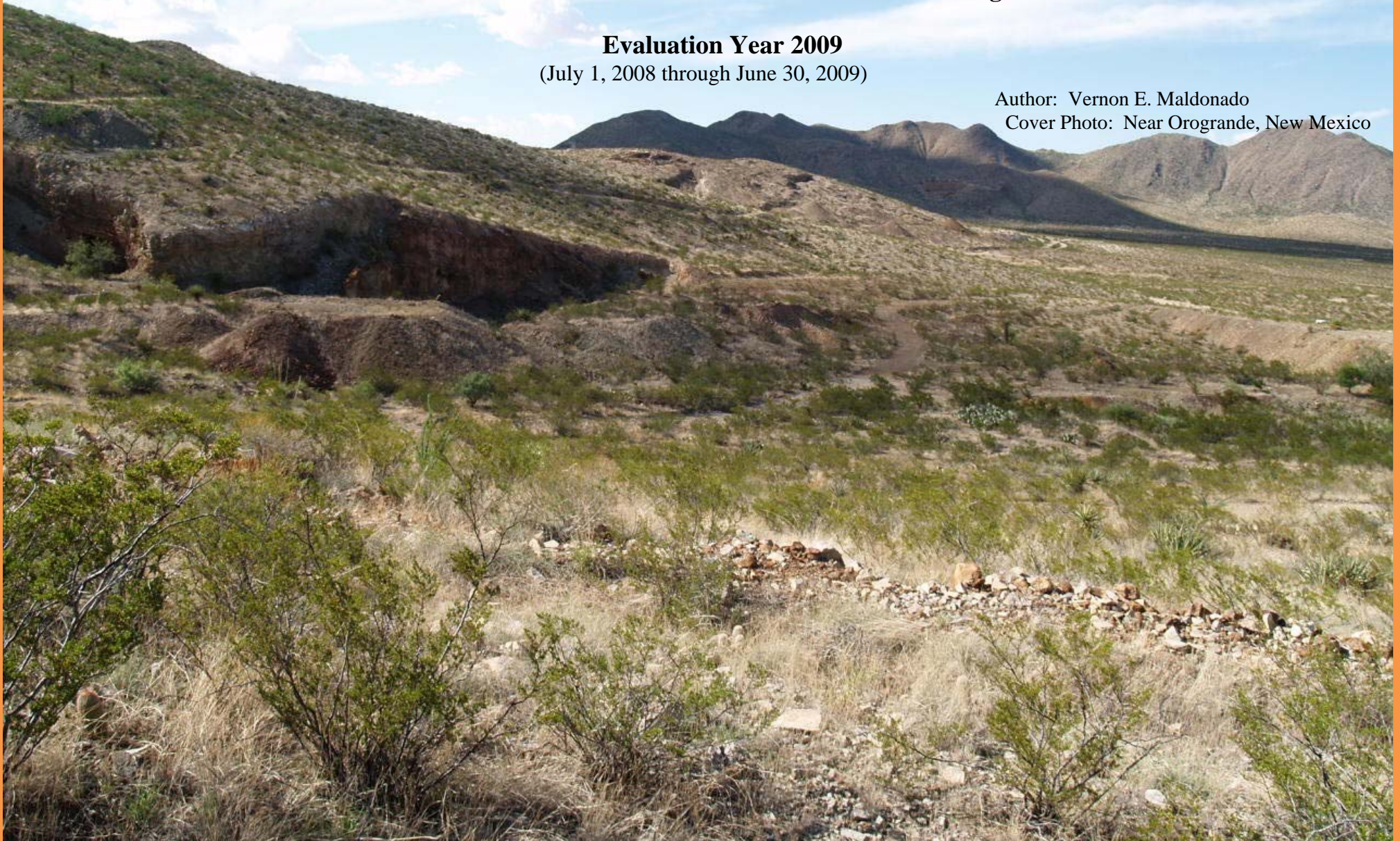


OFFICE OF SURFACE MINING  
Albuquerque Area Office

**Annual Evaluation Report  
for the  
New Mexico Abandoned Mine Land Reclamation Program**

**Evaluation Year 2009**  
(July 1, 2008 through June 30, 2009)

Author: Vernon E. Maldonado  
Cover Photo: Near Orogrande, New Mexico



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## **INTRODUCTION**

The Office of Surface Mining Reclamation and Enforcement (OSM) was founded by the passage of the Surface Mining Control and Reclamation Act (SMCRA) on May 2, 1977. Title IV of this law placed a fee on active coal mines of 35 cents per ton of surface mined coal and 15 cents per ton of underground mined coal. Monies collected are placed in a fund called the Abandoned Mine Reclamation Fund. This fund is used to reclaim coal mines abandoned prior to the enactment of SMCRA. Under certain conditions, abandoned non-coal mines and some post-SMCRA mines may also be reclaimed.

On behalf of the Secretary of the Department of the Interior, OSM administers the Abandoned Mine Reclamation Fund by awarding grants to States and Tribes, to cover the administration and reclamation costs of running their AML Programs. The OSM has responsibility under SMCRA for approving State and Tribal Abandoned Mine Land Programs, to carry out the goals of Title IV of SMCRA and annually evaluating the effectiveness and accomplishments of the AML Programs.

The OSM Western Regional Center's (WRC) Albuquerque Area Office (AAO) provides financial assistance to the New Mexico AML Program and, through oversight, annually monitors the AML Program's performance and accomplishments.

The primary goal of Abandoned Mine Land Programs is to mitigate the effects of past coal mining, by reclaiming abandoned coal and mineral mines. The primary emphasis is placed on correcting the most serious problems endangering public health, safety, general welfare, and property. Once this is accomplished, secondary emphasis is placed on priority 3 restoration of land and water resources and the environment previously degraded by past coal mining practices.

This annual evaluation report is produced by the Office of Surface Mining (OSM) in fulfillment of its statutory responsibility under the Surface Mining Control and Reclamation Act of 1977, (SMCRA). 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 (NMAML). The annual report consists of OSM's oversight findings based on field inspections, data provided by NMAML, and meetings with the NMAML Program during the 12-month evaluation period beginning July 1, 2008 and ending June 30, 2009 (EY-2009). It also documents the activities and accomplishments of the NMAML during this period.

SMCRA AML fee collections were due to expire on September 30, 2006. However, H.R. 6111 was approved by Congress on December 9, 2006, and signed into law as P.L. 109-432, effective December 20, 2006. P.L. 109-432 extends AML fee collection (at reduced rates) through FY-2021 (a 14-year extension of fee collections). In addition, it stipulates that OSM begin mandatory distribution of AML fees that have accumulated in the undistributed State or Tribal Share Balance. OSM published a Final Rule Federal Register notice on November 14, 2008, to amend the relevant parts of 30 CFR Parts 700 through end, to fully implement the 2006 SMCRA amendment.

For a complete history of the AML fee go to:

<http://cnie.org/NLE/CRSreports/06May/RL32993.pdf>

Besides the funding element, Title IV of SMCRA was substantively revised by the passage of the Tax Relief and Health Care Act of 2006. This Act amended SMCRA in a manner that makes important distinctions between AML programs which have certified that all their high priority coal inventory has been completed (Certified AML Programs) and programs which have not made such a certification (Uncertified AML Programs). These regulatory changes affect the funding mechanism(s), program priorities and the required level of OSM oversight. Under the amendment, an increased emphasis is placed on high priority coal reclamation for uncertified AML programs, while certified programs were given greater flexibility in how their funds are used. Despite the reduced fee collection rates, AML Programs now receive higher levels of funding than was received in the past, and there are more categories of funding each of which has unique restrictions on how funds can be used.

New Mexico AML has not certified the completion of its high priority coal hazards so it is considered by OSM to be an uncertified AML program. Whereas in the past NMAML had more flexibility to do non-coal reclamation within the State, under the SMCRA amendment, it is now more restricted in the amount of non-coal reclamation that it can fund. With the changes in the regulatory environment, NMAML has had to make some operational adjustments in both field work and in how it accounts for funds.

In past annual evaluation reports, OSM found the NMAML to be an excellent and well managed State Program. As a result of this year's oversight activities OSM again did not find any issues or concerns with the NMAML Program and therefore does not see fit to make recommendations for improvement.

This year's oversight activity involved the following State and Federal personnel:

NM-AML

John Kretzmann, Program Mgr./P.E.  
Randall Armijo, Environ. Coordinator  
Lloyd Moiola, Project Manager  
Mike Tompson, Civil Engineer, P.E.  
James Smith, Environmental Engineer  
Ray Rodarte, Reclamation Spec.  
Zoe Isaacson, Reclamation Spec.

OSM-AFO

Robert Postle, Albq. Area Office Mgr.  
Vernon Maldonado, AML Pgm. Spec.  
Dan Martinez, Grants Specialist

## **PART I. GENERAL INFORMATION**

The State of New Mexico contains a diversity of ecosystems ranging from high, steeply sloping mountainous areas to semiarid plains and arid desert. Vegetative communities and wildlife are equally diverse across the state. Average rainfall ranges from a high of approximately 20 inches per year to a low of about six inches depending on elevation. 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 mining has occurred within the State, leaving numerous high priority hazards within the New Mexico abandoned mine inventory.

Land ownership in New Mexico is approximately 34.1% Federal (BLM, USFS, NPS) and 11.6% State Trust Land for a total of 45.7% public lands (55,566 sq. mi.). The highest concentration of AML hazards occurs on much of this public land. Public land is increasingly being developed for open space public recreation such as camping, biking, hiking, campgrounds, etc. Population demographics and increased access to mining areas within the State are continually changing and this change is causing the State to readjust its priority / urgency for addressing several mining areas and associated mine hazards.

The state of New Mexico has a long and interesting mining history. The Cerrillos Mining District, just south of Santa Fe, New Mexico contains the remnants of some of the earliest mines in the country, including prehistoric turquoise mines that were worked by Native Americans as early as 700 A.D. and lead mines that were worked from 1200 to 1700 A.D. Spanish lead/silver mines operated in the area from 1581 to the early 1800s and gold/silver/copper mines were worked from 1879 into the mid twentieth century. The Cerrillos area, just south of Santa Fe, was an important mining district in New Mexico. Abandoned gold and silver mines also exist in the southern part of the State near Orogrande and Deming. Whether from mineral mining or coal mining, numerous physical hazards in the form of mine equipment and structures, portals, and vertical shafts exist throughout the State.

#### **New Mexico AML Program History:**

New Mexico received primacy under SMCRA on December 31, 1980. New Mexico's AML Program was subsequently approved by the Secretary of Interior on June 17, 1981. Since then the NMAML has been working to reclaim both its high priority coal and non-coal inventory. Although the State has not yet certified completion of its high priority coal reclamation, the bulk of the high priority coal reclamation has been completed. Life threatening hazards from abandoned non-coal mines have occasionally superseded the urgency posed by coal mines. Recent regulatory changes have necessitated that New Mexico place higher priority on funding abandoned coal mine sites and hazards than on those associated with abandoned non-coal sites. However, NMAML is still authorized to use certain types of funds for non-coal reclamation.

The State's inventory of un-reclaimed 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. Therefore, New Mexico continually struggles to prioritize its most important safety and environmental hazards.

New Mexico estimates that there are over 15,000 abandoned coal and non-coal mine features within the State that are in need of being addressed. In EY-2007, New Mexico AML updated its cost estimates for completing just the Priority-1, Priority-2 and Priority-3 "coal" hazards in their AMLIS inventory. No new sites were added to the inventory. NMAML Program's last official cost estimate to fully reclaim the Priority-1 and -2 coal hazards in its inventory is approximately \$13.8M and for Priority-3 coal approximately \$12.1M. Collectively the total cost estimated to address all coal priorities is about \$25.9M (in 2007 dollars).

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>

**Program Staffing:**

The NMAML is under the New Mexico Mining and Minerals Division, of the New Mexico Energy, Minerals and Natural Resources Department. The NMAML is under the direction of Mr. John Kretzmann, Program Manager / P.E. All of the AML staff work out of the New Mexico AML Office, Mining and Minerals Division, Energy and Minerals Department located at 1220 South Saint Frances Drive, Santa Fe, New Mexico, 87505, telephone (505) 476-3400.

The AML Program consists of nine (9) full time employees plus the equivalent of one additional support staff employee within the Mining and Minerals Division. The NMAML Program staffing level was nine (9) FTE's during the past 25 years. Three (3) of these positions are partially funded (cost share) by other programs within the Mining and Minerals Division. Staffing levels increased by one FTE during EY-2009, by the addition of an additional Reclamation Specialist. Although the funding levels have substantially increased since passage of the 2006 SMCRA Amendment, NMAML does not project any significant increase in staffing in the near future.

**Funding Under the 2006 SMCRA Amendment:**

SMCRA AML fee collections were due to expire on September 30, 2006. However, H.R. 6111 was approved by Congress on December 9, 2006, and thus Congress signed into law P.L. 109-432 effective December 20, 2006. P.L. 109-432 extends AML fee collection at reduced rates through FY-2021. In addition, it mandates that OSM begin full distribution of AML fees that have accumulated in each State or Tribal Share's undistributed balance. OSM published a Final Rule in the Federal Register on November 14, 2008 to implement the amendment.

Under the 2006 SMCRA Amendment, there are now six (6) possible OSM sources of State / Tribal AML Program funding. The availability of these funding sources varies depending upon whether or not an individual AML Program has "certified" that it's high priority coal hazards in its Abandoned Mined Land Inventory System (AMLIS) have been addressed. NMAML is not a certified AML Program. Funding for the NMAML Program under each of the six (6) possible OSM funding sources, is explained below:

- |  |
|--|
| <p>1) <b><u>Prior Un-appropriated State / Tribal Share Balance</u></b> – As of 10/01/07, this funding source contained \$1.2 Billion nationwide. Approximately half of this money (\$600M) stemmed from the un-appropriated 50% State Share collections of currently un-certified Programs and the other half (\$600M) stemmed from the un-appropriated 50% State Share collections of currently certified Programs. As a result of the 2006 SMCRA Amendment, all of the money in this fund was reallocated to the Historic Coal Share and is to be distributed solely to uncertified Programs beginning in 2023. <i>[ NMAML is a not a certified Program so it is eligible to receive its share of funds from this funding source via the Historic Coal Share discussed below.]</i></p> |
| <p>2) <b><u>Prior Balance Replacement</u></b> – As stated above, as of 10/01/07 approximately \$1.2 Billion existed in the Prior Un-appropriated State / Tribal Share Balance. The 2006 SMCRA Amendment matched this \$1.2 Billion with an additional \$1.2 Billion of US Treasury money. Each AML Program is entitled to exactly the same amount of money out of this fund that they were previously entitled to out</p>  |

of their Prior Un-appropriated State / Tribal Share Balance before it was reallocated to the Historic Coal Fund in October 2007. The money in this fund will be fully awarded to both certified and uncertified Programs in seven (7) equal payments over the 7-year period beginning in 2008 and extending through 2014. However, this payment is subject to a \$490M total annual cap for all approved AML Programs in the nation. Should the nationwide distribution calculations be larger than this amount, the funding will be decreased on a proportionate basis so that the total annual distribution does not exceed the \$490M cap. Certified Programs are not restricted in how this money is used, however, **uncertified Programs like New Mexico AML can only use these funds for high priority coal reclamation or to maintain an AML inventory. Thus, NMAML will receive its share of this Fund (\$21,927,511.) over a seven year period beginning in 2008 and can use these funds for any eligible project it chooses. Each year NMAML will receive approximately \$3,009,502 out of this Fund.**

3) **State / Tribal Share Funds** – This funding source consists of 50% of current AML fee collections from active coal production. Money from this Fund is distributed in the year following the year it was collected. In FY-2007 and FY-2008 NMAML received 50% of its annual fee collections from active coal mine production during each previous year. Under the 2006 SMCRA Amendment, as of 2009 only uncertified AML Programs are entitled to receive these funds. ***NMAML will continue to receive its 50% State Share Collection funds until it certifies completion of its high priority coal inventory or when the Fund ceases to exist. Under the 2006 SMCRA amendment, these funds may be used for both coal and non-coal reclamation.***

4) **State / Tribal Share Replacement** – Under the 2006 SMCRA Amendment, beginning in 2009, the portion of the State / Tribal Share fund mentioned above, that was collected from certified States or Tribes, will be matched annually with an equivalent amount of US Treasury Funds. These matching Treasury funds constitute the State / Tribal Share Replacement Fund, which is intended to replace the money, collected from active mining production in States or Tribes that have certified AML Programs, which was reallocated to Historic Coal. ***Uncertified programs like NMAML do not receive Share Replacement funds.***

5) **Historical Coal Share Funds** –Historical Coal Share funding is reserved for uncertified Programs that still have remaining un-reclaimed high priority coal hazards. The money in this fund stem from two different sources. One is the backlog of unpaid (Unallocated State / Tribal Share Balance) 50% State / Tribal Share collections that was reallocated to the Historic Coal Share Fund in 2007. The second is the current annual collections from the 50% State / Tribal Share of both certified and uncertified Programs that is reallocated annually to the Historical Coal Share Fund. Both of these reallocations are prescribed by the 2006 SMCRA Amendment in order to increase the amount of funding available to uncertified AML Programs to address high priority coal reclamation hazards in their AMLIS inventory. ***However, money in this fund may be used to address both high priority coal and non-coal hazards. NMAML is not certified, so it is eligible to receive Historical Coal Share funding.***

6) **Minimum Program Makeup Funding** – Minimum Program funding has always been reserved exclusively for uncertified Programs. Prior to the 2006 SMCRA Amendment, SMCRA set the minimum level of funding for uncertified Programs at \$2.0M. For various reasons, Congressional appropriations only allowed OSM to bring the minimum level of funding for uncertified Programs up to \$1.5M. The 2006 SMCRA amendment specifically raised the minimum program funding level to a mandatory \$3.0M per year, but made it subject to a four year phase-in period (2008 to 2011). Under the new Law, these funds will come from the Secretary’s 50% Federal Share of annual fee collections. These funds are no longer subject to Congressional appropriation, therefore, neither the Congressional budget nor OSM can limit or decrease the minimum program funding level from the mandatory \$3M level set by Law. *Because NMAML is not certified, it is eligible to receive Minimum Program Makeup funding in the amount necessary to bring its annual funding level up to \$3M. [See 402(g)(8)(A)]. From 2008 through 2014, annual NMAML funding from the six possible OSM funding sources is projected to exceed \$3M, pre-empting its eligibility for receiving Minimum Program Makeup funding. However, from 2015 through 2022, NMAML funding from these sources is projected to be approximately \$2M, thus NMAML will then qualify for approximately \$1M annually of Minimum Program Makeup funding, provided that it has not already certified. It is unlikely that NMAML will not have certified by 2015 or shortly thereafter. Thus, it is unlikely that NMAML will receive much if any Minimum Program Makeup funding.*

OSM has prepared preliminary funding estimates for all AML programs nationwide. The table below shows OSM’s most recent funding projection data for New Mexico over the next fifteen years, from all funding sources.

Projected Funding Levels for NMAML by Year\* (in millions)

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
\$3.8	\$4.3	\$5.0	\$4.7	\$5.2	\$5.2	\$5.0	\$1.9	\$1.9	\$1.9	\$2.2	\$2.2	\$1.9	\$1.9	\$1.9	\$49.2

\* These figures do not include deobligated funds from previous grants that may be applied for.

**Status of Fee Collections and Fund Distributions Relative to the AMLIS Inventory:**

OSM awards New Mexico grants on an annual basis, the New Mexico grant cycle runs from July 1st of each year to June 30th of the following year for the administration subaccount and from July 1<sup>st</sup> to June 30<sup>th</sup> of the third year for the construction subaccount. In other words, the program’s administration is funded on an annual basis but construction grants which are awarded annually remain active for three years, so construction projects have to be completed within three years. As of 2008, the number and types of OSM grant funding sources changed as a result of the 2006 SMCRA Amendment, as described above.

In July 2008, New Mexico received Prior Balance Replacement Funds, State Share Funds, and Historical Share Funds in the amount of \$5,668,717.00 to be used for program administration, project development and project construction. This funding exceeds the \$4.0 Million in the projected funding table above because New Mexico also requested deobligated funds from previous grants that were closed out with funds remaining. Therefore, 2008 funding exceeded the projected funding amount shown in the projected funding table above.



In July 2009, New Mexico received Prior Balance Replacement Funds, State Share Funds, and Historical Share Funds in the amount of \$4,759,635.00 to be used for Program administration, project development and project construction. This funding exceeds the \$4.3 Million in the projected funding table above because New Mexico also requested deobligated funds from previous grants that were closed out with funds remaining. Therefore, 2009 funding also exceeded the projected amount shown in the projected funding table above.

With its cumulative funding to date, the Energy, Minerals and Natural Resources Department has overseen the closure of over 4,000 mine openings and the remediation of hundreds of acres of mine waste (see the New Mexico EMNRD web site at [www.emnrd.state.nm.us](http://www.emnrd.state.nm.us) for further information). New Mexico estimates that about 15,000 (coal and non-coal) mine related hazards still exist on the State's 800 abandoned mine sites that have yet to be reclaimed.

Based on the cost estimates reflected in OSM's AMLIS database as of August 2009, the New Mexico AML Program has spent over \$21.0 million to address high priority-1 and -2 coal and non-coal hazards within the State since the Program was created in 1981 (See Table-2, page 22). This figure represents actual on the ground construction costs and does not include the substantive cost of project design and development, so actual program expenditures are substantively higher than \$21 M. Because New Mexico has historically done the project design and development work in-house, these costs are part of New Mexico's program administration costs and are therefore difficult to separate out. Performing design and development in-house offers huge cost efficiencies to the NMAML Program.

In EY-2007, New Mexico updated its cost estimates for existing unreclaimed hazards in its AMLIS inventory of Priority-1, -2, and -3 coal hazards. The updated cost estimate reveals that New Mexico has \$12 million worth of unreclaimed priority-3 coal hazards remaining and \$14 million worth of unreclaimed high priority (priority-1 and -2) coal hazards remaining.

The 15-year funding table above shows that projected funding for NMAML over the six years period, from 2009 thru 2014, will be \$29.4M. During the remaining eight years, from 2015 thru 2022, the total funding will have been \$15.8M. Thus NMAML will receive almost two thirds of its projected funding over the next six years.

OSM estimates that NMAML will likely certify completion of its \$14M worth of high priority coal hazards around the year 2015 or shortly thereafter. Of course, this is just an estimate of how things will occur, actual certification may occur earlier or later than projected. Should NMAML not be certified by 2015, it will be eligible to receive Minimum Program Makeup funds.

**Grants and Financial Information:**

The following AML grants were active during the evaluation period:

<b>Grant Number</b>	<b>Grant Period*</b>	<b>Amount</b>
<b>S06AP12062</b>	07/01/06 to 06/30/09	\$2,998,187.
<b>S07AP12403</b>	07/01/07 to 06/30/10	\$1,500,000.
<b>S08AP12751</b>	07/01/08 to 06/30/11	\$5,668,717.
<b>S09AP15297</b>	07/01/09 to 06/30/12	\$4,759,634.

\* Construction grants are awarded for a three-year period.

**PART II. PROGRAM ACCOMPLISHMENTS**

**Protection of Bats / Habitat:**

The NMAML continues to make a dedicated effort to identify and protect bat populations that use abandoned mines for habitat. New Mexico AML installs bat gates and bat cupolas as necessary to provide for bat access while restricting public access (see photos in the Appendix to this report). Designs have included access panels for follow-up studies on the effectiveness of the bat-compatible closures and access by owls and small mammals has been incorporated into recent designs. In addition, the Program has contracted with the University of New Mexico to perform follow up studies on bat use of mine voids and bat populations and species diversity.

This year NMAML installed several bat compatible closures at the Orogrande reclamation and safeguard project, including both bat cupolas and high strength steel mesh closures. The underground mine workings contain significant bat populations and the mine workings provide excellent bat habitat. The fungus infection that is causing mass extermination of bat populations in the Northeast U.S. does not appear to have spread to New Mexico.

**Technical Information Processing & Technology Transfer Activities**

The following TIPS and NTTP activities occurred during EY-2009:

- Employees from the state of New Mexico were provided the opportunity to attend OSM-TIPS instructor-led training throughout the reporting period. Four training instances (3 students) were recorded for New Mexico state employees at a cost of \$1,014.00, and one New Mexico state employee taught TIPS classes. The four OSM/Technical Information Processing System (TIPS) provided technical training courses were; Introduction to ER Mapper 7.2, High-Accuracy GPS for GIS Trimble ProXRT, Galena, and Introduction to ArcGis for Mining and Reclamation. In addition, OSM's Technical Librarian filled two reference requests and provided nine article reprints to the New Mexico SRA staff members.
- A service manager visit was conducted late in June. The office was informed of all new aspects of the TIPS and Technology Transfer programs.
- The state of New Mexico EMNRD borrowed the following pieces of shared equipment from the TIPS and Technology Transfer Division: the Real Time Kinetic (RTK) GPS unit, the Borehole camera, the Ricoh GPS enabled digital camera and the FLIR thermal camera.
- The NM-EMNRD provided onsite training for the Navajo Nation AML program in the use of the FLIR thermal camera.
- The NM-EMNRD is currently working with the state of Montana on a project in which the evaluation, disposal and use of fly ash on mine sites is proposed. Assistance was requested

- through our office to send someone from the Program Support Division (PSD) to help evaluate soils and fly ash on the mine site. This project is ongoing.
- NM-EMNRD continued its support of the Western Region Technology Transfer team (WRTT) by making available a Title IV and Title V representative for the monthly conference calls. New Mexico's Dave Clark and James Smith continued their strong support of WRTT by participating in the monthly conference calls.
  - A representative from the NM-EMNRD also attended the National Technology Transfer Team (NTTT) meeting this year on behalf of the WRTT to rank and select this year's Applied Science Cooperative Agreement awardees.
  - NM-EMNRD also sent a representative to this year's WRTT annual meeting in Billings, MT.

### **New Mexico EY-2009 Submissions:**

During EY-2009, the OSM-AAO reviewed and approved grant applications, grant close out reports and project packages submitted for funding. OSM issued Findings of No Significant Impact (FONSI) and Authorizations to Proceed (ATP) for the Rogersville Coal Reclamation Project. NEPA documents prepared and submitted by the NMAML for OSM review and approval during EY-2008 were of excellent quality, determined to be complete and adequately addressed all NEPA requirements.

### **Program Accomplishments to Date:**

NMAML did not report any abandoned mine related fatalities to OSM during EY-2009. NMAML did make a couple of adjustments to some of its AMLIS priorities which OSM concurred with.

The NMAML Program was approved in June, 1981. As of June 2009, NMAML has been in operation for 28 years. In that time it has completed over 173 AML reclamation projects and has closed or safeguarded well over 3,000 hazardous mine features. Among these were some of the most hazardous features in the State. Although many serious hazards still exist, certainly lives have been saved and injuries prevented because of this work.

Substantial environmental degradation is typically associated with abandoned mines. The more than 173 reclamation projects completed as of July 2008 have certainly had a positive environmental effect on the State. These positive environmental effects can be measured in terms of protection of cultural and historic property, wildlife enhancement and protection of habitat, revegetation and associated decreases in erosion, improvements in water quality, improvements in air quality and overall a discernable improvement in the quality of life for the citizens of New Mexico.

### **Most recent NMAML reclamation projects:**

**2007-2008:** The 2007-2008 construction season continued construction on the Lake Valley Phase-II (non-coal) project.

**2008-2009:** The 2008-2009 construction season included active construction on the Carthage (imprint seeding coal maintenance), Lordsburg/Fluorite Ridge (maintenance), Madrid (coal maintenance), Sugarite Phase-VI (coal gob maintenance), Yankee-Vukonich (coal maintenance), Lake Valley Phase-III (safeguard) projects.

### Summary of EY-2008 Projects:

The following tables list projects that were either completed or in some phase of project development during EY-2009. Project development means site characterization, obtaining biological, archaeological or cultural / historic clearances for National Environmental Policy Act (NEPA) compliance and project design engineering and contract designs / specifications.

#### **Project Status as of August 18, 2009**

<b>Program Activity</b>	<b>Status</b>
<b>Construction</b>	
Carthage Imprint Seeding (maintenance) (coal)	Construction completed in late June 2009
Lordsburg/Fluorite Ridge Emergency Maintenance Project (non-coal)	Construction completed in late June to backfill eight subsided shafts at Fluorite Ridge and Lordsburg/Gore Canyon project sites
Madrid Maintenance Project (coal)	Project completed in May 2009
Sugarite P-VI Gob Reclamation (maintenance) (coal)	Construction completed July 2009
Yankee-Vukonich Maintenance (coal)	Construction completed July 2009
Orogrande Mine Safeguard Project P-II (non-coal)	Construction completed fall of 2008
Lake Valley Mine Safeguard Project P-III (non-coal)	Construction completed fall of 2008
Carbonate Hill Mine (non-coal)	Bids opened in early June; construction to start in October 2009
<b>Design Phase</b>	
Bradley Mine Safeguard (non-coal)	Design underway
Cerrillos – Bonanza Creek Mine Safeguard (non-coal)	Design started; Archaeological report and environmental assessment near completion
Diamond No. 2 Uranium Mine (non-coal)	Design initiated
Jones Coal Mine (coal)	Design initiated
Lake Valley Ph-IV Mine Safeguard (non-coal)	Engineering design underway and nearing completion; bid opening expected by end of summer
Queen of the Guadalupes (non-coal)	Design underway for USFS-funded project
Socorro West Maintenance II (non-coal)	Engineering design underway; bid opening expected next winter
Water Canyon Maintenance (non-coal)	Design underway – combining with Socorro West Maint. project
<b>Project Development</b>	
Burro Peak Mine Safeguard (non-coal)	Includes radium/uranium mines in populated area south of Silver City; Plan to develop project under pending as-needed uranium engineering contract
Carrizalillo Hills (non-coal)	Archaeological study underway
Gallup Chiaramonte Mine (coal)	City has presented alternatives for storm-water management; AML plans to design and fund construction of closure of the existing drop inlet into the mine
Madrid Anthracite Mines (coal)	Archaeological field survey completed
Rogersville Coal Reclamation (coal)	FONSI received
San Pedro Mine Safeguard (non-coal)	Archaeological survey complete; research and report being prepared by OAS; Bat survey underway
Rogersville Coal Reclamation (coal)	FONSI received
San Pedro Mine Safeguard (non-coal)	Archaeological survey complete; research and report being prepared by OAS; Bat survey underway
Poison Canyon Uranium (non-coal)	Golder Associates doing abandoned uranium mine site assessments at Poison Canyon; Expect to complete work under pending as-needed uranium engineering contract
Vermejo Park Ranch Coal Reclamation Engineering (coal) - Dillon Canyon	Water and Earth Technologies conducting site assessments, beginning environmental assessment and preliminary design; Plan to complete design complete this fall and for construction to be underway next spring

**Project Status as of August 18, 2009 (continued)**

<b>Project Initiation</b>	
Boston Hill Phase II (non-coal)	Reconnaissance complete
Caballo Mountains (non-coal)	Preliminary reconnaissance
Cerrillos South Maintenance (non-coal)	Reconnaissance on deep shaft discovered under shed
Cleveland Mine Safeguard (non-coal)	Preliminary reconnaissance; bat surveys started
Cooke's Peak Mine Safeguard (non-coal)	Preliminary reconnaissance
Gila USFS Mine Safeguard (non-coal)	Worked with Forest Service to provide Biological Assessment
Golden Placer Mines (non-coal)	Reconnaissance; Initial archaeological surveys
Granite Mountain Mine Safeguard	Preliminary reconnaissance
Harding Pegmatite Mine Safeguard (non-coal)	Reconnaissance complete
Hatch Mine Safeguard (non-coal)	Preliminary reconnaissance
Hachita Mine Safeguard (non-coal)	Preliminary reconnaissance
Kingston Mine Safeguard (non-coal)	Preliminary reconnaissance (75% complete)
Kingston/Tierra Blanca Mine Safeguard (non-coal)	Worked with Forest Service to provide Biological Assessment
La Petaca Mine Safeguard Phase III (non-coal)	Preliminary reconnaissance
Lone Mountain Ranch Mine Safeguard (non-coal)	Preliminary reconnaissance
Mogollon Road Mine Safeguard (non-coal)	ROE problems, on hold
Organ Maintenance (non-coal)	Work to replace breached cable nets with more vandal resistant closures
Oscura Maintenance (coal)	Reconnaissance for project to safeguard adits and possibly reclaim gob piles
Petaca USFS Mine Safeguard (non-coal)	Working with Forest Service to provide Biological Assessment
Real de Cerrillos Maintenance (non-coal)	Work to repair subsided shafts, construct new bat gate at Grand Central tunnel
Ruidoso Silver Plume Mine Safeguard (non-coal)	Preliminary reconnaissance on US Forest Service land; Adjacent landowner may backfill openings
Sierra Ricas (non-coal)	Preliminary reconnaissance
Yankee Canyon Gob Reclamation (coal)	ROE issues, on hold
Zuni 27 USFS Mine(non-coal)	Archaeological letter report has been cleared by SHPO; AMLP may fund construction for this USFS project
Bonito Lake Maintenance (non-coal)	Repair of breached closures
<b>Professional Services Contracts</b>	
Beneficial Use Study (coal)	Golder Associates evaluating feasibility of and opportunities for use of abandoned coal mine materials (gob, slag, etc.)
Gallup Coal Field Inventory (coal)	Tetra-Tech is beginning Task 1 of the contract to inventory the Gallup coal field
Geotechnical Services Contract (coal and non-coal)	Professional services agreement with Kleinfelder, who has investigated and reported on a coal seam fire at the Biava Mine in Gallup and on subsurface conditions at four shafts at Lake Valley; Contract just completed in July 2009
Madrid Community Planning (coal)	Contract finalized in June with Dekker/Perich/Sabatini; Work starting on developing a community plan for areas impacted by historic coal mining activities
Photogrammetric Engineering Services (coal and non-coal)	Contract for aerial photogrammetry and mapping with Thomas Mann and Associates completed on June 30,2009; RFP under development for a new photogrammetry contract
Statewide Price Agreement for AML Construction	Under review by State Purchasing Division; Agreement will allow the Program to have construction contractors available for emergency work and small construction projects

## **PART III. RESULTS OF ENHANCEMENT AND PERFORMANCE REVIEWS**

OSM-AAO and NMAML have agreed that the oversight work plan by default will annually evaluate the following two topics or principles for annual review unless a special program area is identified by OSM for nationwide evaluation:

**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. There are no performance standards for AML reclamation set forth in SMCRA. OSM inspects field reclamation and may occasionally offer suggestions or recommendations for improvement.

### **Principle No. 1 - On-the-ground reclamation –quality, accomplishments and cost-effectiveness.**

In evaluating Principle 1, NMAML and OSM-AAO inspected reclamation sites, grants files, NEPA Documents, and contract specification documents. This year the AAO conducted site inspections of the Sugarite Phase-VI coal gob stabilization project, the Orogrande mine safeguard project and the Yankee-Vukonich coal reclamation project.

Representatives from the NMAML Program sponsored and led OSM-AAO on the site inspection tours. No programmatic problems were identified as result of the EY-2009 oversight inspections. However, vandalism continues to be a problem for the State.

### **Orogrande Mine Safeguard Project Phase-II:**

This phase of the Orogrande Mine Safeguard Project involved the safeguarding of 95 mine related hazards including the closure of 23 open portals (thirteen with wildlife compatible closures) at a cost of \$183,017.00, the closure of 67 vertical mine openings (seven with wildlife compatible closures) at a cost of \$490,000.00 and the elimination of five dangerous highwalls at a cost of \$12,300.00. The total cost of the project phase was \$685,317.

OSM inspected the final construction of this reclamation project on August 6, 2009. The steel mesh bat compatible closure was compromised by vandals and several high powered bullets penetrated some of the bat cupolas. OSM observed that many of the roads encroach very close to the project sites allowing easy access to some of the sites. OSM recommended that some of the roads be blocked off farther away from the project sites after the projects are completed, when it is possible to get landowner concurrence to do so, such as on BLM land or other federal lands.

In the case of Orogrande, some of the land is federal land so it should be possible to remove the road access to the site. However, four wheel drive vehicles and all terrain vehicles will likely still be able to access the sites. This is only a recommendation and not a requirement, however, NMAML should plan on removing road access when possible in future project designs in those areas where vandalism is anticipated.

### **Sugarite Coal Gob Reclamation Project (Phase-VI):**

The Sugarite Coal Gob Reclamation Project is located just east of Raton, New Mexico within the boundaries of the Sugarite State Park. This area experienced a significant amount of coal mining leaving huge volumes of coal gob (piles) at this site. The toe of some of the gob piles on the east side of the canyon encroaches upon a perennial stream known as Chicorica Creek. Much of the coal gob has been eroding into Chicorica Creek since the mine site was abandoned.

Because the gob contains materials that are toxic to plants, little vegetation was growing on the gob piles and the often heavy rains have produced sufficient runoff to result in huge erosion gullies on the gob piles. The volume of the gob piles is so large that hauling of gob to relocate the piles is not a feasible option for reclamation. Also, the State Historic Preservation Division will not allow removal or transport of the gob material.

The NMAML Program has conducted several reclamation projects in six phases to stabilize the gob piles in place. Each of the phases has introduced improvement over the previous phase by improving the erosion control designs, soil amendments and revegetation methods. The earlier phases of the project resulted in less revegetation success than subsequent phases. At this point in time, the soil amendments and process has been sufficiently refined to produce excellent results, provide that heavy storm events subside enough to give the seeding and seedlings a chance to establish a foothold. There have been a couple of years where some heavy rain events caused damage to the reclamation work.

Besides the stabilization of the coal gob, another goal of the project is to improve the safety and visual aesthetics of the State the park. There are several gob piles on both sides of the steeply sloping canyon. The AML reclamation project has been ongoing since 1998 with the latest phase done this year. Each phase addresses stages of reclamation work and/or different gob piles located in the canyon. The AML Program received the OSM Western Regional AML Reclamation award and the People's Choice Award in 2002, for the innovative approach to reclamation exhibited by this project. Some phases of the project such as phase-IV has been so successful that one can barely see the gob piles through the vegetation from across the canyon.

Phase-VI of the coal gob stabilization project was inspected by OSM in late July 2009. This phase of the project addressed one dangerous pile (\$614,000.), six acres of coal gob piles (\$168,154.) and one acre of haul road (\$62,000.) for a total cost of the project phase of \$884,154. This phase of the project is to address erosion problems and reseeding (maintenance) over the Phase-1 and Phase-II sites reclaimed in 1999. Almost all of the work is done by hand due to the inaccessibility to heavy equipment due to the steep slopes and unstable materials (except on the roadways). Also, restrictions on the level of disturbance allowed are imposed by the State Park. Most of the labor is not available locally and has to be brought in to the Raton, New Mexico area. All of these factors drive up the cost and the difficulty of the project.

NMAML decided to try replacing the use of bonded fiber matrix with something called coco-flex. The bonded fiber matrix tends to form a crust and shed water whereas the coco-flex holds the water better and facilitates penetration. Coco-flex is more expensive per bag but requires less per acre for the same level of coverage. The contract prescribed soil amendments that included wood waste, gypsum, lime, and compost. The intent is to open up the heavy clays in the gob so

that seeds can germinate and establish. Sodium is displaced by calcium in the process which opens up the soil and allows oxygen to penetrate as well. New Mexico planted 16,000 seedlings in this phase (5,000 were planted during phase-1). Some important elements included in the 10 species seedling mix is Rocky Mountain juniper, pinyon and ponderosa pine, fourwing saltbush, Wood's rose, skunkbrush sumac, chokecherry, golden currant, and New Mexico locust, mountain mahogany, New Mexico Foresteria, and Gambel oak. Wood's rose is being planted in the erosion gullies to promote stabilization as it was found from observation that it does well there and can survive some of the anaerobic soil conditions.

Sediment rolls (made from aspen excelsior) were placed in the channels to hold water and slow erosion. An experimental variation to the methodology that NMAML has previously implemented is to include an annual, cultivated radish in the seed mix. With their large, deep taproots, the radishes will promote biological tillage of the heavy clay soils at the gob pile and incorporate organic matter when the radishes die. The radishes took well and established rapidly. 32 pounds of native, perennial seed were also applied per acre by hydroseeding. Spent oyster mushroom substrate was added to the wood chips mixed into the gob pile. Oyster mushrooms are saprophytic and will aid in the decomposition of the wood chips and promote soil formation.

Overall, the Sugarite Project is very successful in achieving its objective and has made substantial improvements to environmental restoration, public safety and generally improved the State Park as well. Also notable is that the stepped down gabion drains from Phase-II have been so effective in controlling erosion that surrounding areas were so covered with vegetation that the gabions were difficult to see.

#### **Yankee-Vukonich Coal Reclamation and Maintenance Projects:**

This coal reclamation project is in a canyon approximately three miles northeast of the Sugarite Project in northern New Mexico (approximately 8 miles east of Raton). The project involved reshaping of waste piles, construction of straw bale terraces, coir roll terraces, and coir roll terraces with live brush layers; installation of straw wattles, shade and stabilization fabric fences, branch packing in gullies, and a rock rundown channel; restoration of 1200 feet of an ephemeral stream, relocation of a road, incorporation of soil amendments,

The abandoned mine site was originally littered with mining debris which was cleaned up as part of the reclamation work. The entire project was inundated with protected historical resources and associated avoidance areas. Overall, 5.6 acres were reclaimed by the project in two phases. The first phase was done in 2004 during which six coal piles (2.9 acres) were stabilized and two small mine openings (adits) were closed by the project in 2004.

The second phase was completed in 2005 during which the access road was relocated and stabilized and the adjacent stream channel was reconstructed (a segment of an unnamed tributary to Yankee Creek which feeds into Chicorica Creek and ultimately into the Canadian River). Approximately ¼-mile of arroyo that contained coal mine waste material was reclaimed.

The existing drainage pattern was damaged by past mining. NMAML restored the natural sinuosity of the channel. The reclaimed stream channel incorporated geomorphic channel design methods. In addition, steep slopes surrounding the channel were stabilized and revegetated. The



geomorphic stream channel restoration proved successful.

This NMAML project was selected by OSM-HQ in EY-2008 to receive a national award for its innovative design, stream channel reconstruction and inherently difficult reclamation conditions.

During EY-2009, NMAML started a maintenance project in April to address some additional issues on the site. The maintenance project was done in two phases. The first phase was contracted out to Rangeland Hands, Inc. a company working out of Santa Fe. It involved the geomorphologic restoration of 1200 feet of eroding stream. The contractor was responsible for analysis and assessment of the site and the preparation of a report to include sketches, design and installation of erosion control structures, and monitoring and maintenance for a period of two years.

The second phase was contracted out to St. Cloud Mining Company. It involved the installation of 200 feet of straw bale terraces, 490 feet of coir roll terraces, incorporation of soil amendments including gypsum, lime, compost and fertilizer to enhance soil quality. Approximately 990 tree seedlings were then planted along the new coir and straw bale terraces. Seedling species used were rocky mountain juniper, ponderosa pine, chokecherry, gamble oak, skunk brush, sumac, New Mexico locust, Wood's rose, and fourwing saltbush. Approximately one acre of coal waste was then hydro-seeded using a two step process, the first step was the application of soil amendments, the second step was the broadcast of the seed and coco flex cover.

The project addressed 0.23 miles of clogged Stream (\$39,454.00) for the phase-1 (design, installation and monitoring of the site) and \$45,774.00 for phase-2 (surface stabilization, soil preparation and seeding) including addressing one dangerous pile (\$21,274.), two acres of coal gob (\$20,000.), and one acre of haul road (\$4,500.). Total cost of the project is \$85,228. Also, as part of the contract for Phase-2, the contractor can earn a bonus if he attains a tree seedling survival rate higher than 40%. If so, this will add to the total cost of the project.

#### **Carthage Coal Reclamation Maintenance (Reseeding) Project:**

The Carthage - Imprint Seeding Project is located in Carthage, New Mexico, approximately eight miles south of Socorro, NM. The project was contracted to Runyan Construction Inc.. The contractor was given notice-to-proceed on June 12, 2009. Construction started three days later and was completed on June 22, 2009. NMAML conducted their final inspection on June 24, 2009 and deemed the project met the scope of work outlined in the contract project manual.

The project consisted of fertilization and seeding of four separate (roughly 16 acres total) previously reclaimed coal gob sites. Each site was fertilized, inoculated, seeded and then imprinted.

As a test site, two acres on the south half of the Gob Pile 1-2 were fertilized using Organic Technology Inc.'s (OTI) fertilizer. This will be a side-by-side study to compare the effectiveness of a new fertilizer versus the fertilizer specified for the rest of the project. This was done as a change order to the project. The use of OTI's fertilizer was negotiated at a \$4,000.00 increase in contract price. The use of this fertilizer required additional equipment due to its two-step application process; first a dry granular fertilizer was evenly distributed and second, a liquid fertilizer was placed on top. The liquid application was what was outside of the scope of work

detailed in the project specifications and therefore increased overall cost. Final construction costs were \$54,936.50.

The Project was inspected for OSM oversight on July 16, 2009. Although some seed germination was already evident, it was too early to assess the success of the project.

#### **Lake Valley Mine Safeguard Project:**

This is a huge project and was undertaken in phases. This year's construction work is referred to as Phase III. It consists of the safeguarding of 155 mine features including 92 vertical openings (\$74,529.), 22 portals (\$22,300.) and one dangerous highwall (\$2,500.). All of these mine features are littered over about 20 acres of landscape. Most of these features constitute hazardous mine openings. The total cost of the project was \$99,329.

The underground workings were investigated under contract to Dr. Scott Altenbach with University of New Mexico to do the underground mine mapping and the reconnaissance / inventory of the bat populations within the workings. The mine workings are home to a variety of bat species and they have proper airflow conditions to serve as a maternity habitat. Also superimposed upon this project site are several cultural and historic and biological avoidance areas. Some of the avoidance areas are protected mining equipment and buildings that are being preserved as part of the areas generous mining history.

This phase of the project site was not inspected by OSM in 2009 but the earlier phases were inspected in 2008. Safeguarding of all of the mine shafts and adits have been finished by either of the following methods: 1) backfilling, installation of high strength steel mesh that served to preserve the air movement characteristics of the underground mine shafts essential to the unnatural (manmade) bat habitat; 2) installation of bat compatible closures consisting of either bat cupolas or bat gates that provide for ingress and egress by bats as well as small mammals.

An unusual engineering feature that predominates over the on site reclamation work are numerous steel culverts that are inserted deep into several of the mine features and which open to the surface. These culverts serve several purposes. They preserve the integrity of the adits or shafts while at the same time serve to provide a fixed safeguard that can withstand both natural assaults from wind and weather as well as human intervention. They sufficiently stabilize the entry points to various mine features, some of them are designed to allow authorized personnel to enter if necessary and/or access by small mammals. All of the culvert closures are designed to preserve air flow within the underground workings and access to the underground workings by bats. The project took special effort to ensure that bat populations, species and habit were clearly studied to decipher between those aspects of the underground workings that were essential to the bat populations and habitat versus those that could be permanently sealed off. See photographs of the Lake Valley Project in the Appendix to this report.

Other small 2009 maintenance projects that should be mentioned are:

1) **Lordsburg II/Gore Canyon Mine Maintenance Project: Hardrock:**

This project addressed three subsidence areas (0.25 acres) at a cost of \$7,659.00.

2) Fluorite Ridge Mine Maintenance Project: Hardrock:

This project addressed five subsidence areas (0.75 acres) at a cost of \$7,527.71.

3) Madrid North Mine Maintenance Project (coal):

This project involved the permanent closure of one mine portal at a cost of \$4,893.25.

**Principle No. 2 – Accomplishments under the AMLIS inventory.**

AMLIS accomplishments during EY-2009 are listed below in Tables-1 and Table-2. Accomplishments specifically for EY-2009 are in bold blue print in both tables. The main items addressed from a hazard standpoint include 159 vertical openings, 46 portals, 6 dangerous piles, and 6 dangerous highwalls. From a strictly environmental perspective, NMAML also addressed a quarter mile of clogged stream channel, 2 acres of haul road and one acre of mine subsidence.

The Sugarite AML Reclamation project is an in-place coal gob stabilization project. It has had several phases of construction and most of the work was done by hand rather than with heavy equipment. This has been an expensive project but much less expensive than it would be to try to transport such huge volumes of gob material. Approximately \$3.63M has been spent in total at the Sugarite State Park reclamation site. There are no good categories or key words in AMLIS to capture this workload or expense which consists of “in-place” stabilization of coal gob piles and establishment of drainage on the piles.

Since the program started, NMAML has completed over \$21.1 M (see Table-2 below) worth of AMLIS related construction work. This amount does not include the project development work done by NMAML in-house, which substantially increases the overall cost. NMAML pays for its project development costs out of its program administration budget not its construction budget. One of the things that NMAML does to be cost effective is that its project development costs are not tracked on a project by project basis and almost everything except for bat studies are done in-house. In 2009, NMAML for the first time contracted out a project that includes the design, development, and the reclamation and safeguard construction of a project. This project is on the Vermejo Park Ranch in Colfax County, New Mexico and is scheduled to start construction in 2010. The project was contracted to Water and Earth Technologies, Inc. The Vermejo Park Ranch in Dillon Canyon is the largest historic coal area in the state, involving mines such as the Gardiner and Swastika mines.

Without a doubt, NMAML continues to make significant strides with regard to its AMLIS coal inventory. The costs associated with coal and non-coal construction have been about evenly divided in the past. The Program’s staffing is small relative to the amount of work completed annually. NMAML is given a high score by OSM for the AMLIS accomplishments it made during EY-2009.

## **PART IV. AML INVENTORY SYSTEM & NEW MEXICO'S IN-HOUSE DATABASE**

As previously mentioned, New Mexico has a significant amount of mining related hazards within the state. These mine hazards are the result of both coal and mineral mining within the State's history. The most serious of the remaining hazards within the state are associated with mineral mining. Because very little surface coal mining occurred in the State prior to SMCRA, most reclamation work involves the reclamation of underground mine hazards. Although the acreage associated with underground mining is small relative to that typically encountered with surface mining, the numbers of hazards encountered in underground mining are high and the danger associated with these hazards is extreme. Another abandoned mineral mine related fatality occurred in New Mexico on August 2009, which underlines the importance and urgency of the NMAML Program's work.

The AMLIS database contains an inventory of priority-1, -2, and -3 hazards associated with abandoned coal mines and a list of non-coal abandoned mines that have been funded (or completed). The following tables show AMLIS accomplishments for EY-2009 and cumulative accomplishments to date as of the end of EY-2009. These tables are updated annually by the State and are included in OSM's annual evaluation reports. The first table lists the work for the year in question and the second table is a running tabulation of all accomplishments under AMLIS to date. Both tables provide cost information for each of the AMLIS keyword elements.

NMAML is working on obtaining funding agreements or cooperative agreements with the US Forest Service (USFS). The USFS has a list of sites that they want help addressing. The construction may be 100% funded by USFS with NMAML funding the administration and engineering designs.

NMAML is also working out an agreement with BLM for site analysis northwest of Grants, New Mexico near Ambrosia Lake to address uranium mine related hazards.

**Table-1**

**New Mexico AML Reclamation Program  
EY-2009 Accomplishments<sup>1</sup>**

<b>PROBLEM TYPE AND DESCRIPTION</b>	<b>COMPLETED EY 2009</b>	<b>COSTS</b>
Benchs	0.0 acres	\$0.
Clogged Stream Lands	<b>0.23 miles</b>	<b>\$39,454.00</b>
Dangerous Highwalls	<b>6 (count)</b>	<b>\$14,800.12</b>
Dangerous Impoundments	0 (count)	\$0.
Dangerous Piles & Embankments	<b>6 (count)</b>	<b>\$635,274.00</b>
Dangerous Slides	0 acres	\$0.
EF-Equipment/Facilities	0 (count)	\$0.
Gasses: Hazardous / Explosive	0 (count)	\$0.
Gob (coal waste piles)	<b>19.0 acres</b>	<b>\$243,090.50</b>
Highwalls	0 feet	\$0.
Hazardous Equipment & Facilities	0 (count)	\$0
Haul Roads	<b>2.0 acres</b>	<b>\$66,500.00</b>
Industrial/Residential Waste	0 acres	\$0.
Mine Openings	0 (count)	\$0.
Other	0 (count)	\$0.
Portals	<b>46 (count)</b>	<b>\$210,210.45</b>
Pits	0.0 acres	\$0.
Polluted Water: Agric. & Indust.	0 (count)	\$0.
Subsidence	<b>1 acre</b>	<b>\$15,186.71</b>
Spoil Areas	0 acres	\$0
Surface Burning	0.0 acres	\$0.
Slurry	0.0 acres	\$0.
Underground Mine Fires	0.0 acres	\$0.
Vertical Openings	<b>159 (count)</b>	<b>\$564,529.00</b>
Water Problems	0 (count)	\$0.
<b>EY-2009 TOTAL COSTS</b>		<b>\$1,789,044.78</b>

**Note:** This table is based on a Problem Type Unit and Cost Detail Report from the Abandoned Mine Land Inventory System. Neither AMLIS nor this table contains an inventory of un-reclaimed non-coal hazards.

<sup>1</sup> This table includes the Lake Valley Phase III (non-coal), Orogrande Phase II (non-coal), Lordsburg Maintenance (non-coal), Fluorite Ridge Maintenance (non-coal), Madrid North Maintenance (coal), Carthage Imprint Seeding (coal), Sugarite Phase VI (coal), and Yankee-Vukonich (coal) mine safeguarding projects.

**Table-2**  
**New Mexico Abandoned Mine Reclamation Program**  
**“Cumulative” AML Accomplishments as of June 30, 2009**

<b>PROBLEM TYPE AND DESCRIPTION</b>	<b>COMPLETED TO DATE</b>	<b>COSTS</b>
Benches	3.0 acres	\$7,301.
Clogged Stream Lands	2.23 miles	\$571,818.
Dangerous Highwalls	8 (count)	\$62,580.
Dangerous Impoundments	0 (count)	\$0.
Dangerous Piles & Embankments	21.5 acres	\$2,154,994.
Dangerous Slides	0 acres	\$0.
EF-Equipment/Facilities	12 (count)	\$31,635.
Gasses: Hazardous / Explosive	0 (count)	\$56,563.
Gob (Coal Waste Piles)	144.0 acres	\$3,788,841.
Highwalls	0 feet	\$0.
Hazardous Equipment & Facilities	18 (count)	\$124,037.
Haul Roads	10.0 acres	\$255,184.
Hazardous Water Bodies	0.0 acres	\$0.
Industrial/Residential Waste	0 acres	\$0.
Mine Openings	4 (count)	\$122,140.
Other	0 (count)	\$163,052.
Portals	565 (count)	\$2,589,759.
Pits	2.0 acres	\$3,890.
Polluted Water: Agric. & Industrial	4 (count)	\$13,400.
Polluted Water: Human Consumption	1 (count)	\$34,710.
Subsidence	37.85 acres	\$4,639,972.
Spoil Areas	260.0 acres	\$134,910.
Surface Burning	35.0 acres	\$760,406.
Slurry	2.0 acres	\$421,782.
Underground Mine Fires	168.0 acres	\$234,983.
Vertical Openings	1,037 (count)	\$4,927,995.
Water Problems	0 (gal./min.)	\$0.
<b>CUMMULATIVE PROGRAM TOTAL</b>		<b>\$21,099,952.00</b>

**Note:** This table is based on a Problem Type Unit and Cost Detail Report from the Abandoned Mine Land Inventory System. Neither AMLIS nor this table contains an inventory of un-reclaimed non-coal hazards. Non-coal hazards in New Mexico are not all inventoried in AMLIS. New Mexico AML estimates that an additional 2,000 un-reclaimed portals and 14,000 vertical openings exist in New Mexico that still require hazard abatement (safeguarding) or reclamation.

## **PART V. Summary and Recommendations:**

OSM-AAO views the NMAML Program as a partner in meeting mutual environmental goals and challenges. The Program has always been willing to provide assistance to other State and Tribal Programs and has established a cooperative, productive relationship with OSM. The NMAML is an active member of the Southwest AML Partnership which functions to assist, educate and share resources in an effort to accomplish more with their limited AML funds.

The 2006 SMCRA amendment substantially increased the annual funding that the Program will receive during the next six years, after that funding will be near past funding levels. The increased level of funding will place larger demands upon the NMAML Program to plan, develop and construct projects. OSM also believes that this increase in funding will shorten the time it takes NMAML to achieve certification.

OSM's past oversight evaluations consistently found the NMAML to be an exemplary AML Program. OSM's 2009 review again determined that the NMAML is doing excellent reclamation and safeguarding work, is placing an emphasis on coal reclamation, and is making rapid progress in working down its AMLIS inventory of priority hazards.

The NMAML consistently makes cost-effective use of its AML funds while achieving quality reclamation. Attention is paid to details, contractors are required to fulfill all contract specifications in the field, and NEPA compliance is fully satisfied both prior to construction and avoidances areas are routinely observed. The NMAML Program and staff are highly regarded by other AML Programs as well as by OSM. NMAML's special emphasis placed on the preservation of preservation of bat habitat through innovative and state of the art designs may prove to be especially important now that disease is nearly wiping out bat populations in the eastern U.S.

The approach taken to stabilize coal gob piles at Sugarite, have not been applied elsewhere in the United States. The Program has also demonstrated its talent in the design of small geomorphic stream channels, coal gob stabilization, and in working with community groups to merge the public's demand for historic and cultural resource preservation with the Programs objective to safeguard and reclaim abandoned mine hazards within the State.

The NMAML staff and management maintained ongoing communication with OSM as needed throughout the evaluation period and partnered effectively with other members of the Southwest AML Partnership. Their partnership has been leading an effort to address some non-coal (uranium) mining related concerns in Navajo communities that lie within the State's jurisdictional area. Navajo residents in these areas have requested that the state address these abandoned mine sites.

In conclusion, all reclamation work is of high quality, timely, and consistent with contract specifications. OSM has no recommendations or criticism to offer the NMAML. The Office of Surface Mining is proud to have NMAML as an active partner in fulfilling the mandate of Title-IV of the Surface Coal Mining and Reclamation Act.



*Carthage Coal Maintenance Project  
(Prior to maintenance work)*



*Carthage (Post-Maintenance)*



*Orogrande, NM ... Mine Safeguard Project*



*Bat Compatible Closure (Cupola)*

*L to R: Zoe Isaacson, Randall Armijo, Scott Altenbach, Lloyd Moiola*

*Orogrande, NM ... Bat Compatible Steel Mesh Closure*





*Orogrande - Portal Closure with Drainage Pipes*



*Orogrande – Airflow Culvert Closure*

*Sugarite Phase-VI  
(L) John Kretzmann, Project Engineer  
(R) Randall Armijo Project Coordinator*



*Sugarite Phase-VI  
Radish plants – (test seed plot for organic amendment & soil aeration)*



*Sugarite Phase-VI Maintenance:  
Added soil amendments, coir rolls, seeding and seedlings.*



*Yankee Vukonich - Coal Reclamation Project.*

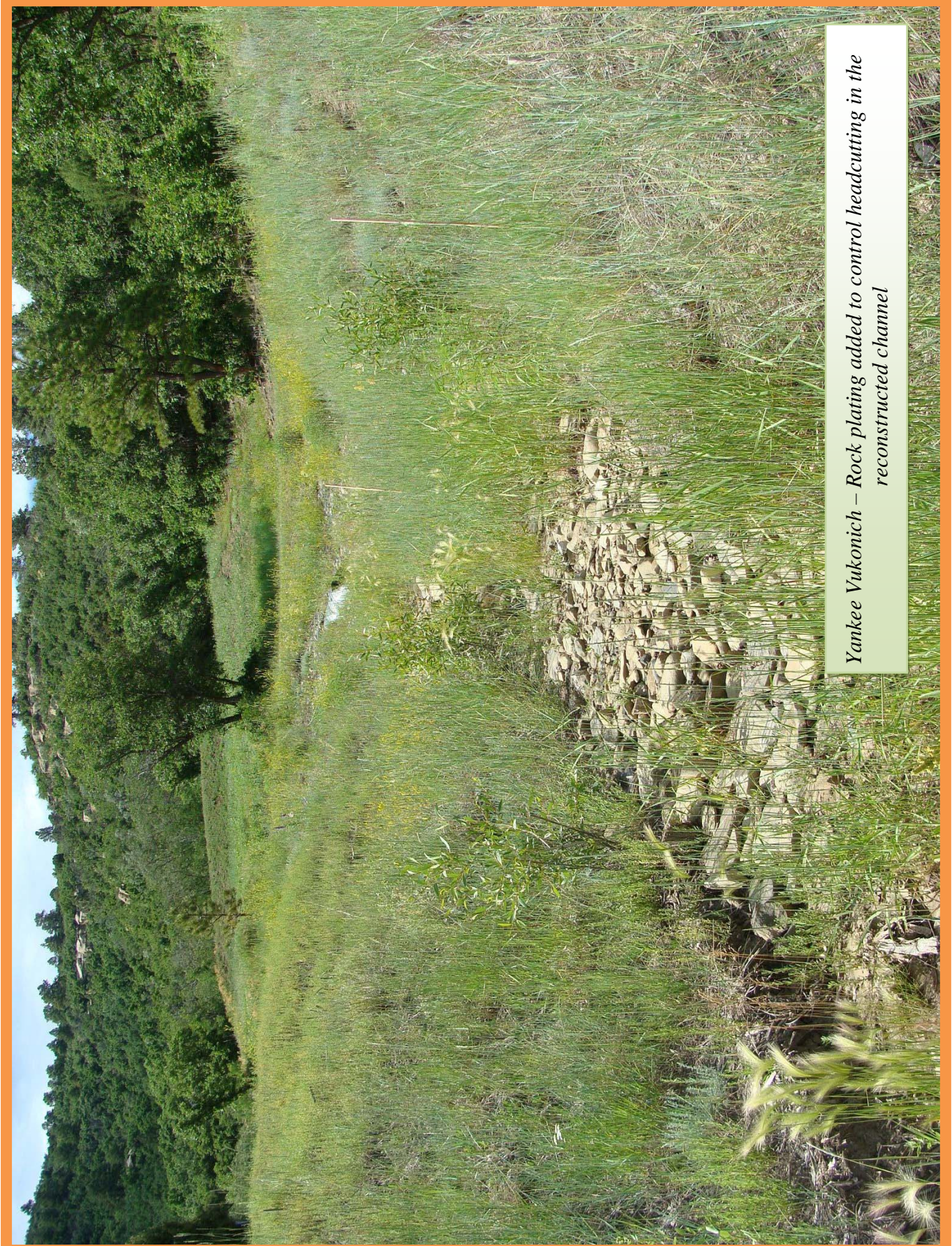


*Yankee Vukonich - Coal Reclamation Project.*



*Yankee Vukonich – Coal Maintenance Project*





*Yankee Vukovich – Rock plating added to control headcutting in the reconstructed channel*