD problems can be difficult at best and taking on your most complex and expensive sites can be a daunting task but sometimes you have to tell the big gorilla in the corner that its time to go!

**By: Ben McCament**  
**Raccoon Creek Watershed Coordinator**  
**Ohio University, ILGARD**



## Green Parrot Mine Collapse

On July 31, 2006, the staff of the KDHE Surface Mining Section, Frontenac, Kansas was notified at 8:10 a.m. of a mine collapse that had occurred in the alley behind the Green Parrot Bar located in downtown Galena, Kansas. A subsidence that measured fifty feet in diameter with a depth of approximately sixty feet had suddenly collapsed into an abandoned lead and zinc mine taking the entire alleyway with it. A natural gas main, sewer line and water main were all hanging in mid-air. A utility pole carrying 13,000 volts over the site leaned precariously over the hole. The subsidence was unstable and slowly growing larger with each passing minute.

Mickey Center and Larry Spahn were at the scene within thirty minutes of the call and met with Larry Delmont, Galena Police Chief and other city officials at the site to assist and advise in remediating the problem. Work began immediately to shut off all utilities that would be affected as the subsidence enlarged. Empire Electric Company positioned a bucket truck to support the leaning power pole and began building a line around the problem. The 100+ degree temperatures caused concern for the residents of a nearby nursing home and arrangements were made to evacuate them to the Galena school building should it become necessary. The Kansas Gas Company began digging up the gas main and capped the line. These very dangerous tasks were completed without mishap before the entire area collapsed into the hole. If the building would have collapsed onto the utilities an explosion and fire could not have been avoided. An ambulance and fire equipment were positioned should they be needed. The Crawford County Mobile Command Center was dispatched to the site to aid Cherokee County authorities, as well as a Red Cross Disaster Relief Van. The City of Galena began working to isolate the sewer main by plugging the line and looping the flow around the site. The uncontrolled flow of raw sewage into the subsidence would have complicated the already growing problem.

Local television crews were soon on site as well as reporters from the surrounding area. The story was carried by the Associated Press Newswire and was distributed across the U.S.



The living quarters, a large brick building that is directly connected to the Green Parrot bar, had been evacuated earlier by the owner, Mickey Morang and his elderly mother. All of their personal effects, such as clothing, money, medications, oxygen equipment and their pet lovebird, Romeo, were still inside the rapidly deteriorating structure. The structure could not be re-entered because of the danger of the entire building collapsing. Dejected bar patrons looked on as cracks in the last remaining tavern in the small town continued to expand.

As the morning passed, the danger of fire and explosion eased as the power was shut off and the gas line isolated. The subsidence continued to grow ever larger and as evening fell. A twenty-four hour watch was placed on the building to keep on-lookers away from the hazardous spectacle.

During the first day Spahn and Center worked to acquire the needed rights of entry and deeds to allow remediation of the collapse. A determination was made that the problem could not be addressed under the Kansas AML emergency program, because the mining was not coal related. Surface Mining Staff processed the necessary paperwork to abate the hazard under the non-coal program. Randy Johnson, AML Inspection Supervisor contacted Mike Robinson Construction, the contractor in charge of the Lead and Zinc Vertical Opening Program, and advised them to mobilize their equipment and move it to the Galena site.

The next morning revealed that the entire back of the building had collapsed into the subsidence and all of the abandoned utility lines had been carried away. The building was very dangerous and continued to collapse throughout the day. Robinson Construction was on site with a large track hoe and several dump trucks full of large rocks and concrete rubble. Robinson was finally allowed into the area and he began filling the sixty feet in diameter, sixty-two foot deep hole late in the day and continued into the



night. Eighty cubic yards of concrete was placed over the rock and rubble to consolidate the fill material. This was covered with material trucked in from a nearby site. After mounding and compacting, the site was covered with topsoil which was leveled and grass seed planted over the disturbed area. The problem was remediated at a cost of \$64,464.00 in approximately five working days.

Sometime after the hole had stabilized, it was learned that an unknown person entered the structure and rescued Romeo the lovebird along with a few of the resident's more valuable possessions.

Mr. Morang has learned that both structures will have to be razed and that his insurance will not cover any of the loss of his home or his business. No subsidence insurance program is in effect for the state of Kansas. The one hundred and fourteen year old building has become another casualty of the lead and zinc mining problem that affects the entire Tri-State Mining District.

Available maps indicate that most of the city is undermined, including the Galena School complex. The clock is ticking.

**By Larry Spahn, Kansas Emergency Program Coordinator**

## Maryland Bureau of Mines Performs Reforestation Demonstration Project

The Maryland Department of the Environment, Mining Program, Bureau of Mines has completed a reforestation demonstration plot on a reclaimed surface mine. The demonstration plot was completed in the spring of 2006 in conjunction with the reclamation of the TD Mining Bond Forfeiture Reclamation Project, located just southwest of Frostburg, Garrett County, Maryland.

Most surface mined lands in the Appalachian coal fields were forested prior to mining. Surface coal mining completely removes the vegetation and soil from the surface in order to extract the underlying coal reserves. In 1977, the newly enacted federal surface mining laws dictated national standards for coal mining and coal mine reclamation. To meet these standards, coal mine operators began using heavy grading, soil compaction, and thick herbaceous ground cover to provide both quick and long-term soil stabilization. This type of reclamation is well suited for areas where the post-mining land-use is pasture or grazing, but in areas where the post-mining land-use is designated as forestry or undeveloped land, this traditional and long accepted practice severely inhibits tree growth. The heavily compacted soil slows tree growth by impeding root penetration and decreasing water infiltration into the soil. The thick mat of cool-season grasses out-competes small seedlings for moisture and sunlight, delays natural succession by decades and severely limits the survival rate of planted tree seedlings.

In 2004, the Maryland Bureau of Mines, the federal Office of Surface Mining, and coal mining agencies from Ohio, Kentucky, Virginia, Pennsylvania, West Virginia and Tennessee began to promote the Appalachian Regional Reforestation Initiative (ARRI). The Goals of ARRI are to promote planting hardwood trees on reclaimed coal mines in Appalachia and to use methods that increase survival rates and growth rates of the trees, thus reestablishing the high-value hardwood forests that existed prior to mining. To achieve these goals, ARRI members promote to the coal mining industry, landowners and state abandoned mine reclamation programs the use of the Forestry Reclamation Approach (FRA). The five steps

of the FRA are: 1) Create a suitable rooting medium for good tree growth that is no less than 4 feet deep and comprised of topsoil, weathered sandstone, and/or the best available material. 2) Loosely grade the rooting topsoil (or topsoil substitutes) to create a non-compacted growth medium. 3) Use native and non-competitive herbaceous ground covers that are compatible with growing trees. 4) Plant two types of trees, early succession species for wildlife and soil stability, and commercially valuable crop trees, and 5) Use proper tree planting techniques.

Three demonstration plots were developed on the TD Mine Project Site using the FRA techniques. Soil encountered during backfilling that was suitable for tree growth was left in place until the demonstration plots were rough backfilled and ready for topsoil placement. The soil was then pushed from the stockpile area using D-9 bulldozers and deposited on the surface of the demonstration plots. The bulldozers pushed a blade full of soil to the back of the demonstration plots, with each consecutive blade full butted against the previous. In this manner, the topsoil was never compacted by



bulldozer traffic and left very rough. The abutting soil piles were then backbladed with a single pass of the bulldozer resulting in a uniform, uncompacted topsoil layer of 4 to 6 feet thick. A composite soil sample was taken and reported a pH of 6.4. No nutrient analysis was completed and no soil amendments were applied.

The plots are on the east slope of Big Savage Mountain, elevation 2650, and slope toward the southeast at a 6% grade. On Plot #1, trees were planted by hand using the Bureau of Mine's in-house tree planting crew. The trees were planted during the first week in April, 2005. Plot #2 was planted by hand on April 6, 2006 by High School students, Government personnel, Watershed Groups and other volunteers during the Bureau of Mines 2006 Arbor Day event.

**Plot #1 (2 acres)**

Trees  
 750 Black Cherry  
 250 Chestnut Oak  
 400 Green Ash

Herbaceous  
 Orchard Grass 10 lbs/ac  
 Perennial Rye Grass 10 lbs/ac  
 Weeping Lovegrass 10 lbs/ac  
 Timothy 10 lbs/ac

The remainder of the mine site (Plot #3) was backfilled, graded and stabilized using the traditional reclamation methods of compaction and thick herbaceous ground covers. Trees were planted on this area during the last week in April, 2006 by a tree planting contractor using a mechanized tree planter. A mixture of Green Ash, Pin Oak, Black Cherry, Northern Red Oak, Chestnut Oak, and White Oak were planted at a rate of 500 trees to the acre. This area was also treated with 5 tons/acre of agricultural grade lime and 400 lbs/acre of 10-20-20 fertilizer. These rates are an industry standard and are generally accepted as appropriate application rates for new revegetation on mine sites.

The goal of the demonstration project is not to provide scientific data but rather provide a site that will visually demonstrate



*Arbor Day Tree Planting, April 2006*

**Plot #2 (5.2 acres)**

Trees  
 500 Red Maple  
 1000 Northern Red Oak  
 1250 Black Locust  
 100 American Plum

Herbaceous (60 lbs/acre)  
 Orchard Grass 10 lbs/ac  
 Perennial Rye Grass 10 lbs/ac  
 Weeping Lovegrass 10 lbs/ac  
 Timothy 10 lbs/ac  
 Birdsfoot Trefoil 10 lbs/ac  
 Redtop 10 lbs/ac  
 Red Clover 2 lbs/ac

the benefits of the FRA to Maryland's Coal Mining Industry and landowners that have property leased to mining companies. It will be used to promote forestry as a viable post-mining land-use and to encourage coal mine operators and landowners to forego the visually pleasing, smooth, compacted grades, and sterile grass fields for the environmental and economic benefits of a well-managed hardwood forest.

The initial results appear to show greater tree growth and survival rates on the FRA sites, although a late summer drought in 2005 has effected the results on Plot #1. It will require at least one or two more growing season before the benefits can be visually observed. To learn more about the ARRI, visit the web site at <http://arri.osmre.gov/>

**NEWSLETTER ARTICLE SPECIFICATIONS**

400 - 500 words. Articles subject to editing. Submit in e-mail or hard copy. 2 photo limit. Include author's name, title of article, captions for photos. Submit photos in TIF(preferred) or JPG format, 300 DPI, and original photo size. E-mail photos as individual files, not embedded.

**Deadline for the Spring edition is April 15, 2007.**

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