REPORT

Abandoned Uranium Mines Data Gap Analysis

NMED
New Mexico Environment Department

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NEW MEXICO
ENVIRONMENT DEPARTMENT

Abandoned Uranium Mines Data Gap Analysis

NMED New Mexico Environment Department

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Our Mission

To protect and restore the environment and to foster a healthy and prosperous New Mexico for present and future generations.

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List of Acronyms

AML	Abandoned Mine Lands
AMRP	Abandoned Mine Reclamation Program
ASMI	Arizona State Mine Inspector
AUM	Abandoned Uranium Mine
AUMWG	Abandoned Uranium Mines Working Group
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CAF	Corrective Action Fund
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DFD	Denver Field Division of OSMRE
DOE	United States Department of Energy
DOE-LM	Office of Legacy Management within the Department of Energy
DOGM	Division of Oil, Gas, and Mining
DOI	Department of the Interior, United States
DRUM	Defense-Related Uranium Mine Program
EMNRD	New Mexico Energy, Minerals and Natural Resources Department
EY	Evaluation Year
ft	foot or feet
FTE	full-time equivalent
GWQB	Ground Water Quality Bureau
HB164	New Mexico House Bill 164
HWB	Hazardous Waste Bureau
IMRP	Inactive Mine Remediation Program
MARP	Mining Act Reclamation Program
Mining Act	1993 New Mexico Mining Act (Mining Act; Chapter 69, Article 36 New Mexico Statutes Annotated [NMSA] 1978
MMD	Mining and Minerals Division
MOU	Memorandum of Understanding
NAAMLP	National Association of Abandoned Mine Land Programs
NAMLRD	Navajo Abandoned Mine Lands Reclamation Department
Navarro	Navarro Research and Engineering Inc
NEPA	National Environmental Policy Act
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMSA	New Mexico Statutes Annotated

NMWQCC	Water Quality Control Commission
NNEPA	Navajo Nation Environmental Protection Agency
NNSP	Navajo Nation Superfund Program
NPL	National Priority List
NRC	Nuclear Regulatory Commission
OSMRE	Office of Surface Mining Reclamation and Enforcement
PSTB	Petroleum Storage Tank Bureau
RCRA	Resource Conservation and Recovery Act
ROS	Remediation Oversight Section
RP	Responsible Party
RRC	Railroad Commission of Texas
SMCRA	Surface Mining Control and Reclamation Act
SOS	Superfund Oversight Section
SWQB	Surface Water Quality Bureau
TBA	Targeted Brownfields Assessment(s)
TENORM	Technologically Enhanced Naturally Occurring Radioactive Material
TMDL	Total Maximum Daily Load
TNRC	Texas Natural Resources Code
Tronox	Tronox Incorporated
UAC	Utah Administrative Code
UMC	Uranium Mine Cleanup
UMRRF	Uranium Mining Reclamation Revolving Fund
UMTRA	Uranium Mill Tailings Remedial Action
UMTRCA	Uranium Mill Tailings Radiation Control Act of 1978
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
V&V	Verification and Validation
VRP	Voluntary Remediation Program
WQA	New Mexico Water Quality Act (WQA), NMSA 1978 §§74-6-1 through 74-6-17
WYAMLD	Wyoming Abandoned Mine Lands Division
WYAMLP	Wyoming Abandoned Mine Land Program

Executive Summary

Throughout New Mexico, there are abandoned uranium mine (AUM) sites where mine features exist that have not been cleaned up and may threaten the health and safety of New Mexicans and the environment. The release of contaminants from AUM features to soil or groundwater may have occurred decades ago and responsible parties (RPs) may be long-gone, but the contamination and safety issues persist. Because most AUM sites in New Mexico rarely rank high enough to be considered for United States Environmental Protection Agency (USEPA) Superfund National Priorities List or other national programs, federal funds are lacking. Furthermore, little state funding is available to ensure that neglected AUM mine sites are appropriately evaluated and cleaned up. The lack of progress in addressing these AUM sites is taking on increasing significance for the state due to renewed interest in uranium as a resource for alternative energy, national defense, and increasing environmental concern.

Neglected AUM sites, a subset of AUMs, are former uranium mine sites that do not have an identifiable responsible party (RP) and do not fall under an existing state, tribal, or federal program. The existing federal and state regulatory framework for addressing cleanup of AUM sites is complex and includes many different federal agencies and programs as well as state agencies and programs. However, neglected AUM sites may not be able to be fully assessed and cleaned up by these existing agencies and programs due to the requirements of the funding mechanisms and the requirements of the programs themselves.

In February 2022, the New Mexico Legislature passed House Bill 164 (HB164), which directs New Mexico Environment Department (NMED) to coordinate uranium mine cleanup in New Mexico. HB164 also required NMED to develop a Uranium Mine Reclamation Coordinator position, tasked with leading the charge for AUM cleanup.

One of the first directives of the Uranium Coordinator was to develop this report to provide:

- an overview of AUMs,
- outline the regulatory complexity of AUM cleanup,
- identify funding mechanisms for cleanup of AUM sites,
- provide a few examples of AUM sites in New Mexico,
- review and summarize AUM programs in other states,
- propose a path for an AUM cleanup program, and
- a discussion of the barriers and benefits of addressing AUM sites in New Mexico.

AUM sites present hazards to humans and the environment, and may not have a clear pathway to cleanup.

This report provides examples of neglected AUM sites that have undergone partial assessment and cleanup under existing programs, however most of these sites have only had surface reclamation conducted through an existing state or federal program. Additional characterization and cleanup may be needed for these example AUM sites. Likewise, many AUM programs in other states also focus primarily on surface reclamation and have similar funding shortfalls that do not allow for a full assessment and cleanup of their neglected AUM sites.

The data gaps, or barriers, that exist for addressing neglected AUM sites in New Mexico include the following:

1. The need for a complete inventory and review of AUMs so that NMED can identify the neglected AUM sites that need assessment and cleanup.
2. The need for comprehensive site assessments to fully characterize the extent of cleanup and funding required to address neglected AUM sites.
3. The need for definition of the regulatory framework for addressing both surface reclamation and groundwater remediation for neglected AUM sites.
4. The lack of an AUM regulatory program, and staff, to administer rules and guidelines associated with the assessment and cleanup of neglected AUM sites. Current state regulations address requirements for groundwater remediation and surface reclamation, but only when an RP is identified. There is a gap in bringing neglected AUMs with no RP under the state's existing regulatory framework.
5. The lack of funds available in the Uranium Mine Reclamation Revolving Fund (UMRRF) for cleanup activities.

However, this report also proposes the actions for removing the barriers and closing the data gaps so that cleanup of neglected AUM sites in New Mexico is possible. The initial recommended steps include establishing an Abandoned Uranium Mine Cleanup (AUMC) Program, developing AUMC implementation guidelines, and funding the UMRRF. These key actions will allow NMED to meet the objectives of HB164 to advance uranium mine reclamation as a whole, which thereby includes neglected AUM sites that do not fall under an existing program.

Uranium mines in New Mexico supported the national defense efforts of the Atomic Age and now the state is left with the legacy of those AUM sites. The State of New Mexico has taken the first step to addressing neglected AUM sites through the passage of HB164 and establishment of the UMRRF. The crucial next steps can now be taken to fully characterize and clean up all neglected AUM sites (not already covered under an existing state, tribal, or federal program) to protect both New Mexicans and the environment.

Establish Abandoned Uranium Mine Cleanup (AUMC) Program

- Develop rulemaking process
- Define regulatory authority
- Hire staff to manage AUMC program
- Define objectives of the AUMC program

Develop AUMC Implementation Guidelines

- Work with other agencies to implement guidelines
- Develop process for assessment and cleanup of neglected AUM sites
- Identify appropriate cleanup standards
- Identify neglected AUM sites that fall under the AUMC program

Fund the UMRRF

- Identify appropriations
- Solicit gifts and donations
- Identify and apply for grants and federal funding
- Identify other funding sources

1 - Introduction

New Mexico's enchanting landscapes, from its mountain sky islands to gypsum dune fields, overlie immense mineral deposits. Geological events over millions of years enriched the state with base and precious metals, aggregates, coal, oil, and natural gas. Mining has been a part of the state's history since precolonial times. As a result, approximately 15,000 abandoned mines and mine features have been recorded in the state (ENMRD, 2022), many of which may pose a risk to human and environmental health.

The inception of the state's uranium industry was driven by the Atomic Age. New Mexico's vast uranium deposits were delineated and exploited in support of two preoccupying national interests: defense and nuclear power. Uranium's radioactive properties make it an extremely valuable source of concentrated energy. The resulting 1950s uranium boom occurred prior to the establishment of state and federal legislation to protect the environment and water resources. State and federal legislation to protect the environment was not enacted until the mid-1970s, and by then federal interest in uranium had stagnated, leaving many mines abandoned, un-reclaimed, and un-remediated.

The New Mexico Energy, Minerals and Natural Resources Department (EMNRD) Mining and Minerals Division (MMD) has compiled a list of approximately 260 abandoned uranium mine (AUM) sites across New Mexico on land owned by private individuals or managed by different state or federal agencies. At least half of the AUM sites have had no cleanup or have an unknown status, with many more that have only partial or in-progress cleanup status.

New Mexico's precious environmental and ecological resources can only be preserved through intentional and focused efforts that include addressing past impacts from mining.

Often, the responsible party (RP) no longer exists or cannot be identified. As a result, many potentially hazardous AUMs remain a threat to humans and the environment. There have been several efforts by state and federal entities to identify and address the numerous data gaps associated with AUMs across the country. This report details New Mexico's latest efforts in this regard.

In 2022, House Bill 164 (HB164) was passed. HB164 directed New Mexico Environment Department (NMED) to coordinate AUM cleanup across 11 state agencies (including NMED), develop a strategic plan, update the AUM database, and develop a uranium mine cleanup workforce within the State. NMED, in collaboration with MMD, is working to compile, review, and update the available information on AUMs across the State.

NMED has produced this report to explain the following:

- The definition and location of AUM sites in New Mexico.
- The state and federal regulatory frameworks for cleaning up AUM sites.
- Existing funding programs and how AUM sites may or may not be addressed.
- The hazards that AUM sites pose to New Mexicans' health and the environment and the benefits that would accrue from their cleanup.
- Some examples of AUM cleanup in New Mexico.
- A brief explanation of how AUM sites are being addressed in other states.
- An overview of a proposed uranium mine cleanup program for AUM sites.

From top left: Photos 1 and 2 show abandoned mine equipment at a neglected AUM site in New Mexico.

Bottom left: Shaft at a neglected AUM site in Hidalgo County.

Bottom right:. Mine equipment at a neglected AUM site in New Mexico.

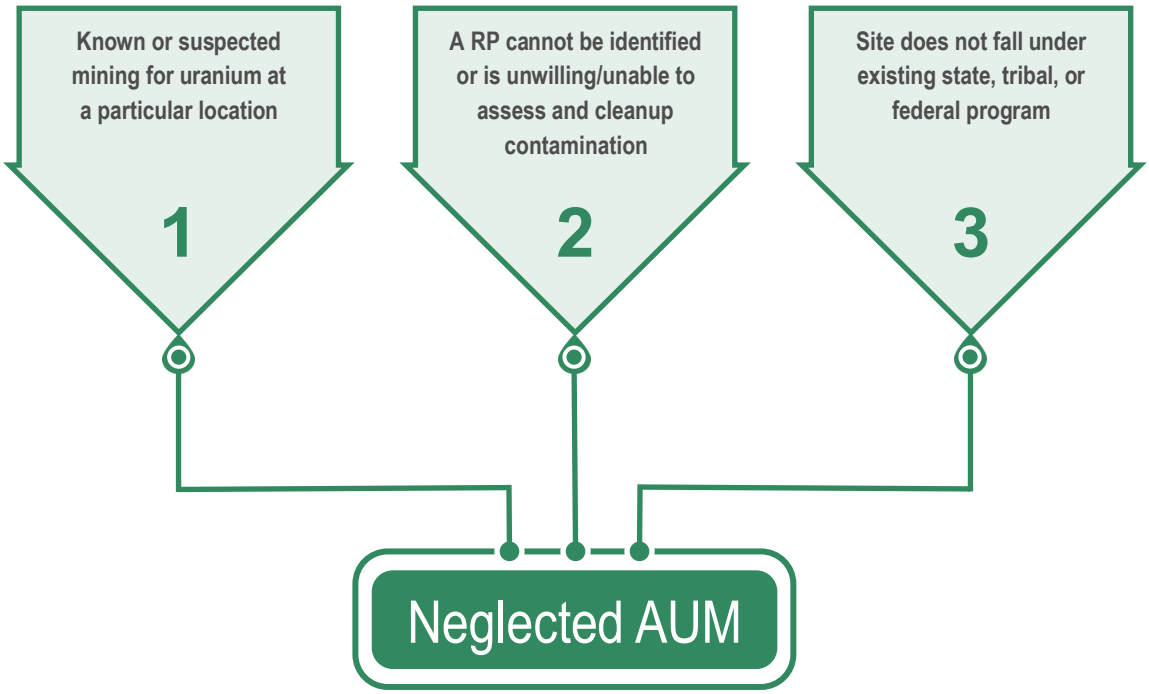
2 - Overview of Abandoned Uranium Mines

AUMs are known or suspected former uranium mining sites. Neglected AUMs are a subset of AUM sites that do not fall into an existing program and need to be addressed as directed by HB164. As illustrated in Figure 1, neglected AUMs are former uranium mine sites that have no identifiable RP to address site cleanup and are not eligible for other programs.

Neglected AUMs excludes AUM sites located on tribal lands or lands managed by federal agencies, such as the United States Forest Service (USFS) or the Bureau of Land Management (BLM). AUM sites on tribal and federal lands are being addressed through existing tribal and federal agencies and programs.

A large sink hole at a neglected AUM site in New Mexico. Neglected AUM sites may pose a physical danger to New Mexicans from pits, shafts (vertical entrances), adits (horizontal entrances), exposed waste rock, and other unstable mine structures.

Figure 1 Criteria for Defining Neglected AUM Sites in New Mexico (excludes AUMs located on tribal and federal lands)



The lack of action by an RP may include the following:

1) the RP has not or cannot be identified or located,
2) the RP does not acknowledge responsibility, or
3) the RP is unable or unwilling to proceed with assessment and cleanup.

Some AUM sites have known or suspected contamination that may pose a threat to human health or the environment, and many are not eligible for comprehensive cleanup assistance through an existing state or federal program. As described in the next section, some safeguarding of sites without a viable RP can be addressed through existing programs; however, the cleanup of contaminated soil or water at AUM sites is not currently addressed through already existing regulatory programs. Consequently, some AUM sites across the state languish as ongoing sources of land and water contamination.

2.1 Where are AUMs located?

Based on currently available information, MMD and NMED have compiled a list of approximately 260 known or suspected former uranium mine sites across New Mexico with mine features that have not been reclaimed. These identified AUM sites are shown on the map included as Figure 2. Many AUM sites are in rural areas, but in some cases AUM sites are also located near human populations or sensitive habitats. Many of the rural AUM sites are on public lands, which presents increased risks as more outdoor enthusiasts such as hikers, campers, hunters, and off-road drivers access public lands and as urban areas expand into more isolated areas. Documentation of the type of contamination and infrastructure present exists for some AUM sites, but for others very little is known. In addition, AUM sites continue to be discovered. NMED and MMD are updating the legacy uranium mines database and dashboard, an online interactive inventory (MMD, 2010).

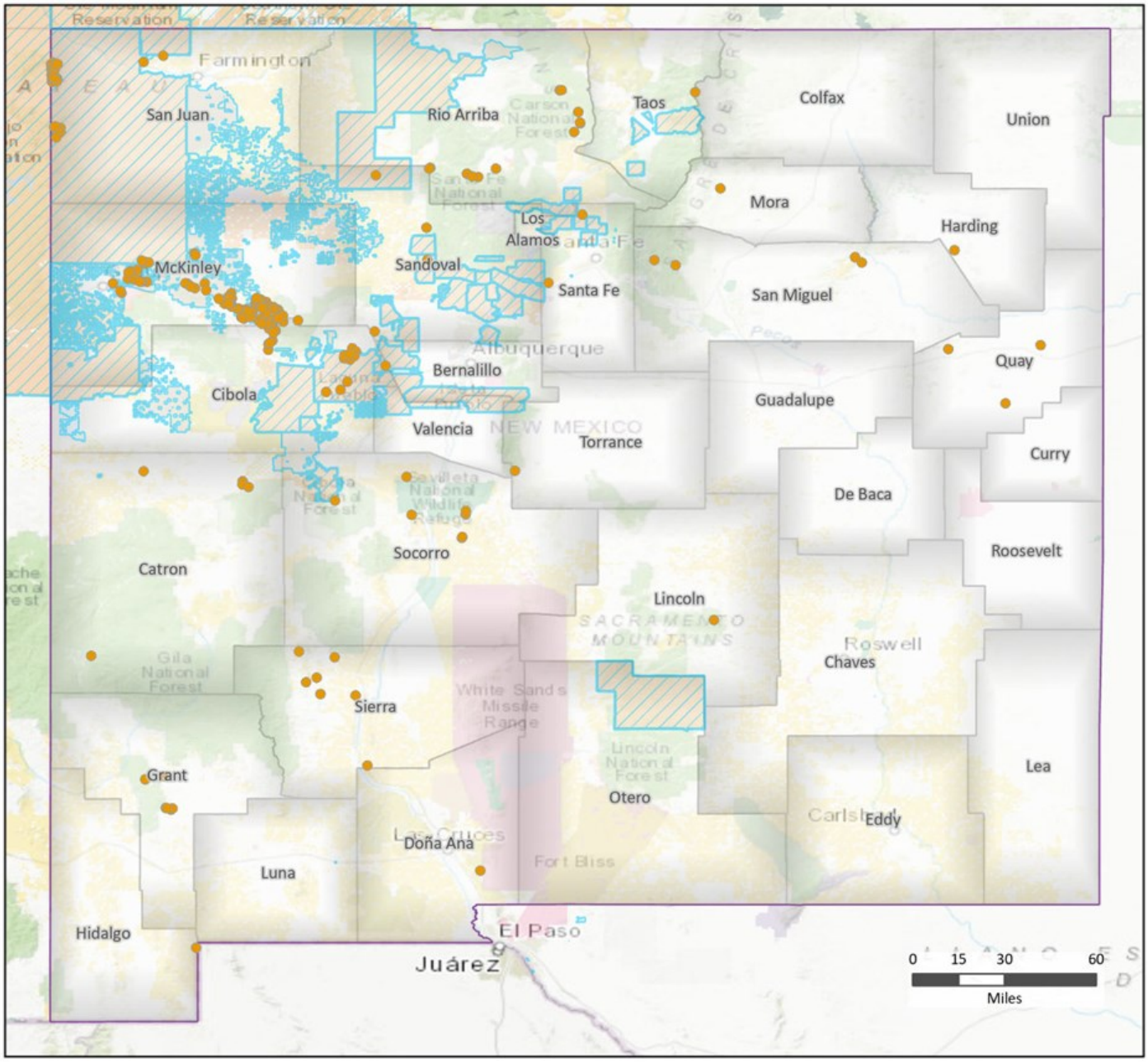
2.2 What types of hazards may be present at an AUM site?

AUMs pose a risk to human health and the environment through a combination of physical dangers, radiological hazards, and threats from heavy metal contaminants. Physical dangers include pits, shafts (vertical entrances), adits (horizontal entrances), exposed waste rock, and other unstable mine structures. Soils and groundwater near an AUM may be contaminated by radiological and metal contamination including uranium, radon, arsenic, selenium, or other metals that can be toxic to humans or wildlife if they are inhaled or ingested.

If you think you might have an AUM on your land, please report it to NMED through their online webform:

https://www.env.nm.gov/general/report-an-environmental-issue-or-incident/

Figure 2. Map of Identified AUM Sites in New Mexico



Abandoned Uranium Mines

Tribal Lands - Indian Country
- Reservation
- Trust

- County Boundaries
- Department Of Defense (DOD)
- Bureau of Land Management (BLM)
- National Park Service (NPS)
- US Forest Service (USFS)
- US Fish and Wildlife (USFW)
- Bureau of Reclamation (USBR)
- Bureau of Indian Affairs (BIA)
- Other Federal
- State
- Local
- Private or Unknown

2010 New Mexico Legacy Uranium Mines Dashboard Data

Mine Location information from Energy, Minerals, and Natural Resources Department - Mining & Minerals Division, compiled 2006- 2010

Data Sources: BLM Energy, Minerals & Realty Management, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPSNMED, EMNRD,BLM Coordinate System: NAD 1983

This map data may contain technical inaccuracies or typographical errors. Data is updated when corrections are submitted to data stewards. It is the responsibility of mine operators to register any mine or mill feature with MRRS prior to the start of operations; to notify MRRS of operational changes; and to accurately and periodically report data as required under the statute and attendant regulation.

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2.3 What types of risks are associated with AUMs?

Safety risks. AUM sites often pose safety risks such as abandoned structures, deteriorated equipment, open foundations, shafts, trenches, adits extending into a rock face, drums, and open pits. The abandoned mine features can be very unstable or deep and may cause injury or death if humans or animals stray into them.

Environmental risks. Contaminants released into the environment may find their way into soil, waterways, groundwater, and the air. Contamination in one of these media can move into other media, e.g., from the soil into groundwater or air. The risk of groundwater contamination is of particular concern in our arid state, as groundwater is the only drinking water source in many areas. Soils damaged by groundwater contamination may be unable to support vegetation or crops. Wildlife may be exposed to toxins, and over time, pollutants may bioaccumulate in the food chain. Loss of habitat can lead to decreased biodiversity. The capacity of the land to absorb stormwater may also be diminished due to erosion or lack of vegetation, thereby increasing flood risk.

Human health risks. The three basic pathways for becoming exposed to contamination are (1) breathing, (2) eating and drinking, and (3) direct contact with the skin. Where the contamination is in the environment and what exposure pathways exist are important considerations when evaluating the health risks at a particular site. If the groundwater is contaminated, exposure can occur by drinking water from an impacted well. Contaminated soil can result in windblown soils and dust with elevated metals and radiological material that may spread off-site, which could be inhaled or may contaminate surface water.

Where a site has not been fully assessed, as is the case for many AUMs, the extent and severity of contamination is unknown and could be affecting an area larger than the site itself. Also, nearby New Mexicans may not even know they are being exposed. Sensitive populations, such as children, pregnant women, and the elderly, may be at higher risk. Inhalation and ingestion of these metals and radiological material may cause chronic illnesses.

2.4 What is a potential process for NMED to address Neglected AUM sites?

Under direction from HB164, NMED is directed to coordinate across regulatory programs to assess the available information—and in some cases conduct a site visit—to determine the best way to obtain additional data about a site. If

1) the site does not fall under an existing regulatory program,
2) an RP cannot be found to clean up the site, and
3) the site presents a potential hazard, NMED will investigate the neglected AUM site (Figure 3).

If a private well or adjacent land is known to be impacted by a neglected AUM site, NMED should notify the affected parties so they can take necessary actions to protect themselves. NMED should work with local jurisdictions and the appropriate agencies to assess the safety, environmental, and health risks associated with a site and encourage mitigation of physical hazards if present and determine a path for cleanup. Figure 3 shows the complexity for addressing AUM sites in New Mexico (excluding sites on tribal land and federal land). If an RP is not identified and an AUM site does not fall under an existing cleanup program, NMED will need to investigate and rank the neglected AUM site. A proposed approach is discussed in more detail in Section 7.

AUM sites presenting the greatest risks may receive evaluation by the United States Environmental Protection Agency (USEPA) Superfund program. As discussed in Section 3, most AUM sites will not qualify for the Superfund program or other existing programs, such as the Brownfields grants or NMED's Voluntary Remediation Program (VRP), but they may qualify for the USEPA's critical or non-time critical removal action.

Unless an AUM site qualifies for funding through an existing program (as described in Section 3 Regulatory Framework) or a potential RP is identified and is able to cleanup a site, NMED will have to conduct and fund a comprehensive site assessment and cleanup through the newly formed Uranium Mining Reclamation Revolving Fund (UMRRF) established by HB164. In order to conduct comprehensive site assessments and cleanup, NMED would benefit from the development of an Abandoned Uranium Mine Cleanup (AUMC) Program, as discussed in Section 7.

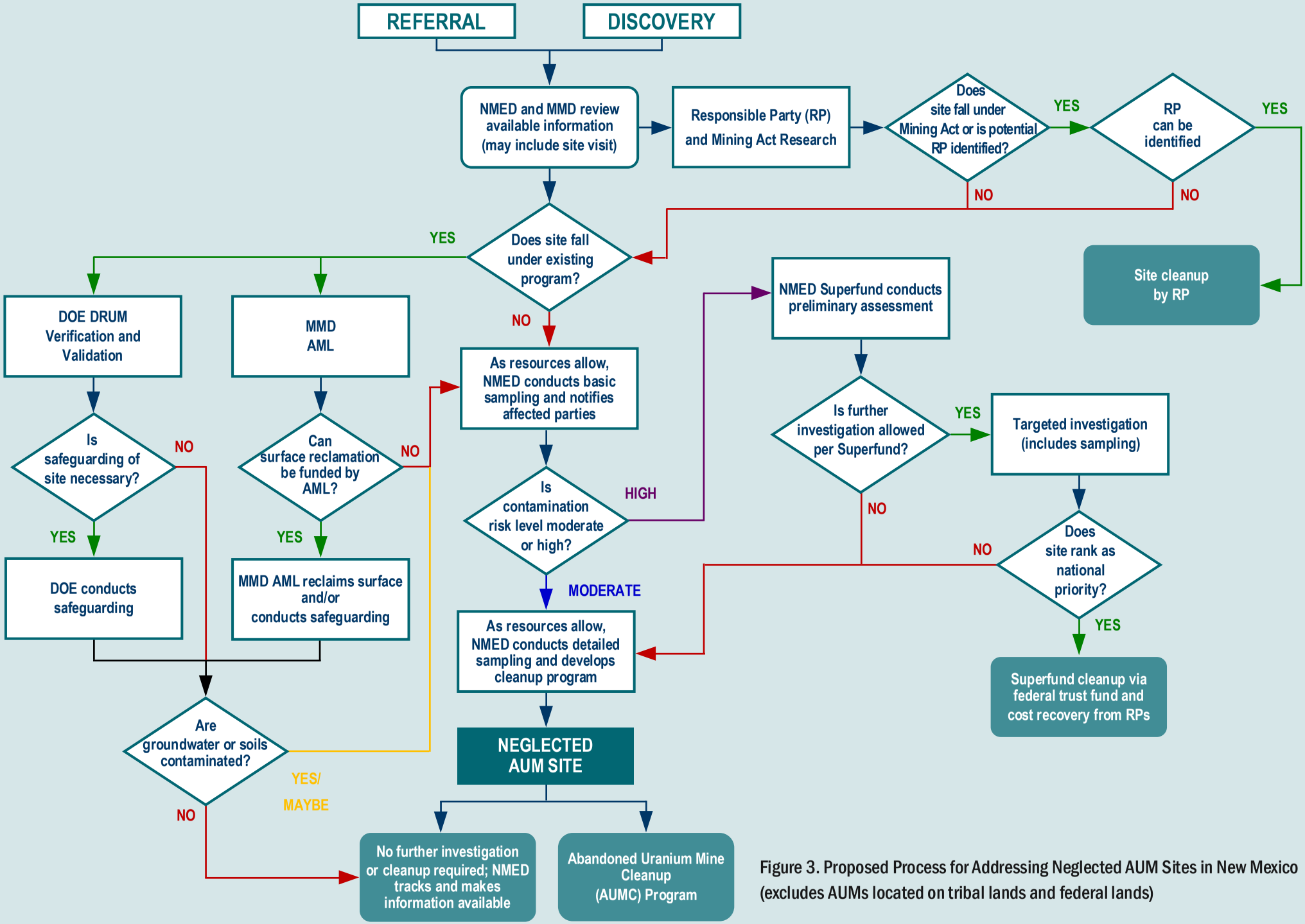

Figure 3. Proposed Process for Addressing Neglected AUM Sites in New Mexico (excludes AUMs located on tribal lands and federal lands)

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3 - Regulatory Framework for Cleaning Up Contaminated AUM Sites

The state is charged with the protection of its people and environment while also encouraging sustainable mining development. Mining in New Mexico is regulated by the 1993 New Mexico Mining Act (Mining Act; Chapter 69, Article 36 New Mexico Statutes Annotated [NMSA] 1978), which promotes the responsible use and surface reclamation of lands impacted by exploration, mining, or mineral extraction. The Mining Act requires operators to obtain permits, meet operation and reclamation standards, and create and follow an approved reclamation plan with financial assurance (i.e., bonds) for future reclamation.

The Mining Act applies to mines operating at the time the act was passed, new mines that began operating after the act's effective date, and all future mines. The Mining Act also covers any mining operation that had ceased operations prior to the act being passed and had produced marketable minerals for at least two years between January 1, 1970, and the effective date of the New Mexico Mining Act. The Mining Commission was established to develop the rules needed to implement the Mining Act and to hear appeals regarding permitting and enforcement actions by MMD.

Although the New Mexico Mining Act applies to all mines operating in New Mexico now and some abandoned mines as well, many AUM sites predate the modern Mining Act and may not have an identified RP to implement surface reclamation or groundwater remediation. The regulatory framework for addressing contaminated AUM sites is complex and may include a combination of state and federal agencies to achieve cleanup. The state and federal laws, agencies, and regulatory programs that may address or be relevant to AUM cleanup, or a portion of cleanup, are described in the sections below.

Many neglected AUM sites contain hazards and there is very little funding to cleanup the sites under existing federal and state programs.

3.1 State Regulatory Framework

3.1.1 New Mexico House Bill 164 'Uranium Mine Cleanup

On March 1, 2022, New Mexico passed HB164 in an effort to address the legacy of uranium mining in the state. HB164 directed NMED to coordinate the cleanup of former uranium mine and mill sites in New Mexico with 10 other relevant federal and state agencies. It further directs the NMED to develop a strategic plan for the cleanup of abandoned uranium mines and mills, and in doing so to also develop a process for effective consultation and coordination with tribal nations and the federal government. HB164 also directs that uranium mine and mill cleanup should be established as an economic development industry in the state. HB164 established the UMRRF to fund neglected AUM site assessment and cleanup. The UMRRF is discussed in more detail in Section 4. The intent of HB164 was to take a new approach to AUM cleanup that was inclusive of regulatory action, workforce development, funding, and communication and coordination with numerous stakeholders. Within that framework, regulatory action for permitted sites and sites with a RP is already in place. However, there is no framework for addressing comprehensive AUM cleanup for neglected AUM sites.

3.1.2 New Mexico Energy Mineral and Natural Resource Department: Mining Act Reclamation Program and Abandoned Mine Land Program

The Mining Act Reclamation Program (MARP) within EMNRD MMD was created under the New Mexico Mining Act. This program regulates specific hard rock mining surface reclamation activities to ensure proper surface reclamation is completed in accordance with the provisions and standards outlined in the Mining Act (19.10 New Mexico Administrative Code [NMAC]). The EMNRD MMD also manages the Abandoned Mine Land (AML) Program, which was formed on May 2, 1977, by the passage of the Surface Mining Control and Reclamation Act (SMCRA). The AML program is part of the National Association of Abandoned Mine Land Programs (NAAMLP). NAAMLP, made up of 23 states and three tribes, seeks to accomplish common goals and objectives related to the surface reclamation of AMLs (NAAMLP, 2023).

Due to funding requirements, discussed below in Section 4, the AML program is focused on coal mine surface reclamation and must get authorization to address non-coal abandoned mines if surface reclamation is necessary to protect the public and/or the environmental from extremely dangerous sites. Once a mine is deemed high priority by the MMD AML Program per SMCRA requirements (i.e., dangerous or environmentally hazardous), MMD AML must go through National Environmental Policy Act (NEPA) processes before surface reclamation can commence (EMNRD, 2022). The MMD AML Program has completed 220 projects and safeguarded more than 2,400 mines (WYDEQ, 2023). However, there are over 15,000 abandoned mines and mine features in the state of New Mexico, and the stated purpose of SMCRA is surface reclamation for coal mines. Unless there is a decision to prioritize AUMs in the context of the MMD AML Program, the timeline for classification and cleanup of AUMs via this framework is uncertain. Furthermore, the AML Program does not assess or address groundwater impacts. It is used primarily for safeguarding sites.

3.1.3 New Mexico Water Quality Act

The New Mexico Water Quality Act (WQA; Sections74-6-1 through 74-6-17 NMSA 1978) and the New Mexico Water Quality Control Commission (NMWQCC) Ground and Surface Water Protection Regulations (20.6.2 NMAC) address protection of both surface and groundwater through groundwater discharge permits and groundwater abatement. The NMWQCC Regulations address discharges that may move directly or indirectly into groundwater that have the potential to cause an exceedance of 20.6.2.3103 NMAC water quality standards. Activities that have the potential to discharge to groundwater and/or surface water are addressed through a discharge permit. The NMWQCC Regulations also contain provisions requiring the abatement of identified contamination to remediate or protect surface and groundwater so that NMWQCC water quality standards are attained. Parties responsible for causing contamination are required to assess and clean up the contamination in accordance with these regulations, regardless of the contaminant type, unless other regulations apply. A viable RP must be identified (or appointed) for cleanup to occur under the abatement section of the regulations. The neglected AUM sites do not have viable or willing RPs.

3.1.4 NMED Ground Water Quality Bureau

The NMED Ground Water Quality Bureau (GWQB) administers multiple sections that address permitting and abatement under the WQA and the NMWQCC Regulations including the: Agricultural Compliance Section, Remediation Oversight Section (ROS), Pollution Prevention Section, Mining Environmental Compliance section (MECS), and Superfund Oversight Section (SOS). This report only addresses ROS, SOS, and MECS programs.

Remediation Oversight Section

The ROS encourages and oversees voluntary efforts to clean up contaminated sites and administers the Ground and Surface Water Protection Regulations that require responsible parties to clean up contaminated soil and groundwater. This is done through the State Cleanup Program, Brownfields Program, and VRP.

State Cleanup Program: New Mexico's State Cleanup Program is responsible for administering parts of the New Mexico Ground and Surface Water Protection Regulations (20.6.2 NMAC) that pertain to the cleanup of contaminated soil, soil vapor, and groundwater. These regulations require corrective actions to mitigate groundwater contamination caused by unauthorized discharges/spills. The State Cleanup Program also oversees the investigation and abatement of subsurface contamination to meet groundwater standards by identifying and notifying responsible parties of abatement plan requirements, reviewing abatement plan proposals and reports, and making recommendations regarding NMED approval of abatement decisions. The State Cleanup Program addresses recent spills, as well as past unauthorized discharges that are discovered after the fact when there is a willing RP.

Brownfields Program: Brownfields are properties where redevelopment is complicated by the presence, or potential presence, of hazardous substances. The 2002 Small Business Liability Relief and Brownfields Revitalization Act amended Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to assess and clean up brownfields, clarified CERCLA liability protections, and enhanced funding to help states and tribes encourage brownfields redevelopment.

NMED has obtained federal grants from USEPA Region 6 to provide Targeted Brownfields Assessments (TBAs) for local and tribal governments. Depending on the specific need, a TBA is an initial or more detailed investigation of the type and extent of contamination and may be used to evaluate cleanup options and associated costs. TBA assistance is generally limited to governmental, tribal, or nonprofit entities that can demonstrate they do not have CERCLA liability, with limited funds available to private parties. For qualified sites with a willing RP, NMED offers low-interest cleanup loans through its Brownfields Revolving Loan Fund. The Brownfields Revolving Loan Fund is discussed below in Section 4. In all cases, a willing participant must come forward to seek brownfields assistance for remediation efforts. In addition, most AUM sites are in rural areas that may not be desirable locations for redevelopment.

Voluntary Remediation Program: The New Mexico VRP offers incentives for the voluntary investigation and remediation of contaminated properties by an RP. Participants in the VRP who did not contribute to the contamination at a site receive liability protection, as do lenders and future purchasers. The VRP provides regulatory oversight and closure documentation (20.6.3 NMAC). The program does not have a fund for financing cleanups with no RP.

Superfund Oversight Section

Through cooperative agreements to SOS, the USEPA provides funding for states to complete work under the Superfund (CERCLA) program. The SOS within NMED partners with the USEPA and works to identify and assess potentially hazardous inactive or abandoned sites that may require remedial or removal action under the Superfund (CERCLA) program. The SOS also provides management assistance and remediation oversight at New Mexico Superfund sites that are already on the NPL. Regulatory staff within the SOS work closely with EPA Region 6 personnel in Dallas, Texas, to complete these tasks.

In New Mexico, there are currently 14 listed Superfund sites, which are in various stages of investigation and remediation, and five sites that have been removed from the NPL due to the completion of cleanup activities. These remaining

sites include mining sites, landfills, manufacturing facilities, and processing plants that threaten human health and the environment without proper remediation. The Jackpile-Paguate Uranium Mine Superfund site is under the regulatory control of Laguna Pueblo and USEPA and is not managed by the state or SOS. Most neglected AUM sites will not qualify for Superfund listing, as discussed below in Section 3.2.3.

Mining Environmental Compliance Section

The GWQB MECS oversees all the permitting, spill response, abatement, and public participation activities for mining facilities in New Mexico. MECS is part of the GWQB Permitting Program and issues groundwater discharge permits pursuant to the New Mexico Ground and Surface Water Protection Regulations (20.6.2 NMAC) and the Supplemental Permitting Requirements for Copper Mining Facilities (20.6.7 NMAC). MECS also coordinates with MMD of EMNRD to help implement the New Mexico Mining Act and the AML Program by coordinating environmental protection requirements at abandoned mine sites. Additionally, MECS reviews and comments on mine permits and closeout plans and provides determinations that mining operations will meet environmental standards after closure. MECS currently manages over 55 active mining permits. Because MECS primarily deals with active mining operations, neglected AUM sites do not fall under their jurisdiction.

3.1.5 NMED Surface Water Quality Bureau

The NMED Surface Water Quality Bureau (SWQB) works to preserve, protect, and improve New Mexico's surface water quality. The SWQB consists of three sections: the Monitoring, Assessment and Standards Section, the Point Source Regulation Section, and the Watershed Protection Section. The Monitoring, Assessment and Standards Section collects and assesses water quality data for all surface water (lakes, streams, and rivers) in New Mexico, develops surface water quality standards and planning documents, and prepares reports, including 303(d)/305(b) Integrated Reports and Total Maximum Daily Load (TMDL) documents for waters not meeting standards. The Point Source Regulation Section implements ground and surface water protection regulations pertaining to point source pollution discharge permitting and spill reporting. The Watershed Protection Section protects watersheds from nonpoint source pollution by overseeing and funding watershed improvement projects through administration of the Nonpoint Source Program, the Wetlands Program, and the River Stewardship Program. Like the GWQB, the SWQB does not regulate sites where there is not a permit in place, including AUM sites.

3.1.6 NMED Petroleum Storage Tank Bureau

NMED's Petroleum Storage Tank Bureau (PSTB) objectives are to reduce, mitigate, and eliminate the threats to the environment posed by petroleum products or hazardous material or wastes release from underground and above ground storage tanks. PSTB accomplishes these objectives by preventing leaks and spills through inspections, monitoring, testing, installation, and removal of storage tanks. As well as through the investigation and cleanup of leaks and spills from orphaned petroleum storage approximately 1,900 sites. Should an AUM also have petroleum storage tank-related contamination, the tank and related contamination may be cleaned up under the PSTB program. Substances regulated as hazardous waste under the federal Resource Conservation and Recovery Act (RCRA), above-ground storage tanks smaller than 1,320 gallons or larger than 55,000 gallons, and spills of oil or petroleum that were not released from a tank are not covered by the Petroleum Storage Tank Regulations nor are they eligible for assessment and/or remediation under PSTB. Most, if not all, AUM sites will not qualify for PSTB cleanup because they did not have storage tanks.

3.1.7 NMED Hazardous Waste Bureau

The NMED Hazardous Waste Bureau (HWB) ensures that hazardous waste is managed effectively and that contaminated sites are properly cleaned up. The HWB provides regulatory oversight through permitting, conducts inspections under the New Mexico Hazardous Waste Act (Sections 74-4-1 through 74-4-14 NMSA 1978), and supplies technical guidance to New Mexico hazardous waste generators and treatment, storage, and disposal facilities. Additionally, the HWB responds to hazardous waste spills and releases, as well as situations involving abandoned hazardous substances. The HWB primarily focuses on permitted hazardous waste generators and facilities and does not outline any responsibilities related to AUMs.

3.2 Federal and Tribal Regulatory Framework

Sites that are located on federal land fall under federal programs. Similarly, sites that are located on tribal lands fall under the jurisdiction of the sovereign tribe. The state of New Mexico does not have regulatory authority over AUM sites on tribal lands. The role of federal and tribal agencies and programs regarding AUM sites are summarized in this section.

3.2.1 Nuclear Regulatory Commission

The United States Nuclear Regulatory Commission (NRC) regulations that protect the public from radiation apply to Technologically Enhanced Naturally Occurring Radioactive Material (TENORM), or radioactive materials that have been concentrated or made accessible as a result of human activities and do not apply to materials that were only mined (EMNRD and NMED, 2016). Therefore, soils, sediments, and groundwater contaminated by uranium ore and mine waste at AUM sites do not fall under NRC jurisdiction.

3.2.2 United States Department of Energy Office of Legacy Management: Defense-Related Uranium Mines Program

The National Defense Authorization Act for Fiscal Year 2013 mandated that the United States Department of Energy (DOE) prepare a report to Congress on AUMs that had produced ore for purchase by the former United States Atomic Energy Commission. In August 2014, after consulting with other federal agencies, affected state agencies, tribal nations, and the public, DOE presented the Defense-Related Uranium Mines (DRUM) Report to Congress (DOE, 2014). The report identified 4,225 uranium mines, most of which were abandoned, that supplied the former Atomic Energy Commission with ore between 1947 and 1970 (DOE, 2014). Around 75.9 million tons of uranium ore were produced for defense-related purposes; and of that, over 52 million tons (68.5%) were produced from New Mexico mines (DOE, 2023). The DOE (2014) DRUM Report to Congress found that most uranium ore production was from very large mines (>500,000 tons of ore) in New Mexico, including mines on the Navajo Nation and Laguna Pueblo lands. The DOE Office of Legacy Management (DOE-LM) subsequently developed a strategy to address the risks posed by AUM sites that produced uranium for defense-related purposes by leveraging DOE-LM and partner agencies (i.e., land management, regulatory, state, tribal) with a one-government approach to optimize and expediate reduction of risk to human health and the environment (DOE, 2020). The primary goal of the DRUM Program is to identify, access, and safeguard sites that pose "unacceptable risk to the public" (DOE, 2020).

DOE-LM is sequentially implementing evaluations of AUM sites through a Verification and Validation (V&V) program for sites that fall under the DRUM Program on public land first (2017-2022), then tribal land (2023-2028), and then private property (2024-2029) (DOE, 2020). V&V field inventory activities are summarized in site-specific reports that provide information on the site location, potential risks and safety hazards, and surface reclamation or groundwater remediation status to exchange data with other federal agencies and state governments. As of April 30, 2023, approximately 2,362 AUMs on public land had been visited and evaluated for safety hazards. Annual progress reports (e.g., DOE, 2022b) detail the DRUM Program activities. In New Mexico, recent DRUM Program accomplishments include collaborations with Laguna Pueblo, Zia Pueblo, Zuni Pueblo, the Navajo Nation Environmental Protection Agency (NNEPA) and Navajo Abandoned Mine Lands Reclamation Department (NAMLRD), as well as updating the DRUM program database with safeguarding project data (DOE, 2022b).

In 2015, as a follow-up to the 2014 DRUM report to Congress, DOE and their collaborators formed the multi-agency Abandoned Uranium Mine Working Group (AUMWG) with the USEPA, the United States Department of the Interior (DOI), and the United States Department of Agriculture (USDA) to develop a coordinated approach to the assessment and cleanup of AUMs. Although there is no comprehensive federal program, the AUMWG agencies are using their authority to inventory, assess, clean up and conduct long-term monitoring and maintenance of AUMs (DOE, 2022a).

Much of the defense-related uranium ore production between 1947 and 1970 came from mines in New Mexico.

3.2.3 United States Environmental Protection Agency

The USEPA leads continuing efforts to execute enforceable agreements with RPs for mine cleanup, implement TRONOX settlement (discussed in Section 4), oversee trust settlements, and conduct Superfund response actions. USEPA regulates soil concentrations of radioactive elements in uranium mine waste, groundwater, and other impacted media.

Superfund/CERCLA

The USEPA-administered CERCLA regulation was enacted in 1980 and has become known as 'Superfund,' the name given to the Trust Fund the act created. The Superfund program evaluates contaminated sites and decides if a site has sufficient hazards to be placed on the NPL. The NMED SOS and MECS coordinate and work cooperatively with USEPA to identify, investigate, and remediate inactive hazardous waste sites and oversee agreements between the state and the RPs, as discussed in Section 3.1.4.

Most AUM sites are not expected to get a hazard ranking high enough to be placed on the NPL based on the current knowledge of the sites. Nationwide, only three uranium mines are on the NPL, including one in New Mexico, the Jackpile-Paguate Uranium Mine (USEPA, 2023a). However, 34 other uranium mine sites are being evaluated by Superfund, and 17 of these uranium mine sites under evaluation are in New Mexico (USEPA, 2023a). While many of the remaining uranium mine sites throughout the State may not qualify to be placed on the NPL, they may still be threats to human health and the environment.

Through CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Volume 28, Part 300 (2015), USEPA authorizes removal responses at sites when contamination poses an immediate threat to human health and the environment. These removal responses are classified as emergency, time-critical and non-time critical removal actions and can be used to address impacts at sites that are not on the NPL (DOE, 1998, USEPA 2023b). These actions can be accomplished through coordination between State agencies and regional USEPA offices and through the establishment and implementation of Cooperative Agreements.

3.2.4 United States Bureau of Land Management

The BLM's mission statement is to "sustain the health, diversity, and productivity of public lands" (BLM, 2023b) and it is responsible for managing over 247 million acres of land in the United States. The DOI BLM state office in New Mexico, along with Colorado, Utah, and Wyoming, holds a Memorandum of Understanding (MOU) with DOE to address DRUM sites. Of the 4,225 DRUM sites identified nationwide, the DOE has identified at least 2,013 DRUM sites on BLM lands (BLM, 2018). BLM is actively involved with the assessment and cleanup of DRUM sites on BLM-managed land. However, the rate of progress of work at those sites is constrained by available funding, discussed in Section 4.

Through its authority as a response agency under CERCLA and as a resource manager under the Federal Lands Policy and Management Act, the BLM is responsible for addressing AML issues on lands managed by BLM. The BLM's AML program enhances public safety by reducing or eliminating the effects of past mining activities. The BLM maintains an inventory of known AMLs on BLM-managed lands, most of which are abandoned hardrock mines (gold, silver, lead, and uranium). Approximately 80% of the 57,586 AML sites need further investigation and/or remediation (BLM, 2017). BLM's Surface Management regulations (43 CFR Subpart 3809) to eliminate the burden of future abandoned mines on BLM-managed lands became effective on January 1, 1981.

3.2.5 United States Forest Service

The USFS manages approximately 193 million acres of land and has a mission to "achieve quality land management under the sustainable multiple-use management concept to meet the diverse needs of people" (USFS, 2023). Watershed protection and restoration is one of the primary goals established by the USFS in their Strategic Plan, including cleanup of AMLs. As many AML sites involve a combination of federal, state, and private lands, the USFS actively seeks partnerships to leverage funds and maximize cleanup accomplishments on a watershed scale. The USFS is an active collaborator with the AUMWG and has partnered with USEPA regions, states agencies, and DOE to collectively address AUMs on USFS-managed land (DOE, 2022a). USFS is involved with the assessment and cleanup of AUMs to a degree proportionate with available funding through the USFS AML program and through its authority as a response agency under CERCLA. USFS has a reclamation policy (FSM 2840) and financial surety program in place to ensure lands disturbed under current mining activity leases are reclaimed to conditions consistent with resource management plans to eliminate additional abandoned mine issues in the future.

3.2.6 Navajo Nation

New Mexico State agencies do not have authority on tribal lands, therefore cleanup of AUM sites located on tribal lands is being led by the tribes themselves. Of the 23 Native American tribes in New Mexico, the Navajo Nation is the largest and has the largest number of AUM sites located on or near Navajo lands. The Navajo Nation lands cover an area of approximately 27,000 square miles, extending across northwestern New Mexico into northeastern Arizona and southeastern Utah. Ongoing efforts to address the health and environmental risks associated with legacy uranium mining on Navajo Nation lands are detailed in a Ten-Year Plan (USEPA, 2021), which is an inter-agency cooperation with USEPA, NNEPA, Bureau of Indian Affairs (BIA), DOE, NRC, Indian Health Service, and the Agency for Toxic Substances and Disease Registry.

Navajo Nation EPA

Since 2008, USEPA and NNEPA has conducted preliminary investigations at all 523 known AUMs on or near Navajo Nation; completed 113 detailed assessments including their 46 top priority mines; cleaned up over 50 contaminated structures; provided safe drinking water to over 3,800 homes in AUM regions in partnership with the Indian Health Service; and completed cleanup, stabilization, and/or fencing at 29 mines (USEPA, 2021).

Federal assessments and cleanup activities on Navajo Nation lands are summarized in annual reports, most recently in July 2022 (USEPA, 2022a). Funding for the assessment and cleanup of 230 of the 523 AUMs has been secured through enforcement agreements, trust settlements, and settlements with private companies (i.e. Tronox Settlement, discussed further in Section 4). Uranium cleanup efforts are underway on the Navajo Nation at sites that have a viable RP. The NRC is currently working with Navajo Nation to approve a proposal to construct a mine disposal cell atop the existing uranium mill tailings cell of the United Nuclear Corporation Church Rock mill site.

NNEPA runs the Navajo Nation Superfund Program (NNSP) within its Waste Regulatory and Compliance Department. NNSP implements the Navajo Nation CERCLA and partners with the USEPA to implement CERCLA on Navajo Nation lands. The NNSP addresses AUMs on Navajo Nation, among other contaminated sites (NNEPA, 2023). USEPA is working closely with the Navajo Nation to develop contracts that incentivize creating employment opportunities for Navajo residents and prioritizing selection of Navajo- and other Native American-owned firms and contractors to ensure Navajo communities benefit economically from the ongoing work to clean up their land.

Navajo Abandoned Mine Lands Reclamation Department / Uranium Mill Tailings Remedial Action Department

The NAMLRD/Uranium Mill Tailings Remedial Action (UMTRA) Department operates under the Division of Natural Resources within the Executive Branch of the Navajo Nation. The NAMLRD/UMTRA Department was formed in 1988 to address abandoned mine lands cleanup on Navajo Nation lands. The NAMLRD/UMTRA Department has reclaimed 273 coal, 913 uranium, and 33 copper mine sites since 1989 on Navajo lands (NAMLRD, 2023).

The UMTRA Program of the NAMLRD/UMTRA Department was approved by the DOE in 1985 through a Cooperative Agreement. Its purpose is to remediate four UMTRA sites on Navajo Nation lands pursuant to the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA). These Navajo Nation UMTRA sites are located in Tuba City, Arizona; Monument Valley, Arizona; Mexican Hat, Utah; and Shiprock, New Mexico.

Neglected AUM sites on federal lands fall under federal programs and neglected AUM sites on tribal lands fall under the jurisdiction of the sovereign tribe.

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4 - Funding Mechanisms for Cleaning Up Contaminated Sites

The state and federal agencies and programs discussed above in Section 3 are summarized in Attachment 1 along with the funding mechanisms that exist for surface reclamation or groundwater remediation. Key state and federal programs that provide funding for the cleanup of contaminated sites are described below, along with the reasons that neglected AUM sites may or may not be able to be addressed by these agencies or under these programs. Attachment 1 provides a more complete summary of the state and federal programs with funding mechanisms along with the applicability of the program and funds for neglected AUM sites.

AUM sites may leave unsafe materials exposed to the air; however, there is often not a funding mechanism or appropriate program for cleanup of contaminants in soil and groundwater.

4.1 Uranium Mining Reclamation Revolving Fund

HB164 established the UMRRF, which is designed to receive appropriations, gifts, grants, donations, and money from the federal government, state agencies, and other sources for conducting uranium mine cleanup. In addition, money recovered for the state from uranium mine or mill cleanup, litigation, or settlement actions will also go to the UMRRF. At this point, UMRRF does not have any available funds for assessment or cleanup of neglected AUM sites. Careful consideration is required to determine how to best use this new funding source once it is funded.

4.2 MMD AML Fund

The Office of Surface Mining Reclamation and Enforcement (OSMRE) within the DOI funds state and tribal AML programs. OSMRE administrates a fee levied on active coal mines, which supports the AML Fund. The AML Fund finances projects to reclaim pre -SMCRA abandoned coal mines. Non-coal abandoned mines may also be reclaimed using the AML Fund if surface reclamation is necessary to protect the public and/or the environment from extremely dangerous adverse effects. This is regularly interpreted by the AML Program to mean open mine features presenting an immediate hazard and does not include the waste rock piles and tailings commonly associated with hard rock mines. The use of funds for non-coal mine sites must be approved by OSMRE. Due to this interpretation, funding is often not directed to non-coal abandoned mines, including neglected AUMs.

4.3 Brownfields Revolving Loan Fund

As discussed in Section 3, TBAs are federal grants available to governmental, tribal, or nonprofit entities to conduct brownfields assessments. NMED also offers low-interest cleanup loans through its Brownfields Revolving Loan Fund for Brownfields sites with a RP. Both the TBAs and the Brownfields Revolving Loan Fund are only available when a willing participant comes forward to seek brownfields assistance for remediation efforts. The Brownfields Revolving Loan Fund is not applicable for most AUM sites with no RP, unless a willing participant steps up.

4.4 Corrective Action Fund

NMED's PSTB administers the Corrective Action Fund (CAF) established by the New Mexico Groundwater Protection Act (Hazardous Waste Act, Sections 74-4-1 through 74-4-14 NMSA 1978) to investigate, clean up, and monitor leaks and spills from neglected petroleum storage tanks. Since 1992, the CAF has been used to clean up approximately 1,900 sites. Should an AUM also have petroleum storage tank-related contamination, this fund may apply, however most, if not all, AUM sites will not qualify for PSTB cleanup using CAF funding.

4.5 Tronox Settlement

In 2014, more than $5 billion was recovered from litigation settlements with Kerr-McGee Corporation and its successor, Tronox Incorporated (Tronox), to provide USEPA with funds to assess and clean up contaminated sites across the country, including nearly $1 billion to clean up approximately 50 uranium mines formerly owned by Kerr-McGee Corporation on or near Navajo Nation lands (USEPA, 2016). The Kerr-McGee Corporation mined more than 7 million tons of uranium ore from the mines on New Mexico and around Navajo Nation from the 1940s through the 1980s (USEPA, 2022b). Approximately $45 million was allocated to the Navajo Nation to address the Shiprock Uranium Mill Site. The USEPA received almost $90 million for the Quivira mine sites (USEPA, 2022c). The remaining funds are mandated to be spent on addressing contamination at other uranium mine sites listed in the Tronox Settlement, including 34 mines in USEPA Region 9 and 20 mines in USEPA Region 6 in New Mexico (USEPA, 2022b). Because the Tronox mine sites have a RP and are restricted to the mines called out in the settlement they are not considered to be neglected AUM sites.

4.6 Other Federal Funding

Some other federal funds exist for cleanup of hazardous sites that may or may not address neglected AUMs in New Mexico, depending on circumstances described below:

The DOE DRUM program funds the safeguarding of physical hazards for AUM sites but does not fund assessment or cleanup of soil or groundwater contamination at AUM sites. The V&V reports developed by the DRUM program will allow New Mexico to inventory the AUM sites and help the state understand the need for funding and efforts towards characterizing the neglected AUMs.

The Superfund program, administered by USEPA, assesses and cleans up the most contaminated sites around the United States, as discussed in Section 3. Currently there are 17 uranium mine sites in New Mexico that are under evaluation for inclusion in the Superfund program and one site, the Jackpile-Paguate Uranium Mine that is undergoing cleanup and listed on the NPL (USEPA, 2023a). Many of the of the neglected AUM sites throughout New Mexico will not qualify to be reclaimed by the Superfund program and related funds.

BLM currently leverages program funding, existing agreements, and available federal funding to continue its response actions at the high priority AUM sites on BLM-managed land already identified. Additional federal funding would specifically allow BLM to complete preliminary assessments and site inspections of neglected AUMs on BLM-managed land.

The USFS leverages funding through its AML program to address AUMs on land managed by the USFS. The funding available through the USFS AML program is limited and so only a select number of sites can be addressed at a time. Additional funding focused specifically for neglected AUMs on USFS-managed land would permit the USFS to conduct a complete an AUM inventory and evaluate these sites for potential releases to the environment and then address cleanup of the neglected AUM sites (DOE, 2022a).

4.7 Summary of Funding Mechanisms for AUM Cleanup

The funds described above, and other funds for various water and environmental purposes in New Mexico are included in Attachment 1. Many of the funds listed in Attachment 1 cannot be used for cleanup of neglected AUM sites. There is no single funding mechanism in place to address neglected AUMs specifically, even though there are some federal and state funding mechanisms to address safeguarding and limited surface reclamation. Previously, there was no funding mechanism in place to assess or address potential groundwater impacts at neglected AUMs, but the creation of the UMRRF by HB164 was a first step.

5 - Examples of Neglected AUMs

Example neglected AUM sites are presented in this section. In these examples, the physical hazards and soil radiation levels have been assessed and/or addressed. None of these neglected AUMs have had groundwater assessed for radiological contaminants and some have had only limited soil sampling.

The Poison Canyon trend in McKinley County presents ongoing hazards despite previous MMD AML safeguarding and would likely benefit from further NMED assessment. The Barbara J Mine, part of the Poison Canyon trend, is undergoing safeguarding under the MMD AML Program. Also presented below is an example of successful surface reclamation for five neglected AUM sites in the Cibola National Forest conducted by the USFS. And finally, the Bear Canyon Group Mine in Lincoln County is summarized as a neglected AUM that the DRUM Program found to not present a hazard.

5.1 Poison Canyon

At least 30 mine and exploration features were identified by the MMD AML Program within the Poison Canyon trend, approximately 15 miles northwest of Grants, New Mexico, in McKinley County. The Poison Canyon trend hosts uranium deposits in sandstones of the Jurassic Morrison Formation and the Todilto Limestone. Approximately 10 million pounds of uranium oxide (U3O8) were produced from 20 mines within the area from 1951 through 1980 (McLemore, 2021). Although the MMD AML Program safeguarded more than a dozen features within the Poison Canyon sites in the 1990s, more openings have been identified and there is still significant risk of exposure to radiological hazards in the area (Jordan et al., 2009). In particular, mineralized, gravel-sized pieces of Todilto Limestone occur as thin layers on the ground surface, emitting high levels of gamma radiation (Jordan et al., 2009; Golder, 2009a). The Poison Canyon area likely requires further evaluation, and funding will be needed to properly assess the area's soil and groundwater. The environmental risks associated with these sites cannot be regarded lightly.

Photographs circa 2009 of the Poison Canyon Mine Screening Assessment, conducted by USEPA Region 6.

5.2 The Barbara J Mine

The Barbara J Mine within the Poison Canyon trend is one of the many AUMs where mine features are currently being reclaimed under a CERCLA time-critical removal action in conjunction with the BLM. The Barbara J Mine orebody produced 8,691 short tons of ore grading 0.20% U3O8, hosted by the Todilto Limestone (Gabelman and Boyer, 1988). Surface reclamation work in the area included mine waste excavation and compaction; shaft, vent, and subsidence feature backfilling; drill hole plugging; revegetation; and mulching of areas disturbed by construction (EMNRD, 2023; USEPA, 2015). Safeguarding is being completed at the Site, following the results of soil sampling and gamma ray surveys in the area (Golder, 2009b). Soil sampling may need to occur to confirm surface reclamation is complete for the Barbara J Mine. In addition, groundwater sampling may need to occur to characterize groundwater impacts of the Barbara J Mine and verify that the site will not pose an ongoing risk to New Mexicans or the environment.

Photographs from USEPA Region 6 Screening Assessment of the Barbara J Mine Site, including an abandoned mine shaft marked with arrow in the top photo, and an abandoned well in the lower photo, measuring 458 feet deep.

5.3 Cibola Uranium Mines

Recently, the USFS coordinated the characterization and surface reclamation of five of the many neglected AUMs in the Cibola National Forest (USFS, 2022) to fulfil CERCLA requirements. Gamma radiation and radium-226 were the primary constituents of concern and were measured in high enough concentrations to be hazardous to humans and the ecosystem. No viable RP that could have contributed to the cleanup was found.

Four of the AUM sites—Zia, La Jara, Taffy, and Vallejo mines—are in the Grants mining district near Grants, New Mexico, within the Mt. Taylor Ranger District of the Cibola National Forest. The fifth AUM site, the Abo Mine, is west of Mountainair, New Mexico, in the Mountainair Ranger District of the Cibola National Forest. The surface reclamation included filling of open pits, excavations, adits, waste rock, debris piles and trenches. Clean overburden was used to cover radioactive material left in place and the bedrock. The Zia Mine pits were used as a repository for contaminated, radiological material from all five of the reclaimed mines. A 3.5-foot thick evapotranspirative cover was constructed over the repository. Cleanup was completed in June 2016, at a total cost of $1,979,343.22.

5.4 Bear Canyon Group Mine

The Bear Canyon Group Mine, in the Capitan Mountains of Lincoln County, New Mexico, was evaluated by Navarro Research and Engineering Inc (Navarro) on behalf of the DOE for the DRUM Program (Navarro, 2019). No mine-related features were evident since the mine was small and had only consisted of shallow excavations.

The Bear Canyon Group Mine produced approximately 3 tons of ore (coming to less than 1.5 pounds of uranium oxide). There was no elevated gamma radiation recorded by the Navarro (2019) survey. The physical hazard and radiological risk ratings were ranked as “none.” The procedures for AUM validation and verification are detailed in a work plan, most recently revised in February 2022 (RSI ENTECH, 2022). DRUM verification and validation reports, such as the Navarro (2019) survey, can be used by NMED to assign priority to DRUM-evaluated AUM sites.

6 - AUM Programs in Other States

Problems posed by AUMs are not unique to New Mexico. Many states are working to address the physical and environmental hazards that AUMs cause. The AML and AUM programs in several states, including Arizona, Colorado, Texas, Utah, and Wyoming, are discussed below. A review of the programs in other states reveals that AUM sites are currently being addressed in a similar fashion: in conjunction with all other AML projects within state AML programs. No other state appears to have a program dedicated solely to AUM cleanup; the sites are addressed within coal and other non-coal AML programs based on priority level and funds available.

Many states are trying to address the cleanup of mine sites under AML programs, including AUM sites. Each of these states would benefit from a separate AUM-focused program with its own funding to accomplish their AUM cleanup goals.

All the state programs reviewed for this report receive a majority of their funding from legislatively mandated programs/funds, specifically SMCRA-related OSMRE grants. Additional funding for programs from other states rely on a variety of funds/grants from federal agencies (such as the BLM and USFS), state taxes, private entities, and landowners. These funding sources are discussed in further detail for each state. Due to the significant variations between states and the differences in programs, funding summary data should not be used to compare one state to another. Rather, the data should serve as an example for AML and AUM program implementation.

The most successful state AML programs work closely with their local OSMRE division/office, facilitate interagency communication and cooperation as well as draw funds from multiple federal, state, and private sources, allowing for more sites to be assessed and remediated in an effective manner. In general, AUM cleanup efforts in all states would benefit from a separate, AUM-focused program, as long as that program worked with existing agencies, working groups, and funding sources to accomplish their cleanup goals.

6.1 Arizona

In 1992, the Arizona State Mine Inspector (ASMI) began working with the BLM to survey federal lands and inventory abandoned and inactive mines. The program hired college and university student interns from across Arizona to conduct field investigations and create reports. State funding for the program started in 1997, which extended the program to state and privately owned lands. Currently, BLM Arizona has documented approximately 10,000 features in the Abandoned Mine and Site Cleanup Module database (BLM, 2023a). The ASMI also partnered with the National Park Service in 1996 to aid in abandoned mine closures in national parks, monuments, and recreational areas throughout the state. Arizona's Abandoned Mine Safety Fund was enacted in 1998. The fund's objective is to "encourage private contributions that can be used directly to abate public safety risks on State Lands and leverage legislative appropriations to increase funding for this work." Money from the fund can only cover the direct cost of work and cannot be used for administrative expenses. Most of Arizona's AUMs are in the northern part of the state and are located on Navajo Nation tribal trust lands. Because of this, the majority of Arizona's AUMs are addressed through the NNEPA and NAMLRD.

6.2 Colorado

Colorado's Abandoned Mine Land Reclamation Plan was approved by the DOI Secretary on June 11, 1982. The Colorado Inactive Mine Reclamation Program (IMRP) is administered by the Division of Reclamation, Mining, and Safety in Colorado's Department of Natural Resources and has 16.5 full-time equivalent (FTE) staff as of 2022 (OSMRE-DFD, 2022a). Colorado has approximately 23,000 abandoned mine sites located on both public and private land (Colorado Geological Survey, 2023). In Evaluation Year 2022, Colorado started 13 non-coal AML projects and completed 16 non-coal AML projects (OSMRE-DFD, 2022a).

The Colorado IMRP works to address hazards and environmental issues associated with abandoned or inactive "legacy" mines. Non-coal projects include safety closures, water quality improvement projects, and surface reclamation of sites with revoked permits and forfeited financial warranties. Since its inception, IMRP has safeguarded over 10,500 hazardous openings and reclaimed over 4,000 acres of AML across Colorado (Colorado DRMS, 2023). IMRP works closely on mine safety closure projects with many partners, including the BLM, USFS, Colorado Division of Parks and Wildlife, Women in Mining, local governments, mining associations, private citizens, landowners, and the Colorado Scenic and Historic By-Ways Commission.

IMRP consistently engages with various local, regional, statewide, and federal organizations and has a strong commitment to education and outreach. In 2022, the program partnered with Colorado Correctional Industries and Colorado Youth Corps Association to safeguard and reclaim abandoned mines while providing technical training and work experience to participants. IMRP also provides service opportunities to local Boy and Girl Scout Troops and has also presented to and provided mine cleanup field trips for students at Western Colorado University.

Funding for IMRP comes from the traditional SMRCA-funded model through Annual Title IV grants and state severance taxes. IMRP also partners with other agencies to achieve additional AML surface reclamation activities, including the USFS, BLM, United States Geological Survey, DOE and DRUM, private industry, local watershed associations, private landowners, local governments, and stakeholder groups. These groups receive additional funding through the USEPA and/or the Colorado Department of Public Health and Environment. The program has recently begun placing additional emphasis on AUM-related features on the Colorado Plateau (OSMRE-DFD, 2022a).

6.3 Texas

The Texas Uranium Exploration, Surface Mining and Reclamation Act (Texas Natural Resources Code [TNRC] Sec. 131) went into effect in 1977. The Railroad Commission of Texas (RRC) Surface Mining and Reclamation Division oversees the state's AML Reclamation Program. The program is fully funded by the federal OSMRE through a production tax levied on active coal mining operations in Texas, as well as the Land Reclamation Fund outlined in TNRC Sec. 131.231. In 1992, the RRC AML program certified completion of surface reclamation of all inventoried high-priority coal AML sites, allowing the program to use federal AML funds for non-coal AML sites. Following certification, the RRC AML Program focused on non-coal surface reclamation projects, specifically abandoned uranium and cinnabar mine sites (OSMRE-TFO, 2022).

Prior to 1975, 23 uranium pits were mined and abandoned in Texas. These uranium mines typically consist of an open pit (~20 to 120 feet [ft] deep) and associated spoil piles (~20 to 80 ft high with a steep slope of 33% or greater). The pits usually contain collected groundwater 20 to 80 ft deep (RRC of Texas SMRD, 2002). The RRC AML Program completed its first AUM cleanup project in 1988. Between 1988 and 2001, nine AUM cleanup projects were completed, which cost a total of $10,133,675 (RRC of Texas SMRD, 2002).

The program's Mabel New-Superior AUM site was the recipient of the federal OSMRE's 2009 Mid-Continent Regional Award for AML Reclamation. More recently, the RRC AML program has been refocusing surface reclamation efforts toward abandoned coal sites where they can now obtain right of entry. RRC is also reopening investigations into AUMs where right-of-entry was not previously obtained. During Evaluation Year 2022, the Texas AML program staffed 4.7 FTE employees and had a total of $1,126,610 in AML Program Grant Awards, which helped fund the initiation of five AML projects and the completion of three projects (OSMRE-TFO, 2022).

6.4 Utah

Utah's Abandoned Mine Reclamation Program (AMRP) is administered by the Division of Oil, Gas and Mining (DOGM) within Utah's Department of Natural Resources. The program was established in 1983 to address physical safety hazards caused by abandoned mines as authorized by the 1977 SMCRA. There are estimated 17,000 mine openings across the state (Utah DOGM, 2023). The AMRP safeguards abandoned mine sites by sealing off access to openings and cleaning up waste. A State Reclamation Plan was enacted in 1986 by Utah Administrative Code (UAC) R643-884. One of the requirements of the reclamation program is the coordination of surface reclamation work between AMRP, the Rural Land Reclamation Program administered by the Soil Conservation Service, and OSMRE's surface reclamation programs (R-643-884-133.300 UAC). Because the DOGM has an approved state surface reclamation plan, the AMRP is eligible for state reclamation grants under R643-886 UAC.

As of September 2022, the AMRP employs 11 FTE staff with roles in project management, engineering, geographic information systems, environmental compliance, geology, and archaeology (OSMRE-DFD, 2022b). The AMRP works closely with the OSMRE Denver Field Division (DFD) and the BLM. Funding for the program comes from SMCRA-related sources, such as OSMRE and the Abandoned Mine Reclamation Fund (40-10-25.1 UAC), as well as The Utah Coal Producers, who pay an abandoned mine reclamation fee to OSMRE for each ton of coal mined in Utah. Noncoal sites can be remediated using these funds under R643-875 UAC. The program is also funded by non-SMCRA sources, such as the DOE and BLM. In 2022, Utah's total AML grant awards and funding was $2.829 million, some of which was used to start four and complete three non-coal AML projects (OSMRE-DFD, 2022b).

Utah's AMRP has been recognized multiple times over the past several years for their AUM surface reclamation efforts. The San Rafael Swell uranium mine closure project, a partnership between BLM and AMRP, won the NAAMLP 2016 Hardrock Abandoned Mine Lands Reclamation Award for Physical Safety Hazards. More recently, AMRP won the same award in 2020 for the 2019 Red and Fry Canyon abandoned mine closure project in San Juan County, Utah, which was described as "a showcase example of interagency cooperation and collaboration to protect public safety while protecting the environment" (Utah DOGM, 2020). The project involved closing 62 hazardous AUM openings and was funded by the BLM and OSMRE.

6.5 Wyoming

Wyoming's Abandoned Mine Land Reclamation Plan was approved in 1981 under Title IV of SMRCA, allowing for the Wyoming Department of Environmental Quality to operate the Abandoned Mine Reclamation Program. Administered by the Wyoming Department of Environmental Quality, the Wyoming Abandoned Mine Lands Division (WYAMLD) implements the approved State Reclamation Plan and the Abandoned Mine Land Program (WYAMLP). As of July 1, 2021, WYAMLP had 12.5 FTE staff (OSMRE-DFD, 2022c); these employees are distributed between an administrative office and a field office. The WYAMLD works closely with the OSMRE-DFD Casper Area Office, which described the state as having "a superior AML program in full compliance with its approved [Abandoned Mine Land Reclamation] Plan" (OSMRE-DFD, 2021). The WYAMLP typically hosts an annual AML staff meeting, bringing together federal stakeholders and state agencies to provide the Casper Area Office staff with updates on AML projects and to allow for coordination of activities among various stakeholders associated with the WYAMLP.

During Evaluation Year 2022, WYAMLP received a total of $32,975,498 in grant funding; of that total funding, WYAMLP spent $6,198,665 on AUM surface reclamation project costs spanning five AUM projects (OSMRE-DFD, 2022c). The program received $35,801,324 in total funding during Evaluation Year 2021 and spent $7,353,677 on AUM surface reclamation costs across 10 projects (OSMRE-DFD, 2021). These costs covered different types of surface reclamation problems, including mine openings, subsidence, hazardous water bodies, dangerous piles and embankments, hazardous equipment/facilities, pits, etc.

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7 - Barriers and Benefits in Addressing Neglected AUM Sites

A lack of resources is the primary barrier to tackling neglected AUMs in New Mexico and the potential threats they pose. AUM restoration projects require large investments of funds over a period of many years. Though HB164 establishes a reclamation fund (the UMRRF), it has yet to receive any monies from the state. The price range for an initial site assessment with sampling may exceed $25,000 to $100,000. Additional sampling may then be needed to fully characterize the contamination and design a cleanup program. Subsequent cleanup typically costs even more, and it can take many years to successfully cleanup a site, depending on the type and extent of the contamination. The cost to physically safeguard a site and remediate soil and groundwater may exceed several million dollars.

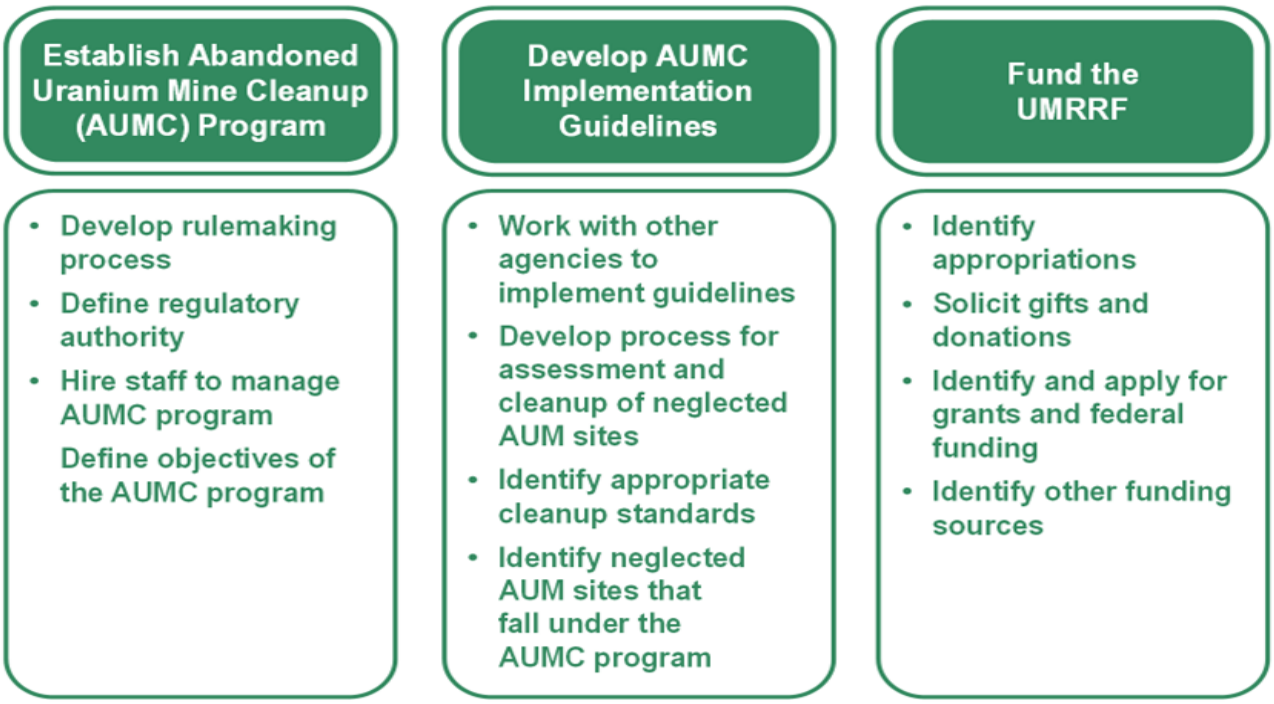
Another barrier to addressing neglected AUMs is the fact that there are many different state and federal agencies and working groups, programs, and funds that partially address AUM and neglected AUM sites in New Mexico. Furthermore, though NMED is experienced in cleaning up many different types of contaminated sites, NMED does not have a history of cleanup of AUM sites. Additionally, although HB164 directs NMED to address the AUM sites, NMED does not have an established program or adequate staff to carry out or oversee neglected AUM site assessments, investigations, and cleanup. Although the cost associated with cleaning up neglected AUM sites with contamination and hazards can be high, the benefits, including those listed below, lead to a healthier and more prosperous New Mexico:

- Protecting natural resources for the future
- Protecting the health of New Mexicans
- Deterrence of trespassing at abandoned and dangerous AUMs
- Protecting humans by safeguarding site access
- Improved air quality and groundwater quality
- Carbon sequestration through improved soil health
- Improved wildlife habitat
- Improved recreation opportunities
- Increased property values near remediated sites

The main barriers to addressing neglected AUM sites are a lack of resources, the need for an established program, and developed guidelines for implementing assessment and cleanup.

The recommended actions for removing the barriers that exist for cleaning up neglected AUM sites (excluding sites on tribal lands or federal lands) in New Mexico are summarized in Figure 4. An AUMC Program will allow NMED to develop a rulemaking process, define its regulatory authority, the objectives of the program, and hire staff to manage the cleanup of AUM sites. The AUMC program can then develop implementation guidelines for the AUMC staff to follow. In addition, the AUMC program can identify and evaluate appropriate ways to fund the UMRRF so there is sustainable source of funds for ongoing assessment and cleanup of neglected AUM sites throughout the state.

Figure 4. Recommended Actions for Removing Barriers to Cleanup of Neglected AUM Sites excludes AUMs located on tribal lands and federal lands)



8 - Proposed Abandoned Uranium Mine Cleanup Program

The state recognizes that the AUM problem in New Mexico is large and complex. Inter-agency cooperation is essential, as are clear guidelines for RPs. Current guidelines, in addition to the regulatory framework discussed in Section 3, for uranium operations include:

- a joint guidance document between EMNRD and NMED (2016) for addressing soil radiation at existing uranium mines as part of cleanup activities, and
- MMD guidance for meeting cleanup requirements at new uranium mining operations (2016),
- NMWQCC regulations, as applicable for protection of groundwater and surface water (see Section 3), and
- New Mexico Mining act, as applicable for surface reclamation (see Section 3).

Presently, as resources allow, MMD investigates and safeguards neglected AUMs that have no discernible RP. So far, limited resources through MMD's AML program and its partnerships have enabled a relatively slow pace of neglected AUM surface cleanup as the state grapples with many other mining-related environmental issues. A proposed approach for conducting the assessment and cleanup of neglected AUM sites in New Mexico is provided in Figure 5. First, an AUMC Program should be established to help NMED define the regulatory authority, develop the objectives of the program, and hire staff to manage the assessment and cleanup of neglected AUM sites.

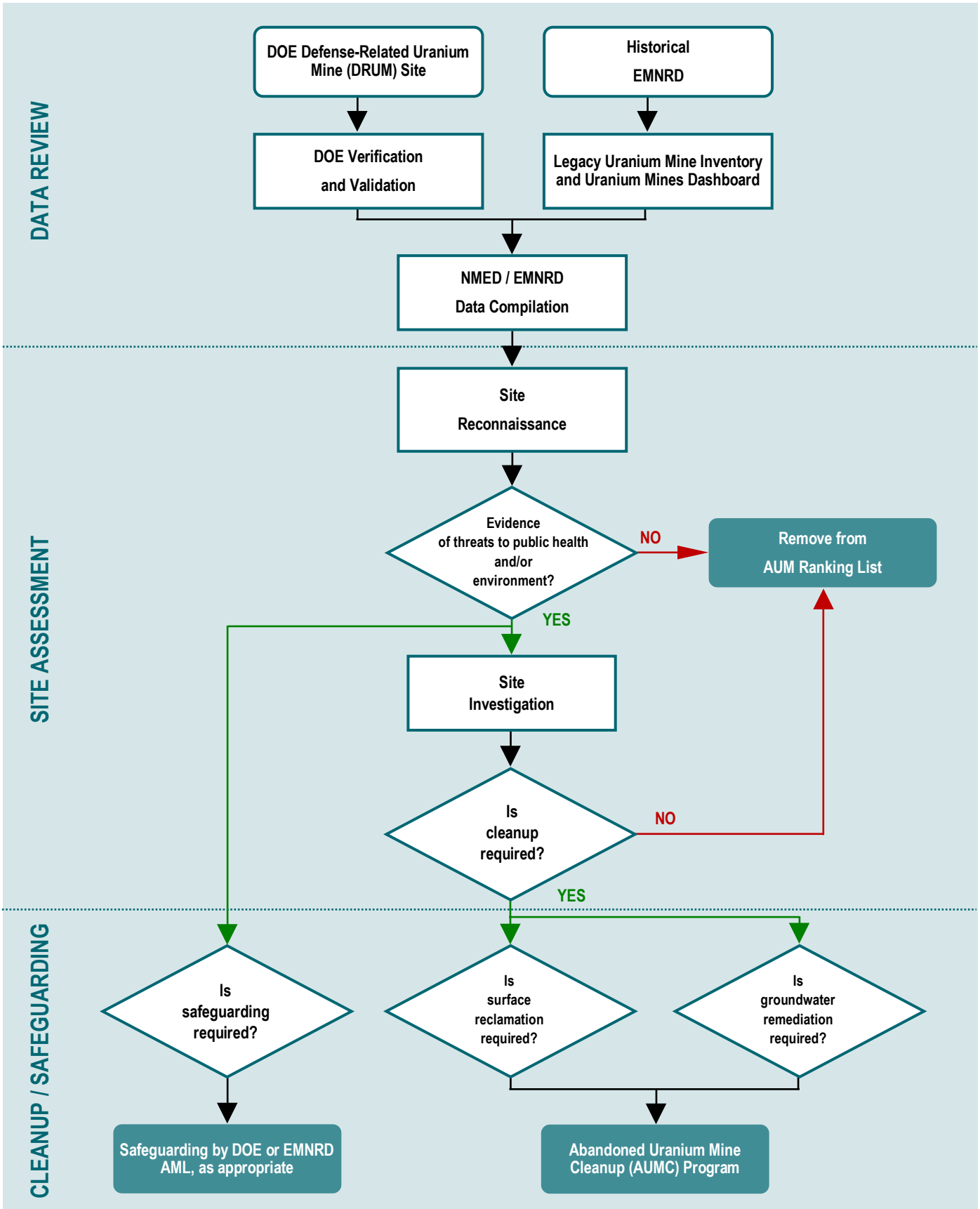
An effective AUMC program will need to conduct thorough data compilation and a robust AUM geodatabase in order to conduct an efficient and comprehensive review and ranking of the 260 identified AUMs in New Mexico. The AUM geodatabase will also allow NMED to identify and prioritize the neglected AUM sites. To avoid duplicating efforts in site characterization, all

The risks that neglected AUM sites pose to human health and the environment far outweigh the costs needed to establish a sustainable fund to provide the resources and appropriately address them.

available information related to a site should be reviewed. The DOE DRUM Program Verification and Validation reports, airborne radiological surveys (where available), as well as historical EMNRD MMD AUM inventories provide NMED with a large amount of information to compile and review. Once a thorough review has been completed, NMED can rank the neglected AUM sites for an initial site assessment based on the potential hazards at each site (Figure 5). The priority ranking for sites could include the following rankings:

- **Low priority:** sites that were evaluated via the DOE DRUM Program or EMNRD MMD programs and found to have little to no physical, radiological, or other threat.
- **Moderate priority:** sites that may have a physical, radiological, or other threat based on DOE DRUM or MMD evaluations, or if there is no available information.
- **High priority:** sites that are likely to have physical, radiological, and/or other threat based on DOE DRUM or MMD evaluations, sites that are in close proximity to populated areas, sites that are in close proximity to surface water and/or groundwater, or if the mine is known to be "wet."

Figure 5. Proposed Phases for Assessment and Cleanup of AUM Sites in New Mexico



The first step for the neglected AUM site assessment would include site reconnaissance that, in addition to the data review, may include a site visit and limited sampling. The site reconnaissance may cost between $25,000 and $100,000 per AUM site, depending on the site location and available information.

For those neglected AUM sites initially ranked as moderate or high priority, or sites found likely to pose a threat to human health and/or the environment, a more in-depth site investigation and funding may be required (Figure 5). A site investigation may include more extensive soil and/or surface water sampling, ground-based radiological surveys, and/or groundwater sampling. For this level of site investigation, the NEPA process will need to be followed and may include biological and archeological surveys to assess the environmental impacts of the investigations. In addition, the groundwater sampling may require drilling and installing monitoring well(s). An in-depth site investigation may cost as little as $80,000 but could cost more than $1,000,000, depending on the site and level of investigation required.

Based on the results of data review, the site reconnaissance, and the site investigation, the neglected AUM site may be assigned a final priority level based on threat: low, moderate, or high. High priority sites will require additional funds to develop and implement cleanup through the AUMC Program. The funds needed for cleanup could be in the range of tens of thousands of dollars for simple safeguarding measures to multiple millions of dollars for extensive soil reclamation and/or groundwater remediation, as well as the safe disposal of radioactive material.

Neglected AUM sites that qualify for the AUMC Program should adhere to cleanup standards summarized in the EMNRD and NMED joint guidance for existing operations (2016), and those set by USEPA where appropriate, NMWQCC regulations as applicable, and follow any promulgated rules addressing cleanup of AUM sites. Alternative concentration levels in soils and groundwater may have to be applied, depending on the site's natural background levels, the limits of available remediation techniques, and the site's proximity to human settlements.







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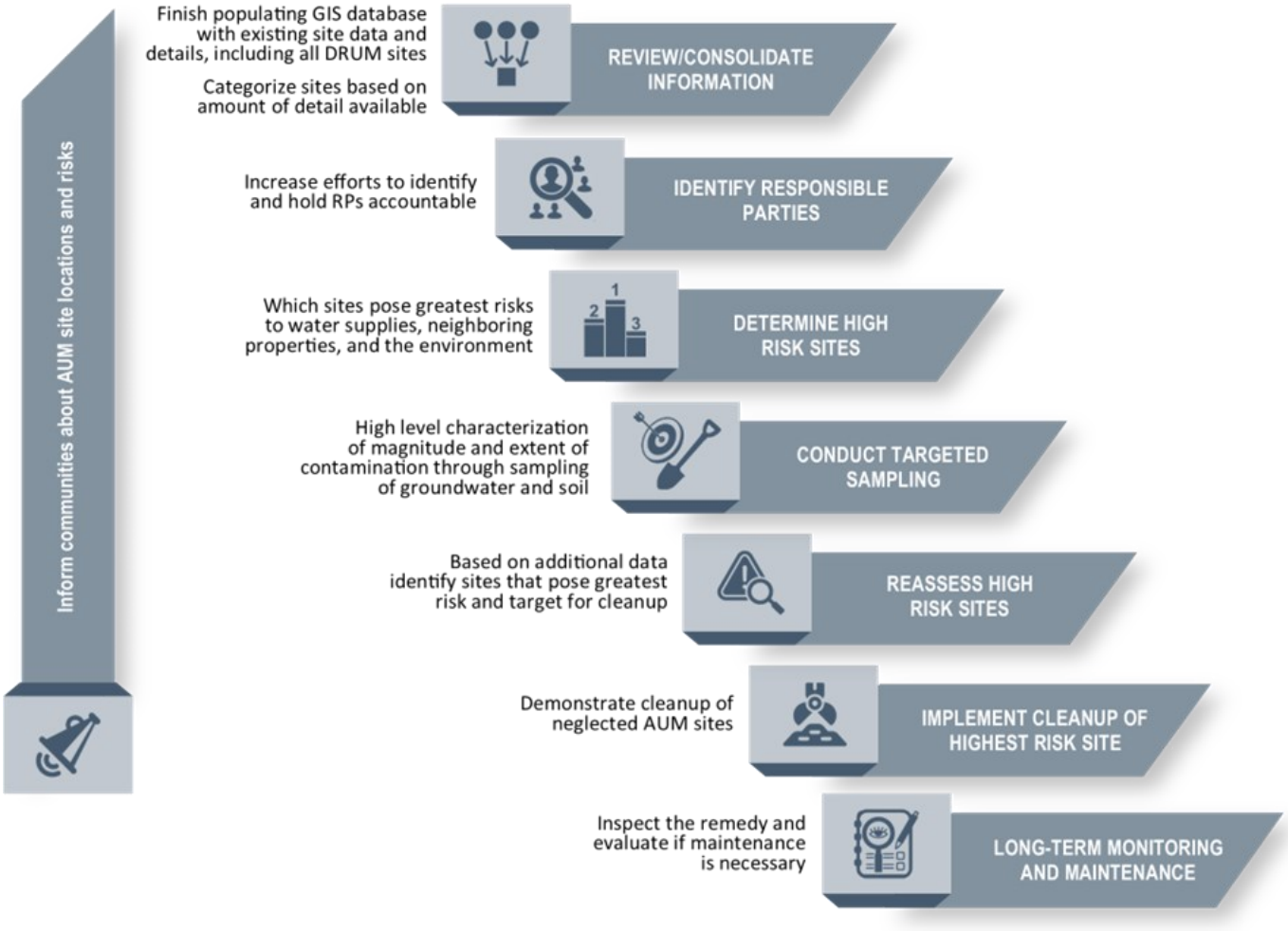
9 - Conclusions

Uranium mines throughout New Mexico and Navajo Nation produced much of the material that gave birth to the Atomic Age in support of national defense efforts. Although the uranium mining boom was incentivized by the United States government, there are still no specific federal laws for addressing AUMs. New Mexico is now left with the legacy of these uranium mine sites and the lasting threat of contamination from un-reclaimed and un-remediated AUMs. Despite comprehensive environmental legislation introduced over the last 50 years, New Mexico is still grappling with how to address the approximately 260 AUM sites in the state, many of which have unknown hazards and unknown threats. Therefore, New Mexico will require additional funding from the federal government or other sources to address the legacy of these mines.

The passage of HB164 is the latest effort to fill the gaps in the regulatory framework for addressing neglected AUMs and to protect the health of New Mexicans. HB164 establishes a fund for cleanup, and a Uranium Mine Reclamation Coordinator position to focus efforts on the neglected AUMs that have previously been overlooked in New Mexico. However, the UMRRF has yet to be funded. In addition, an organized AUMC Program needs to be established and will require a closely coordinated effort between multiple agencies. Once the AUMC Program is set up and the UMRRF funded, the recommended next steps for addressing neglected AUM sites (excluding sites on tribal lands and federal lands) in New Mexico are summarized in Figure 6.

Uranium mine cleanup can be seen as a significant economic opportunity for New Mexico. The work required to characterize and cleanup neglected AUMs demands a range of skills. Every site presents an opportunity for innovation in the fields of engineering, geology, geochemistry, and hydrology.

Figure 6. Recommended Next Steps for Addressing Neglected AUM Sites in New Mexico (excludes AUMs located on tribal and federal lands)



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Attachment 1. Existing State and Federal Funding Mechanisms

Regulatory Framework / Funding Mechanism	Apply to AUMs?	Applicability
State		
New Mexico House Bill 164 (HB164) / Uranium Mining Reclamation Revolving Fund *(forthcoming)*	Yes	Applicable for Uranium Mine Cleanup (UMC) Abandoned Uranium Mines (AUMs): AUM sites that have no Responsible Party (RP), and do not fall under another program.
NM Energy, Minerals and Natural Resources Department, Mining and Minerals Division (EMNRD)/ Abandoned Mine Lands (AML) Fund	Yes	Abandoned coal mines are first priority for AML Funds. Applicable to non-coal mines, including AUMs, with Office of Surface Mining Reclamation and Enforcement (OSMRE) approval.
Brownfields Program / Brownfields Revolving Loan Fund	Maybe	Only applicable when a willing participant comes forward
Petroleum Storage Tank Bureau / Corrective Action Fund	No	Only applicable for tank spills, will not be applicable for most AUMs
New Mexico Finance Authority / Water Project Fund	No	For water conservation, treatment, reuse projects; flood prevention; water storage or conveyance projects; and watershed restoration.
New Mexico Environment Department (NMED) Construction Programs Bureau / Clean Water State Revolving Fund	No	Explicitly for the construction and modification of wastewater facilities.
NMED Construction Programs Bureau / Clean Water Administrative Fund	No	Solely to administer the Wastewater Facility Construction Loan Fund.
NMED Construction Programs Bureau / Rural Infrastructure Revolving Loan Fund	No	Applicable for infrastructure related to domestic water systems, wastewater, and solid waste project in small/rural communities.
NMED Drinking Water Bureau and New Mexico Finance Authority / Drinking Water State Revolving Loan Fund	No	Only applicable for financial assistance to public water systems for repairs and replacement of drinking water infrastructure to meet drinking water regulations and protect public health.
NMED Remediation Oversight Section / Voluntary Remediation Fund	No	Available only for administration and oversight of the state's Voluntary Remediation Program.
NMED Remediation Oversight Section / Responsible Parties Fund	No	Explicitly for the removal of underground storage tanks.
NM Water Quality Control Commission / Water Quality Management Fund	No	Available only for administering regulations adopted by the Water Quality Control Commission.
NMED Hazardous Waste Bureau / Hazardous Waste Fund	No	Explicitly for the administration of the state's hazardous waste program.
NMED / Water Conservation Fund	No	Applies only to conducting testing, assessing, and training for public water supply systems.
NMED / Public Water Supply System Operator and Public Wastewater Operator Fund	No	Available only for administering and enforcing the state's Utility Operators and Certification Program.
NMED / Hazardous Waste Emergency Fund	No	Applicable only for immediate, emergency response and remediation of a hazardous waste contamination spill.
Office of Natural Resources Trustee / Natural Resources Trustee Fund	No	Funds are recovered from RPs and used to restore, replace, or acquire natural resources in an area where natural resources have been damaged, destroyed or lost due to contamination. Only available if there is an RP.
Federal		
Department of Energy Office of Legacy Management Defense-Related Uranium Mines (DRUM) Program	Yes	Applicable for safeguarding at all AUMs that fall within the DRUM Program, not applicable for surface or groundwater reclamation
United States Environmental Protection Agency (CERCLA) / Superfund	Yes	Only applicable for AUM sites on the National Priority List or sites designated under time-critical or non-time critical removal actions
United States Bureau of Land Management / AML funds	Yes	Only applicable for AUMs on land managed by the Bureau of Land Management
United States Forest Service / AML funds	Yes	Only applicable for AUMs on land managed by the United States Forest Service
Navajo Nation Environmental Protection Agency (NNEPA) (with USEPA/CERCLA)	Yes	Only applicable for AUMs on Navajo Nation
Navajo Abandoned Mine Lands (NAML) (with USEPA and NNEPA)	Yes	Only applicable for abandoned mine lands, including AUMs, on Navajo Nation

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