



ABANDONED URANIUM MINES WORKING GROUP (AUMWG)

# ANNUAL STAKEHOLDER REPORT

January 1 – December 31

2020

## PREFACE

In 2013, Congress directed the U.S. Department of Energy (DOE), in consultation with the secretary of the U.S. Department of the Interior, secretary of the U.S. Department of Agriculture (USDA), and the administrator of the U.S. Environmental Protection Agency (EPA), to conduct a review and prepare a report on approximately 4225 abandoned uranium mines (AUMs) across the nation that provided ore to the U.S. Atomic Energy Commission (AEC) for defense-related activities. DOE assigned the Office of Legacy Management (LM) to take the lead. In August 2014, LM submitted the *Defense-Related Uranium Mines Report to Congress* (Report to Congress).

The Report to Congress has four associated topic reports: mine location and status, priority ranking for reclamation and remediation, potential cost and feasibility for reclaiming or remediating the mines, and mine risks to human health and the environment. Each of these topic reports noted and documented numerous data gaps, primarily related to three major issues: (1) the status of reclamation and remediation could only be confirmed at 15% of the mines, (2) location data were not always accurate (including information in the AEC records), and (3) information about whether the mines pose risks to public health and safety and the environment was insufficient. This drove the need for a multiagency effort to fill existing data gaps and to verify and validate existing information.

The Abandoned Uranium Mines Working Group (AUMWG), consisting of senior management and staff from DOE, the U.S. Department of the Interior, USDA, and EPA, was formed to maintain ongoing dialogue among the agencies and continue collaborative efforts to exchange technical and administrative information. This heightened focus on inventorying and assessing potential impacts on public health and safety and the environmental condition of these mines contributed to the initiation of DOE's Defense-Related Uranium Mines (DRUM) Program.

The DRUM Program aims to fill the data gaps identified by the Report to Congress and to provide accurate information to help decision-makers prioritize mines for additional action, if warranted. The geographic distribution and land ownership of the DRUM sites is such that multiple agencies and stakeholders must necessarily be involved, and this required that DOE develop a phased implementation strategy. It was also the impetus for establishing partnerships between DOE, federal land management agencies (FLMAs) (including the U.S. Department of the Interior and USDA), EPA, and state and tribal abandoned mine lands programs. These partnerships, both formal and voluntary, are beneficial and allow the leveraging of resources on an as needed basis.

The purpose of this Annual Stakeholder Report is to communicate the AUMWG's collaborative efforts and accomplishments over the past year toward assessing, safeguarding, reclaiming, and remediating AUMs.

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## EXECUTIVE SUMMARY

In 2020, the Abandoned Uranium Mines Working Group (AUMWG) partners reconfirmed their programmatic documents and communication strategies were still viable. The partners recognized that marshalling and leveraging the resources of multiple federal agencies greatly increases the probability of success. Moreover, the coordinated efforts of a one-government approach are cost-effective and strengthen public support. The partners worked with states and tribes to identify and address high-priority mines in an effective and coordinated manner.

This interaction and collaboration between the U.S. Department of Energy (DOE), federal land management agencies (FLMAs), the U.S. Environmental Protection Agency, and state and tribal abandoned mine lands programs has contributed to the formation of the AUMWG and the ongoing implementation of the Defense-Related Uranium Mines (DRUM) Program. It provides a forum to exchange operational experiences, advice, and lessons learned from each partner agency's challenges and successes. Using the collaborative efforts of the AUMWG and implementation of the group's programmatic documents, the partners recognized shared objectives, coordinated schedules, and exchanged constructive information for their respective administrative and technical needs. This one-team approach is intended to expedite the protection of human health and the environment from any hazards resulting from the legacy of abandoned uranium mines.

The 2020 AUMWG highlights are:

- ❖ The partners continued to fulfill their responsibilities to protect human health and the environment, focusing on assessments and response actions, enforcement of responsible party agreements and settlements, and community outreach.
- ❖ The partners continued to engage one another on both project and programmatic levels and assisted one another, where possible, in leveraging resources, experience, and methods.
- ❖ The DRUM Program continued to verify and validate the condition of approximately 2500 mines on public land. To date, nearly 1300 DRUM sites on public land have been evaluated, and preliminary analysis shows:
  - The primary risks are attributed to unprotected open mine entries, subsidence features, dangerous highwalls, and large unstable structures associated with historic mining operations.
  - Many mines evaluated rank relatively low or exhibit no physical safety, chemical, or radiological hazards likely to result from the recreational use of public land. These mines are candidates for no additional action as determined by the FLMAs.

- DOE’s relative risk rankings (“high,” “medium,” and “low”) of mines on public land indicate that many of the mines may not need additional action. However, it is noted that the relative rankings do not constitute actual human health risk assessments and the FLMAs will determine actual risks at these sites in the future, as needed. Based on the mines screened by DOE, the federal government could realize over \$270 million in cost avoidance as compared to the estimates made in the Report to Congress.
- ❖ The partners safeguarded physical hazards at mine sites in several locations across Colorado and Utah. Additional safeguarding efforts are planned for Utah, Colorado, and New Mexico in 2021.

## INTRODUCTION

The AUMWG was formed to maintain the ongoing dialogue among the agencies resulting from the development of the Report to Congress. The AUMWG is a consortium of federal agencies working together to address the human health, safety, and environmental challenges posed by the nation’s AUMs. By marshalling and leveraging the resources of multiple federal agencies, the AUMWG works with states and tribes to identify and address high-priority mines in an effective and coordinated manner. The working group is led by LM and comprises directors, managers, and senior technical abandoned mine leads from DOE, EPA, the U.S. Bureau of Land Management (BLM), the U.S. Forest Service (USFS), the U.S. Bureau of Indian Affairs (BIA), and the National Park Service (NPS).

This year was especially unique given the onset of the coronavirus disease of 2019 (COVID-19) across the country. Many of the transactional activities of the AUMWG’s member agencies were deferred to alleviate exposure and transmission risk of COVID-19 with the safety and wellbeing of agency employees, contractors, volunteers, and the public in mind. While continuing to deliver essential services to the greatest extent practicable, the AUMWG’s members followed the guidance from the Centers for Disease Control and Prevention. Members worked with state and local health authorities to minimize the risk of COVID-19 transmission and consider the unique circumstances of each operating location. Individual state and tribal orders were reviewed for exemptions and permissible essential activities. In addition, site-specific regulatory requirements were reviewed to determine what could be completed within the constraints of the orders. Each partner implemented their agency plans to establish and implement their posture in response to this pandemic.

The *Abandoned Uranium Mines Working Group Addressing Health and Safety Risks of Abandoned Uranium Mines Multiagency Strategic Plan* (AUMWG Strategic Plan) guides the activities of the working group. The group normally holds quarterly calls and an annual face-to-face meeting each year to discuss its progress in addressing the problems posed by AUMs and to share technical approaches to assessing, safeguarding, reclaiming, and remediating these mines. Due to the COVID-19 pandemic, the annual face-to-face meeting was cancelled.

However, the quarterly telecons occurred and were engaging, collaborative, and informative. The purpose of this Annual Stakeholder Report is to communicate the AUMWG’s collaborative efforts and accomplishments over the past year.

## **GOALS AND OBJECTIVES**

The goals of the AUMWG are to: (1) identify areas of commonality among the federal agencies with AUM responsibilities and (2) improve strategies for the allocation of government resources to identify and address unacceptable risks to human health, safety, and the environment. To accomplish these goals, the working group integrates the collective experience and expertise of member agencies. This one-team approach optimizes the benefit to the government by leveraging resources to prioritize and expedite the reduction of risks to human health, physical safety, and the environment.

In support of these goals, the objectives of the AUMWG are to:

1. Share existing information and collect site-specific data at each mine to identify safety hazards or human health and environmental risks.
2. Perform high-level or relative risk scoring and ranking of these mine hazards.
3. Improve the data quality and content of the DRUM Program database and agency databases.
4. Exchange information with federal, tribal, and state governments.
5. Work together to leverage resources to address mines with priority safety hazards as well as human health and environmental risks.

A primary DRUM Program goal is to provide sufficient information to partner agencies to help them make informed decisions about what, if any, actions should be taken to address physical hazards or human health and environmental risks from the AUMs. Accomplishment of this goal facilitates the AUMWG achieving its goals and objectives.

## **WORKING GROUP PLANS**

The AUMWG Strategic Plan and the *Abandoned Uranium Mines Working Group Communications Strategy* (Communications Strategy) are critical to providing the group strategic direction and are useful for guiding executive-level decisions, allocating resources, evaluating progress, and collaborating with stakeholders.

### ***Strategic Plan***

The AUMWG Strategic Plan is a collaborative effort among the partner agencies to develop a comprehensive multiagency strategy to address the human health, safety,

and environmental risks posed by AUMs. It summarizes the scope of the problem, provides existing information on the costs of cleanup, describes the authorities and roles in addressing the hazards associated with these mines, and proposes a coordinated strategy by the agencies, along with state and tribal partners, to address these mines.

### ***Communications Strategy***

Through the Communications Strategy, the AUMWG representatives will deploy an assortment of partnership building activities and engagement opportunities to increase collaboration with communities, local governments, states, tribes, and stakeholders. The AUMWG recognizes that to successfully implement its strategy, strong strategic partnerships and meaningful engagements with stakeholders are required.

## **MAJOR ACCOMPLISHMENTS**

The AUMWG members continued to network, partner, and collaborate on the DRUM Program and other abandoned mine lands activities as one government. Member agencies reconfirmed the AUMWG Strategic Plan and Communications Strategy and prepared an annual report to its stakeholders. In 2020, the AUMWG member agencies accomplished the following:

### ***EPA***

EPA continued its efforts to execute enforceable agreements with potentially responsible parties for mine and groundwater cleanup, implement the Tronox Settlement, oversee trust settlements, and conduct fund-lead response actions such as replacement of contaminated homes, as well as assessments of high-priority mines near homes. Groundwater and surface contamination from uranium mining remain the primary concerns of communities and stakeholders where uranium mines are located.

The progress of EPA this past year was hampered by COVID-19 as some field work and public meetings were postponed. COVID-19 impacted the availability of contractors, access to sites, and the ability of facilities and laboratories to carry out certain activities required by federal environmental permits, regulations, and statutes. However, incremental progress was made, including the following:

- ❖ EPA continued the implementation of the Region 6 Grants Mining District Five-Year Plan (2015–2020) to address legacy mining and milling impacts in New Mexico. This plan is a partnership with federal agencies, State environmental, mining, and health agencies, and tribal governments.
- ❖ EPA continued the oversight of three former mine operators who are conducting the groundwater Remedial Investigation/Feasibility Study of the lower portion of the San Mateo Creek. This work will identify the nature and extent of the

contamination, assess the risk to human health and the environment, and assess cleanup options.

- ❖ EPA completed draft engineering evaluation/cost analysis (EE/CA) documents that covered 18 Tronox Navajo Area Uranium Mines funded by the Tronox Settlement. These drafts support discussions on cleanup alternatives with state and tribal partners and meet EPA inspector general commitments. Prior to completing the initial drafts, a series of technical workshops with the Navajo Nation and the State of New Mexico were held to give an overview of the potential alternatives and seek initial comments.
- ❖ EPA oversaw 32 Removal Site Evaluations (RSEs) conducted under the Cyprus Amax Settlement and finalized 13 RSEs and one water study conducted under the Navajo Phase 2 Trust settlement.
- ❖ EPA oversaw the development of draft EE/CAs for nine large mines, including the Mariano Lake mines (one), Ruby mines (two), Mac and Blackjack mines (four), Quivira mines (two), and the Johnny M mine.
- ❖ EPA developed a draft EE/CA for the Quivira mines, which entailed coordinating with BLM and the State of New Mexico to identify and evaluate DRUM sites in New Mexico. This may be a candidate site for a combined action and joint repository.
- ❖ EPA Region 6 continued community involvement to develop the new five-year plan for the Grants Mining District. Publication of the plan is expected in 2021.
- ❖ EPA Region 9 continued the multiagency planning and consultation effort to publish a 10-year plan addressing health and environmental risks associated with the legacy of uranium mining and milling on the Navajo Nation. Publication of the plan is expected in February 2021.
- ❖ EPA continued coordination with the Navajo Nation as a coregulator and partner, so Tribal Ecological Knowledge is incorporated into the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) decision-making process.
- ❖ EPA continued its collaboration with the DRUM Program by sharing methods for conducting mine assessments, collecting technical data, addressing risks to human health posed by AUMs, coordinating assessment and cleanup activities, and supporting the development of DOE plans for work on tribal lands.

EPA obtained the authority to use drones (unmanned aircraft) on Superfund sites for characterization, remediation, and redevelopment purposes. Drones can play a

significant role in these activities, such as enhancing mapping and surveillance of the overall site and difficult to access areas. Drones allow for aerial survey of a property without health or safety risks to site investigators.

EPA collaborated with FLMAs to establish a mechanism by which to redelegate CERCLA response, enforcement, and settlement authorities, pursuant to Executive Order 12580, *Superfund Implementation*, at mixed-ownership mining sites located partially on privately owned and partially on federally owned land. FLMAs, such as BLM and USFS, generally have CERCLA authority for enforcement and cleanup at mixed-ownership mining sites on the federally owned land under the FLMA's jurisdiction, custody, or control.

Finally, EPA established a new western abandoned hard-rock mine-lands-focused Office of Mountains, Deserts and Plains (OMDP), which is part of the Office of Land and Emergency Management (OLEM) and reports directly to the assistant administrator of OLEM. OMDP's mission is to focus on: (1) expediting the effective cleanup of AUMs on Navajo Nation land; (2) streamlining procedures and processes for Good Samaritan cleanup efforts and promoting Good Samaritan cleanup projects at abandoned hard-rock mining sites in the west; (3) leading and organizing the cleanup of hard-rock mining Superfund sites in the west using EPA Lean Management System principles; and (4) identifying the most advanced technology solutions for historic hard-rock mining sites in the west and improving their acceptance and application in the field.

## **DOE**

The DRUM Program's field season began on March 2, 2020. However, due to COVID-19 health concerns and work restrictions, field operations were suspended on March 19, 2020. As health and safety conditions improved and the associated risks were better understood, limited field operations resumed on May 18, 2020. To date, verification and validation (V&V) work has been conducted at nearly 1300 mines on public land. Specifically, DOE accomplished the following:

- ❖ Achieved several major milestones:
  - Published the 1000th mine-specific V&V report, the honor going to the aptly named Blue Ribbon 3 mine in the Gateway Mining District on land managed by BLM's Grand Junction Field Office.
  - Accomplished the 1000th V&V field visit, the honor going to the Mineral Channel 3 mine on Outlaw Mesa on land managed by BLM's Grand Junction Field Office.

- Completed the first pilot safeguarding project, the honor going to Long Park on land managed by BLM's Uncompahgre Field Office. It was a team effort with DOE funding the project, BLM accomplishing the National Environmental Policy Act (NEPA) documentation, and Colorado Division of Reclamation, Mining, and Safety (DRMS) executing the design and construction contracting.
- ❖ Assisted BLM Colorado on an emergency action safeguarding project for the Main Street mine on land managed by BLM's Tres Rios Field Office. Safeguarded a subsidence feature that encroached on a county road.
- ❖ Updated the risk screening process using BLM's *Decision Making Manual/Risk-Based Ranking Strategy for Utah Abandoned Mine Sites* document to include additional recreational screening levels (RSLs) to better support partner agency decisions. These additional screening benchmarks augment the RSLs to better identify DRUM sites where risk from long-term exposure is more likely.
- ❖ Delivered a reclamation project proposal to a delegation in the Republic of Palau (an island country in the western Pacific Ocean) outlining options for addressing damage resulting from legacy bauxite mining. Proposed a phased approach and recommended actions such as surface roughening, soil amendments, sediment traps, microclimates, and revegetation.
- ❖ Participated in a mining panel for Science, Technology, Engineering, Arts, and Mathematics student presentations at Tope Elementary School in Grand Junction, Colorado. Students (4th and 5th graders) presented their solutions and prototypes on safeguarding abandoned mines to the panel of industry experts.

DOE continued to form and revise necessary partnership agreements among the various federal and state entities to accomplish the V&V work and to safeguard physical safety hazards, such as hazardous mine openings, at AUMs. Most notably, DOE established a cooperative agreement with Bat Conservation International that provides long-term access to the spectrum of project development, environmental review (including NEPA documentation), and design and construction contracting services needed to safeguard mines on public land.

The DRUM Program is well underway. Table 1 shows the program progress to date by state. Notably, the DRUM Program has preliminarily investigated over 3200 acres of public land containing these AUMs.

**Table 1.** Progress of the DRUM Program by State

State	Estimated Number of DRUM Mines <sup>a</sup>	Current DRUM Mine Estimate <sup>b</sup>	Number of Field V&V Operations Completed (12/12/2020)	Number of Field V&V Operations Remaining
Alaska	1	1	0	1
Arizona	413	354	0	354
California	26	24	0	24
Colorado	1539	1261	493	768
Florida	1	0	0	0
Idaho	7	6	0	6
Montana	19	21	0	21
Nevada	24	22	0	22
New Jersey	1	1	0	1
New Mexico	247	216	60	156
North Dakota	14	12	0	12
Oklahoma	2	2	0	2
Oregon	4	3	0	3
Pennsylvania	1	1	0	1
South Dakota	155	141	26	115
Texas	29	29	0	29
Utah	1380	1162	670	492
Washington	17	15	0	15
Wyoming	319	260	38	222
Unknown	26	2	0	2
<b>Totals</b>	<b>4225</b>	<b>3533</b>	<b>1287</b>	<b>2246</b>

<sup>a</sup> This represents the estimated number of DRUM mines per state presented in 2014 Report to Congress.

<sup>b</sup> This represents the estimated actual number of DRUM mines per state following reconciliation.

The DRUM Program assisted land management agencies in safeguarding the immediate hazards posed by physical mine features. This was accomplished while honoring historical, cultural, and ecological values at individual mine sites. These hazards are primarily due to unprotected open mine entries, subsidence features, or dangerous highwalls. Table 2 describes the safeguarding projects performed this past year and their associated closure costs.

**Table 2. 2020 Safeguarding Projects**

State	Project Area	Features Safeguarded	Direct Cost (\$)	Indirect Cost (\$) <sup>a</sup>	Total Cost (\$)	Cost Per Feature (\$)
Utah	BLM/Utah AMRP Safeguard Projects					
	Buckmaster Phase I	46	127,372	31,339	158,711	3,450
	White Canyon/Deer Flat	83	325,050	34,037	359,087	4,326
	Temple Mountain	12	22,300	8,000	30,300	2,525
Colorado	BLM/Colorado DRMS Safeguard Projects					
	Long Park	26	63,200	11,600	74,800	2,877
	Bald Eagle	20	56,402	10,500	66,902	3,345
	Klondike Basin	20	79,750	11,000	90,750	4,538
Total		207			780,550	

**Note:**

<sup>a</sup> Indirect cost includes mobilization, insurance, bond, and safety-related project costs.

**Abbreviation:**

AMRP = Abandoned Mine Reclamation Program

***BIA***

As a trustee for tribal mine sites, BIA continued to participate in community outreach efforts, ensuring that tribes are informed and consulted both formally and informally. BIA monitored the ongoing work at tribal sites and provided long-term monitoring of institutional controls and completed remedies.

***BLM***

BLM continued their assessment and cleanup of AUM sites. BLM made progress, despite the constraints of available funding and COVID-19. BLM leveraged program funding, existing agreements, and available federal funding with states to continue its response actions at the mine sites under its purview. Additional funding would specifically allow BLM to complete preliminary assessments and site inspections of AUMs on public land. BLM is partnering with DOE so that the resources of both agencies can be leveraged to collectively do DRUM inventory work on BLM-managed land.

- ❖ BLM collaborated with DOE to facilitate the completion of numerous V&V operations in Colorado and Utah.

- ❖ BLM worked with DOE to prepare numerous Field Operations Plans for V&V efforts scheduled to start in 2021, including four mining districts under the management of the Tres Rios Field Office.
- ❖ BLM accomplished safeguarding projects in Colorado and Utah (see Table 2), partnering with DOE, Colorado DRMS, and Utah AMRP.
- ❖ BLM is poised to initiate additional V&V and safeguarding activities in Utah, Colorado, and New Mexico in 2021.
- ❖ The BLM Colorado State Office continued inventorying non-DOE, non-Freeport-McMoRan AUM sites and to date has inventoried over 1000 AUM sites on BLM-managed land throughout western Colorado. Mine features deemed to be of extremely high physical safety risk were signed, fenced, or both.
- ❖ The BLM Utah State Office, under an interagency agreement with DOE, developed screening-level risk assessment guidance to support decision-making at DRUM sites.

BLM executed a significant reorganization effort, relocating most of its Washington, D.C.-based headquarters staff to BLM offices across the west, including its new headquarters office in Grand Junction, Colorado. Realigning BLM’s human resources closer to the lands and resources it manages has been of significant benefit to its constituency of states, tribes, and local communities. States will benefit from the presence of additional BLM staff who possess experience and expertise in performing duties that address headquarters priorities and who understand how to utilize that knowledge to advance each state’s local, day-to-day operations. BLM will be able to serve the American people with an increased staffing presence closer to the resources it manages, which in turn will allow for more informed and locally coordinated decision-making.

### **USFS**

USFS continued its assessment and cleanup of AUM sites commensurate with annual funding and relative project prioritization. Additional funding would permit USFS to conduct a complete AUM inventory and evaluate these sites for their potential impact on the environment. Despite funding constraints and COVID-19, USFS made incremental progress, including the following:

- ❖ USFS partnered with EPA regions, as well as states and DOE, to leverage agency resources and collectively address AUMs on National Forest System land.
- ❖ USFS facilitated concurrence with the supervisor for the White River National Forest to execute safeguarding projects in the future.

- ❖ USFS, along with BLM, NPS, and DOE, virtually hosted the Interagency Abandoned Mine Safety Training Course addressing topics such as surface and underground mine features and hazards.
- ❖ USFS continued its assessment and cleanup work at other AUMs on National Forest System land.

Most notably, USFS developed and instituted its first-ever abandoned mine lands database. The database includes abandoned mine lands features derived from historic inventory and field observations taken by USFS staff and state and federal partners. It records the location, type, associated mines (if any), and other important details of the abandoned mine lands feature, including whether any safety mitigation has been previously completed. Features are individual physical hazards resulting from previous mining activity such as adits, shafts, pits, vehicles, equipment, dilapidated structures, and other refuse. The database does not contain environmental hazard or sampling information. It is strictly devoted to recording the presence and types of physical hazards at historic mine sites and mine claims on National Forest System land.

### ***NPS***

NPS continued its investigation of the nature and extent of contamination at the Orphan mine site in Grand Canyon National Park using its CERCLA authority. NPS intends to identify a recommended cleanup action for the upper mine area in the near term and address the lower mine area in the future as they are generally inaccessible to park visitors.

- ❖ NPS joined an interagency agreement with DOE to facilitate the accomplishment of inventory, environmental, and safeguarding activities at DRUM sites. The agreement reflects the natural resource stewardship approach of NPS as well as guiding statutes.

### **BENEFIT POTENTIAL**

Several benefits can be achieved when the AUMWG and its partner agencies collectively address the hazards posed by AUMs. With effective partnerships and collaboration among diverse site stakeholders, the cleanup and restoration of an AUM site can provide significant economic, public health, and environmental benefits.

### ***Background***

Mining for uranium has a long history in the United States. After the Atomic Energy Act of 1946, the U.S. AEC facilitated a mining boom, offering incentives and guaranteed prices as the sole purchaser of uranium. Uranium mines initially opened in the states of Utah, Colorado, New Mexico, and Arizona and then rapidly spread to other states. When mining ventures

were no longer economically viable, mines were abandoned without being subject to the closure and cleanup requirements of present-day regulation. Most abandoned mines have no responsible or solvent party to perform the safeguarding or reclamation, so the federal government, including the agencies of the AUMWG, has undertaken the extensive effort to assess and clean up the mines. There are still many abandoned mines that pose significant safety hazards.

Nearly 11% of AUM sites are on tribal lands, and the majority of these are on Navajo Nation land. Because the radiological risks are not visually evident, mine waste material was used in construction of some homes, and some homes were built directly on top of mine waste. To date, over 50 structures and homes on Navajo Nation land have been remediated or replaced due to radiological contamination. This past year, contamination was removed from the yards of 18 homesites.

### ***Benefits***

As part of the AUMWG's commitment to finding effective solutions to address the potential threats that abandoned mines pose to human health, safety, and the environment, significant attention is being focused on the potential future uses of these lands and on the economic, environmental, and social impact that reuse can have on the neighboring communities. The AUMWG is critical to achieving these benefits, which include:

- Reclaiming and reusing thousands of acres of formerly contaminated land.
- Safeguarding historic mining areas for recreational visitation and tourism.
- Providing neighboring communities with new opportunities to grow and prosper.
- Creating, preserving, and restoring land for recreational and ecological purposes.
- Creating and enhancing wildlife habitats.
- Restoring the connection of local communities to the area.
- Maintaining the protective use of the land.
- Sustaining the environment for future generations.

## CONCLUSION

The AUMWG has successfully fostered dialogue among partner agencies, enabled community and stakeholder engagements, and collaborated to address the human health, safety, and environmental challenges posed by AUMs. By orchestrating the resources and efforts of multiple federal agencies, the working group helped states and tribes to identify and address high-priority mines in an effective and coordinated manner. Acting as one government is essential to the group's overall success.

Notably, the DRUM Program is 50% complete for AUMs on public land. Based on preliminary analysis of data collected from ongoing mine evaluations, concerns regarding physical hazards continue, since they are an immediate threat to humans and wildlife. These hazards mostly consist of unprotected open mine entries, subsidence features, dangerous highwalls, and large unstable structures associated with historic mining operations.

To date, most mines have been found to be potential candidates for no additional action by the FLMAs. Since many sites on public land may not need additional action, the federal government could realize over \$270 million in cost avoidance as compared to the estimates made in the Report to Congress. However, this trend may not continue for the remaining mines because of factors such as geological formations, mining methods, and land use risk scenarios.

The AUMWG partners continued to fulfill their responsibilities to protect human health and the environment, which was viewed as an imperative. Their efforts focused on assessments and response actions, enforcement of responsible party agreements and settlements, and community outreach. The team made great strides, but more progress is needed.

Finally, as part of the AUMWG's commitment to finding effective solutions to address the potential threats that abandoned mines pose to human health, safety, and the environment, significant attention was paid to the potential future uses of these lands, and the economic, environmental, and social impact that reuse can have on the neighboring communities. This attention is important for sustaining the environment for future generations.



## APPENDICES

## APPENDIX A

### Abbreviations List

AEC	U.S. Atomic Energy Commission
AUM	abandoned uranium mine
AUMWG	Abandoned Uranium Mines Working Group
BIA	U.S. Bureau of Indian Affairs
BLM	U.S. Bureau of Land Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COVID-19	coronavirus disease of 2019
DOE	U.S. Department of Energy
DRMS	Division of Reclamation, Mining, and Safety
DRUM	Defense-Related Uranium Mines
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
FLMA	federal land management agency
FLPMA	Federal Land Policy and Management Act
LM	Office of Legacy Management
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NPS	National Park Service
OLEM	Office of Land and Emergency Management
OMDP	Office of Mountains, Deserts and Plains
PL	Public Law
RSE	Removal Site Evaluation
RSL	recreational screening level
SARA	Superfund Amendments and Reauthorization Act
SMCRA	Surface Mining Control and Reclamation Act
Stat.	Statutes at Large
USC	<i>United States Code</i>
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
V&V	verification and validation

## APPENDIX B

### Agency Authorities

This appendix documents the statutes that provide authority to the AUMWG partner agencies. It defines the extent of powers and responsibilities held by the agencies, which must be consistent with Constitutional constraints and legislative intent.

#### **Atomic Energy Act**

Title 42 *United States Code* Section 2011 et seq. (42 USC § 2011 et seq.) (1954)

The Act is a United States federal law that covers the development, regulation, and disposal of nuclear materials and facilities in the United States. It was an amendment to the Atomic Energy Act of 1946 and substantially refined certain aspects of the law, including increasing support for the possibility of a civilian nuclear industry. Notably, it made it possible for the government to allow private companies to gain technical information (Restricted Data) about nuclear energy production and the production of fissile materials, allowing for greater exchange of information with foreign nations as part of President Dwight D. Eisenhower's Atoms for Peace program. It reversed certain provisions in the 1946 law, which had made it impossible to patent processes for generating nuclear energy or fissile materials.

#### **Bureau of Indian Affairs (BIA)**

25 USC § 1 et seq. (1969)

Congress gave BIA statutory authority by the Act of July 9, 1832, Volume 4 *Statutes at Large* page 564 Chapter 174 (4 Stat. 564 Chapter 174). In 1849, BIA was transferred to the newly created U.S. Department of the Interior. The Interior Department formally adopted the name "U.S. Bureau of Indian Affairs" for the agency on September 17, 1947. BIA carries out its core mission to serve 574 federally recognized tribes through four offices. The Office of Indian Services operates BIA's general assistance, disaster relief, Indian child welfare, tribal government, Indian Self-Determination, and Indian Reservation Roads programs. The Office of Justice Services directly operates or funds law enforcement, tribal courts, and detention facilities on federal Indian lands. The Office of Trust Services works with tribes and individual American Indians and Alaska Natives in the management of their trust lands, assets, and resources. Finally, the Office of Field Operations oversees 12 regional offices and 83 agencies which carry out the mission of the bureau at the tribal level.

#### **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**

42 USC § 9601 et seq. (1980)

The Act provides a federal "Superfund" to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and the release or threatened release of pollutants and

contaminants into the environment. Through CERCLA, EPA was also given authority to require parties responsible for contamination to either perform cleanups or reimburse the government for EPA-led cleanup work.

While other federal agencies have authority to clean up federal lands, EPA is the lead agency for cleanups on private and mixed-ownership sites.

EPA cleans up orphan sites when potentially responsible parties cannot be identified or located, or when they fail to act. Through various enforcement tools, EPA obtains private party cleanup through orders, consent decrees, and other settlements. EPA also recovers costs from financially viable individuals and companies once a response action has been completed.

EPA is authorized to implement the Act in all 50 states and U.S. territories. Superfund site identification, monitoring, and response activities may be undertaken in coordination with state and tribal environmental protection or waste management agencies.

The Superfund Amendments and Reauthorization Act (SARA) of 1986 reauthorized CERCLA to continue cleanup activities around the country. Several site-specific amendments, definition clarifications, and technical requirements were added to the legislation, including additional enforcement authorities. Also, Title III of SARA authorized the Emergency Planning and Community Right-to-Know Act.

Under CERCLA, the secretary of the interior has the authority to address the release or threatened release of hazardous substances, pollutants, and contaminants on or from land under the department's jurisdiction, custody, or control. The secretary has delegated this authority to the bureau directors. In addition, under CERCLA, the department is designated as a trustee for natural resources and must act as such on behalf of the public.

### **Federal Land Policy and Management Act (FLPMA)**

Public Law 94-579 (PL 94-579) (1976)

The Act is a United States federal law that governs the way in which the public lands are administered by USFS within the USDA, and by BLM, the U.S. Fish and Wildlife Service (USFWS), and NPS within the U.S. Department of the Interior. The Act phased out homesteading in the United States by repealing the pre-existing homestead acts. Congress recognized the value of the public lands, declaring that these lands would remain in public ownership. USFS, USFWS, NPS, and now, BLM, are commissioned in FLPMA to allow a variety of uses on their land while simultaneously trying to preserve the natural resources within it. This concept is best summarized by the term "multiple use." The term "multiple use" is defined in the Act as "management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people."

The Act addresses topics such as land use planning, land acquisition, fees and payments, administration of federal land, range management, and rights-of-way on federal land. It has specific objectives and time frames in which to accomplish them, giving it more authority and eliminating the uncertainty surrounding BLM's role in wilderness designation and management.

### **National Forest Management Act (NFMA)**

PL 94-588 (1976)

The Act is a United States federal law that is the primary statute governing the administration of national forests and was an amendment to the Forest and Rangeland Renewable Resources Planning Act of 1974, which called for the management of renewable resources on National Forest System lands.

The main objectives of NFMA are to require USFS to develop plans for national forests, set standards for timber sales, and create policies to regulate timber harvesting. The purpose of these objectives is to protect national forests from permanent damage from excessive logging and clear cutting. Congress requires USFS, in conjunction with other appropriate agencies, to thoroughly assess, research, and plan for the nation's renewable resource use, including the current demand, anticipated demands, and environmental and economic impacts.

USFS's abandoned mine lands program uses this Act to restore the land disturbed by historic mining activities. There are approximately 40,000 abandoned mine sites on National Forest System lands. Of those, 34% were mines with records of mineral production.

### **National Park Service Organic Act**

PL 64-235 (1916)

The Act is a United States federal law that established the NPS, an agency of the U.S. Department of the Interior. The NPS, as established by the Act, promotes and regulates the use of the federal areas known as national parks, monuments, and reservations, in order to conserve the scenery, the natural and historic objects, and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

### **Surface Mining Control and Reclamation Act (SMCRA)**

30 USC Chapter 25 § 1201 et seq. (1977)

The Act provides for cooperation between the secretary of the interior and the states with respect to the regulation of surface coal mining operations, the acquisition and reclamation of abandoned mines, and for other purposes.

SMCRA created two programs: one for regulating active coal mines and a second for reclaiming abandoned mine lands. SMCRA also created the Office of Surface Mining Reclamation and Enforcement, an agency within the U.S. Department of the Interior, to promulgate regulations, to fund state regulatory and reclamation efforts, and to ensure consistency among state regulatory programs.

The regulation of active mines under SMCRA has five major components:

- ❖ **Standards of Performance.** SMCRA and its implementing regulations set environmental standards that mines must follow while operating and achieve when reclaiming mined land.
- ❖ **Permitting.** SMCRA requires that companies obtain permits before conducting surface mining. Permit applications must describe what the pre-mining environmental conditions and land use are, what the proposed mining and reclamation will be, how the mine will meet the SMCRA performance standards, and how the land will be used after reclamation is complete. This information is intended to help the government determine whether to allow the mining and set requirements in the permit that will protect the environment.
- ❖ **Bonding.** SMCRA requires that mining companies post a bond sufficient to cover the cost of reclaiming the site. This is meant to ensure that the mining site will be reclaimed even if the company goes out of business or fails to clean up the land for some other reason. The bond is not released until the mining site has been fully reclaimed and the government has found that the reclamation was successful.
- ❖ **Inspection and Enforcement.** SMCRA gives government regulators the authority to inspect mining operations and to punish companies that violate SMCRA or an equivalent state statute. Inspectors can issue “notices of violation,” which require operators to correct problems within a certain amount of time; levy fines; or order that mining cease.
- ❖ **Land Restrictions.** SMCRA prohibits surface mining altogether on certain lands, such as in national parks and wilderness areas. It also allows citizens to challenge proposed surface mining operations on the grounds that they will cause too much environmental harm.

### **Surface Resources Act**

PL 84-167 (1955), 30 U.S.C. § 611 et seq.

This Act allows BLM to address abandoned mine openings on active mining claims staked after 1955 as long as the proposed closure work does not endanger or materially interfere with actual, established prospecting, mining or processing operations or reasonably incidental uses. Therefore, BLM is authorized to take the necessary steps to protect public safety and prevent further unnecessary and undue degradation caused by abandoned mines.

