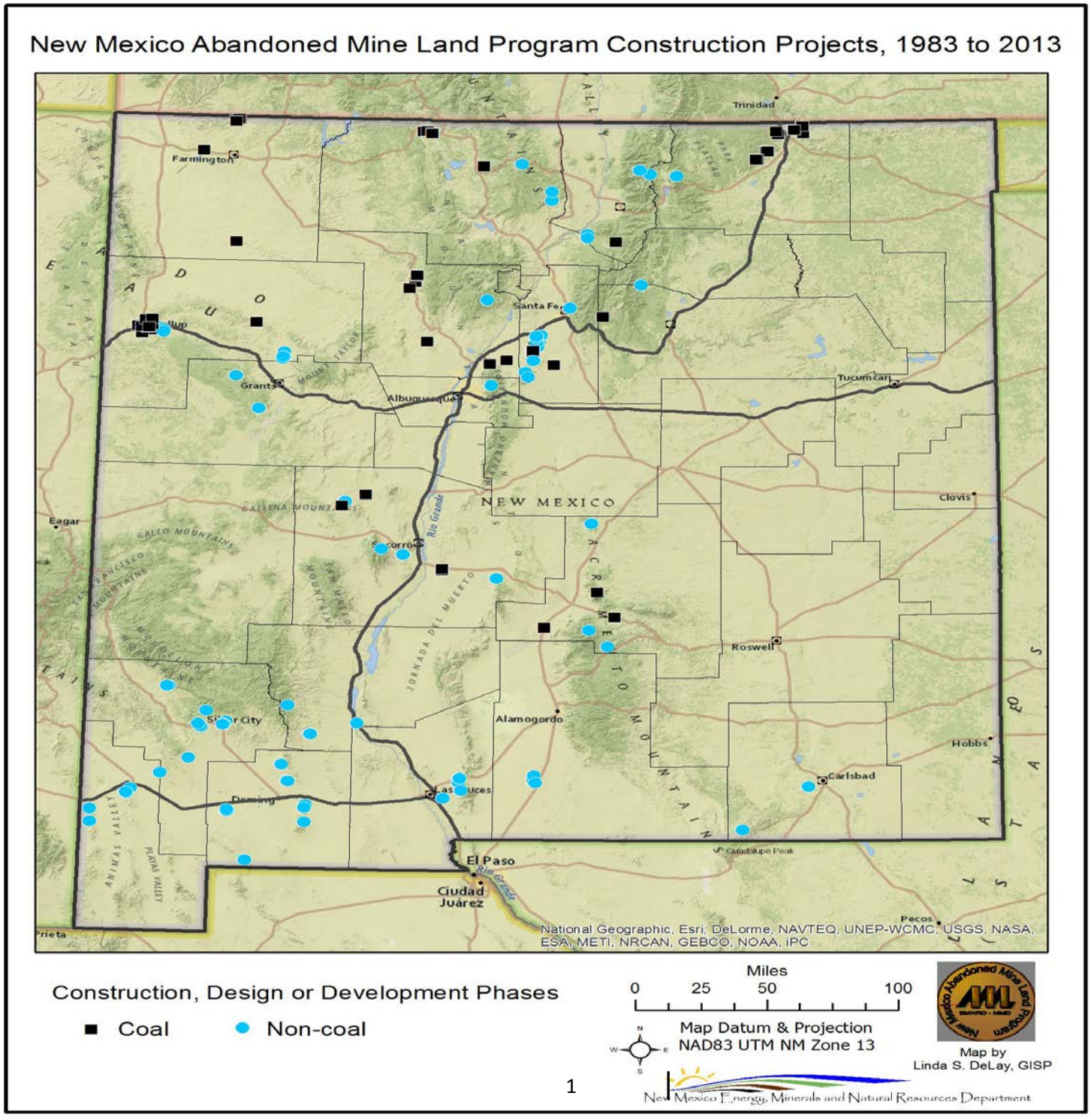
DEPARTMENT OF INTERIOR/OFFICE OF SURFACE MINING

NEW MEXICO ABANDONED MINE LAND ANNUAL EVALUATION REPORT 2013



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Executive Summary

This report has been created by the Office of Surface Mining, Program Support Division, to provide a summary of New Mexico's Abandoned Mine Reclamation Program (NMAMLP). This report covers highlights New Mexico's program administration, noteworthy accomplishments for the past year, technical assistance/training provided by OSM, and the public participation/outreach NMAMLP conducted and e-AMLIS entries for this evaluation year.

Assessing the success of NMAMLP's work for evaluation year 2013, a combination of office visits and field visits were used as methods to gain insight of how things are done and the success. Reclamation was done under four different grants. There were four projects under construction this year, six in design, nine in project development and 27 being evaluated to initiate.

The largest geomorphic reclamation project in New Mexico was finished this year. Vermejo Park Ranch has many reclamation sites; two were done in conjunction, Swastika Mine and Dutchman Canyon. This geomorphic land form constructed accommodated 200,000 cubic yards of coal waste, 3,050 ft section of stream channel, utility poles, preserved over 200 archaeological features, and was built for a 100-year precipitation event.

New Mexico actively uses TIPS equipment to enhance their research for wildlife using sonogram and video surveillance enhancing their research findings. The Townsend's Big-eared Bat, a species of concern, is part of the study involving maternity colonies, bat counts, and behavioral observations at the abandoned mine land sites.

Education and outreach events included hosting the Southwestern Abandoned Mine Land Partnership Meeting, community meetings, tours and field trips. Among the efforts were 17 classroom and field trip activities for five area schools, a homeschooling cooperative and a science camp to take part first-hand in environmental stewardship. By taking part in pre and post reclamation effects on water quality there was a 45% increase in understanding the fundamentals of the subjects.

New Mexico continues to be efficient and effective in reclamation throughout the state.

I. General

Introduction

This annual evaluation report is produced by the Office of Surface Mining Reclamation and Enforcement (OSM) in fulfillment of its statutory responsibility under the Surface Mining Control and Reclamation Act of 1977 (SMCRA).

The OSM Western Region's (WR) awards abandoned mine land (AML) grants with moneys from the Abandoned Mine Reclamation Fund and the general Treasury to pay for administration and abandoned mine reclamation costs to the New Mexico abandoned mine land program (NMAMLP). OSM evaluates State and Tribe AML programs through oversight, annually

monitor the AML Program's expenditures, performance and accomplishments.

The purpose of this report is to assess the effectiveness and report on the accomplishments of the New Mexico Mining and Minerals Division, Abandoned Mine Lands Reclamation Program. The annual report consists of OSM's oversight findings based on field inspections, data provided by NMAMLP, and meetings with the NMAMLP during the 12-month evaluation period beginning July 1, 2012 and ending June 30, 2013 (EY-2013). It also documents the activities and accomplishments of the NMAMLP during this period.

New Mexico's coal resource underlies approximately one-fifth of the state's surface (over 15 million acres) and totals over 40.6 billion short tons of coal. A significant amount of pre-law (before August 1977) mining has occurred within the State, leaving numerous high priority hazards within the New Mexico abandoned mine inventory. The state of New Mexico has numerous physical hazards associated with past mining activities. These hazards exist in the form of mine equipment and structures, portals, and vertical shafts left unreclaimed because of unregulated non-coal mineral mining and coal mining. Although most of the more significant physical hazards in the State are attributable to non-coal mining, Title IV of SMCRA was written to give priority nationwide to addressing hazards associated with abandoned coal mines.

Since the NMAML Program was approved in June 17, 1981 it has been working to reclaim and safeguard both its high priority coal and non-coal inventory. Although it may take years before the State can certify that of all of its high priority coal reclamation is completed, the majority of its high priority coal inventory, tracked by the AMLIS database, has been addressed.

The State's inventory of unreclaimed mines is substantial and total estimated reclamation cost of reclaiming all known mine related hazards exceeds the amount of AML funds currently available and projected to be available to New Mexico. New Mexico estimates that there are over 15,000 abandoned coal and non-coal mine features within the State that remain to be addressed. New Mexico's estimate of the total cost needed to address all currently know coal priorities is well over $25.9M .

In December 2006, SMCRA was revised to place even greater emphasis on addressing mine hazards associated with abandoned coal mines versus non-coal mines. It is authorized through SMCRA to use of certain types of AML funds for non-coal reclamation as well. Program Accomplishments to Date:
The NMAML Program was approved in June, 1981. As of June 2013, NMAML has been in operation for 32 years. In that time it has completed over 181 AML reclamation projects and has closed or safeguarded approximately 3,500 hazardous mine features. Based on the cost estimates reflected in OSM's AMLIS database as of August 2013, since the NMAML Program was created it has expended over $23,000,000.00 on reclamation and safeguard construction costs, to address high priority-1 and -2 coal and non-coal hazards within the State (see Table-2). Although many serious hazards still exist, certainly lives have been saved and injuries prevented because of this work. New Mexico's Energy Minerals and Natural Resources Department has an excellent web site that provides current information on the Department, including the New Mexico AML Program. The site can be accessed at:
http://www.emnrd.state.nm.us/MMD/AML/AMLmain.htm

ACCRONYMS

AML	Abandoned Mine Lands
AMLIS	Abandoned Mine Land Inventory System
BLM	Bureau of Land Management
EA	Environmental Assessment
FAM	Federal Assistance Manuel
FLIR	Looking Infrared Radiometer
FONSI	Finding of No Significant Impact
FTE	Full time equivalent
GIS	Geographic Information System
GPRA	Government Performance and Results Act
GPS	Global Positioning System
MOA	Memo of Authority
NEPA	National Environmental Protection Act
NMAMLP	New Mexico Abandoned Mine Land Program
NOV	Notice of Violation
OSM	Office of Surface Mining Reclamation and Enforcement
PA	Programmatic Agreement
ROE	Right of Entry
SHPO	State Historical Preservation Officer
SMCRA	Surface Mining Control and Reclamation Act
TIPS	Technology Innovation and Professional Services
USFS	United States Forest Service
WR	Western Region
XRF	X-ray Florescence
NEPA	National Environmental Policy Act
PUF	Polyurethane Foam

Program Administration

Program Staffing:

The NMAMLP is part of the New Mexico Mining and Minerals Division, New Mexico Energy, Minerals and Natural Resources Department. The Program is under the direction of Mr. John Kretzmann, Program Manager and consists of ten (10) full-time employees plus the equivalent of two and a half (2.5) additional support staff employee within the Mining and Minerals Division. Five (5) of these positions are partially funded (cost share) by other programs within the Mining and Minerals Division.

Grants and Financial Information:

Of the grants awarded to NMAML, the following grants remained active during EY-2013

Grant Number	Grant Period	Amount
S09AP15297	07/01/09 to 06/30/12	$4,759,634
S10AB20005	07/01/10 to 06/30/15	$4,258,725
S11AF20023	07/01/11 to 06/30/14	$4,880,409
S12AF20009	07/01/12 to 06/30/15	$6,733,888

OSM monitors all grants through to close-out. NMAML is diligent about keeping OSM informed of grant expenditures and submitting its grant reports.
Sequestration has reduced the grant money by five percent overall however, that has not been the biggest administrative challenge. That impact is not expected to be felt until three or four years. The reduction is grant funding expected after the seven-year payback of prior unappropriated state share balance ends in a couple of years is expected to be a greater challenge for the NMAMLP. It is expected this will decrease the grants by almost 50% beginning in fiscal year 2016. This reduction will require revised approaches to AML staffing, processional services contracting versus staff members doing required, time-sensitive activities to accomplish project completion. The number and size of projects that will be approved for work will also be affected.

The biggest administrative challenges has been to reorganize in order to move forward new projects on other projects temporarily put on hold due to the significant staff time and efforts required to manage and administer the projects in Vermejo Ranch (Swastika Mine and Dutchman Canyon Reclamation Projects), by far the largest project ever take on by the program. The staff has been able to get two significant projects into construction and a few more underway regardless of their challenges.

There is a good ongoing professional relationship between OSM and the State's grants and financial personnel. New Mexico has successfully followed all provisions under the Federal Assistance Manual (FAM) as required.

II Noteworthy Accomplishments

A. Overall Performance

The NMAMLP performs both administration and project work. The administrative work includes program administration, grant applications, personnel management, outreach, project ranking, and the AMLIS database updates.
Project portions of the work include but are not limited to:

Project Phase	Included Work
Project Initiation	Site reconnaissance, initial contact, assessment, definition of project scope, boundaries and areas of potential impact
Project Development	Mapping, determining surface and mineral claims, gaining consent to entry, archaeological and wildlife, surveys, research, public meetings, interagency coordination, document submittals and reviews, FONSI, contract management
Design	Engineering reconnaissance, engineering and construction drawings, specifications
Construction	Bid advertisement, bid evaluation, construction contract and inspection, finial inspection, post-completion monitoring

AML Project Status as of June 30, 2013

Project Name	Status
Construction	
Bradley Group Mine Safeguard - Phase I (non-coal); Luna County	Construction underway by Duran Bokich Enterprises
Cleveland Mine Safeguard (non-coal); Grant County	Advertised for bid with bid opening on April 19
Orogrande Mine District Maintenance Project (non-coal; Otero County	Small construction project to repair vandalized hatch at shaft closure; Bids received March 14
Oscura Maintenance (coal); Lincoln County	Small construction project to construct culvert with bat gate in open adit; Bids received March 14
Sugarite Gob Reclamation – Phase VIII (coal); Colfax County	Advertised for bid with bid opening on April 12
Design	
Boston Hill Phase II (non-coal); Grant County	Dekker/Perich/ Sabatini continuing work on community information and planning phase of work; Needs archaeological study (perhaps only limited survey and synthesis depending on
Dandee Coal Mine Safeguard (coal); Rio Arriba County	Design substantially complete; Additional archaeological study planned after additional mine openings were discovered; Needs
Madrid Low Impact Stormwater Study, Design, Construction and Monitoring Services (coal); Santa Fe County	Rangeland Hands complete with preliminary design phase and starting design phase; Beginning work on realty, with work planned for archaeological survey, EA, tribal consultation, design review and approval, and
Poison Canyon Uranium Safeguard (non-coal); McKinley County	Golder Associates completed design; Needs finalization of archaeological report, EA, agency consultations and FONSI
San Pedro Mine Safeguard - Phase I (non-coal); Santa Fe County	Archaeological and bat surveys complete; Design complete; Needs BLM, SHPO review, EA, and FONSI
Spencer Uranium Mine (non-coal); McKinley County	BLM funding for construction; Design started; BLM providing archaeological survey and EA; Tribal consultation by Farmington
Project Development	
Bingham Mine Safeguard (non-coal); Socorro County	Archaeological surveys complete and consultations in process; Realty complete; Needs EA, design, and FONSI
Bradley Group Mine Safeguard - Phase II (non-coal); Luna County	Project awaiting engineering reconnaissance; FONSI received; Needs updated EA and resolution of visual resource

AML Project Status as of June 30, 2013

(cont.)	guidelines and wilderness study area status
Cerrillos Central/Bonanza Creek – Phase II (non-coal); Santa Fe County	Bat survey complete; Archaeological survey complete; FONSI approved: Needs realty updated for certain features
Cookes Peak Mine Safeguard (non-coal); Luna County	Archaeological field work complete and report under preparation; Bat surveys underway; Coordinating with BLM and State Land Office; Needs EA
Gage Mine Safeguard Project – Phase II (non-coal); Luna County	Mapping complete; Needs archaeological survey and EA
Kingston Mine Safeguard (non-coal); Sierra County	Reconnaissance and realty underway; Mapping completed; Needs archaeological survey and EA
Madrid Anthracite Mines (coal); Santa Fe County	Archaeological report completed; SHPO clearance for mine openings, not for gob piles
Orogrande Mine Safeguard – Phase III (non-coal); Otero County	Mapping completed; Needs archaeological survey and EA
Zuni 27 USFS Mine(non-coal); Cibola County	Archaeological letter report has been cleared by SHPO; USFS preparing environmental assessment; Needs FONSI
Project Initiation	
Biava Mine Fire and Gob Reclamation (coal); McKinley County	Beginning to define project areas to extinguish a coal seam fire in Gallup and reclaim nearby gob piles
Bonito Lake Maintenance (non-coal); Lincoln County	Repair of breached closures needed
Burro Peak Mine Safeguard (non-coal); Grant County	Includes radium/uranium mines in populated area south of Silver City; Reconnaissance complete
Caballo Mountains (non-coal); Sierra County	Preliminary reconnaissance
Carrizalillo Hills (non-coal); Luna County	In-house reconnaissance (BLM is working on reconnaissance in other areas for possible border area projects)
Dawson Reclamation (coal); Colfax County	Determining land ownership
Diamond No. 2 Uranium Mine Maintenance (non-coal); McKinley County	Needs realty, archaeology and EA
Eagle Nest (non-coal); Colfax County	Preliminary reconnaissance
Gallup Chiaramonte Mine (coal); McKinley County	Environment Department issued NOV to City of Gallup for unpermitted discharge to groundwater; Project currently stalled; AML to design and fund construction of closure of the existing drop inlet into the mine when issue resolved

AML Project Status as of June 30, 2013

Gallup Area Project (coal); McKinley County	Beginning to research and reconnoiter high-priority coal projects in the Gallup Coal Field for future work
Hachita Mine Safeguard (non-coal); Grant County	Preliminary reconnaissance
Hatch Mine Safeguard (non-coal); Dona Ana County	Preliminary reconnaissance
Hogan Mine (non-coal); McKinley County	Preliminary reconnaissance; Archaeological survey this spring
Jones Mine Fire (coal); San Juan County	Monitoring fire for possible extinguishment project
Kingston/Tierra Blanca (non-coal); Sierra County	Preliminary reconnaissance; USFS
La Petaca Mine Safeguard – Phase II (non-coal); Rio Arriba County	Preliminary reconnaissance
Lemitar Mine Safeguard (non-coal); Socorro County	Preliminary reconnaissance at mine where man was injured in fall and nearby openings; BLM may safeguard this project area
Lone Mountain Ranch Mine Safeguard (non-coal); Santa Fe County	Preliminary reconnaissance; working on ROE
Magdalena/Waldo and Kelly Mines (non-coal); Socorro County	Preliminary reconnaissance
Mesa Top Mine (non-coal); McKinley County	Preliminary reconnaissance; BLM funding for construction; BLM providing archaeological survey; AML providing EA; Additional archaeological survey needed for Beacon Hill Gossett Mine
Mogollon Safeguard (non-coal); Catron County	Preliminary reconnaissance
Monero Coal Mines Maintenance (coal); Rio Arriba County	Reconnaissance on 1980s project; Needs archaeological survey
Rinconada Coal Mine Project (coal); Rio Arriba County	Preliminary reconnaissance
Ruidoso Silver Plume Mine Safeguard (non-coal); Otero County	Preliminary reconnaissance on US Forest Service land; Working with USFS
Vermejo Park Ranch Coal Reclamation Engineering (coal); Colfax County	Plan to issue RFP for design and construction administration for future phases of construction in Dillon Canyon and at Koehler Mine; MOA or PA with SHPO and archaeological survey and testing required for any future work
Yankee Canyon Gob Reclamation (coal); Colfax County	ROE issues, on hold
Zuni Mountains Mine Safeguard (non-coal); Cibola County	Reconnaissance; USFS funds may become available

AML Project Status as of June 30, 2013

Professional Services Agreements	
As-needed Environmental and Archaeological Services (coal and non-coal); Statewide	Parametrix working on report for the Swastika/Dutchman project; Marron beginning archeological survey in Madrid
As-needed Cultural Resources Compliance Services (coal and non-coal); Statewide	Proposals received February 15; Contract negotiations underway with three firms
As-needed Environmental Compliance Services(coal and non-coal); Statewide	Proposals received March 21 under review
Boston Hill Phase II (non-coal); Grant County	Dekker/Perich/ Sabatini continuing work on community information and planning phase
Construction Phase Engineering Services for the Swastika Mine/Dutchman Canyon Project (coal); Colfax County	Water and Earth Technologies substantially complete; Providing services for winter pole plantings
Educational Services for Swastika/Dutchman (coal)	River Source continuing work
Madrid Low Impact Stormwater Study, Design, Construction and Monitoring Services (coal); Santa Fe County	Rangeland Hands complete with preliminary design phase and starting design phase
On-call Engineering Services contracts (coal and non-coal); Statewide	Kleinfelder is evaluating geo-hazards at the Legal Tender Mine in the Boston Hill project
Photogrammetric Engineering Services (coal and non-coal); Statewide	T.R. Mann and Wilson & Co. photogrammetry and mapping services

III Utilization of OSM Technological Assistance

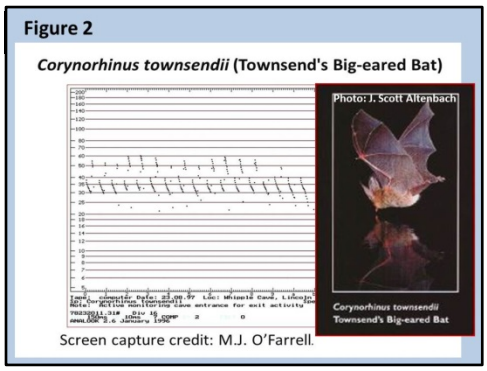
Program staff members have completed a variety of classes that the Technology Innovation and Professional Services (TIPS) offered this year in their respective areas such as: Galena Slope Stability Analysis, ARCGIS Spatial Analyst: For Mining and Reclamation; Introduction to GIS for Mining and Reclamation I.

In addition, TIPS deployed the Forward Looking Infrared Radiometer (FLIR) 660 Infrared Camera to NMAMLP to conduct bat counts in mine shafts on reclaimed AML sites. The X-ray Florescence (XRF) machine was deployed as well to evaluate soil contamination. The X-ray fluorescence (XRF) spectrometer is an x-ray instrument used for routine, relatively non-destructive chemical analyses of rocks, minerals, sediments and fluids. It works on wavelength-dispersive spectroscopic principles that are similar to an electron microprobe. New Mexico had a representative on the Geomorphic Reclamation Workshop planning committee, the in-situ working group and monthly Western Region Technical Training conference calls.
The TIPS Remote Sensing team ordered and processed satellite imagery for several mine sites in New Mexico. This imagery will be used by the State of New Mexico Energy, Minerals and Natural Resources Department and the WR-OSMRE Program Support Division.
The NMAMLP submitted two "Success Stories" to TIPS based on their recent usage of TIPS software. One is the "*New Mexico Coal Mine Reclamation and Reclamation and Abandoned Mine Land Programs, Mining and Minerals Division, Apply Updated GPS Units to Project Workflows"* and the other is "*Bat Habitat Use In New Mexico Abandoned Mines: Using GIS To Plan Monitoring*." Both stories can be found on the TIPS website: http://www.tips.osmre.gov/newsroom/success_stories.shtml.

TIPS and NMAMLP continue to work together with a goal of learning more about the behavior of bats throughout New Mexico by focusing the study area on abandoned mine sites. Although abandoned mines can be a safety threat to people, they also offer vital wildlife habitat for bats, in particular, and, principally, the guild of species that rely on subterranean habitat. The abandoned mines provide valuable living environments for bat species that use the underground tunnels and caverns as roosts (maternity, hibernation, bachelor, rest /migration), swarming sites (mating sites), and food and water sites. Townsend's Big-eared Bat (*Corynorhinus townsendii*) is one species of concern throughout the U.S. and is known to commonly inhabit abandoned mines. The NMAMLP is conscious of the bat's importance and, as a result, constructs a variety of bat-compatible closures on mine features which exhibit signs consistent with bat use. In addition to other studies, the Program conducts internal surveys to determine the bat's presence. The closures are designed to keep people out while allowing bats and other wildlife continual access. Monitoring bat statistics over time at abandoned mine sites will aid with population trend data gathering, this also helps with bat conservation efforts. Observations will provide evidence of how bats respond to bat-closures and may assist in guiding improvements for future designs. NMAMLP's monitoring data is also a beneficial way to track the potential western spread of the

fungal infection, associated with the White-nose Syndrome that has already caused significant bat mortality in the Eastern U.S.

NMAMLP began its first season establishing a bat roost monitoring project in May 2013, with the season continuing through September 2013. The project tracks changes in numbers and species composition of bats that are known using or have used abandoned mines. Maternity colonies are the focus of subsequent monitoring. The observations are scheduled at a time before pups are born (usually late May-June). The focal point of the upcoming external bat surveys are sites already equipped with bat-compatible structures or sites that are scheduled to have –the structures in place. Surveys involve bat counts, behavioral observations, acoustics recordings, and it is also an opportunity to supplement the internal evaluations of bat use of abandoned mines, typically performed by the AML Environmental Coordinators and consultants, before bat-compatible structures are constructed.



OSM-WR and TIPS responded to NMAMLP request for equipment in order to begin the pilot project. An Anabat SD2 CF Bat Acoustic Detector (Figure 1) was provided to NMAMLP. The echolocation bats use to locate prey and other objects at ultrasonic frequencies is usually above what humans can hear. The Anabat SD2 CF Bat Acoustic Detector translates the calls to frequencies humans can hear. -Sonograms of the recordings were used to list probable bat guilds and species that may have been using the environment or coming out of the mine openings during the surveys. Figure 2 is an example of a sonogram of a Townsend's Big-eared bat.

The Program used a video camera capable of recording bat behaviors and appearances at the mine sites during dusk and into the hours of darkness for NMAMLP's surveys. TIPS loaned out a FLIR 660 video camera for the NMAMLP to use during the period of May through October. The video shows the images using the far infrared wavelengths to sense thermal radiation emitted from objects, which allows the objects to be seen in the dark. Figure 3 depicts a recording session from the FLIR Camera and Anabat Detector at a culvert-bat gate closure.

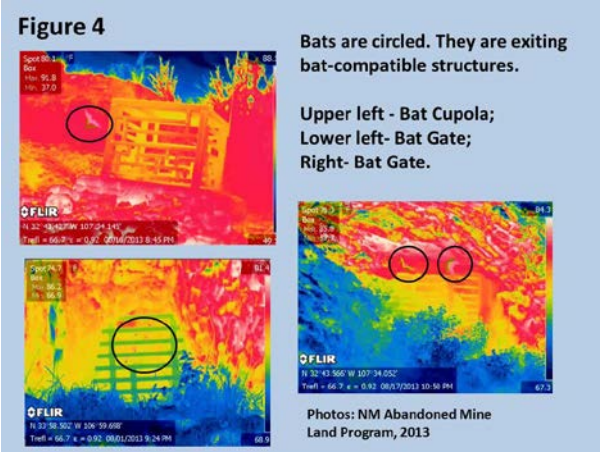


Figure 4 shows three separate bat-compatible closures in video snapshots taken by the FLIR camera. Looking forward, NMAMLP's goals involve implementing a geodatabase design to organize links and monitoring data to related sonogram files and videos that will enhance research findings and summaries. Videos are an effective means to analyze, document bat behavior, and share information effectively. To help accomplish these goals, TIPS has provided the Program access to Camtasia Studio 8 screen recording and video editing software. NMAMLP plans to actively continue monitoring efforts during succeeding years.

IV Public Participation and Outreach

New Mexico hosted the Southwest Abandoned Mine Land Partnership Meeting August 6-9, 2012 in downtown Santa Fe. There were more than fifty participants from the Western Region, including representatives from the Colorado, Utah, Navajo Nation, Hopi, Nevada, New Mexico and Arizona State AML Programs, and Federal agencies such as the Bureau of Land Management, OSMRE/VISTA (Volunteers in Service to America), and contractors used for AML projects. There was a wide range of disciplines in attendance as well, to include: Soil Scientists, Natural Resource Specialist, Biologists, Civil Engineers, Geologists, Civil Engineers, and Project Engineers. The meeting offered an opportunity to address issues specific to AML programs, while examining broader topics and questions unique to the Southwest. The sharing of vital, inclusionary information pertaining to techniques and challenges AML programs face provides a broad-spectrum view to incoming participants and facilitates the sharing of inter-institutional knowledge.

Tours included AML sites in New Mexico such as Harding Pegmatite Mine near Dixon, NM, Vermejo Park Ranch in Raton, NM, Swastika Mine and Dutchman Canyon Reclamation Project, and Sugarite Canyon State Park. The visit to each site was substantial in understanding the challenges involved in each area. The Vermejo Park Ranch and Swastika Mine and Dutchman Canyon Reclamation Project are the largest geomorphic reclamation projects that the NMAMLP has undertaken. These areas were especially important for meeting participants to view because they are still under construction, and their large scale makes them the most educational to view.

Vermejo Park Ranch

In April of 2011 the NMAMLP contracted with River Source, Inc. to provide education and outreach services to rural communities throughout the Raton area. The program decided a contract of this nature would be beneficial to demonstrate the significance of abandoned mine

land reclamation to those most affected. During this time, the NMAMLP was in the design phase of the large-scale Swastika Mine Dutchman Canyon Reclamation Project (part of the Vermejo Park Ranch) ; construction was a year out, providing an ideal opportunity to connect the community with the project. The community, especially the youth, learned the importance of environmental stewardship with a first-hand account of participating in the monitoring of the pre and post reclamation effects on water quality.

Pre-Construction- (2011-2012)

Multiple resources and groups were invited to participate in the pre-construction phase of this project. River Source provided 17 distinct classroom and field trip activities to teachers and students from five area schools, the homeschooling cooperative of the Vermejo Park Ranch, and the Summer Ecology Science Camp from Las Vegas, NM. In addition to young students, adults from the local Master Gardeners Club also participated on a field trip.

Figure 1 Students get first-hand experience relocating wildlife for construction to proceed

River Source traveled to each school and shared the mission of the NMAMLP including: highlighting the major issues associated with the abandoned Swastika coal mine, the importance of wetland habitats and what ecological role they play, and how the NMAMLP planned to reclaim the valley using geomorphic techniques.

At the start of the education and outreach program, middle and high school students were tested on key issues regarding abandoned mines, watershed health, and land reclamation. These students were then tested again at the end of the program and River Source found a marked increase in the students' level of knowledge.

Figure 2 Taking water samples

River Source received tests from 51 students at 3 schools; they found a 45% increase in understanding of the fundamental subjects. Table 1 shows the results from the three schools two high schools and one middle school. The results from Springer High may reflect a lack of continuity in teachers and lack of administrative support for high school participate in the field classes.

School	Pre-test	Post-test
Raton MS	22%	70%
Springer HS	34%	62%
Cimarron HS	17%	76%

Table 1: pre/post test results 2011-2012

During each field visit, three stations were set-up to provide hands-on activities for participants. First, the history portion of the field class explained how people in the coal camps lived, the conditions in the mine, and the culture of the mining camps. Then the students cycled to the vegetation sampling lesson. Here the students were taught about the significance of vegetation in ecological restoration, helped identify species, and recorded vegetation data. Lastly, students collected water samples and measured various quality parameters in the field. They also learned how the reclamation and restoration efforts would help improve water quality for downstream water users.

The first year of the program was so successful that the NMAMLP decided to continue the education and outreach campaign for another year. Students would return at least once during construction and again the following spring to participate in hands-on restoration. The Cimarron High School used this program as a steppingstone, and made plans with Vermejo Park Ranch to video document the changes at the site over the life of the project; before, during and after reclamation.

During and Post Construction- (2012-2013)

River Source facilitated field visits or a classroom experience for 599 participants in the 2012-2013 programs. Since some people participated twice or more (classroom and field visits combined) it is estimated that approximately 325 people participated in the program directly.

Figure 3 Student planting vegetation

In the classroom, River Source taught the students about reclamation design. Students were given handouts detailing the reclamation process, the equipment that would be used, and the restoration methods. During construction the students were allowed to watch the heavy equipment at work, participated in a question answer session with the construction contractors and learned about endless career opportunities in the field of reclamation.

Construction finished in the fall of 2012. In the spring, the same students returned to the site to participate in cottonwood pole and willow stake planting. River Source led the re-vegetation work. In total, the students helped plant approximately 1,600 willows (two species – bluestem and coyote willow) and 15 cottonwood trees. River Source also created a web-page to share water quality data for the site at: http://watershedwiser.org/projects/nm-abandoned-mine-land-program

Madrid

The NMAMLP started work in Madrid soon after the Program began in 1981. The high priority public hazards were addressed first. This included open abandoned coal mine shafts and adits. In the 1980s, AML projects focused on specific projects on one to three private properties. Coordination with the community was fairly easy, since consents-to-entry needed was from a few individuals for each project.

Once many high priority public hazards were dealt with the coal mine waste gob plies in town were addressed. The gob piles are meagerly vegetated and there is an abundance of sediment and runoff during storms. Businesses and homes are increasingly experiencing run-off flooding and sedimentation problems. For years the community was against reclamation work due to concern of the historic look vanishing. After years of public outreach and informational meetings Madrid is now a community of shop owners and individuals who are now growing in support of AML projects to help protect the public from adverse mining remains and retain the unique ambiance of the historic area.

A community-wide planning process, completed in 2011, identified two projects that met the acceptability and funding limitations criteria: improvement of storm drainage improvements on the east side of Madrid where most of the gob piles are located, with a strong emphasis on storm water harvesting, and improvements to the degraded Madrid Gulch by restoring meanders removed during Madrid's mining era. These projects have broad much needed community support. Town residents traveled to a Santa Fe County Commission meeting to speak in strong support of the AML Program projects in Madrid and community members have inquired several times in recent months on the status of the AML work in Madrid.

The AML Program is now moving into the design phase for the identified projects. In 2011 it completed an engineering study of storm water conditions in Madrid and of engineering alternatives for storm water management and Gulch restoration efforts. It also recently received proposals for low impact storm water design and construction services and is in the process of negotiating a contract for these services. The services necessarily include at least one public informational meeting on what is being proposed as well as coordinating with all key stakeholders and landowners. It will result in on-the-ground construction of water conveyance and water harvesting measures. In contrast to many of its projects, which are in remote areas of the state, the Madrid projects afford the AML Program a significant opportunity to advance the public good in ways that directly affect a population center impacted by past mining practices.

Boston Hill

A public meeting has been held in Silver City, NM regarding the Boston Hill project. As of the writing of this report, the project team has identified major stakeholders and has contacted them individually to introduce themselves. The team also made a presentation to the Town Council to familiarize the councilors with the project intent. The project has received some publicity from a local news and website forum. The projects initial publicity started out with little information and community members voiced some concerns; however, further discussions with the project team allayed their worries, and the general tone is now supportive.

Per the terms and conditions of this contract, the contractor must include user groups and community interests in the decision making process; design of the safeguarded features must be amenable to the community, because the Boston Hill area is a favored recreational landmark for residents.

V Results of Evaluation Year 2013 Reviews

Topic-Specific Reviews

OSM and NMAML have agreed that the oversight work plan by default and historically evaluated the following two topics or principles for annual review.

Principle 1: On-the-ground reclamation is achieved in a timely, cost-effective manner.
Principle 2: Progress in entering Program accomplishments into AMLIS.

The goal of these two principles is to document on-the-ground reclamation work accomplishments in terms of quality and quantity relative to NMAML's inventory of mine hazards.

PRINCIPLE NO. 1 On the Ground Reclamation

In evaluating Principle 1, NMAMLP inspected a sample of current AML reclamation sites, grants files, NEPA Documents, and contract specification documents. Representatives from the NMAMLP sponsored and led OSM on two site inspection tours for oversight purposes. This year OSM visited the following reclamation sites, as a sample of the projects reclaimed and being worked on during the evaluation period:

- Swastika Mine and Dutchman Canyon
- Sugarite Coal-gob
- Madrid
- Harding Pegmatite
- Dillon Canyon/Vermejo Park Ranch
- Cerrillos Central / Bonanza Creek Phase II
- Real de Dolores
- Carthridge
- San Pedro Mine Safeguard /Placer Field
- The Bradley Group Safeguard Project

Bradley Group Mine Safeguard

The Bradley Group Mine Safeguard project is ten miles southeast of Deming, New Mexico and is heavily visited by locals and tourists for recreation. There are trails and roads to most of the mine features allowing easy access for people. Law enforcement officials are aware of the dangers and welcome closure of these mine sites for public safety. Vandalism to the sites has varied

Figure 4 Culvert with Bat gate

from torching timbers at the bottom of one of the largest stopes to graffiti on and near adits. Phase 1 of Bradley Group Mine Safeguard Project includes 29 features. Many of the mine openings are currently used by bats and owls. There are many different methods used in this project to safeguard the public and mitigate disturbance to wildlife. Construction was started on February 23, 2013 by Duran Bokich Enterprises, LLC, located in Truth or Consequences, N.M. Currently, twenty-two of the features have been closed with the remaining seven features expected to be finished by the end of October 2013.

Completed	Type of closure
7	Shafts filled with mine waste
2	Bat gates
4	Culverts with bat gates
6	Bat cupolas
2	Mesh closures
1	Polyurethane foam plug

The adits received bat closures placed inside of a corrugated steel pipe culvert of varying sizes. Bat gates are all weathering steel, including the plates, plates for bolts, bolts and nuts and sharp corners and edges were rounded. Where applicable, the finish grade outside of the culvert has positive drainage away from the gate opening. Construction of a bat cupola with corrugated steel pipe riser and polyurethane foam plug was used at four shafts. The polyurethane foam was used to plug filled an additional mine opening. During construction, the dirt and loose rock was removed and polyurethane foam (PUF) was placed against clean, dry surfaces. The amount of rock, timber and other debris available to fall into the opening during construction was minimized. Two mine openings were covered with high-tensile steel mesh with openings big enough for bats and owls to pass but small enough to keep out small humans.

Figure 5 Mesh closure

Construction continues on seven remaining sites. There is a stope opening scheduled to be finished within the next few months. The stope will be cordoned with a steel picket fence. The weathering steel is set in solid rock and the pickets have a one-inch clearance from the ground surface. The weathering steel saves on average 10 percent initial cost savings from not needing paint and 30 percent life cycle cost savings. Two other site areas will be fenced in with barbed wire, three mesh closures and one bat gate in rock bulkhead. Survey markers were placed where appropriate.

Madrid

Madrid is an ongoing area of reclamation due to extensive gob piles. The high priority public hazards were addressed first. This included open abandoned coal mine shafts and adits. In the 1980s, AML projects focused on specific projects on one to three private properties. Coordination with the community was fairly easy, since consents-to-entry needed was from a few individuals for each project.

Once many high priority public hazards were dealt with the coal mine waste gob plies in town were addressed. The gob piles are meagerly vegetated and there is an abundance of sediment and runoff during storms. Businesses and homes are increasingly experiencing run-off flooding and sedimentation problems. For years the community was against reclamation work in fear of losing the historic look of a coal mining community. After years of consistent public outreach and informational meetings Madrid is now a community of shop owners and individuals who are now in support of AML projects to help protect the public from adverse mining remains and retain the unique ambiance of the historic area.

A community-wide planning process, completed in 2011, identified two projects that met the acceptability and funding limitations criteria: improvement of storm drainage improvements on the east side of Madrid where most of the gob piles are located, with a strong emphasis on storm water harvesting, and improvements to the degraded Madrid Gulch by restoring meanders removed during Madrid's mining era. These projects have broad much needed community support. Town residents traveled to a Santa Fe County Commission meeting to speak in strong support of the AML Program projects in Madrid and community members have inquired several times in recent months on the status of the AML work in Madrid.

The NMAMLP is now moving into the design phase for the identified projects. In 2011 it completed an engineering study of storm water conditions in Madrid and of engineering alternatives for storm water management and Gulch restoration efforts. It also recently received proposals for low impact storm water design and construction services and is in the process of negotiating a contract for these services. The services necessarily include at least one public informational meeting on what is being proposed as well as coordinating with all key stakeholders and landowners. It will result in on-the-ground construction of water conveyance and water harvesting measures. In contrast to many of its projects, which are in remote areas of the state, the Madrid projects afford the NMAMLP a significant opportunity to advance the public good in ways that directly affect a population center impacted by past mining practices.

Vermejo

West of Raton, NM, the Vermejo Park Ranch is over one million acres of privately owned land that was previously a heavily mined area. Now, it is flourishing wildlife including keynote species such as bears and mountain lions. Numerous coal mines and camps such as Swastick Mine and Dutchman Canyon (inside of Vermejo Park Ranch) were in production between the 1880s and 1920s. These mining operations left much to be reclaimed. The Vermejo Park Ranch reclamation project, which includes the Swastika Mine and Dillion Canyon Reclmation projects was a challenging reclamation effort, as well as the largest project the Program has undertaken. The final construction cost was over $4.4 million, and the staff on this project used new methods of procurement such as selection of a construction contractor on both qualifications and price and construction payments made on a time and materials basis.

The Swastika Mine and Dutchman Canyon Reclamation Project demonstrated some challenges and opportunities inherent in geomorphic landform and stream reclamation. The Swastika Mine and Dutchman Canyon abandoned mines are in close proximity and, as a result, they were reclaimed together. The challenges included archaeological features associated with the mine located on the hillside behind the coal gob piles, and realignment of the stream and road, that run parallel to the gob pile. The stream and road were relocated into the valley which allowed for the preservation of two existing power line right of ways, and scattered areas with established wetland vegetation and mature trees. The unique aspect of using a pond/wetland system to treat alkaline coal mine drainage was also part of the project.
Several areas of coal waste required reclamation to improve the treatment and conveyance of seepage from closed mine adits. The Swasticka mine camp was safeguarded during the process of stabilizing and reclaiming nearby gob piles and also during the realignment and restoration of the Dillon Canyon degraded stream channel. There was nearly 200,000 cu.yds of steep unstable gob piles adjacent to the canyon channel which was collapsing into the stream over a significant reach. Visible precipitate in the channel indicated chemicals leached from the pile by storm water. This project's geomorphic design restored functional drainage to the landscape, created stable landforms from the coal waste material that were revegetated, and now blends into the surrounding undisturbed topography.

The Swastika abandoned mine lies just below the confluence of Dillon Canyon and the stream channel through the project site conveys runoff from a tributary watershed more than 23 square miles. The project also included road and embankment improvements as well as a new spillway that directs outflow from the ponds to a passive treatment wetland area prior to entering the channel. This improved water quality and created a salt-tolerant wetland area. Natural stream meanders were created to balance erosion at the outside bands with formation of depositional features at the inside meanders. The redistribution of sediments prevents the channel from cutting too deep, thus allowing for the support of vegetation on the stream banks. The restored channel now has an improved stream function and habitat value. The design for this channel was based upon a 100-year -6 hour precipitation event.

Figure 6 and 7: Left is before reclamation; Right is after

Figures6,7: Picture to the right was taken before constructio n and below was taken after.

The Office of Archaeological Studies found 822 mining and domestic structures and over 29,000 artifacts, the geomorphic reclamation design required 183 features to be preserved and NMAMLP exceeded that by preserving over 200. The preserved features included shafts, adits, load-outs, coke ovens, waste piles, tram lines and coal processing plants, residence, privies, dugouts, cisterns and sheds.

The design incorporates stable drainage and topographic variety developed from nearby undisturbed features of the valley to mimic stable landforms and stream characteristics that have developed naturally. Every opportunity to use coal waste material was used above the estimated maximum groundwater level due to the significant volume on site, and at least one foot of clean fill was placed over it with appropriate amendments. The stabilization of rolling ridges on capped coal waste created an aesthetically pleasing area. In addition to the 200,000 cu./yds of coal waste, 3,050 ft section of the Dillon Canyon stream channel was restored.

Oscura

This feature is a portal located on BLM land and backfilled in 1990 that has subsided and reopened, therefore was a coal maintenance project. The project began on August 27 and completed on the same day. The portal was safeguarded with a steel gate in a culvert. The culvert was then secured with polyurethane foam and rock.

Orogrande I

The Orogrande I maintenance project consisted of installing a new bat gate after several previous vandalism incidents. The shaft was fixed by the claimant several times prior to NMAMLP replacing the gate. The most recent vandalism event was so sever replacement was the best option. In July, 2013 construction begin with the removal of the damaged bate gate, after removal, hinge holes were cut out to receive a 3 inch by 4 foot long steel pin and threaded thru the existing frame and the prefabricated gate, and locking bolts were installed. Although other features have been damaged in this problem area no other work was necessary at the time.

PRINCIPLE NO. 2 Program Accomplishments in eAMLIS

As part of the agreement with OSM, the State is required to update Problem Area Descriptions (PADs) in eAMLIS when OSM approves funding for a project and upon project completion. Projects continue to be entered into the system. not all projects checked have been updated due to changes in eAMLIS at this time due to lack of training however they are consistent with project files. NMAMLP is taking part in upcoming eAMLIS training as soon as it is available. There were 11 edits into the AMLIS database this year. There has been progress toward uploading maps and documents into new projects as projects mature.

VI. Tables

The following tables' present summary data pertinent to reclamation activities under the New Mexico Abandoned Mine Land Program. The reporting period for the data contained in the tables is the evaluation year. Not all tables are available at this time but are expected to be up to date shortly after eAMLIS training is completed.

Summary of Core Data to Characterize the New Mexico Abandoned Mine Lands Program

The following tables present summary data pertinent to reclamation activities under the New Mexico abandoned mine land program

Table 1 – (New Mexico) Status of AML Inventory all Priority 1, 2, and 3 Hazards on June 30, 2013

	High Priority		Elevated Priority 3	Stand-Alone Priority 3 (Not adjacent or in conjunction w/ P1&2)	Total
	Priority 1	Priority 2			
UNFUNDED					
GPRA Acres	6.4	320.41	N/A	1144.41	1471.22
Dollars	$556,375	$21,912,812	N/A	$12,425,449	$34,894,636
FUNDED					
GPRA Acres	18.4	35.5	27	32.3	113.2
Dollars	$2,085,500	$751,049	$675,000	$266,459	$3,778,008
COMPLETED					
GPRA Acres	221.65	1050.93	10	1166.17	2448.75
Dollars	$10,641,646	$9,202,673	$222,369	$4,129,027	$24,195,715

Table 2 - (New Mexico) Accomplishments in Eliminating Health and Safety Hazards Related to Past Mining Priority 1 and 2 Hazards (As of June 30, 2013)

	PROBLEM TYPE (keyword)																	
	Clogged Stream (CS) (miles)	Clogged Stream Lands (CSL) (acres)	Dangerous Pile or Embankment (DPE)(acres)	Dangerous Highwall (DH) (feet)	Dangerous Impoundment (DI) (count)	Dangerous Slide (DS) (acres)	Gases: Hazardous /Explosive (GHE) (count)	Hazardous Equip. /Facilities (HEF) (count)	Hazardous Water Body (HWB) (count)	Industrial/Residential Waste (IRW) (acres)	Portal (P) (count)	Polluted Water:Agri/Industrial (PWAI)(count)	Polluted Water: Human Consumption (PWHC)(count	Subsidence (S) (acres)	Surface Burning (SB) (acres)	Underground Mine Fire (UMF) (acres)	Vertical Opening (VO) (count)	TOTAL
UNRECLAIMED/REMAINING HAZARDS (Unfunded)																		
Units			0	1030			0	2		0	33	0		173.6	1	130	40	N/A
GPRA Acres			0	14.71			0	0.2		0	3.3	0		173.6	1	130	4	1272.58
Dollars			$0	$30,000			$0	$7,625		$0	$141,685	$0		$12,441,460	$5,000	$8,600,000	$1,243,417	$19,844,319
ANNUAL RECLAMATION - EY2013 only (Completed)																		
Units											3	0		868.5		18	1	N/A
GPRA Acres											0.3	0		868.5		18	0.1	886.9
Dollars											$99,303.63	$9,972.00		$1,703,008.81		$590,954.69	$83,923.57	$2,487,163
HISTORICAL RECLAMATION - EY1981 - 2013 (Completed)																		
Units	40.6	51922			1	1		10	554	4		100.75	30.2	240	307	40.6	51922	N/A
GPRA Acres	40.6	742.73			1	0.1		10	57.1	20		100.65	30.2	239.5	30.7	40.6	742.73	1272.58
Dollars	$461,432	$2,955,885			$690	$1		$83,488	$1,281,595	$74,215		$8,424,657	$1,104,260	$2,815,334	$2,642,762	$461,432	$2,955,885	$19,844,319

Table 3 - (New Mexico)
Accomplishments in Eliminating Environmental Problems
Related to Past Mining Priority 3 and SMCRA section 403(b) Hazards (As of June 30, 2013)

	PROBLEM TYPE (keyword)														
	Bench , Solid Bench, Fill Bench (BE) (acres)	Industrial/Residential Waste Dump (DP) (acres)	Equipment and Facilities (EF) (count)	Gob (GO) (acres)	Highwall (H) (feet)	Haul Road (HR) (acres)	Mine Opening (MO) (count)	Pit, Open Pit, Strip Pit (PI) (acres)	Spoil, Spoil Bank (SA) (acres)	Slurry (SL) (acres)	Slump (SP) (acres)	Water (WA) (gallons)	Other (specify)	Water Supplies (WS) – Section 403(b) (count)	TOTAL
UNRECLAIMED/REMAINING HAZARDS (Unfunded)															
0	9		2	131	0	8	15	0	39.5			3			N/A
0	9		0.2	131		8	1.5	0	39.5			0			189.2
0	$360,000		$20,000	$4,540,020		$320,000	$87,000	$0	$1,540,000			$50,000			$6,917,020
ANNUAL RECLAMATION - EY2013 only (Completed)															
0				45		2			0						N/A
0				45		2			0						47
0				$1,476,954		$66,500									$1,543,454
HISTORICAL RECLAMATION - EY1981 - 2013 (Completed)															
0	3	0	11	87.5	0	9	4	2	2			0	0		N/A
0	3	0	1.1	86	0	9	0.4	2	2			0	0		103.5
0	$7,301	$0	$13,634	$3,257,044	$0	$146,684	$7,140	$3,890	$2,301			$0	$0		$3,437,994

Table 4 – (New Mexico) – AML Program Grant Awards and Staffing (New Mexico) AML Program Grant Awards and Staffing (During EY 2013)

AML Program Costs	
Administration	$ 1083884.774
Construction	$2476057.32
Water Supply Construction	N/A
AMD Set-Aside	N/A
Contractual	$510796.07
Other: Travel, Equipment, Indirect Costs	$507508.66
Total AML Funding	$6733888.19
AML Program Staffing (full-time equivalents on June 30, 2013):	14