OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT
U.S. Department of the Interior

Annual Evaluation Report for the Abandoned Mine Land Program Administered by the New Mexico Mining and Minerals Division

For Evaluation Year 2022
July 1, 2021 to June 30, 2022

Prepared by Western Interior Regions 5, 7-11 (Denver Field Division)
September 2022

EXECUTIVE SUMMARY

The Office of Surface Mining Reclamation and Enforcement - Denver Field Branch (OSMRE – DFB) annually prepares this report to describe the accomplishments of the New Mexico Mining and Minerals Division - Abandoned Mine Land Program (MMD – AMLP) during the previous Evaluation Year (EY). The report includes a discussion of New Mexico's program administration, public participation and outreach efforts, technical assistance provided by OSMRE, and the results of topic-specific evaluations conducted in coordination with the State.

Denver Field Branch's annual oversight activities typically involve two different methods of evaluation. First is various administrative reviews designed to ensure accuracy and integrity throughout the grants financial assistance and enhanced Abandoned Mine Land Inventory System reporting processes. Second is on-the-ground site visits that enable us to evaluate various elements of the State's construction management, abatement selection, and hazard prioritization processes.

According to data available through the enhanced Abandoned Mine Land Inventory System, New Mexico has a remaining inventory of 330.8 coal-related acres to be reclaimed at an estimated cost of $33,784,106. Since 1978, New Mexico has expended a total of $20,875,361.73 in grant funding to reclaim a total of 415.6 coal-related acres. In Evaluation Year 2022, OSMRE awarded New Mexico $2,829,000 in grant funding to continue carrying out its mission of protecting people, property, and the environment from hazards related to historic mining operations.

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Cover Page Photograph: San Pedro Mine Safeguard Project - Phase III; Santa Fe County, New Mexico.

I. INTRODUCTION

The Surface Mining Control and Reclamation Act of 1977 (SMCRA) created the Office of Surface Mining Reclamation and Enforcement (OSMRE) in the Department of the Interior. SMCRA provides authority to OSMRE to oversee the implementation of and provide federal funding for state regulatory programs and abandoned mine land programs that have been approved by the Secretary of the Interior as meeting the minimum standards specified by SMCRA. The primary purpose of SMCRA Title IV is to address the adverse effects of past coal mining, though it also allows AML programs to address certain non-coal problems. To this end, Title IV authorizes OSMRE to provide grant support to states and tribes from the Abandoned Mine Reclamation Fund and the general Treasury of the United States. SMCRA puts the highest priority on correcting the most serious AML problems that endanger public health, safety, and property. As amended in 2006, SMCRA also allows AML programs to address certain lower priority coal problems if they are reclaimed in conjunction with or situated adjacent to higher priority problems. OSMRE, state, and tribal AML programs work together to achieve the goals of the national program including annual evaluations.

OSMRE also provides staff training and financial, technical, and management assistance to each state program. This report contains summary information regarding the New Mexico Abandoned Mine Land Program and its effectiveness in meeting the applicable purposes of SMCRA as specified in Section 102. This report covers the 2022 Evaluation Year which ran from July 1, 2021, to June 30, 2022.

Detailed background information and comprehensive reports for the program elements evaluated during the Evaluation Year are available for review and copying at the OSMRE Denver Field Branch; One Denver Federal Center; Bldg. 41; Lakewood, Colorado 80225. To arrange an appointment, contact Howard E. Strand, Denver Field Branch Manager, at (303) 236-2931 or hstrand@osmre.gov.

The reports are also available at the OSMRE Oversight Documents website: https://odocs.osmre.gov. Adobe Acrobat Reader® is needed to view these documents. Acrobat Reader® is free and can be downloaded at https://get.adobe.com/reader. Follow these steps to gain access to the document of interest:

1. Select the applicable governing body and performance period from the drop-down boxes labeled “State or Tribe” and “Evaluation Year” respectively. The search can be narrowed using the optional “Category” or “Keyword” drop-down menus. Lastly, click “Search”.

2. The oversight documents and reports matching the selected state and evaluation year will appear at the bottom of the page.

3. Select "View" for the document that is of interest and the report will appear for viewing, saving, and/or printing.

The following acronyms are used in this report:

AMD	Acid Mine Drainage
AML	Abandoned Mine Land
AMLP	New Mexico Abandoned Mine Land Program
BLM	Bureau of Land Management
CEMREC	Chevron Environmental Management and Real Estate Company
CFR	Code of Federal Regulations
DFD	Denver Field Division
eAMLIS	Enhanced Abandoned Mine Land Inventory System
EMNRD	Energy, Minerals and Natural Resourced Department
EY	Evaluation Year
FTE	Full-time equivalent
GIS	Geographic Information System
GPRA	Government Performance and Results Act
NEPA	National Environmental Policy Act
NTTP	National Technical Training Program
OIG	Office of the Inspector General
OSMRE	Office of Surface Mining Reclamation and Enforcement
PAD	Problem Area Description
PDF	Priority Documentation Form
SMCRA	Surface Mining Control and Reclamation Act
TIPS	Technical Innovation and Professional Services

(a) Program Administration

New Mexico submitted its AML reclamation plan to OSMRE on February 4, 1981; OSMRE approved the plan on June 17, 1981. The New Mexico AMLP is administered by the Mining and Minerals Division of the New Mexico Energy, Minerals and Natural Resources Department. AMLP employs a staff of 11 full-time equivalents (FTE) and five partially funded support positions across a variety of disciplines including project management, engineering, geographic information systems, environmental compliance, geology, and archaeology.

Overall, the Denver Field Branch finds that AMLP is successfully implementing its approved AML program. The AMLP-DFB Team maintains open and productive lines of communication and a cooperative relationship. Through these, effective reclamation of high-priority AML hazards and stewardship of grant funds continue.

II. NOTEWORTHY ACCOMPLISHMENTS

Over the past year, DFB monitored New Mexico's performance in meeting the goals and objectives of SMCRA Section 102. As mentioned, DFB finds that AMLP is successful in implementing its approved AML program. Results of the oversight reviews used to reach this conclusion are included in Section V of this report.

Major accomplishments in AML reclamation during EY 2022 include:

PROJECT CONSTRUCTION

Project Name / PAD Number	County
San Pedro Mine Safeguarding Project Phase III / NM-935052	Santa Fe
Gallup Dog Park-Laguna Circle Safeguarding Project/ NM-066	McKinley

PROJECT DEVELOPMENT AND ENGINEERING

Project Name / PAD Number	County
Madrid Stormwater and Erosion Control Project / NM-935060	Santa Fe
Allison Phase IV Project / NM-069	McKinley
Harding Pegmatite Mine Safeguarding Project Phase II / NM-214	Taos
Gallup Fires / (Pending)	McKinley
Navajo Fire Project / NM-935063	McKinley
Enterprise Brown Fire / NM-935062	McKinley
Bell - Aztec Fire / NM-090	McKinley

Biava No. 3 Fire / NM-935064	McKinley
Carbon Coal / NM-070	McKinley
Gallup Coalfield / (Pending)	McKinley
Boston Hill Mine Safeguarding Project Phase II / NM-935059	Grant
Chloride Flat / NM000237	Grant
Old Turner Ranch / NM000237	Grant
Yankee Canyon / NM000001	Colfax
Abo Mine / NM935061	Torrance

III. UTILIZATION OF OSMRE TECHNICAL ASSISTANCE

OSMRE provides direct technical and technological assistance to state AML programs on project-specific efforts including problem investigations, design and analysis, permitting, interagency consultation, and general guidance. OSMRE provides technical and technological support at the national level in the form of conferences, trainings, and initiatives. In 2004 OSMRE formed a regional Technology Transfer Team to support and enhance the technical skills needed to effectively implement regulatory and AML programs; the Technology Transfer Team includes a representative from each state, including New Mexico. OSMRE's training catalog includes offerings from the National Technical Training Program (NTTP) and Technical Innovation and Professional Services (TIPS).

In EY 2022 AMLP staff attended the following course available through OSMRE's NTTP training program:

- Surface and Groundwater Hydrology

In EY 2022 AMLP staff attended the following courses available through OSMRE's TIPS training program:

- Sharing GIS Content Using ArcGIS
- Working with LiDAR Arc GIS
- ArcGIS Pro: Essential Workflows

- LiDAR and Point Cloud Processing in Global Mapper

EY 2022 New Mexico AML Evaluation Team Members

AMLP: James Hollen, Meghan McDonald, Lloyd Moiola, and Mike Tompson
DFB: Tom Medlin, DJ Cunningham, Dan MacKinnon, Brook Zeller, and Howard Strand (Team coach)

IV. PUBLIC PARTICIPATION AND OUTREACH

The term "public" means stakeholders, including the citizenry at large, industry, other federal, state, or local agencies, and environmental groups.

(a) OSMRE - DFB

AMLP maintains a database of interested parties the Team uses each year to solicit comments or suggestions from persons and groups who may have an interest in abandoned mine land reclamation and our oversight process. These stakeholders include: state, federal, and local governmental agencies; coal mine permittees; and environmental groups. This year the Team mailed its outreach letter on February 15 soliciting input for Evaluation Year 2023 review topics in addition to any questions or comments on previous oversight reports or the OSMRE / AMLP oversight process.

For EY 2022 the Team received one public outreach response. In a letter dated March 30, 2022, Chevron Environmental Management and Real Estate Company (CEMREC) noted its appreciation of the photos provided in annual evaluation reports which provide excellent examples of best management practices. CEMREC also noted they find helpful the AML project inventory and funding data included in section VI in each annual evaluation report. Lastly, CEMREC acknowledged a strong management of funds by AMLP to address public safety and potential environmental hazards at historic mining sites.

(b) MMD - AMLP

The New Mexico AMLP interacts with the stakeholders described above and provides opportunities for the public to:

- Determine areas of concern and receive suggestions relative to AML reclamation; and
- provide timely information about OSMRE activities to interested groups.

In EY 2022, AMLP and BLM staff hosted an online public information meeting with stakeholders and residents of Silver City, New Mexico to discuss AMLP's proposed mine safeguarding project in the Boston Hill Mining District. The meeting took place on August 25, 2021, where the draft Environmental Assessment was reviewed. AMLP also held two additional in-person follow-up meetings to discuss the proposed project. The first follow-up meeting (September 29, 2021) was with the Town of Silver City Trails and Open Space Advisory Committee, while the second (August 23, 2022) was a presentation by AMLP staff of the proposed project to the Town of Silver City Town Council to update the mayor, town council, and residents on the results of the draft Environmental Assessment and proposed construction activities.

Public outreach activities for the Abo Mine Safeguard Project and the Carthage Maintenance Project were completed in EY 2022 and included the creation of informational flyers that were posted along with the Categorical Exclusion documents and attachments on the New Mexico Energy, Mineral and Natural Resources Department, Mining and Minerals Division website under the public notices link. For the Abo Mine Safeguarding Project, an advertisement was published online, and in print editions of the *New Mexico Independent*, a local newspaper. The notices included a link to the informational flyer, the Categorical Exclusion documentation, and provided notification of a public comment period for 30-days from April 1, 2022, to May 1, 2022. No comments were received. The BLM also listed the Abo Mine Safeguard and the Carthage Maintenance Projects on the Bureau of Land Management National NEPA Register (ePlanning) and posted a copy of the completed Categorical Exclusion documents on the National NEPA Register (ePlanning) website. An informational flyer providing details for the Carthage Maintenance Project was also posted at the Socorro Post Office and at the Socorro BLM Field Office, with no comments received.

Other outreach efforts included meetings with Santa Fe County and the Madrid Landowners Association to discuss the objectives of the planned Madrid Stormwater and Erosion Control Project. AMLP continues to use the Esri web application to update its Story Map Journal and promote public awareness of abandoned mines and abandoned mine safety. AMLP also fosters awareness of abandoned mine lands through press releases, the EMNRD website, staff presentations, and through its display at the state fair natural resources building in Albuquerque each September. The state fair display provides exposure to a few thousand visitors annually.

AMLP staff hold regular meetings with the BLM, Santa Fe County, and the Madrid Landowners Association for project development in the San Pedro Mountains, Florida Mountains, Fluorite Ridge, Cerrillos Hills, and the village of Madrid. AMLP also uses its cultural resource consultants to produce popular reports summarizing cultural resource investigations and the mining history of specific project areas for public distribution.

V. RESULTS OF EVALUATION YEAR 2022 REVIEWS

National priority reviews and oversight topic reviews can be located and reviewed at OSMRE's website as listed in the Introduction of this report. Individual reports prepared by OSMRE are part of the oversight process of each state and contain findings and details regarding the evaluation of specific elements of the state program.

In EY 2022 the AMLP-DFB Team conducted the following Enhancement and Performance Reviews as specified in the Performance Agreement:

1 (b): Is reclamation successful on a long-term basis?
2 (e): Does the information the State entered into eAMLIS agree with information in its files?

No reviews were conducted under Principle of Excellence 3 (the State has systems to properly manage AML funds) during EY 2022. These reviews will be conducted as practicable during EY 2023.

2022 Enhancement and Performance Review
New Mexico Abandoned Mine Land Program

Measure
Principle of Excellence: 1. The State's on-the-ground reclamation is successful.
Performance Measure: (b) Is reclamation successful on a long-term basis?

Review Dates
This review was conducted in the spring of 2022. The report was composed in the spring and summer of 2022.

Personnel
Lloyd Moiola and Mike Tompson (New Mexico Abandoned Mine Land Program); Steve Fluke and Jan Morse (Utah Abandoned Mine Reclamation Program); Jeff Graves (Colorado Inactive Mine Reclamation Program); DJ Cunningham, Tom Medlin, and Brook Zeller (Office of Surface Mining Reclamation and Enforcement).

Background
This is a cyclical review which we last conducted in EY 2019. We selected this measure for evaluation again in EY 2022 because reclamation success is a principal goal of the New Mexico Abandoned Mine Land Program (AMLP).

Population / Sample

The population for this review included all abandoned mine land (AML) projects completed by AMLP ten or more years ago. The sample included two coal projects (Rogersville Mine Safeguard Project Phases I and II and the La Ventana Mine Closure Project) and two non-coal projects (Real de Delores Mine Safeguard Project and the Harding Pegmatite Mine Safeguard Project).

Methodology

During the week of April 11th, the team traveled throughout the State of New Mexico to evaluate reclaimed AML features at each sample project site, with the goal of determining whether AMLP's reclamation work is successful on a long-term basis. AMLP project managers began each stop on the tour with a discussion of the site's: history and significance; technical, environmental, and cultural resource considerations; and challenges, achievements, and lessons learned. In preparation for this field evaluation we also reviewed drawings, plans, specifications, change orders, maps, enhanced Abandoned Mine Land Inventory System (eAMLIS) data, photographs, and National Environmental Policy Act documentation. AML safeguards demonstrated long-term reclamation success if they were intact and functioning as designed at the time of inspection.

Findings

We evaluated approximately 37 reclaimed AML features over the four sample projects, including shafts, adits, pits, stope openings, subsidences, and coal gob.

Table 1.

Real de Delores Mine Safeguard Project - eAMLIS key NM-444 - Completed in 2003

Mine	Feature ID	Feature Type	Reclamation Method	Comments
English Mine	AML-7	Shaft	Backfill	Stable and secure.
English Mine	AML-8	Shaft	Culvert in PUF with bat cupola	Stable and secure. See Figure 1.
Ortiz Mine	AML-1	Adit Trench	Fence	The fence installed on the uphill slope appeared to provide protection against slips or falls. See Figure 2.
Ortiz Mine	AML-3 and AML-4	Shaft and Open Stope	Culvert in PUF with bat cupola	A 2010 maintenance project added a rock retaining wall to the upslope to prevent erosion and subsidence into the mine. At the time of inspection this retaining wall was functioning as designed. See Figure 3.
Ortiz Mine	AML-6	Shaft	Backfill	Stable and secure.
Benton Mine	AML-11	Shaft	PUF with backfill and preserved headframe	Stable and secure.
Benton Mine	AML-13	Pit	Backfill	A “Danger” sign remained posted after this pit had been backfilled. At the time of inspection the backfill was stable and the pit did not pose a hazard. Recommend removing the sign to deter unwanted interest. See Figure 4.
New Live Oak Mine	AML-16	Adit	Backfill	This backfill had been re-opened by an unknown cause, possibly an animal or person, and required maintenance. Figure 5.

Rogersville Mine Safeguard Project - eAMLIS key NM-073 - Completed in 2011

Mine	Feature ID	Feature Type	Reclamation Method	Comments
Rogersville Phase I	AML-13	Shaft	Backfill	Stable and secure. See Figure 6.

Rogersville Phase I	AML-22	Adit	Backfill	Stable and secure.
Rogersville Phase I	AML-24	Shaft	Backfill	Stable and secure.
Rogersville Phase II	AML-23	Gob Pile	Stabilization via grading, topsoil placement, and seeding	Stable and well vegetated. See Figure 7.

La Ventana Mine Closure Project - eAMLIS keys NM-037, NM-036, NM-038 - Completed in 1988

Mine	Feature ID	Feature Type	Reclamation Method	Comments
Kistler Black Rose Mine	F-9	Adit	Metal grate and wood	This closure utilized a mixture of wooden planks and steel grating to restrict access to the adit. The closure was unconventional in that the grating was bolted to wooden planks and bolts could be loosened by hand. As a result, anyone could gain access to the mine if desired. AMLP explained that this closure was completed almost 20 years ago, and that an improved closure could be considered in conjunction with other work in the area. There was a small subsidence to the right of this closure that required maintenance. Unidentified droppings in the vicinity of the closure indicate likely use by wildlife. See Figures 8 and 9.
Kistler Black Rose Mine	Kistler Black Rose Mine Subsidence	Subsidence	Backfill	This area had several subsidence features in need of repair. See Figures 10 and 11.
Kistler Black Rose Mine	LV-1	Adit	Backfill	Stable and secure.

Kistler Black Rose Mine	LV-2	Adit	Backfill	Stable and secure.
Kistler Black Rose Mine	LV-3	Adit	Backfill	Stable and secure. See Figure 12.
Kistler Black Rose Mine	LV-4	Adit	Backfill	Stable and secure.
Kistler Black Rose Mine	LV-5	Adit	Backfill	Stable and secure. See Figure 13.
Kistler Black Rose Mine	LV-6	Adit	Backfill	This adit had subsided open and required maintenance. See Figure 14.
McDonald Hayes Mine	F-2	Adit	Backfill	Stable and secure.
Well Prospect Mine	F-1	Adit	Bulkhead	Stable and secure. See Figures 15 and 16.
Well Prospect Mine	F-2	Adit	Backfill	Stable and secure.
Unknown Mine	SPA Gob Pile	Gob Pile	Stabilization via grading, topsoil placement and seeding	Stable and secure; however, protective plastic tubing for plants and sections of rebar were remaining and should be removed. See Figure 17.

Harding Pegmatite Mine Safeguard Project - eAMLIS keys NM-247 - Completed in 2011

Mine	Feature ID	Feature Type	Reclamation Method	Comments
Harding Pegmatite Mine	S-2	Stope	Temporary fencing	This feature had subsided open: in the summer of 2022 AMLP will install an 18” corrugated metal pipe (CMP) with steel gate. See Figures 18 and 19.

Harding Pegmatite Mine	S-1	Stope	Steel grate	Stable and secure, though human ingress is possible via a small gap between the steel and rock. The bars comprising this grate were oriented vertically which is sub-optimal for bat ingress / egress. In the summer of 2022 AMLP will cut and rotate the grate to orient the bars horizontally. See Figure 20.
Harding Pegmatite Mine	F-1	Adit	Steel grating with locking gate	Stable and secure; however, this closure was set fairly deep into the hillside / highwall and rockfall hazards persist. Additionally, the vertical steel grating is less bat friendly, though AMLP staff indicated they have observed evidence of bat activity inside this mine.
Harding Pegmatite Mine	F-10	Adit	Steel bat grate	Stable and secure.
Harding Pegmatite Mine	F-11	Adit	Airflow steel grate	Stable and secure.
Harding Pegmatite Mine	F-4	Adit	18” CMP with inset steel crossbars to prevent human ingress	Stable and secure.
Harding Pegmatite Mine	F-9	Adit	Temporary fencing	This feature had subsided open. In the summer of 2022 AMLP will stabilize and secure the opening with PUF and a soil cap.
Harding Pegmatite Mine	F-2	Adit	Locking steel gate set in double-walled concrete	Stable and secure. The double-walled concrete collar was designed to stabilize the fractured rock opening. AMLP staff indicated in the future they may install steel “ramadas” overhead to protect visitors from rockfall. Future construction phases may also include bolting and scaling work to further mitigate the rockfall hazard. See Figure 21.

Harding Pegmatite Mine	F-3	Adit	48” CMP with locking steel gate and masonry collar	Stable and secure. See Figure 22.
Harding Pegmatite Mine	F-5	Adit	Locking steel bat grate	This closure was secure, but evidence of extensive rockfall was present. AMLP staff indicated their preference would have been to secure this opening with a CMP extending outward; however, landowner University of New Mexico desired all closures be unobtrusive / recessed well into the hillside / highwall.
Harding Pegmatite Mine	Sub-1	Subsidence	Temporary fencing	Recently discovered subsidence issue. Site was unstable but had temporary fencing placed around the feature to prevent access. In the summer of 2022 AMLP will permanently safeguard this feature with a combined toroid – PUF plug and soil cap. See Figure 23.
Harding Pegmatite Mine	Iceberg Pit	Pit	Backfill	Stable and secure. In the summer of 2022 AMLP will install permanent fencing around the perimeter of this pit.

Conclusion

Overall, we found AMLP’s reclamation to be successful on a long-term basis. AMLP’s mine closures were often: one-off, custom designs; robustly constructed; bat and biologist compatible as necessary; and durable. Where potential vandalism or natural subsidence was an issue, AMLP noted the problem type and location to prioritize future maintenance efforts. The coal waste reclamation sites showcased different stabilization techniques AMLP uses where high elevation, steep slopes, landowner preference, historic preservation considerations, and low rainfall were all factors.

As is typical with evaluations of long-term reclamation success, some maintenance will be required to ensure continued protection of the public. At the Real de Delores Mine Safeguard Project site, adit feature AML-16 will need to be re-backfilled or mitigated with an alternate closure option to prevent the public from gaining access. At the La Ventana Mine Closure Project site, the small subsidence near adit feature F-9 will need to be closed, potentially in combination with an upgraded closure for feature F-9. Additionally, at the La Ventana Mine Closure Project site, the Kistler Black Rose Mine Subsidence area, and adit feature LV-6 will

require maintenance to ensure continued protection for the public, wildlife, and livestock. At the Harding Pegmatite Mine Safeguard Project site, several subsidence areas were noted at Sub-1, S-2, and F-9 which AMLP plans to address during future phases of work.

Figures

Figure 1: Real de Dolores Mine Safeguard Project, English Mine, feature AML-8.

Figure 2: Real do Delores Mine Safeguard Project, Ortiz Mine, Feature AML-1.

Figure 3: Real de Delores Mine Safeguard Project, Ortiz Mine, Features AML-3 (shaft) and AML-4 (open stope). Rock retaining wall installed as a maintenance project visible in background.

Figure 4: Real de Delores Mine Safeguard Project, Benton Mine, Feature AML-13.

Figure 5: Real de Delores Mine Safeguard Project, New Live Oak Mine, Feature AML-16.

Figure 6: Rogersville Mine Safeguard Project Phase I, Feature AML-13.

Figure 7: Rogersville Mine Safeguard Project Phase II, Feature AML-23.

Figure 8: La Ventana Mine Closure Project, Kistler Black Rose Mine, Feature F-9.

Figure 9: La Ventana Mine Closure Project, Kistler Black Rose Mine, subsidence to the right of feature F-9 (see Figure 7).

Figure 10: La Ventana Mine Closure Project, Kistler Black Rose Mine, Kistler Black Rose Mine Subsidence.

Figure 11: La Ventana Mine Closure Project, Kistler Black Rose Mine, Kistler Black Rose Mine Subsidence.

Figure 12: La Ventana Mine Closure Project, Kistler Black Rose Mine, Feature LV-3.

Figure 13: La Ventana Mine Closure Project, Kistler Black Rose Mine, Feature LV-5.

Figure 14: La Ventana Mine Closure Project, Kistler Black Rose Mine, Feature LV-6.

Figure 15: La Ventana Mine Closure Project, Well Prospect Mine, Feature F-1.

Figure 16: La Ventana Mine Closure Project, Well Prospect Mine, Feature F-1.

Figure 17: La Ventana Mine Closure Project, Unknown Mine, SPA Gob Pile.

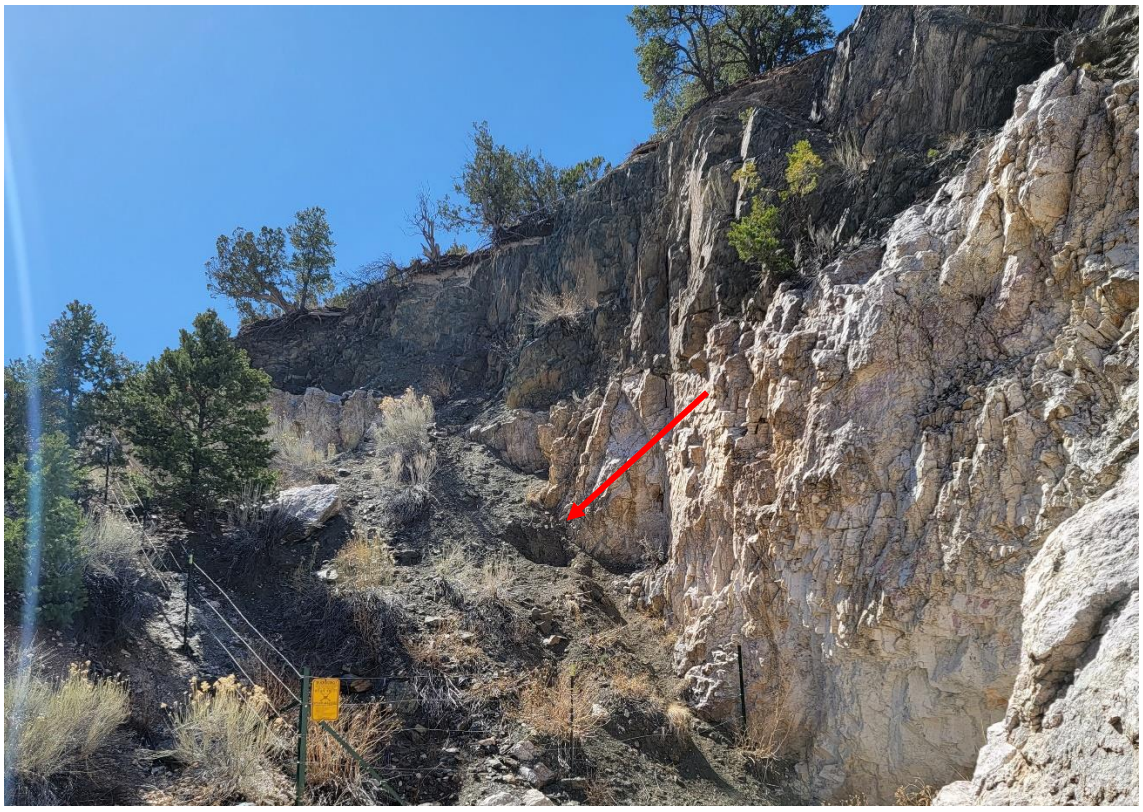

Figure 18: Harding Pegmatite Mine Safeguard Project, S-2 Subsidence.

Figure 19: Harding Pegmatite Mine Safeguard Project, S-2 closeup of Subsidence.

Figure 20: Harding Pegmatite Mine Safeguard Project, S-1 Feature.

Figure 21: Harding Pegmatite Mine Safeguard Project, F-2 Feature.

Figure 22: Harding Pegmatite Mine Safeguard Project, F-3 Feature.

Figure 23: Harding Pegmatite Mine Safeguard Project, Sub-1 F

New Mexico Abandoned Mine Land Program
2022 Enhancement and Performance Review

Measure
Principle of Excellence: 2. The State's abandoned mine land (AML) procedures are efficient and effective.

Performance Measure: (e) Does the information the State entered into the Abandoned Mine Land Inventory System (AMLIS) beginning July 1, 2004, agree with information in its files?

Review Dates
This review was conducted throughout the 2022 Evaluation Year.

Personnel
Amanda Muller and Lloyd Moiola, New Mexico Abandoned Mine Land Program (AMLP) and Brook Zeller, Office of Surface Mining Reclamation and Enforcement (OSMRE).

Background
This is the sixth annual review of this performance measure. OSMRE Directive AML-1, "Abandoned Mine Land Inventory Manual" effective December 12, 2012, requires state and tribal AML programs to update Problem Area Descriptions (PAD) in eAMLIS when OSMRE approves project funding and upon project completion. AML-1 also requires state and tribal AML programs to complete Priority Documentation Forms (PDF) when adding new problem-types to eAMLIS designated as high priority hazards (Priority 1 or Priority 2).

In September 2003, the U.S. Department of the Interior, Office of the Inspector General (OIG), issued report number 2003-I-0074 based on its review of AMLIS data for four eastern states' AML programs. The report criticized the accuracy of AMLIS data and recommended corrective action. Specifically, the OIG's review concluded that AMLIS data did not match data in those states' files. In part, the OIG recommended establishing "a quality control system that ensures that States, Tribes, and OSM[RE], as applicable, review and certify the accuracy of data entered into AMLIS."

OSMRE responded to the OIG's recommendation with two new reviews. We reviewed the first as performance measure 2(d) in Evaluation Year (EY) 2005. This assessed whether the states had procedures in place to ensure and certify the accuracy of data entered into AMLIS. The second requirement, performance evaluation 2(e), was first implemented in EY 2006 and annually compares a sample of AMLIS PAD data to the State's respective project files to ensure they

agree. OSMRE did not conduct this evaluation in EY 2011 due to complications with the transition to the enhanced Abandoned Mine Land Inventory System (eAMLIS). We reasoned it would be difficult to conduct a credible evaluation when state and federal staff had not had sufficient time to learn and update eAMLIS.

Methodology

The population for this review included all project completion data entered into AMLIS or eAMLIS since July 1, 2004 which have not already been evaluated under 2(e). AMLP uses the information in its individual project files to update eAMLIS. AMLP also uses this information to produce Project Completion Summaries (PCS) which aid in this evaluation. We compare the information in the PCS to the costs, quantities, keywords, and construction completion dates contained in the corresponding eAMLIS PADs. We also ensure the PADs under evaluation contain the additional information required by AML-1 such as Priority Documentation Forms and 1:24,000 scale / USGS 7.5-minute quadrangle maps showing the approximate location of each AML problem.

Findings

1. **Tin Pan Gob Reclamation Project (coal)**

   The Tin Pan Gob Reclamation Project was designed to stabilize steep slopes on two gob piles that have been contributing mine waste to an adjacent ephemeral stream channel in Colfax County, New Mexico. The reclamation work consisted of establishing vegetation, constructing a large rock rundown, and implementing various erosion control structures necessary to facilitate effective stormwater management.

   a. eAMLIS PAD NM-009 (Tin Pan Canyon) did not contain a 7.5-minute quadrangle map upon initial review; however, AMLP was quick to upload one upon request.
   b. Upon initial review, the PDF form for the project was incorrectly marked as a Clogged Streams (CS) problem type instead of Clogged Stream Lands (CSL). AMLP quickly updated the PDF with the correct problem type.
   c. AMLP's 2018 and 2019 AML grants, S18AF20060 and S19AF20032, funded project construction.
   d. Construction ran from September 4, 2020, to April 23, 2021.
   e. The project resulted in two change orders and no maintenance costs have been incurred.
   f. The Tin Pan Gob Reclamation Project PCS indicated two acres of CSL's were safeguarded at a cost of $368,614.33. These figures match the construction costs reported in the Tin Pan eAMLIS PAD.

2. **La Madera Mine Safeguard Project (non-coal)**

The La Madera Mine Safeguard Project was designed to safeguard ten adits, two pits, one shaft, one stope, and two subsidence features distributed among seven different mine sites in Ria Arriba County, New Mexico. In addition, all areas disturbed by construction were seeded.

a. eAMLIS PAD NM-447 (La Madera) does not require a 7.5-minute quadrangle map since the project was fully complete prior to the transition to eAMLIS; however, AMLP has uploaded a 7.5-minute quadrangle map showing the approximate project location for completeness and consistency.
b. PDF's are not required for this project since the project was fully complete prior to the transition to eAMLIS; however, AMLP has uploaded PDF's for completeness and consistency.
c. EMNRD grant 60003 and OSMRE grant GR307350 funded project construction.
d. Construction ran from July 22, 2005 to July 8, 2006. The project start dates were initially missing from the Problem Completion Data Tables for both the Vertical Openings and Portals but were quickly added by AMLP.
e. The project resulted in three change orders, and no maintenance costs have been incurred.
f. The La Madera PCS indicates six vertical openings were safeguarded at a cost of $20,731.00 and ten portals were closed at a cost of $34,554.09. These figures match the construction costs reported in the La Madera eAMLIS PAD.

3. **San Pedro Mine Safeguard Project Phase III (non-coal)**

Phase III of the San Pedro Mine Safeguard Project consisted of work on 60 mine features. The work consisted of 52 backfills, the construction of two structures on vertical shafts and three on horizontal adits, the construction of two barbed wire fences around two open prospect pits, and the capping of an 8-inch diameter, 93-foot deep vertical pipe with a weathering steel cap. All work was conducted in Santa Fe County, New Mexico.

a. eAMLIS PAD NM-420 (San Pedro/Golden) contains a 7.5-minute quadrangle map showing the approximate location of each AML problem as required by AML-1.
b. The PAD contains PDF's for the Priority 1 Portals and Vertical Openings as required by AML-1.
c. AMLP's 2018 and 2019 AML grants, S18AF20060 and S19AF20032 funded project construction. Upon initial review of the San Pedro/Golden PAD, the

Problem Summary Table indicated that all vertical openings and portals were funded by an alternate funding source (BLM), while the PCS for the San Pedro Mine Safeguard Project Phase III stated OSMRE funds were utilized. After further discussions with AMLP it was determined that a combination of BLM and OSMRE funds were utilized throughout the various project phases. AMLP corrected the Problem Summary Table by breaking out the vertical opening and portal problem types into different line items for OSMRE funding (NCA) and BLM funding (AFS).

d. Construction started February 23, 2021 and ended November 17, 2021. The project start dates were initially missing from the Problem Completion Data Tables, but were quickly added by AMLP.
e. The project resulted in four change orders, and no maintenance costs have been incurred.
f. The San Pedro Phase III PCS indicates 57 vertical openings were safeguarded at a cost of $273,914.17 and three portals were closed at a cost of $25,790.24. These figures match the construction costs reported in the San Pedro\Golden eAMLIS PAD.

4. <u>Swastika Mine and Dutchman Canyon Maintenance and Stream Restoration Project (coal)</u>

The Swastika Mine and Dutchman Canyon Maintenance and Stream Restoration Project was designed to stabilize and reclaim a series of steep and actively eroding coal gob piles. In addition, the project involved straightening a deeply incised section of stream channel adjacent to the gob piles. All work occurred in Dillon Canyon, New Mexico.

a. eAMLIS PAD NM-008 (Dutchman) contains a 7.5-minute quadrangle map showing the approximate location of each AML problem as required by AML-1.
b. Upon initial review the Dutchman PAD contained PDF's for the priority 2 portals, vertical openings, and polluted water (agriculture and industrial) problem types. In addition, there was a document explaining the upgrade of the gob and haul road problem types to Priority 2 form Priority 3. The PDF for the dangerous piles and embankments problem type was initially missing but was later uploaded by AMLP.
c. AMLP's 2018 and 2019 AML grants, S18AF20060 and S19AF20032 funded project construction.
d. Construction ran from September 1, 2020 to May 26, 2021.

e. The project required two change orders and was the fourth project developed to maintain the work initially completed by the Swastika Mine and Dutchman Canyon Reclamation Project completed in 2012. Therefore, all costs associated with the project were maintenance costs.
f. The PCS indicates three acres of polluted water (Agriculture and Industrial) were mitigated at a cost of $1,029,339.54. These figures match the construction costs reported in the Dutchman eAMLIS PAD.

1. As required by 30 CFR § 886.21 AMLP updated eAMLIS with completion data for the sample PADs. These data match the information contained in AMLP's Project Completion Summaries. Applicable problem type units were also updated to reflect completion of the work;

2. AMLP uploaded maps and PDFs to eAMLIS for each high priority problem type as required by OSMRE Directive AML-1;

3. AMLP's project information was well organized and easy to interpret; and

4. The cost data (unfunded, funded, completed, total) in each eAMLIS PAD's problem summary table were prorated by keyword, as applicable.

Conclusion

This review identified a few minor discrepancies related to project completion dates, problem type identification, and funding codes. AMLP promptly resolved these issues by entering into eAMLIS corrected completion data, correcting PDF's where applicable, and adjusting funding codes as necessary. We found no further problems in our comparison of the data contained in AMLP's Project Completion Summaries and the information reported by eAMLIS. Therefore, no corrective actions are recommended at this time. We appreciate AMLP's continued assistance with reporting comprehensive and accurate AML accomplishment and construction cost data in eAMLIS. We look forward to collaborating with AMLP in the coming evaluation year to review and improve additional PADs while continuing to rebuild institutional knowledge with respect to eAMLIS best practices.

VI. TABLES

Summary of Core Data to Characterize the AML Program

The following tables present summary data pertinent to abandoned mine land activities carried out by the New Mexico AMLP. Unless otherwise specified, the reporting period for the data contained in the tables is the 2022 Evaluation Year. Other data and information used by DFB in its evaluation of AMLP's performance are available for review in the evaluation file maintained by the Denver Field Branch.

Because of the significant variations from state to state and the differences between state programs, the summary data should not be used to compare one state to another.

List of Tables

Table 1 – New Mexico's Status of AML Inventory all Priority 1, 2, and 3 Hazards on June 30, 2022					
	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	15.80	67.66	N/A	104.9	188.36
Dollars	$2,802,556	$11,535,460	N/A	$6,225,000	$ 20,563,016
FUNDED					
GPRA Acres	1.80	8.09	3	18	30.89
Dollars	$114,936	$322,997	$20,300	$333,000	$ 791,233
COMPLETED					
GPRA Acres	122	129.50	81.90	82.2	415.60
Dollars	$8,330,558.59	$7,125,441.14	$4,894,565.99	$3,018,796	$ 23,369,361.72

Table 1a – New Mexico's Status of AML Inventory all Priority 1, 2, and 3 Non-Coal Hazards on June 30, 2022					
	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	99.7	0.30	N/A	360	460
Dollars	$1,728,200	$24,000	N/A	$72,000	$1,824,200
FUNDED					
GPRA Acres	17.7	0.06	0	80	97.76
Dollars	$865,716.36	$375,000	0	$10,000	$1,250,716.36
COMPLETED					
GPRA Acres	186.67	7.21	0	334.30	528.18
Dollars	$7,730,582.11	$73,854	0	$165,643	$7,970,079.11

Table 2 – New Mexico's Accomplishments in Eliminating Health and Safety Hazards Related to Past Mining Priority 1 and 2 Hazards as of June 30, 2022																	
PROBLEM TYPE (keyword)																	
	Clogged Stream Lands (CSL) (acres)	**Clogged Stream (CS) (miles)**	**Dangerous Piles & Embankments (DPE)(acres)**	**Dangerous Impoundment (DI) (count)**	**Dangerous Highwall (DH) (feet)**	**Dangerous Slide (DS) (acres)**	**Gases: Hazardous /Explosive (GHE)**	**Hazardous Equip. /Facilities (HEF) (count)**	**Hazardous Water Body (HWB) (count)**	**Industrial/Residential Waste (IRW)**	**Polluted Water: Agri/Industrial (PWAI)(count)**	**Polluted Water: Human Consumption (PWHC)(count)**	**Portal (P) (count)**	**Subsidence (S) (acres)**	**Surface Burning (SB) (acres)**	**Underground Mine Fire (UMF) (acres)**	**Vertical Opening (VO) (count)**	**TOTAL**
UNRECLAIMED / REMAINING HAZARDS (Unfunded)																	
Units	0	0	38	0	0	0	0	16	1	0	3	0	71	9	4.12	1.14	25	N/A
GPRA Acres	0	0	38	0	0	0	0	1.6	5	0	15	0	7.1	9	4.12	1.14	2.5	83.46
Dollars	0	0	$7,140,960	0	0	0	0	$1,094,500	$15,000	0	$610,000	0	$884,000	$2,322,556	$1,310,000	$675,000	$286,000	$14,338,016

ANNUAL RECLAMATION EY 2022 only (Completed)																	
Units	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	N/A
GPRA Acres	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0.1
Dollars	0	0	0	0	0	0	0	0	0	0	0	0	$59,957.36	0	0	0	0	$59,957.36
HISTORICAL RECLAMATION 1978 – 2022 (Completed)																		
Units	4	1.5	26.5	0	0	0	0	16	0	0	3	1	264	71.3	35	32	87	N/A
GPRA Acres	20	10	26.5	0	0	0	0	1.6	0	0	15	5	26.4	71.3	35	32	8.7	251.5
Dollars	$785,472.33	$155,000	$277,123	0	0	0	0	$118,840	0	0	$2,430,980.07	$1,728	$1,256,908	$6,165,417	$696,036	$234,983	$839,513	$12,961,999.73

Table 2a – New Mexico's Accomplishments in Eliminating Health and Safety Hazards Related to Past Mining Priority 1 and 2 Non-Coal Hazards as of June 30, 2022																	
PROBLEM TYPE (keyword)																	
	Clogged Stream (CS) (miles)	**Clogged Stream Lands (CSL) (acres)**	**Dangerous Piles & Embankments (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	0	0	5,000	0	0	0	0	0	0	74	0	0	0	0	0	212	N/A
GPRA Acres	0	0	0	71.4	0	0	0	0	0	0	7.4	0	0	0	0	0	21.2	100
Dollars	0	0	0	$500,000	0	0	0	0	0	0	$342,500	0	0	0	0	0	$909,700	$1,752,200

ANNUAL RECLAMATION EY 2022 only (Completed)																		
Units	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	57	N/A
GPRA Acres	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0	0	0	5.7	6
Dollars	0	0	0	0	0	0	0	0	0	0	$25,790	0	0	0	0	0	$273,914	$299,704
HISTORICAL RECLAMATION 1978 – 2022 (Completed)																		
Units	0	0.5	4	286	0	0	0	7	0	0	407	0	0	13	0	0	1,228	N/A
GPRA Acres	0	0.5	4	4.08	0	0	0	0.7	0	0	46	0	0	13	0	0	125.50	193.88
Dollars	0	$2,500	$24,500	$53,292	0	0	0	$2,460	0	0	$2,251,937	0	0	$31,450	0	0	$5,438,297.27	$7,807,436.11

Table 3 – New Mexico's Accomplishments in Eliminating Environmental Problems Related to Past Mining Priority 3 and SMCRA section 403(b) Hazards as of June 30, 2022															
PROBLEM TYPE (keyword)															
	Bench, Solid Bench, Fill Bench (BE) (acres)	**Equipment and Facilities (EF) (count)**	**Gob (GO) (acres)**	**Haul Road (HR) (acres)**	**Highwall (H) (feet)**	**Industrial/Residential Waste Dump (DP) (acres)**	**Mine Opening (MO) (count)**	**Pit, Open Pit, Strip Pit (PI) (acres)**	**Slump (SP) (acres)**	**Slurry (SL) (acres)**	**Spoil, Spoil Bank (SA) (acres)**	**Water (WA) (gallons)**	**Other (specify)**	**Water Supplies (WS) – Section 403(b) (count)**	**TOTAL**
UNRECLAIMED / REMAINING HAZARDS (Unfunded)															
Units	9	5	186	8	0	0	13	0	0	0	39.5	3	0	0	N/A
GPRA Acres	9	0.5	186	8	0	0	1.3	0	0	0	39.5	3	0	0	247.3
Dollars	$720,000	$350,000	$15,754,090	$580,000	0	0	$122,000	0	0	0	$1,720,000	$200,000	0	0	$19,446,090

ANNUAL RECLAMATION EY 2022 only (Completed)															
Units	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N/A
GPRA Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dollars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HISTORICAL RECLAMATION 1978 – 2022 (Completed)															
Units	3	9	105.4	47.5	0	0	13	2	0	2	2	0	0	0	N/A
GPRA Acres	3	0.9	105.4	47.5	0	0	1.3	2	0	2	2	0	0	0	164.1
Dollars	$7,301	$10,634	$4,149,278	$3,616,417	0	0	$123,540	$3,890	0	$1	$2,301	0	0	0	$7,913,362

Table 3a – New Mexico's Accomplishments in Eliminating Environmental Problems Related to Past Mining Priority 3 and SMCRA section 403(b) Non-Coal Hazards as of June 30, 2022

	PROBLEM TYPE (keyword)														
	Bench, Solid Bench, Fill Bench (BE) (acres)	**Equipment and Facilities (EF) (count)**	**Gob (GO) (acres)**	**Haul Road (HR) (acres)**	**Highwall (H) (feet)**	**Industrial/Residential Waste Dump (DP) (acres)**	**Mine Opening (MO) (count)**	**Pit, Open Pit, Strip Pit (PI) (acres)**	**Slump (SP) (acres)**	**Slurry (SL) (acres)**	**Spoil, Spoil Bank (SA) (acres)**	**Water (WA) (gallons)**	**Other (specify)**	**Water Supplies (WS) – Section 403(b) (count)**	**TOTAL**
UNRECLAIMED / REMAINING HAZARDS (Unfunded)															
Units	0	0	0	0	0	0	0	0	0	0	360	0	0	0	N/A
GPRA Acres	0	0	0	0	0	0	0	0	0	0	360	0	0	0	360
Dollars	0	0	0	0	0	0	0	0	0	0	$72,000	0	0	0	$72,000

ANNUAL RECLAMATION EY 2022 only (Completed)															
Units	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N/A
GPRA Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dollars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HISTORICAL RECLAMATION 1978 – 2022 (Completed)															
Units	0	18	0	0	0	0	25	0	0	0	330	0	0	0	N/A
GPRA Acres	0	1.8	0	0	0	0	2.5	0	0	0	330	0	0	0	334.3
Dollars	0	$9,000	0	0	0	0	$115,000	0	0	0	$41,643	0	0	0	$165,643

Table 4 – (State/Tribe) Public Well-Being Enhancement
(All Priority 1, 2, and 3 Coal AML projects completed during EY 2022)

#	PAD Number	Project Name	Problem Type(s) Reclaimed	GPRA Acres	Cost	Number of People with Reduced Exposure Potential (State Estimated /or/ Census Data)
1	NM000066	Gallup Dog Park / Laguna Circle Adit Safeguarding Project	P	0.1	$59,957.36	3241
TOTAL				0.1	$59,957.36	3241

Table 4a – (State/Tribe) Public Well-Being Enhancement (All Priority 1, 2, and 3 Non-Coal AML projects completed during EY 2022)						
#	**PAD Number**	**Project Name**	**Problem Type(s) Reclaimed**	**GPRA Acres**	**Cost**	**Number of People with Reduced Exposure Potential (State Estimated /or/ Census Data)**
1	NM935052	San Pedro Phase III	P, VO	6	$299,704.41	15
TOTAL				6	$299,704.41	15

Table 6 – New Mexico's AML Projects Started and / or Completed During EY 2022	
Projects Started	**Projects Completed**
1	1

Table 6a – New Mexico's Non-Coal AML Projects Started and / or Completed During EY 2022	
Projects Started	**Projects Completed**
0	1

Table 7 – New Mexico's AML Program Grant Awards and Staffing During EY 2022	
AML Program Costs	
Administration	$1,831,811
Project	$997,189
Water Supply Construction	0
AMD Set-Aside	0
Total AML Funding	$2,829,000
AML Program Staffing (full-time equivalents on June 30, 2022)	11 FTE

VII. COMMENTS

The New Mexico AMLP had no comments on the EY 2022 Annual Evaluation Report.