

NAAML P

NATIONAL ASSOCIATION OF ABANDONED MINE LAND PROGRAMS

NEWSLETTER
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UPCOMING MEETINGS

Winter Business Meeting

Golden, Colorado
Feb 14 -16, 2017

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 NAAML P Membership,

It is both an honor and a privilege to have been elected as the next President of NAAML P for this upcoming year. While I am excited the help guide this Association, I also know that I have big shoes to fill. This Association has had the good fortune of strong leadership, people that have been deeply committed to the issues and challenges of AML programs around the country. My goal is to continue that leadership. There are 31 states and tribes that make up this Association, each program is unique and we all face different obstacles and challenges, but our strength has always been in our ability to remain as a united front. Over the last few years we have seen a downturn in the coal industry. As coal production continues to decline, so too will the collection of fees that fund AML programs. This will ultimately reduce funding to states and tribes but it will not change the goal of improving public health and safety or repairing the environment from historic and pre-law coal mining.

I would like to extend my sincere gratitude and appreciation to our outgoing President, Chuck Williams. Chuck, who manages the Alabama AML program, provided the Association with steady leadership and guidance not only during his year as President but also in the two previous years as Secretary-Treasurer and Vice President. I have developed both a personal and professional bond with Chuck, he is my mentor, and I look forward to his continued involvement with the Association. I would also like to take the opportunity to offer congratulations to the newly elected Vice President, Bob Scott of Kentucky and to the Association's new Secretary-Treasurer, Autumn Coleman of Montana. There are some big and important issues facing the Association such as Reauthorization and RECLAIM, and I am fortunate to have both Bob and Autumn to help with the work that lies ahead.

The State of Montana, in particular Autumn Coleman and her staff, deserve a big thank you for hosting the 38th annual conference in Bozeman, Montana. This was one of the most successful conferences that NAAML P has ever organized, there were nearly 400 attendees. The technical presentations were amazing, a diverse group of exhibitors and sponsors filled



2016 NAAML P Conference Tour - Virginia City

the conference center, and the tours of various parts of Montana were spectacular. The planning, preparation, and work that it takes to arrange a conference of this size is no small feat and the State of Montana was more than up for the challenge.

I would like to thank Jeff Graves and his staff from the State of Colorado for hosting the upcoming 2017 winter business meeting to be held in Golden, CO. In addition, I'd like to thank Bob Scott and his staff from the State of Kentucky for hosting the 39th Annual Conference which will be in Lexington, KY next fall.

This article would not be complete without acknowledging the important work that IMCC does on our behalf. Each and every year there are budget and legislative issues that face this Association. Greg Conrad and Ryan Ellis continue to provide us with valuable input. Their efforts have helped NAAMLPLP remain united on many important issues. The 2016 election is complete and there is a new administration in Washington, D.C. Greg and Ryan have been instrumental in helping put together a report which will be provided to the new administration's transition team. This report will be crucial in helping the incoming administration understand the very important work that our AML programs do. So on behalf of the NAAMLPLP we would like to extend a big thank you to Greg and Ryan and the rest of IMCC.

AML programs have made tremendous progress since SMCRA was introduced in 1977 but there are still many billions of dollars of unfunded and unreclaimed high priority mine sites all across this great nation. NAAMLPLP member states and tribes will continue to work together and with others, to repair affected land and make communities safer and cleaner.



Yellowstone National Park

I look forward to seeing everyone in Golden, Colorado

**Sincerely,
Justin Ireys, President**



2016 NAAMLPLP Conference, Bozeman, Montana

By all accounts the 2016 NAAMLPLP Annual Meeting was a huge success! There were record number of attendees (385) and we couldn't have hosted all of those folks without the support of the sponsors and vendors. First and foremost, thank you to everyone who helped out the Montana AML Program over the last two years. We would like to specifically thank the NAAMLPLP Delegation, past NAAMLPLP President, Chuck Williams, IMCC, NASLR and the Wyoming AML Program for your unparalleled support.



The 2016 conference was co-hosted by NASLR and their attendance allowed us to refocus on the technical matters behind all aspects of mine reclamation and remember why we come together every year. As our past president, Chuck Williams stated “That is why we host this conference, to facilitate those opportunities to network and gain insights from some of the best and brightest in their fields.”

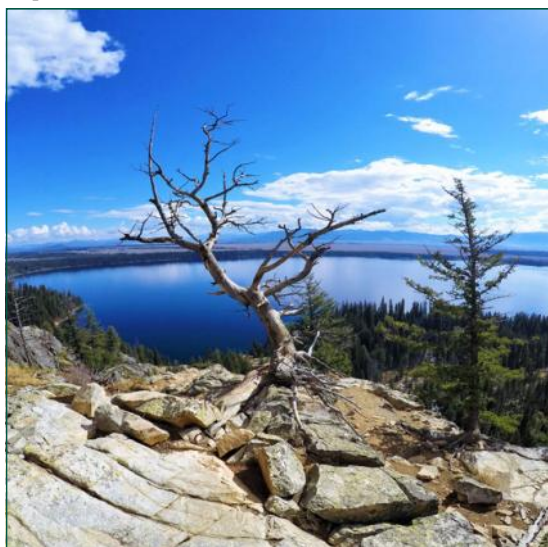
Easily one of the highlights of the conference was the pre-conference tour hosted by the Wyoming AML Program. The tour included stops at Big Horn Canyon National Recreation Area, the Medicine Wheel, Cody, WY and Yellowstone National Park. The Wyoming AML Program pulled out all of the stops to entertain the hardy group who got to see some of the best of Wyoming.



The plenary session and banquet featured excellent speakers that shared the reclamation perspective nationally and from the West. Each speaker commended the conference attendees for their excellent work in mine reclamation for protection of the environment.

The conference featured technical presentations from mine reclamation experts across the country. With an abundance of abstracts, an additional track was added to accommodate the 64 presentations. The NAAML2016 web site at www.naamlp2016.com hosts the Power Point presentations from each of the speakers.

Inspiration Point



Pre-Conference Tour - Cody Wyoming



Old Faithful.



Virginia City Tour



The Montana AML Program staff was most proud that the tours to Cooke City, Virginia City, Butte, and Yellowstone National Park were filled to capacity! For those of you on the Yellowstone tour, we are sorry about the technical problems, but we were pleased that no one got gored by a buffalo.

Finally, we would like to highlight the fantastic event held at the Museum of the Rockies which holds the finest collection of dinosaur artifacts in the West and featured Villas of Oplontis near Pompeii exhibit. The evening was fun filled and informational. Thank you to all of those who attended at the end of a long hard day on tours.

As we wrap up the conference details, we wish Kentucky the best and can't wait to see you all in Lexington next fall!

Autumn Coleman
Montana Abandoned Mine Lands Program Manager



Cooke City Tour



Big Horn Canyon

Stan Barnard Award - Eric Cavazza

Eric is the Director of the Bureau of Abandoned Mine Reclamation with the Pennsylvania Department of Environmental Protection. He has served as the Director of Pennsylvania's AML program for several years and has worked as a member of the program for even longer. His entire life has been dedicated to AML and working with citizen and watershed groups to advance the cleanup of Pennsylvania streams from the ravages of acid mine drainage.

Eric has not only dedicated his professional life to the advancement and implementation of the AML Program in Pennsylvania, but as importantly, has volunteered undeterminable hours of both professional and personal time and effort to the work of the NAAML, serving as the President in 2014 – 2015 and officer prior to his stint as president. He guided the Association through some complex legislative waters and testified on numerous occasions on behalf of NAAML and Interstate Mining Compact Commission.

Eric exhibits the outstanding dedication, commitment and hard work necessary toward enhancement of the Association.



Dave Bucknam Award - Mike Richardson

Mike has served as an instructor for The Office of Surface Mining Reclamation and Enforcement's technical training program for 10 years. He is an instructor for the AML Design Workshop: Landslides. Mike is a 21st century mentor for AML Program Specialist and New Inspectors. He was nominated and receives this award for his exceptional ability to communicate and lead his students down an environmental field-oriented path of creative greatness by allowing them to participate and share their AML reclamation design experience.

NAAMLPScholarship Awards



Poonam Giri –Mid-Continent Region

Poonam Giri holds a Bachelor of Science from the Pennsylvania State University and a Master of Science from Indiana University. She is currently entering her final year of Doctoral research in the Department of Geological Sciences at Indiana University. As a hydro-geochemist, her research examines the attenuation neutralization capacity for limestone-based Abandoned Mine Land (AML) treatments. Having gained expertise in hydrogeology, geochemistry, and numerical modeling through her studies, she developed a numerical model simulating the physio-chemical conditions within limestone-based acid mine drainage (AMD) treatments. As an intern with the Indiana Geological Survey, she has applied her models to an abandoned mine land (AML) site in southwestern IN in order to help target the location for a new treatment. The project demonstrated that the attainable level of effluent alkalinity is highly dependent on the site-specific influent pH and mineral acidity, which fluctuate considerably with seasonal discharges, as well as the reactivity of limestone surface, the abundance of secondary mineral precipitates, and the flow rate through the system. She has also previously interned with the U.S. Department of Energy, ConocoPhillips, and Chevron.

Her ambition is to work for a consulting company as a reclamation engineer. She would like to continue developing models to aid in AML reclamation and environmental remediation. In her free time, Poonam enjoys swimming, being outdoors and cooking.



Meg Doolittle –Western Region

My interest in abandoned mines stemmed from my work with active mines on the Wallowa-Whitman National Forest. There were a total of nine ghost towns on or near the forest and many of the miners I was working with were re-mining areas that had been mined decades ago. I took the Abandoned Mine Land Safety course with the Forest Service in Wallace, ID and explored a number of closure solutions to the vast amount of abandoned mines around me. I was involved in some inspections of mines with bat gates on Hells Canyon, helped install and fabricate a bat gate outside Cle Elum, WA, and am living in Butte with a lot of mining history. I have worked both with the government and private sector companies.

At the University of Montana, my bachelor's of geology had a focus on hard rocks and structural geology. This allowed me to be mindful of the geology behind heavily mined areas. After working for a few years, I found a desire to be more qualified to work in reclamation and remediation to prevent the massive problems associated with many abandoned mines. I am currently studying geological engineering at Montana Tech, with a focus in geochemistry and specifically acid rock drainage. My thesis is on naturally occurring acid rock drainage, but could easily be applied to acid mine drainage in abandoned mine land clean up.



Gireesh S.S. Raman -Eastern Region

Gireesh S. S. Raman is a PhD candidate at the Pennsylvania State University working in the field of mining and mineral processing. Raman received his Bachelor's degree in Mining Engineering from the College of Engineering Guindy, one of the top technical schools in India. He was at the top of his graduating class and was the recipient of the Working Internships in Science and Engineering (WISE) scholarship to pursue a research internship in Germany. During his undergraduate, he has presented multiple papers on eco-friendly mining and processing. For his undergraduate thesis, he developed an expert system for environmental impact assessment which offered a potential to reduce the time consumed in the environmental clearance process for mining projects by many folds. Having entered the PhD program with the Funds for Excellence in Graduate Recruitment scholarships, he is currently investigating the effects of various operating parameters on the pressure filtration of coal refuse slurries, as pressure filtration offers a potential to eliminate slurry impoundments, reduce the surface area requirement for waste storage, and reduce the overall water consumption of the plant.

He is also the recipient of multiple awards from The Society for Mining, Metallurgy and Exploration which includes the Coal and Energy Division Scholarship, The Environmental Division Scholarship, WAAIM Scholarship (2015 and 2016). He has also been recognized with the Outstanding Graduate Teaching Assistant Award, The Charles B. Darrow Award in Fuel Science, and the Frank and Rusy Rosinko Graduate Fellowship from The Pennsylvania State University.

Sand Coulee Water System Restoration Project, Montana



New water storage tank for the town of Sand Coulee.



New well drilled for Sand Coulee.

National Award Winner

The Sand Coulee Water System Restoration Project mitigated persistent water shortages and drinking water contamination in a former coal mining community located near Great Falls, Montana. From the late 1880s through the 1940s, Sand Coulee mines supplied coal to the Great Northern Railway. Acid mine drainage discharging from the mines contaminated streams and groundwater, and the mines dewatered the sandstone aquifer used by the community. Coal wastes were used as backfill materials for the water distribution piping. The piping was thin walled plastic pipe and suffered a recurring pattern of breaks. Since the 1950s the community endured recurring water shortages and coal wastes entering their potable water.

The restoration project included installation of an 800-foot water supply well and water rights permitting for the community. The new system included over 8,900 feet of new

water main pipe, 22 fire hydrants, construction of a new 150,000 gallon storage tank, and construction of a new well house building with modern controls. The new water system incorporated Supervisory Control and Data Acquisition and internet controls offering innovative technology allowing the District to monitor well water levels, the tank level, and pumping data. The water shortages and the impacts from coal wastes have been alleviated.

Prior to the AML reclamation project, the community was stuck in a position with few viable options to solve their water system problems. The community did not have economic or technical resources to locate, develop, and obtain legal rights for a new source of potable water. This project was successful in addressing these needs enhancing the community of Sand Coulee.

Montana Department of Environmental Quality Abandoned Mine Lands Program



(Photo from Great Falls Tribune)

Sludge in existing water tank.



Reclaiming a Company Town, Morgan Township, Pennsylvania



After construction (2016)



During construction (2015)

Appalachian Region Award Winner

The judges selected the reclamation of a dangerous refuse pile and surface burning condition in Mather, PA. The reclamation of the 70 acre AML site addressed a variety of problems posing both a threat to public health and safety as well as causing significant environmental degradation to the South Fork of Tenmile Creek located along the pile. Partnerships with Pennsylvania Department of Conservation and Natural Resources (PA DCNR), Greene County Industrial Development Authority (GCIDA), OSMRE and other state and local officials facilitated the completion of the project. Over 250,000 C.Y. of certified soil sediment covering material from PA DCNR's Duke Lake Project was transported to Mather through a memorandum of agreement between PA DEP-BAMR and PA DCNR to cover the pile. Now with the pile regraded to a permanent stable condition, with over two feet of superior soil covering material that is abundant with vegetation, the pile is not a hazard and can be developed for economic and recreation uses. The surface

burning condition has been quashed and the adjacent South Fork Tenmile Creek is no longer being contaminated with acid runoff. The hydraulic capacity of the floodway has been restored to accommodate high flow volume events without the risk of any refuse slides being deposited within the watercourse. The reclamation project also directly improved the general welfare and social economic hardships that the coal industry left on the small company town that it produced. Over 700 residents of Mather and visitors will be able to enjoy the planned recreational redeveloped use of the property. The resultant reclamation of the pile provides an outstanding example of what can and is being accomplished through the AML Program here in Pennsylvania and throughout the country.

PA Department of Environmental Protection Abandoned Mine Land Program

Before construction (2014)



After construction of Pennsylvania project.



Highway 15 Pit Subsidence Emergency Project, Illinois



Completed road stabilization project.

Mid-Continent Region Award Winner

This project abated a mine subsidence pit that resulted in the closure of two lanes of a highly traveled state route connecting Belleville and many other communities within the greater St. Louis metropolitan area. Nearly 26,000 vehicles make their daily commute on this four-lane divided highway. The Illinois Department of Transportation (IDOT) contacted the Illinois Department of Natural Resources Office of Mines and Minerals Abandoned Mined Lands Reclamation Division (AMLRD) and as a team the two agencies abated the potentially life threatening situation.

The AMLRD determined that previous voids discovered by IDOT beneath the pavement were due to coal-mine subsidence (pit-type). As part of the inspection, IDOT assisted the AMLRD by drilling two exploratory holes. One hole, drilled outside the affected area, was to determine the embankment fill and soil thickness above the top of rock. A second hole, drilled near the center of the affected area, discovered 56 feet of soft clayey silts near liquid limit, with flowing characteristics.

The first phase of this project stabilized the near surface soils by excavating a 17 by 25 foot area to a depth of 20 feet and replacing the disturbed soils with 330 cubic yards of Controlled Low Strength Material (CLSM) at a cost of \$37,000. The CLSM plug provided a stable surface upon which Phase 2 operations could be conducted safely and created a solid subsurface for the

rebuilding of the highway. Phase 2 included drilling and pumping of 500 cubic yards of cement grout to fill the mine voids, followed by compaction grouting the loose soil and rock debris from mine level up to the base of the CLSM at a cost of \$282,000. IDOT and AMLRD conducted the initial joint investigation on August 29, 2014, reclamation started on September 15 and by October 30, 2014 the project was completed.

Illinois Department of Natural Resources Abandoned Mine Lands Program

330 cubic yards of flowable fill placed to elevation of pavement subgrade



Coyote Canyon Coal Fire Mitigation, New Mexico



Coyote Canyon Coal Fire Completed Reclamation.

Western Region Award Winner

In November 2014, the Navajo AML Reclamation Program (NAMLRP) successfully extinguished a subsurface coal fire five miles southwest of Coyote Canyon, NM. The fire area lies within Navajo Trust Lands, Coyote Canyon Chapter Boundaries. According to the families that reside near the project area, the burning coal seam has been burning since the 1930s, previously called the Jack Tom Mine. The Coyote Canyon fire likely started naturally. NAMLRP partnered with Koveva Ltd., a consulting firm from Colorado specializing in underground coal fire characterization. NAMLRP developed technical specifications to address the fire and subsidence areas. This required excavation of the burning coal seams, so that the fire can be quenched with a combination of ChemGuard Extreme firefighting agent and water. The Navajo Nation has been in severe drought for the past several years; thus, transporting water using tanker trucks was required and adding the firefighting agent to increase the effectiveness. The final contouring geomorphic concept was implemented and most of the overburden material was used to construct two sediment retention structures that was proven

successful in capturing limited precipitation. NAMLRP is confident that this reclaimed site will be stable for decades to come. NAMLRP would like to thank the U.S. Office of Surface Mining (OSM), Coyote Canyon Chapter, the local land users, Navajo Archeology, Navajo Fish & Wildlife, U.S. Army Corps of Engineers, Navajo EPA, Navajo Land Department, Navajo Resource Enforcement, Clawson Excavation Inc., Dodge Environmental, and Koveva LTD for all their hard work and dedication in keeping Navajo families healthy and safe. This project followed SMCRA and NEPA guidelines and gave NAMLRP a very valuable example of how to address a coal outcrop mine fire. The local families were extremely supportive throughout the entire project and during the final inspection expressed complete approval by giving the entire team thumbs up.

New Mexico Mining and Minerals Division Abandoned Mine Land Program

Excavation of the top burning seam while the bottom seam is quenched with water and ChemGuard Extreme.



Water and Chemguard mixture being applied to the coal seam (facing west).



Halleck Mine AML Project, North Dakota



Emergency Sinkhole site meeting with Bowman and Trans Canada officials at the Halleck Mine in 2014.



Construction Inspector pointing out the blow out in the south ditch of the east-west road.

Small Project Award Winner

The Halleck Mine operated five miles north of Bowman, North Dakota, from 1919 until 1944. The 30-40 feet thick coal seam lies about 50 feet below surface with mostly soft overburden. Collapse of this underground mine caused many deep sinkholes that were a serious hazard to the public.

In 2014, local authorities reported several large and dangerous sinkholes within 70 feet of two public roads and within 90 feet of the TransCanada Bison Pipeline, a 30-inch interstate natural gas transmission pipeline. The sinkholes also severed a fiber optic telecommunication cable. The AML Division filled these sinkholes in a 2014 emergency project.

North Dakota AML Division conducted a 2015 drilling and grouting project to stabilize roads and pipeline still threatened by mine collapse. The location of the Bison Pipeline near the entry to the Halleck Mine increased the difficulty of the project. TransCanada contributed to the success of the project by providing valuable consultation and conducting a subsurface geophysical survey near the pipeline.



(Photo from Bowman County Pioneer)

Drilling near the pipeline helped verify that the mine entry tunnel was likely excavated when the Farm to Market Road was improved and paved several years ago. Therefore, no drilling or grouting was required inside the 50-foot pipeline easement; but grout injection near the pipeline was closely monitored.

The AML Division used a borehole camera and video an open mine tunnel with failing support timbers directly beneath one road and large open mine voids less than 60 feet beneath the ditch of another road. Approximately 4,500 cubic yards of cementitious grout were pumped to stabilize underground mine voids at the Halleck Mine Site. This successful project was a collaborative effort between the North Dakota AML Division and many interested shareholders.

North Dakota Public Service Commission Abandoned Mine Lands Program

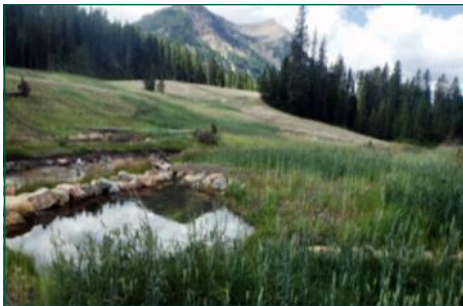


Borehole camera image showing failing timbers and partial collapse of the entry tunnel on the south side of the east-west road.

NAAML P Hardrock Abandoned Mine Land Reclamation Award

Remediation of Contamination Impacting the Environment or Human Health Award - Montana

The McLaren Gold Mines Company operated a flotation mill near Cooke City, MT processing gold and copper ores from the 1930s to the 1950s. Mill tailings were placed in an impoundment which filled the channel and floodplain of Soda Butte Creek. Soda Butte Creek enters Yellowstone National Park approximately five miles downstream of the project site and flows into the Lamar River. The tailings impoundment was saturated with contaminated water, and the stability of the dam was uncertain. Following the 1988 Yellowstone fires, the site was designated an Emergency Response Action Site by the Environmental Protection Agency resulting in work to divert water and stabilize the dam.



Site reclamation required excavating tailings to depths of 35 feet below ground surface and 20 feet below the water table in the impoundment. The project spanned five years and included installation of seventeen groundwater pumping wells, operation of water treatment system, excavation of one-half million tons of tailings, and return of two streams to their approximate pre-mining locations. Quicklime was mixed with the tailings to dry the materials for the construction a stable repository. The project overcame difficult conditions including alpine weather at 7,600 feet, extensive snowpack and rapid spring run-off, and abundant wildlife including grizzly bears. Over 100 million gallons of contaminated water were treated. The McLaren Tailings

Reclamation project was completed in 2014 and received a National Recognition Award from American Council of Engineering Companies. Water quality improvements documented by the National Park Service have facilitated current work to restore Yellowstone Cutthroat trout to Soda Butte Creek.

Remediation of Physical Safety Hazards Award - Utah

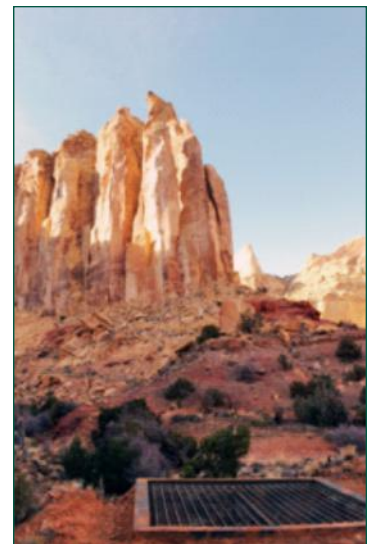
The San Rafael Swell in central Utah is an 800-square-mile geologic feature noted for its deep canyons, plunging hogback spines, high cliffs, badlands topography, and panoramic views. Following World War II, the demand for uranium ignited a twenty year prospecting and mining frenzy there. But booms go bust and hundreds of mines were abandoned when the uranium market soured. Today the San Rafael Swell is a popular recreational destination for thousands of four-wheelers, hikers, climbers, equestrians, and desert rats of all stripes who find adventure on old mining roads and danger at the mines.

The Utah Abandoned Mine Reclamation Program, working in conjunction with the U.S. Office of Surface Mining and the U.S. Bureau of Land Management, recognized the dangers and in 2013-2015 sealed 172 hazardous mine openings with walls, gates, grates, and backfills.

The logistical challenges for this sprawling project in rugged, steep terrain spanning 40 miles were considerable. Many mines were high in cliff faces with no roads. Wilderness, bighorn sheep lambing, and radiation added their own complications. The contractor enlisted helicopters, ATVs,



pack horses, human feet, and a great deal of ingenuity to get supplies and labor where they needed to be. Aerial tramways were rigged to ferry materials to inaccessible mine portals. By being creative, destructive roadbuilding was avoided and disturbance was minimized in the sensitive desert environment.



With the completion of the San Rafael Swell Project, the Utah Abandoned Mine Reclamation Program has safeguarded all of the known uranium mine openings in the San Rafael Swell, protecting public health and safety in an area that, though having no resident population itself, sees extensive and increasing recreational traffic. The safeguarding has been done in a way that also protects cultural and environmental values.



Winter Business Meeting, February 14 - 16 2017 THE GOLDEN HOTEL | GOLDEN, COLORADO

Golden, Colorado, founded in June of 1859 during the golden rush, is nestled within the Foothills of the majestic Rocky Mountains. Location of the Territorial Capital from 1862-1867, Golden is well known for the “Howdy Folks Welcome to Golden” arch that spans across Washington Avenue as well as being home to the Coors Brewery and the Colorado School of Mines.

BOOK ROOMS AT THEGOLDENHOTEL.COM | 800.233.7214

Mention “NAAML 2017 Winter Business Meeting” for group rate of \$112/night. Cancellation Policy - 72 hour notice.



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www.thegoldenhotel.com



GETTING THERE:

Golden can be accessed by car, trail or rail. There are five major highways (I-70, Hwy 6, Hwy 58, Hwy 93 and C-470) that lead to Golden. No matter if you are coming from the East, West, North or South, Golden is conveniently located at the foothills of the Rockies just 20 minutes from downtown Denver.

RTD Rail system

Denver International Airport



NEWSLETTER ARTICLE SPECIFICATIONS

Articles subject to editing. Submit an article by e-mail. Include author’s name, title of article, captions for photos. Submit photos in TIF (preferred) or JPG format, and original photo size. E-mail photos as individual files, not embedded.

Deadline for Spring Edition is April 15, 2017.

Email articles to **Bob Scott** (bobf.scott@ky.gov) or mail articles to: Bob Scott, Director
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