2024 - 2028
Grants Mining District
Five-Year Plan

September 2024

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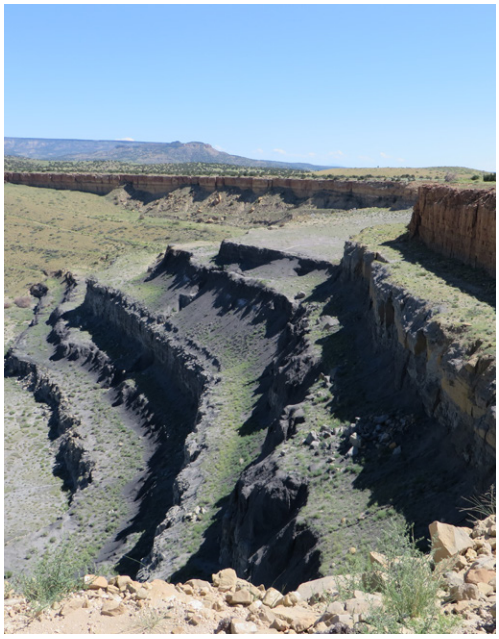


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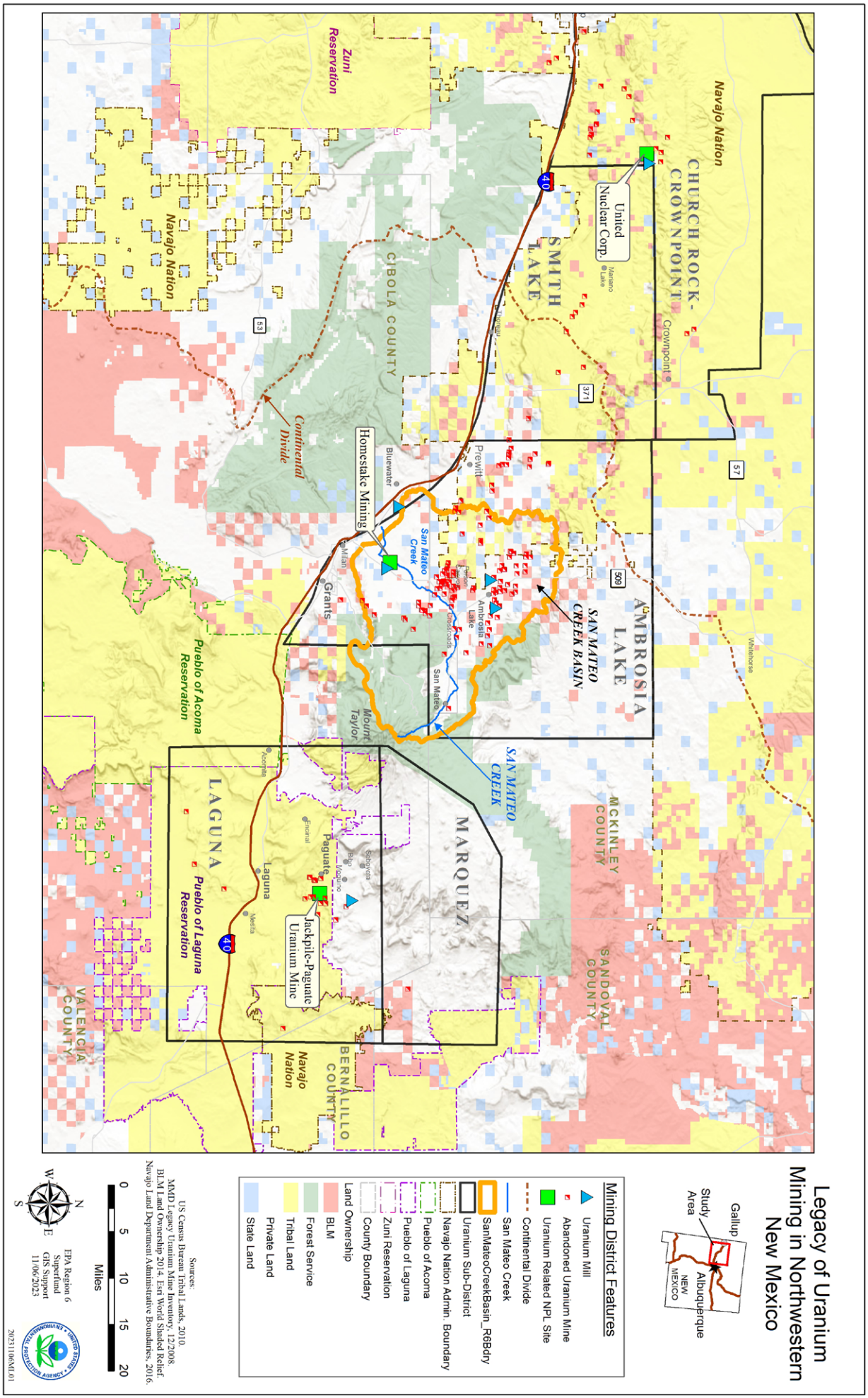
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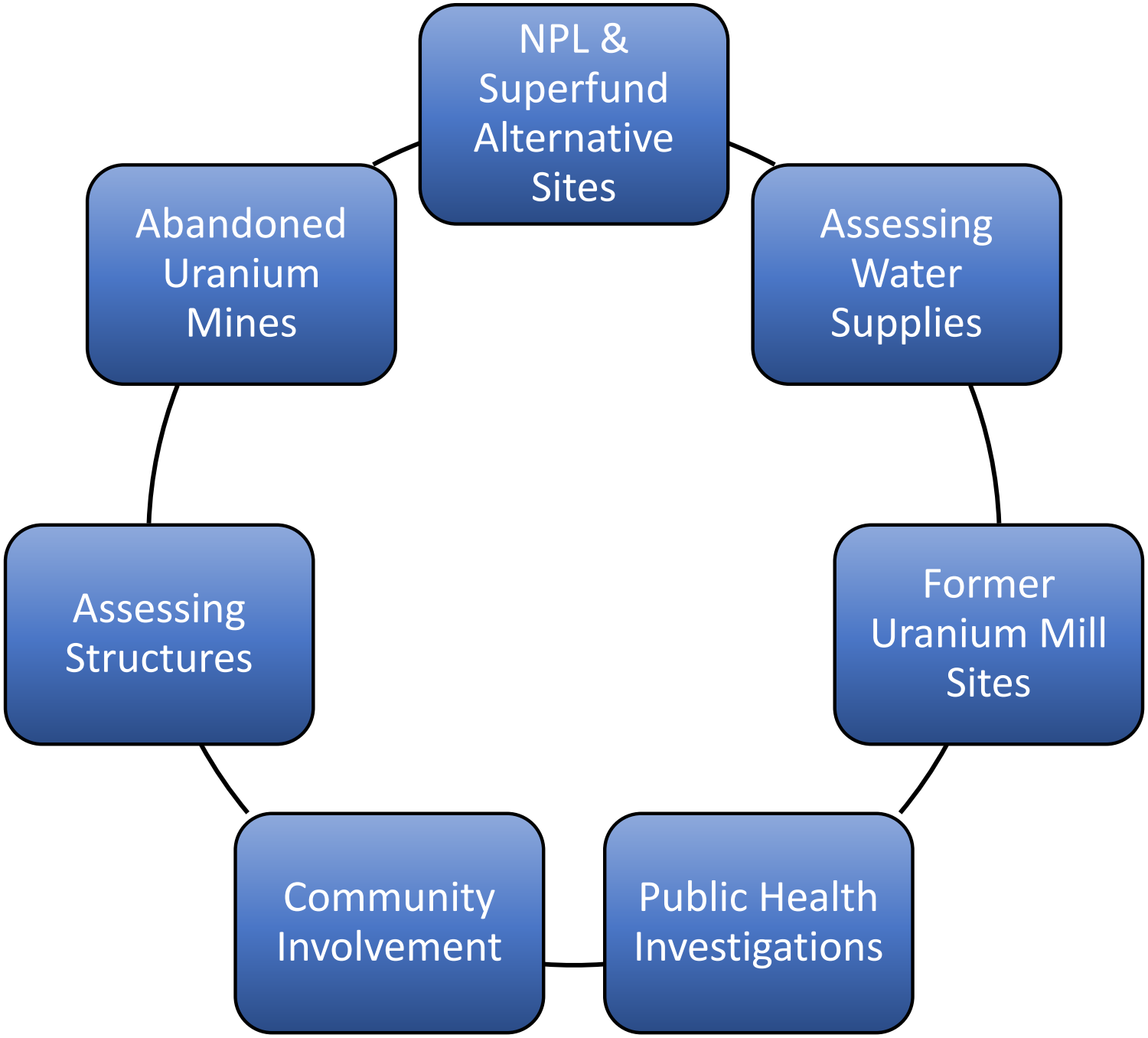
Acronyms

AEC – Atomic Energy Commission
AML – Abandoned Mine Lands
ARCO – Atlantic Richfield Company
ASAOC – Administrative Settlement and Agreement on Consent
ATSDR – Agency for Toxic Substances and Disease Registry
AUM – Abandoned Uranium Mine
CCP – Closeout/Closure Plan
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
BLM – Bureau of Land Management
DOD – Department of Defense
DOE – Department of Energy
DOI – Department of Interior
DRUM – Defense Related Uranium Mine
EE/CA – Engineering Evaluation/Cost Analysis
EPA – Environmental Protection Agency
FS – Feasibility Study
GMD – Grants Mining District
MCL – Maximum Contaminant Level
NCP – National Contingency Plan
NLN – National Lab Network
NMAC – New Mexico Administrative Code
NMED – New Mexico Environment Department
MMD – New Mexico Mining and Minerals Division
NMDOH – New Mexico Department of Health
NMWQCC – New Mexico Water Quality Control Commission
NPL – National Priorities List
NRC – Nuclear Regulatory Commission
OU – Operable Unit
PRP – Potentially Responsible Party
RAML – Rio Algom Mining, LLC
RA – Remedial Action
RD – Remedial Design
RD/RA Remedial Design/Remedial Action
RI – Remedial Investigation
RI/FS – Remedial Investigation/Feasibility Study
ROD – Record of Decision
RSE – Removal Site Evaluation
SA Approach – Superfund Alternative Approach
SMCB – San Mateo Creek Basin
UMTRCA – Uranium Mill Tailings Radiation Control Act
UNC – United Nuclear Corporation
USACE – United States Army Corps of Engineers
USFS – United States Forest Service

I. Purpose

The purpose of the Grants Mining District 2024 – 2028 Five-Year Plan is to report to the public the progress made in implementing prior five-year plans and to memorialize priorities and activities for the next five years in the Grants Mining District (GMD). The plan is intended to promote and advance the assessment and cleanup, when warranted, of contamination caused by legacy uranium mining and milling operations. Preceding this plan was the 2010-2014 Grants Mining District Plan and the 2015-2020 Grants Mining District Plan. Work accomplished during the interim period between the second and third plans is identified in this document.

The seven objectives for this Five-Year Plan are designed to guide the efforts in the GMD. Each objective identifies goals with specific actions to be taken in the next five years by those agencies with the authority and responsibility. Although the objectives are presented as standalone subjects in the plan, they are intertwined.



II. Partners to the Five-Year Plan

Federal, state, and tribal governmental agencies are partners to the plan. They are committed to continue to assess and address legacy contamination and to eliminate, reduce or manage risks to human health and the environment. Each partner has certain authorities that are defined by statute and/or regulations, or tribal sovereignty. These authorities may overlap, or sites may be situated on "mixed ownership" land, requiring careful planning and communication between partners, stakeholders, and communities.

Agency for Toxic Substances and Disease Registry

The Agency for Toxic Substances and Disease Registry (ATSDR) is a federal public health agency of the U.S. Department of Health and Human Services. ATSDR can conduct Public Health Assessments (PHA) which evaluate data and information on the release of hazardous substances into the environment to assess impacts on public health, develop health advisories or other recommendations, and identify studies or actions needed to evaluate and mitigate or prevent human health effects.

New Mexico Department of Health

The New Mexico Department of Health's (NMDOH) objective is to promote, preserve and protect the health of residents of New Mexico. As a partner to this plan, NMDOH's APPLETREE Program coordinates efforts with ATSDR to address health concerns about environmental exposures from community members or stakeholders and provide health consultations as deemed necessary when there is new environmental data available.

New Mexico Energy, Minerals, and Natural Resources Department – Mining and Minerals Division

New Mexico Mining and Minerals Division's (MMD) permits mining and reclamation operations on state land, private lands, and federal lands in New Mexico. The permitting and enforcement authority falls under the NM Mining Act of 1978, and NM Mining Act Rules, 19. 10 NMAC. The intent of the Mining Act is the address environmental impacts during and after mining operations with surface reclamation measures established in the rules and permits.

New Mexico Environment Department

The New Mexico Environment Department (NMED), under House Bill 164 (2022), Section 9-7A-16 NMSA 1978, is tasked with coordination efforts to clean up former uranium mine and mill sites. NMED also ensures protection and abatement of groundwater and surface water through enforcement of the groundwater and surface water protection rules in 20.6.2 and 20.6.4 of the New Mexico Administrative Code (NMAC). NMED currently regulates and oversees groundwater quality protection through issuance of groundwater discharge permits in accordance with New Mexico Water Quality Control Commission (NMWQCC) permitting regulations that were promulgated in 1978 pursuant to the New Mexico Water Quality Act. Some of the previously permitted operational mines are undergoing groundwater assessment, abatement, and closure pursuant to NMWQCC regulations. NMED also supports EPA, NRC, and DOE at Superfund and UMTRCA sites.

Pueblo of Acoma Department of Natural Resources

The Acoma Department of Natural Resources (DNR) assists the Pueblo of Acoma's government and its

programmatic offices in providing land management and other activities. Federal agencies work closely with the Acoma DNR and provide briefings to Pueblo of Acoma officials.

Pueblo of Laguna Environmental and Natural Resources Department
The Pueblo of Laguna Environmental and Natural Resources Department (Laguna ENRD) monitors and protects the environmental quality of Pueblo of Laguna air, land, and water for the health benefit of current and future generations of Pueblos. Federal agencies work closely with the Laguna ENRD and provide briefings to Pueblo of Laguna officials.

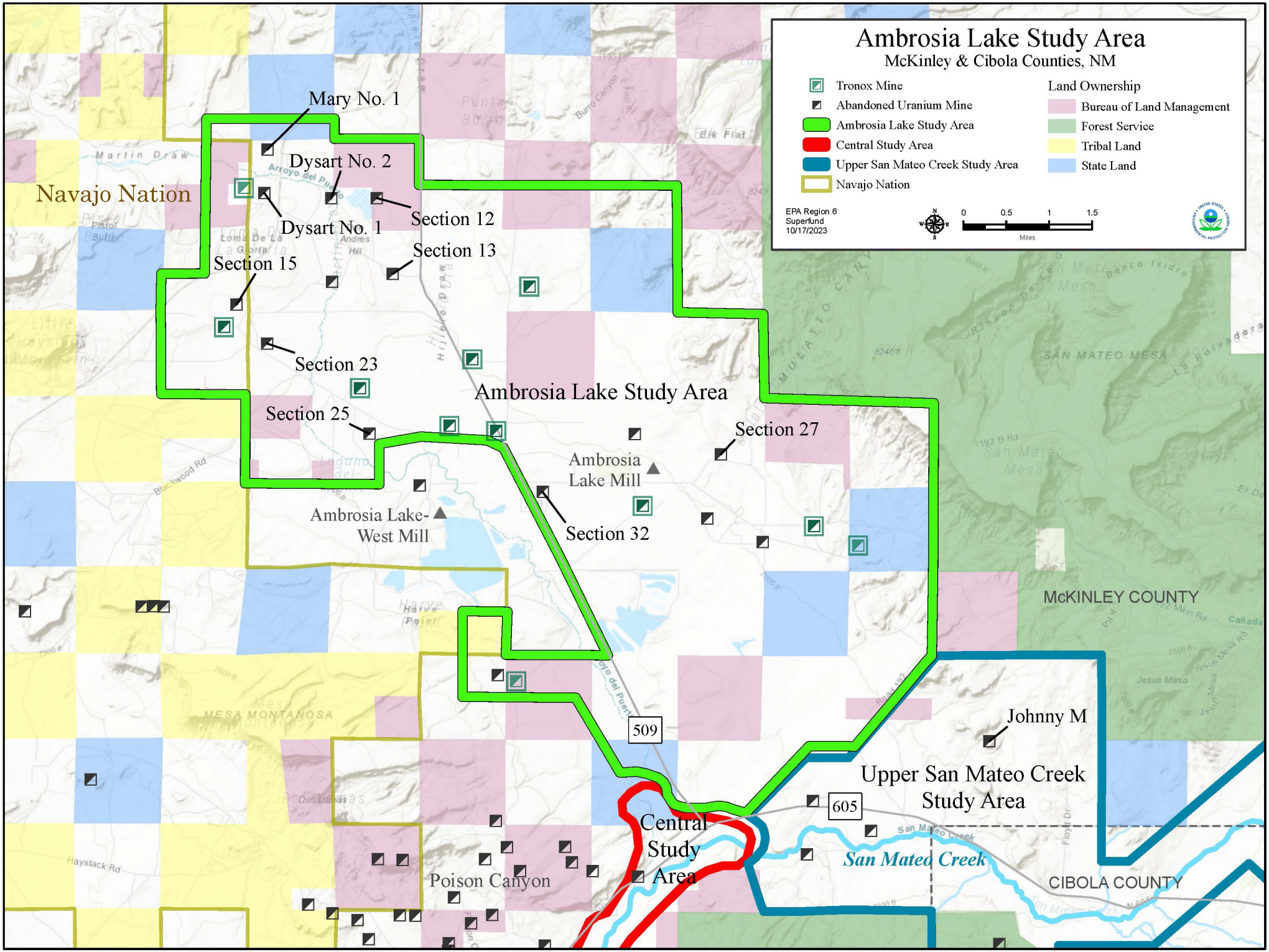
U.S. Department of Agriculture – Forest Service
The U.S. Forest Service (USFS), an agency within the U.S. Department of Agriculture, manages public lands in the national forests. USFS oversees mineral extraction and reclamation and can use its CERCLA authority to address hazardous substances on national forest land.

U.S. Department of Energy – Office Legacy Management
The U.S. Department of Energy's Office of Legacy Management (DOE-LM) has two roles in the Five–Year Plan. The first role is implementing the Uranium Mill Tailings Radiation Control Act (UMTRCA) through the cleanup of twenty-two uranium mill sites that were inactive and unregulated at the time UMTRCA was promulgated in 1978 (known as Title I sites), and the long-term surveillance and maintenance of uranium mill sites that were active when UMTRCA was promulgated (known as Title II sites). The second role for DOE-LM is assessment of thousands of uranium mine sites across the U.S. under the Defense Related Uranium Mines (DRUM) Program's Verification and Validation (V&V) Program. DOE does not have authority to cleanup uranium mines and instead shares information from the V&V Program with federal land managers, tribes, and property owners.

U.S. Department of the Interior – Bureau of Land Management
The Bureau of Land Management (BLM), an agency within the U.S. Department of Interior, manages much of the country's public lands. The BLM is the lead agency for mines on their land and can use various authorities under the Federal Land Policy and Management Act, the General Mining Law of 1872, and CERCLA to address mining and its impacts on public lands.

U.S. Environmental Protection Agency Region 6
The United States Environmental Protection Agency (EPA) Region 6's role is to implement the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as the Superfund Law, and the National Contingency Plan (NCP), which provides the framework for EPA to respond to releases of hazardous substances. EPA Region 6's efforts are focused on private land and tribal land in the State of New Mexico apart from the Navajo Nation, which is led by Region 9. Superfund does not regulate permitting of new mines.

U.S. Nuclear Regulatory Commission
The NRC regulates the operation of uranium mills and the decontamination, decommissioning, reclamation, closure and, if necessary, groundwater corrective action of uranium mill sites through the issuance of a source materials license to the operator (Title II UMTRCA sites). Once such activities are completed, NRC issues a general license to DOE-LM, the custodian, for the long-term surveillance and maintenance of Title II sites.


Ambrosia Lake Study Area
McKinley & Cibola Counties, NM
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Abandoned Uranium Mine
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Central Study Area
Upper San Mateo Creek Study Area
Navajo Nation
Land Ownership
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Navajo Nation
Ambrosia Lake Study Area
Ambrosia Lake Mill
Ambrosia Lake-West Mill
McKINLEY COUNTY
CIBOLA COUNTY
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Upper San Mateo Creek Study Area
Central Study Area
Poison Canyon
San Mateo Creek
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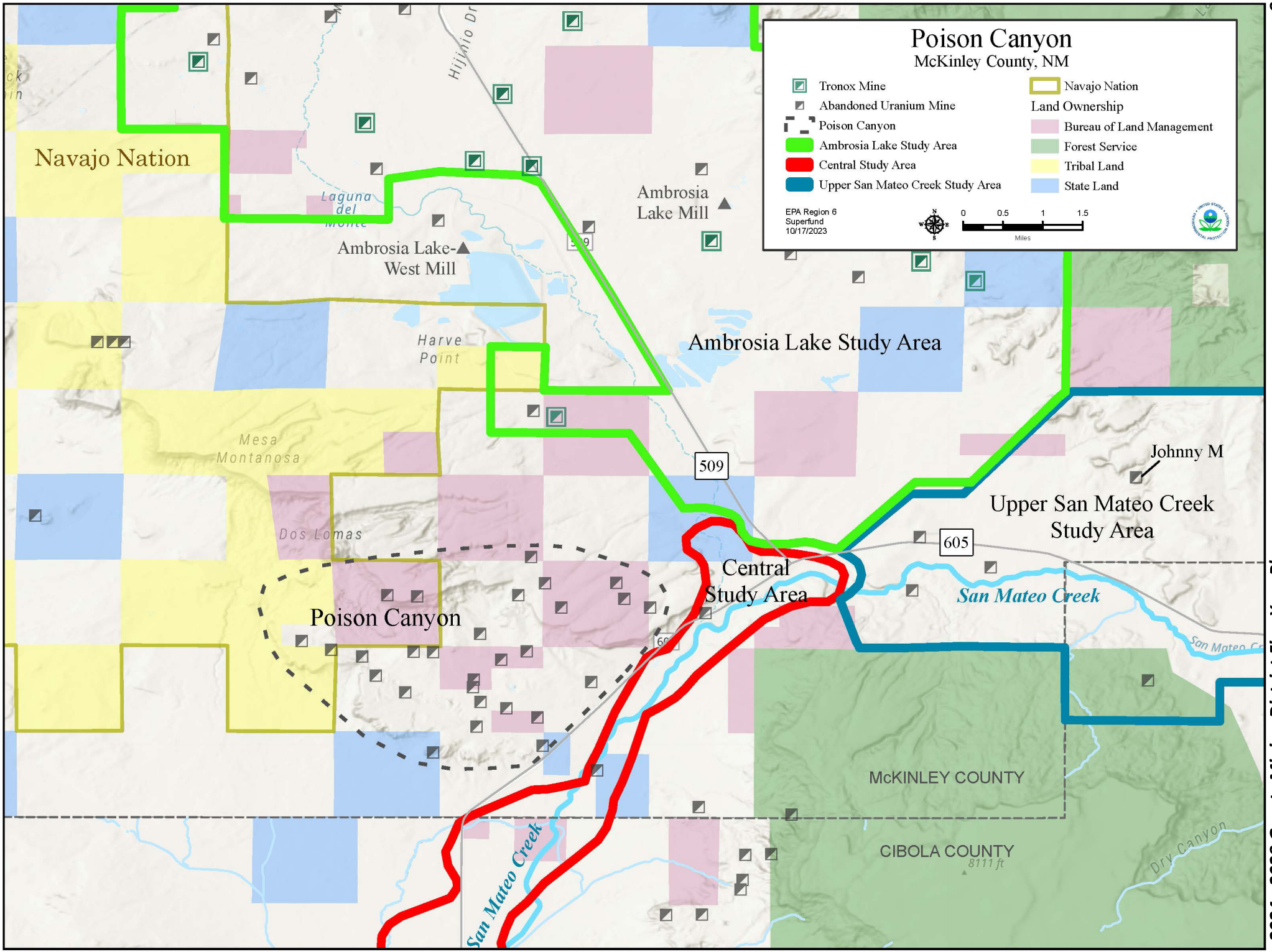
Haystack Rd
Jesus Mesa Rd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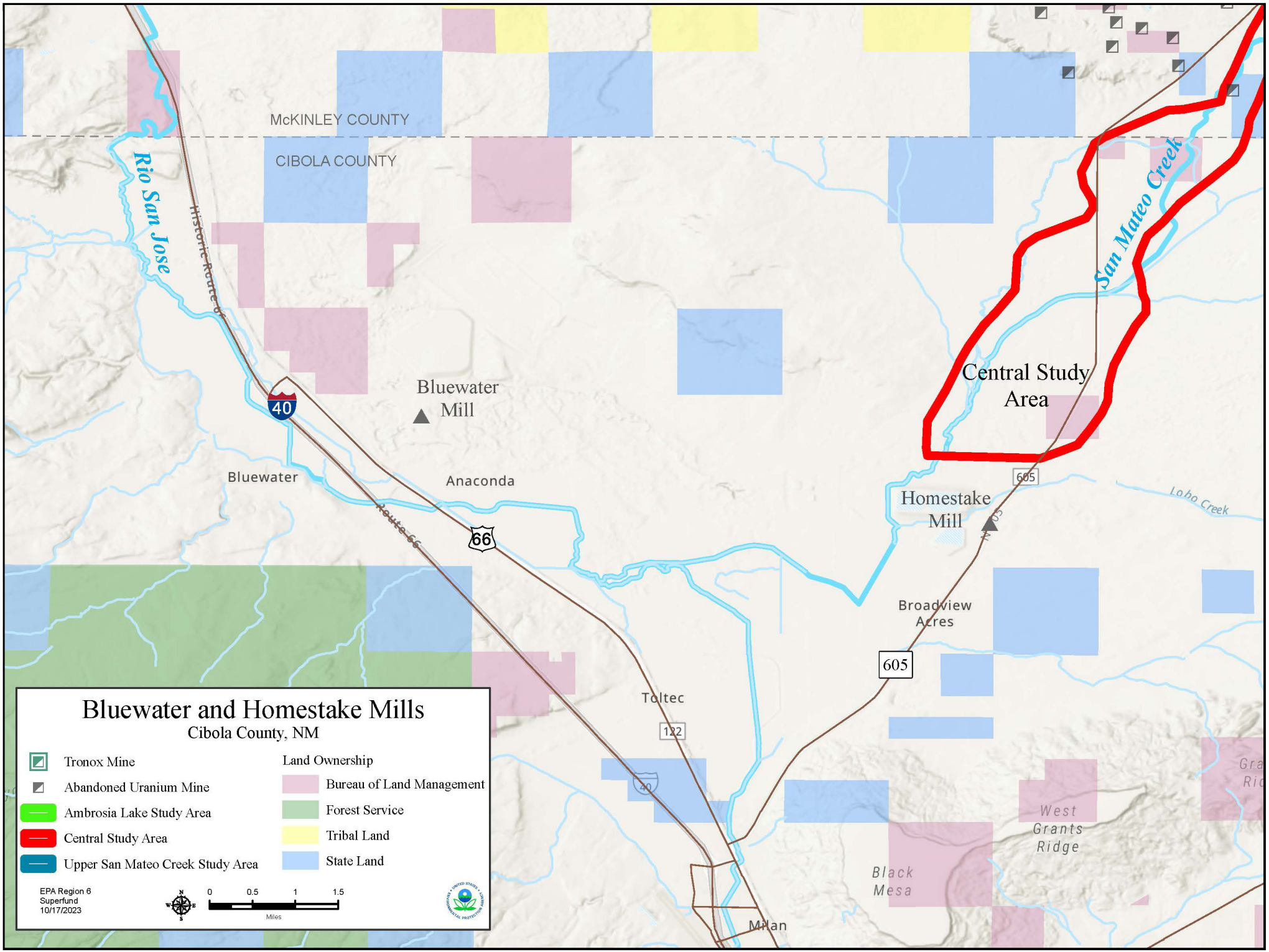
McKINLEY COUNTY
CIBOLA COUNTY
Rio San Jose
Historic Route 66
San Mateo Creek
Central Study Area
Bluewater Mill
Bluewater
Anaconda
Route 66
Homestake Mill
Lobo Creek
Broadview Acres
Toltec
West Grants Ridge
Black Mesa
Milan
40
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Cibola County, NM
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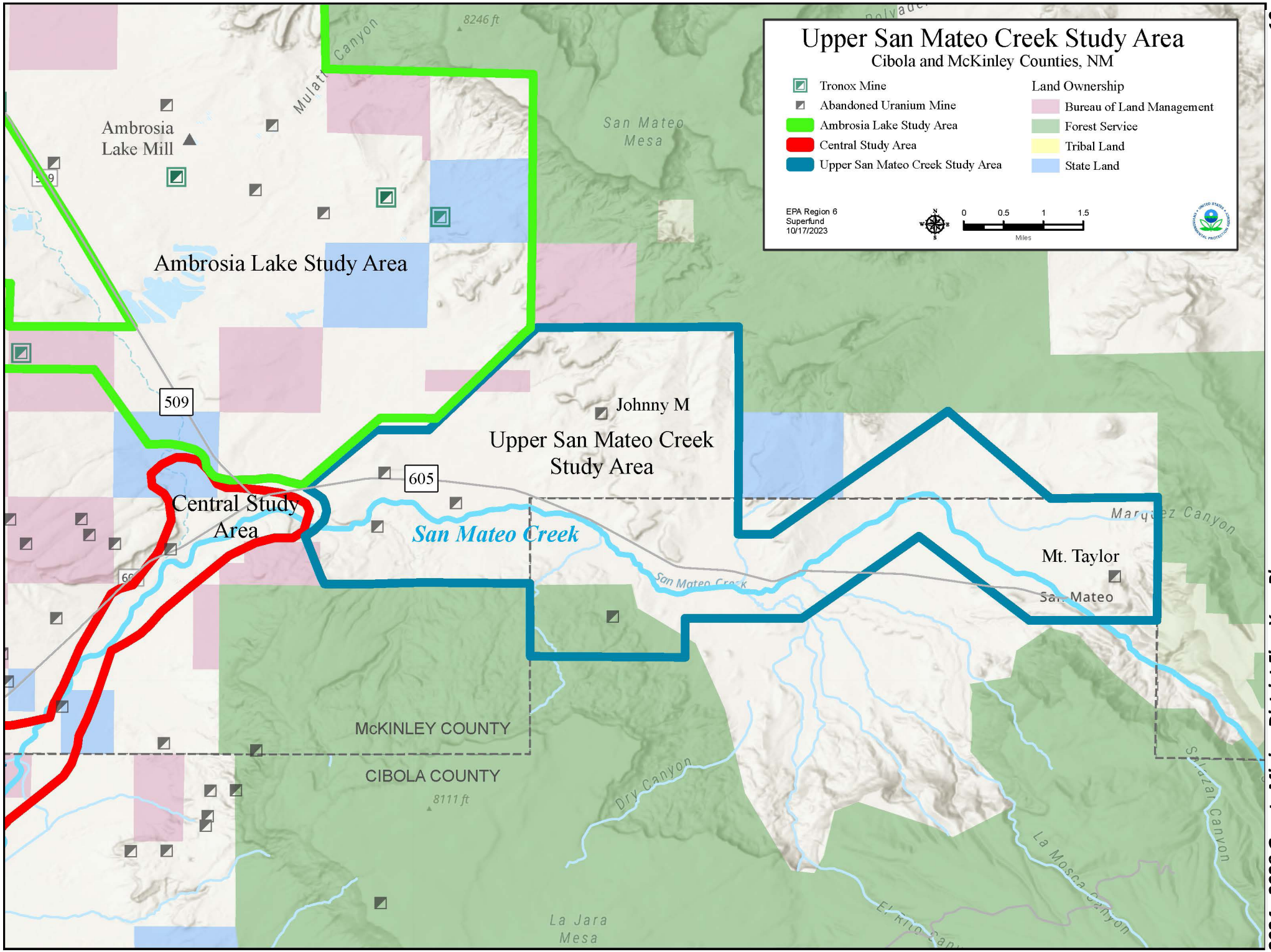
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CIBOLA COUNTY
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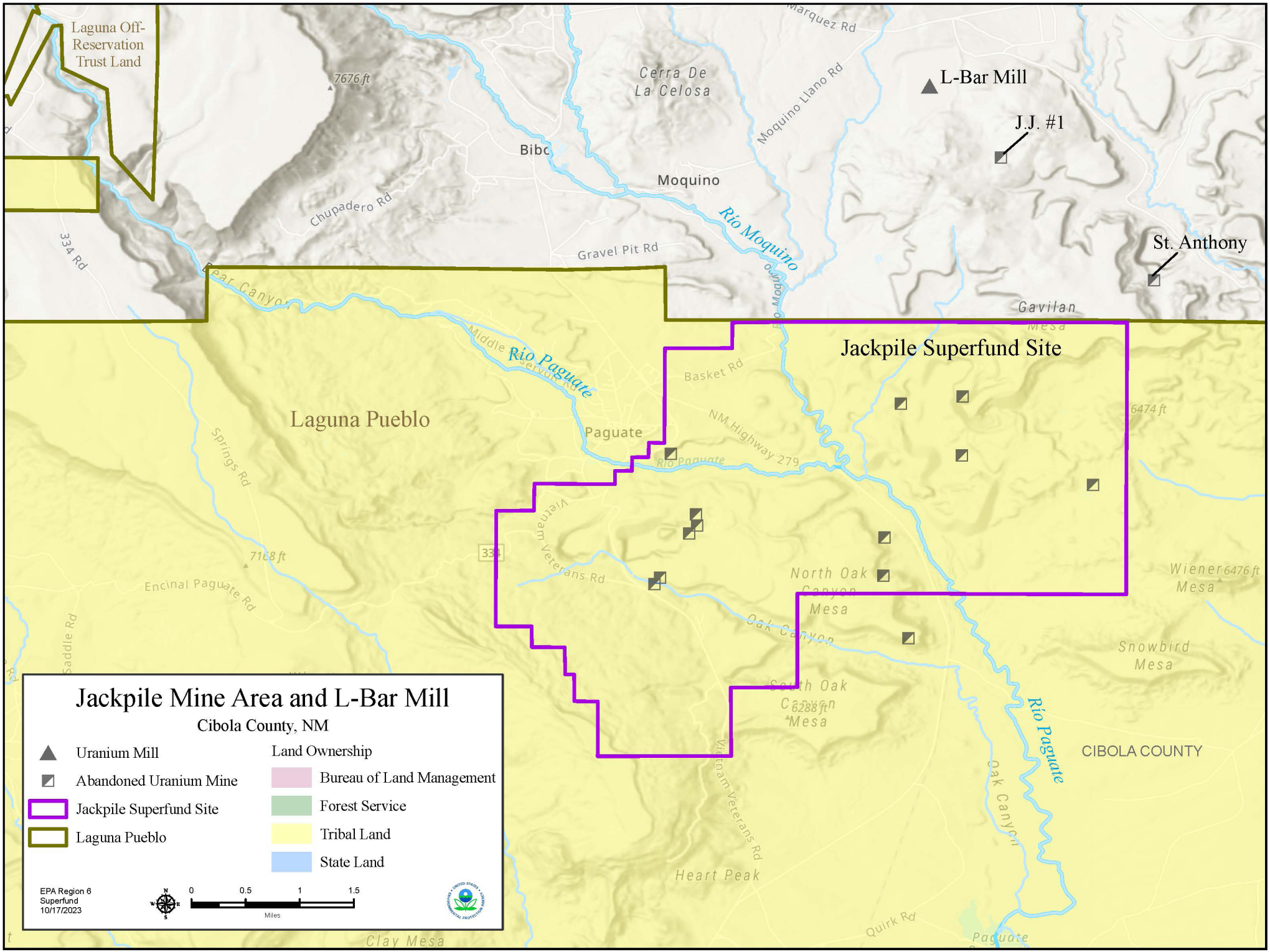
San Mateo Mesa
La Jara Mesa
Dry Canyon
La Mosca Canyon


Laguna Off-Reservation Trust Land
7676 ft
Cerra De La Celosa
Marquez Rd
Moquino Llano Rd
L-Bar Mill
J.J. #1
Bibo
Moquino
Chupadero Rd
Río Moquino
St. Anthony
334 Rd
Gravel Pit Rd
Bear Canyon
Gavilan Mesa
Middle Río Paguate
Jackpile Superfund Site
Basket Rd
Laguna Pueblo
Paguate
NM Highway 279
Río Paguate
6474 ft
Springs Rd
Vietnam Veterans Rd
334
7168 ft
Encinal Paguate Rd
North Oak Canyon Mesa
Oak Canyon
Wiener Mesa 6476 ft
Saddle Rd
South Oak Canyon Mesa 6288 ft
Snowbird Mesa
Río Paguate
CIBOLA COUNTY
Heart Peak
Quirk Rd
Clay Mesa
Paguate
Jackpile Mine Area and L-Bar Mill
Cibola County, NM
Uranium Mill
Abandoned Uranium Mine
Jackpile Superfund Site
Laguna Pueblo
Land Ownership
Bureau of Land Management
Forest Service
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III. Overview of the Five-Year Plan

National Priorities List and Superfund Alternative Sites
The National Priorities List (NPL) is the list of sites of national priority among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. The Superfund Alternative (SA) approach uses the same investigation and cleanup process and standards that are used for sites listed on the NPL. EPA Region 6 Superfund Remedial Program is the lead on these sites.

Assessment of water supply sources for contamination
Water is a precious resource in New Mexico and most residents in the GMD obtain their water from groundwater sources, either from private or municipal water supply wells. Ensuring water supplies are not contaminated supports providing reliable water sources for the communities impacted by mining.

Assess and cleanup legacy uranium mines
Uranium mining was prolific in the GMD, starting in the 1940's until as late as the mid-1980's. The extraction of uranium-bearing ore occurred through open pits, from underground workings that were extensively connected, and solution mining; all of which has impacted the environment to varying degrees. Assessing and cleaning up abandoned uranium mines, where warranted, reduces the risk to human health.

Assess, cleanup, and perform long-term management of former uranium milling sites
Six legacy uranium milling operations are in the GMD. These sites are either undergoing cleanup or have been cleaned up under UMTRCA with regulatory oversight. The cleanups and ultimate long-term surveillance and maintenance are necessary to ensure protection to human health and the environment.

Assess and clean up contaminated structures and properties
Structures and properties can be impacted by legacy uranium mining and milling. Elevated levels of radon may be found inside a home and contaminated soil may be found adjacent to a structure. Assessing homes for hazardous substances helps reduce the risk to human health caused by uranium mining.

Public Health
Health impacts from uranium mining and milling activities in the area are assessed by ATSDR or NMDOH through health consultations.

Environmental Justice, Disadvantaged Communities, and Climate Change
Federal partners are committed to incorporating environmental justice and climate change into efforts to assess and address the legacy of uranium mining and milling in the Grants Mining District.

Communicate and coordinate with communities
Community engagement is an important component of the Five-Year Plan. The development of the plan considers the ideas and comments that are provided during the drafting process. Community meetings held at regular intervals on progress under the plan also allow for accountability and transparency. Certain laws, including Superfund, UMTRCA, and state permitting, formally incorporate community involvement.

The activities outlined in the GMD Five-Year Plan are based on current availability of resources and the priorities of the partners of this plan with community and stakeholder input. Resource constraints and re-evaluation of priorities could impact the planned activities. Likewise, additional resources identified for these efforts could result in new projects planned.

IV. National Priorities List and Superfund Alternative Sites

The sites that are being addressed under the NPL or SA Approach are managed by the EPA Region 6 Superfund Remedial Program. Within Region 6 there are currently three sites related to uranium mining or milling on the NPL and one under the SA Approach program. For detailed site information, including documents and current site status, please visit the site's website. EPA is the lead agency on implementing the Superfund program, with support from state and federal agencies.

Homestake Mill Superfund Site

Map Location: Bluewater and Homestake Mill Figure, Page 9
Grants Mining District Sub-District Location: Ambrosia Lake
More Information: https://www.epa.gov/superfund/homestake-mining
Note – See also Homestake Mill UMTRCA Site on page 38 for a summary of activities under UMTRCA.

Background – The Homestake Mill Superfund site is located in Cibola County, New Mexico, approximately 5.5 miles north of the Village of Milan, at the intersection of Highway 605 and County Road 631. The site includes the former uranium mill site, two unlined tailing disposal sites (named the large tailing pile and small tailing pile), and the impacted portions of the underlying groundwater aquifers. Uranium milling and tailing disposal operations at the site began in 1958 under a license issued by the Atomic Energy Commission (AEC) and ceased in 1990. The site was placed on the NPL by EPA in 1983, primarily due to groundwater contamination caused by seepage from the two tailing piles. The site is also regulated by the NRC, through its Source Material licensing program pursuant to Title II of UMTRCA, and NMED, through its groundwater discharge permitting program pursuant to the New Mexico Water Quality Act.

The site consists of three operable units (OUs). OU1 addresses tailing seepage contamination to groundwater aquifers; OU2 addresses long-term tailing stabilization, surface reclamation and site closure; and OU3 addresses radon concentrations in indoor and outdoor air at the neighboring subdivisions.

Homestake Mill Site Water Treatment Plant and Evaporation Ponds

The Homestake Mining Company of California (Homestake) started groundwater corrective action for OU1 in 1977 under the direction of the State of New Mexico, which regulated such facilities under an agreement with the AEC. In 1983, EPA entered into a consent decree with Homestake requiring the company to connect residences near the mill to the municipal water supply of Milan, as an alternative permanent drinking water supply, to mitigate the risk caused by consuming contaminated ground water from private wells. In 1986, after the State of New Mexico relinquished its radioactive licensing authority to the NRC, Homestake began performing groundwater corrective actions for OU1 and reclamation and closure activities for OU2 in accordance with NRC Source Material License SUA-1471.

EPA is currently overseeing a Superfund Remedial Investigation and Feasibility Study (RI/FS) being performed by Homestake that will support the selection of a Superfund remedy for OU1 and OU2. The Feasibility Study is being conducted under a 2020 Administrative Settlement Agreement and Order on Consent (ASAOC) with EPA. Under the ASAOC, Homestake is also conducting an evaluation of whether the restoration of groundwater is technically impracticable from an engineering perspective. If it is determined by EPA that it is technically impracticable to achieve a groundwater standard at the site, or a portion of the site, a waiver of the standard would be invoked in the Record of Decision (ROD). The ROD would also identify an alternative remedial strategy for protecting human health and the environment.

Groundwater Protection Standards have been established by the NRC for OU1. In 2006, the standards were revised for uranium, selenium, and other constituents based on a groundwater background study conducted by Homestake. Background concentrations represent naturally occurring concentrations or those caused by other human activity (anthropogenic concentrations) not associated with a site. Therefore, the NRC revised the Groundwater Protection Standards to reflect background concentrations, which were above federal drinking water maximum contaminant levels (MCLs).

In 2014, EPA and NMED began a reassessment of groundwater background concentrations at the request of several residents. The reassessment, which was completed in 2023, led EPA and NMED to conclude that the 2006 background concentrations did not represent natural background but anthropogenic concentrations associated with legacy uranium mining activities north of the site as well as Homestake operations at the site. Natural background concentrations estimated by EPA and NMED are significantly lower than those estimated in the 2006 study. The new background concentrations will support EPA's effort to develop groundwater remediation goals in future EPA decision-making on a Superfund remedy.

Once the FS is completed, EPA will prepare a Proposed Plan that identifies the EPA's preferred cleanup option that will be released to the public. A public meeting and a 30-day public comment period will be held so that the public can submit written comments. EPA plans to issue a ROD for remedies at OU1 and OU2 after the end of the public comment period. EPA will prepare written responses to all comments received on the Proposed Plan during the public comment period.

From 1987 to 1989, Homestake, under an EPA ASAOC, conducted an investigation as to whether radon associated with the uranium milling and tailings disposal operations might be impacting outdoor and indoor radon levels in the neighboring subdivisions (OU3). Based on Homestake's investigation, EPA determined that the uranium mill and tailing piles were not contributing significantly to off-site subdivision radon contamination in air. Instead, EPA attributed the radon contamination mostly to natural background concentrations. Therefore, in 1989, EPA selected "no further action" in a ROD for the radon operable unit (OU3). In the ROD, EPA recommended radon reduction techniques for residents having elevated indoor radon levels.

In 2014, at the request of the community, EPA completed a baseline human health risk assessment for the neighboring subdivisions. The results of the risk assessment indicated that the majority of the risk from radon

gas is coming from background sources, but it also showed that additional incremental risk originates from the site. The site poses a long-term chronic risk (not an immediate risk) that EPA expects will be reduced to background level risk when the final radon barrier cover is placed on top of the large tailing pile and other reclamation work is completed.

Completed and Ongoing Activities

- June 2020 – A Final RI Report was completed by Homestake for OU1 and OU2 that included a baseline risk assessment.
- March 2021 – The EPA National Remedy Review Board (NRRB) met with EPA Region 6 and key stakeholders, including the Pueblo of Acoma, NMED, two grassroots organizations (Multicultural Alliance for a Safe Environment and Bluewater Valley Downstream Alliance), and Homestake to discuss the site and hear statements from the stakeholders on expectations for a Superfund remedy. The Pueblo of Laguna submitted written statements.
- June 2021 – NRRB provided recommendations to EPA Region 6 on the FS process and other aspects of the site, which included expanding the range of cleanup options being considered in the FS for OU1 and OU2. Region 6 responded in October 2021 and generally agreed with all the Board's recommendations.
- August 2021 – EPA Region 6 and EPA headquarter offices (HQ) initiated an ambient air modeling study for radon and progeny sourcing from the large tailing pile to verify or update EPA's risk estimates on radon exposure that were documented in the 2014 human health risk assessment report for OU3.
- September 2021 – A Superfund Five-Year Review (FYR) was completed by EPA to determine if the CERCLA "no further action" decision for off-site radon contamination (OU3), documented in the 1989 ROD, is still an appropriate decision for protecting human health. Based on the review, EPA concluded that additional information was needed to make a protectiveness determination. EPA recommended updating the 2014 human health assessment for radon in the neighboring subdivisions using new toxicity data and the updated EPA electronic calculator for performing radiation risk calculations at Superfund sites. In performing this update, EPA recommended including individual risk calculations for the various lighter radionuclides in the decay chain and using a sum-of-the-fractions approach for calculating total risk from radionuclides in ambient air. The ambient air modeling study initiated by EPA Region 6 and EPA HQ for radon and progeny would support the updated risk assessment.
- March 2023 – Homestake submitted a revised technical memorandum on the screening of remedial technologies and process options that will comprise a range of remedial alternatives to be evaluated in the final phase of the FS.
- April 2023 – EPA HQs Superfund Program National Radiation Expert and the Office of Indoor Air Radiation, in working with Region 6 staff, completed an air modeling study for radon and progeny at the site.
- May 2023 – The Groundwater Background Reassessment Technical Memorandum was completed by EPA and NMED.
- June 2023 – EPA approved a work plan to characterize the geochemical and physical properties of the groundwater aquifers as part of the ongoing Technical Impracticability evaluation for groundwater restoration.
- August 2023 – EPA approves Homestake's Addendum to the 2020 Remedial Investigation Report for the baseline human health risk assessment for OU1 and OU2.

Planned Activities for 2024-2028

- 2024 – Complete site-specific data collection and perform testing to characterize groundwater aquifers in support of the Technical Impracticability evaluation and subsequently, completion of the FS.
- 2024 – Complete updates to the EPA's 2014 human health risk assessment for OU3.
- 2025 – Complete the Technical Impracticability evaluation.
- 2026 – Complete a detailed analysis of remedial alternatives as the second and final phase of Feasibility Study.
- 2026 – Meet with state and tribal stakeholders to discuss the Proposed Plan and the EPA's preferred remedy and seek state and tribal concurrence.
- 2026 – Release a Proposed Plan to the public that identifies EPA's preferred Superfund remedy for OU1 and OU2 and hold a formal public meeting to present the preferred remedy and a 30-day public comment period for receiving written comments.
- 2027 – Issue a ROD that describes the Superfund remedy selected by EPA.

Jackpile-Paguate Uranium Mine

Map Location: Jackpile Mine Area and L-Bar Mill Figure, Page 11
Grants Mining District Sub-District Location: Laguna
More Information: https://www.epa.gov/superfund/jackpile-paguate

Background – The Jackpile-Paguate Uranium Mine is located on the Pueblo of Laguna adjacent to the Village of Paguate. At the time of operations, the mine was one of the world's largest open pit uranium mines, in a district that contains numerous uranium deposits across Cibola, McKinley, Sandoval, and Bernalillo Counties on private, state, and tribal lands. The former leaseholder, Anaconda Minerals Company, operated the mine from 1953 through 1982. Operations included three open pits and 66 acres of buildings and roads.

During the 30 years of mining, approximately 400 million tons of low-grade mineralized material or waste rock material were relocated within the leased boundary and approximately 25 million tons of uranium ore were transported to Anaconda's Bluewater Mill for processing via the Santa Fe Railroad from the mine. The releases of hazardous substances to surface water supported the EPA proposed listing onto the NPL on March 15, 2012, for public review and comment and final listing on December 12, 2013. Anaconda performed reclamation activities from the late 1970s to the early 1980s primarily while the mine was still active. Subsequent reclamation activities were performed through 1995 by the Pueblo of Laguna under the auspices of the Department of Interior (DOI) and the DOI ROD.

In July 2017, EPA signed an ASAOC with Atlantic Richfield Company (ARCO), successor to Anaconda Mining, requiring the company to conduct the RI/FS under CERCLA enforcement authority. The remedial investigation will collect data to characterize site conditions, determine the nature and extent of the waste left on site, and will assess the fate and transport of waste left on site in relation to potential risk to human health and the environment. These data will be used to support remedial options and will be documented in the FS for final selection of a Preferred Remedy. The feasibility study will develop, screen, and provide a detailed evaluation of the alternative remedial actions. Once complete, EPA will develop a Proposed Plan identifying the preferred remedy for public review and comment before selecting a final clean-up strategy. The final remedy will be published in an EPA ROD.

Blasting at the Jackpile Mine Site. Date Unknown.

Completed and Ongoing Activities

- July 2017 – ARCO began conducting the RI/FS under EPA oversight. EPA will continue the oversight of ARCO's work under the RI/FS Administrative Order on Consent. It is expected the RI/FS will continue throughout this Five-Year Plan.
- March 2023 – Phase 1 Supplemental Gamma Radiation Survey was completed to support mid-course evaluations and data gaps to support phase 2 activities.
- July 2022 – April 2023 – Quarterly 1 RI sampling and monitoring events were completed, which included the collection of groundwater, surface water, hyporheic/porewater, and sediment samples for laboratory analysis. These data will be evaluated to support next steps in relation to site characterization across all media.
- Radiation air monitoring and meteorological data will continue to be collected throughout the RI.

Planned Activities for 2024-2028

- 2025 – Technical Memoranda for: quarterly groundwater, surface water and sediment sampling. Site Background Determination including: workplan, investigation, data validation, summary report, and background technical memorandum.
- 2026 – Phase 1 Remedial Investigation (RI)Technical Memorandum and Phase 2 RI data gap-based planning, complete field activities, data validation and summary report.
- 2027 – Phase 2 RI Technical Memorandum, human health and ecological risk assessments, RI report, FS report, selection of preferred remedial alternative(s).
- 2028 – Proposed Plan and Record of Decision

San Mateo Creek Basin – Central Study Area (Superfund Alternative Site)

Map Location: Ambrosia Lake Figure, Page 7, and Poison Canyon Figure, Page 8
Grants Mining District Sub-District Location: Ambrosia Lake
More Information: https://www.epa.gov/grants-mining-district/san-mateo-creek-basin-groundwater-site-central-study-area

Background – The San Mateo Creek Basin (SMCB) is a 321-square mile drainage basin located north of the Village of Milan and City of Grants, in Cibola and McKinley Counties. It is comprised of private, state, tribal, and federal lands managed by USFS and BLM. Within the SMCB are approximately 85 legacy uranium mines and four former uranium mill sites. From the late 1950s through the 1990s, this area produced over 40 million tons of uranium ore. Some of the mines in the SMCB were "wet" mines, meaning the uranium ore-bearing geologic formation was saturated. The underground workings of the mines had to be constantly dewatered to allow for access to the ore body. The mine water pumped from the underground workings was discharged to surface drainages and flowed as surface water to the Arroyo del Puerto and San Mateo Creek over a period of decades. The mine-water discharge infiltrated into the alluvial sediments to recharge the shallow alluvial groundwater aquifer. Water levels in alluvial wells were documented to rise over 50 feet in some areas of the basin. The mine-water discharges also recharged bedrock aquifers. It is estimated that approximately 125 billion gallons of mine water was discharged from the "wet" mines, and the mine-water discharges contained elevated concentrations of uranium, selenium, molybdenum, chloride, and other contaminants. The recharge and mixing of the mine-water discharge with native alluvial groundwater and bedrock groundwater resulted in the adverse impact to alluvial and bedrock groundwater quality.

The site is being handled under the EPA's Superfund Alternative Approach (SA Approach) process. The SA Approach uses the same investigation and cleanup process and standards that are used for sites listed on the NPL. The SA approach is an alternative to listing a site on the NPL; it is not an alternative to Superfund or the Superfund process. The SA Approach can potentially save the time and resources associated with listing a site on the NPL. As long as a PRP enters into an SA Approach agreement with EPA, there is no need for EPA to list the site on the NPL (although the site qualifies for listing on the NPL).

Completed and Ongoing Activities

- November 2019 – Homestake, Rio Algom Mining Corporation, and the United Nuclear Corporation begin the RI/FS for groundwater in the Central Study Area under EPA oversight.
- 2024 (May) – PRPs Finalized Phase 1 RI Surface Geophysical Surveys Technical Memorandum, which includes plans for Phase II RI borehole drilling and monitoring well construction.
- 2024 (July) – PRPs initiated Phase II RI borehole drilling and monitoring well construction. EPA performs full-time oversight of drilling activities.

Planned Activities for 2024-2028

- EPA will continue to provide oversight of the RI/FS which is expected to be completed after this current Five-Year Plan.
- 2025 – PRPs complete Phase II borehole drilling and monitoring well construction.
- 2025-2027 – PRPs conduct eight consecutive quarters of groundwater sampling and analysis.
- 2027-2028 – PRPs submit a preliminary Study Area characterization summary, preliminary remedial alternatives, and preliminary remedial action objectives to EPA, and any other federal, state, and tribal

agencies (as specified by EPA) for review. PRPs also submit a list of federal, state, and tribal preliminary applicable or relevant and appropriate requirements and to-be-considered (TBC) information.

- 2028 – PRPs perform baseline risk assessment as part of RI.

United Nuclear Corporation Mill Site

Map Location: Grants Mining District, Page 1
Grants Mining District Sub-District Location: Church Rock/Crownpoint
More Information: https://www.epa.gov/superfund/united-nuclear
Note – See also United Nuclear Mill Site on Page 29 for a summary of activities under UMTRCA.

The United Nuclear Corporation (UNC) Site is located 17 miles northeast of Gallup in Church Rock, McKinley County. The Site includes a former uranium ore processing mill (25 acres) and tailings disposal area (100 acres). The tailings disposal area is subdivided into three cells identified as the South Cell, Central Cell, and North Cell. The surrounding lands include Navajo Nation and UNC-owned property.

There are two operable units within the UNC site: the ground water operable unit (OU1) and the surface soil operable unit (OU2). The area is sparsely populated, with the nearest residence located 1.5 miles north of the Site. The land use near the Site is primarily grazing for sheep, cattle, and horses. Activities with the neighboring Northeast Church Rock Mine, on Navajo Nation, is under Region 9 oversight.

Completed and Ongoing Activities

- Groundwater remediation in OU1 is ongoing in Zone 3 consisting of groundwater pumping and evaporation.
- December 2018 – The RD to move waste from Northeast Church Rock Mine to the UNC Mill was completed for OU2 and a license amendment request was submitted to NRC.
- February 2023 – Following NRC completing the Safety Evaluation and Environmental Impact Statement, License Amendment 58 was approved to allow mine waste from the nearby Northeast Church Rock Mine Site on Navajo Nation to be placed on the mill site.
- September 2023 – EPA completed the Protectiveness Determination and 5-Year Review.

Planned Activities for 2024-2028

- EPA will continue to provide oversight to UNC's implementation of the groundwater operable unit remedy of pump and treat. The remedy has been optimized since the pump and treat remedy was selected in 1988. The remedy enhancements are meant to buffer, intercept, slow down, direct, and extract impacted ground water. The configuration and pumping scheme of the extraction well array tries to minimize the withdrawal of background water and the tendency to draw it westward while maximizing the volume of impacted water that is extracted.
- EPA has begun work on the Consent Decree and Statement of Work for a removal action at the nearby Northeast Church Rock site (Region 9 lead) and has entered negotiations with UNC to implement the remedy.
- The removal action to move mine waste will begin upon completion of negotiations and entry of the Consent Decree by the Court.

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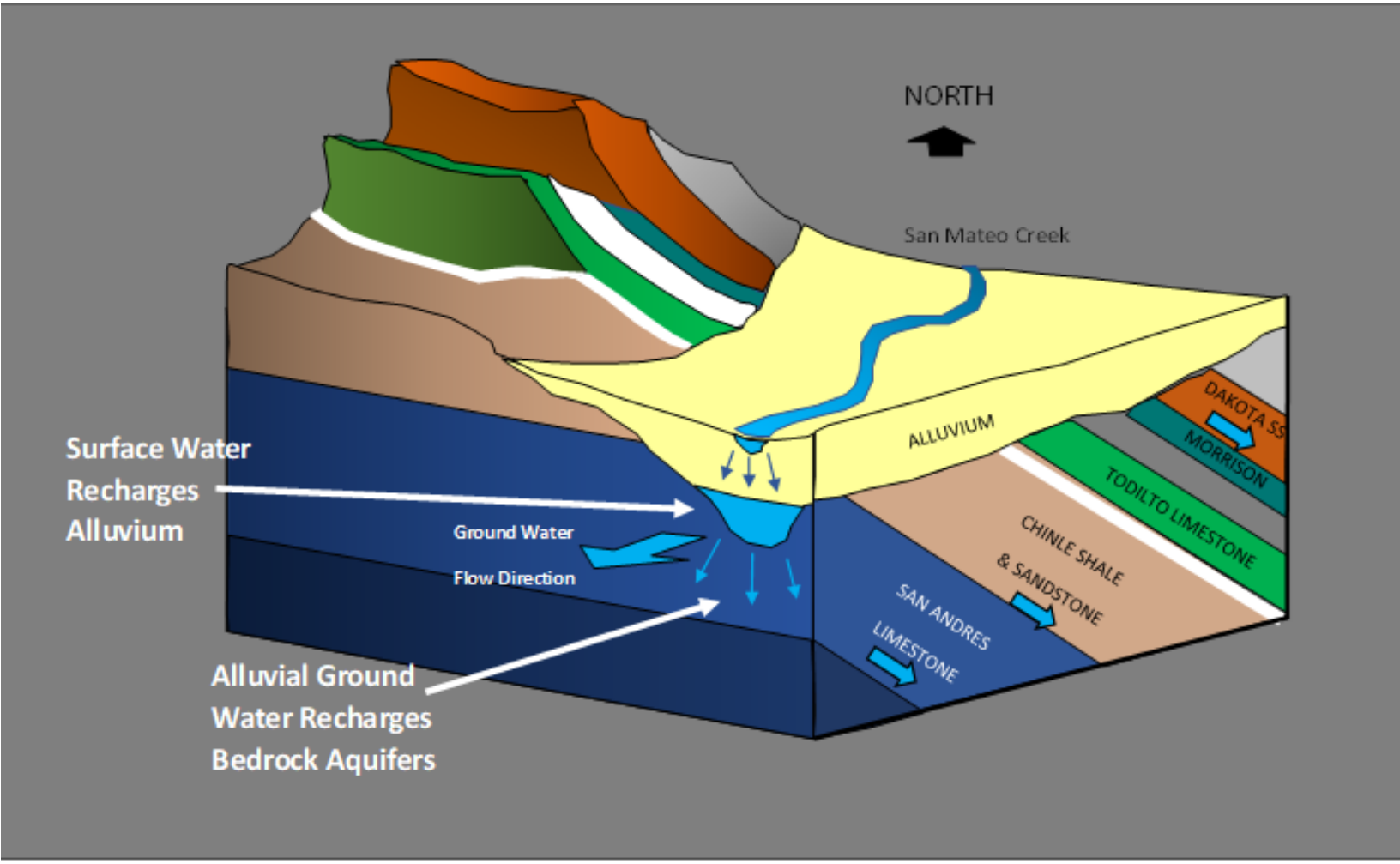
V. Assess Water Sources for Contamination

Water is a precious resource in New Mexico because of the arid climate. Most of the drinking water in the state comes from groundwater resources, and residents in the GMD primarily rely on private and community wells for residential-domestic, stock-watering, and agricultural uses.

Legacy uranium mining and milling operations generated liquid wastes, also called effluent. The effluent included groundwater pumped to the surface to dewater mines, process waters from unlined on-site mine ore leach pads, evaporation and tailing ponds, heap- and isotope-leaching, and uranium milling operations. These effluents were discharged to the ground surface or surface drainage features, such as arroyos, and allowed to infiltrate and recharge the shallow alluvium directly or via impoundment infiltration and overflow. From 30 years of mining operations alone it is estimated over 125 billion gallons of mine water was discharged from the subsurface and discharged to surface drainages, the majority being discharged into the SMCB. The effluent discharges that occurred prior to the establishment of state and federal groundwater regulations had little or no treatment prior to discharge.

Groundwater investigations by EPA and other entities have shown the effluent discharged during legacy uranium site operations, as well as subsequent runoff from contaminated soil and sediment which continues to the present, have impacted regional bedrock drinking water aquifers and shallow alluvial aquifers. These aquifers are accessed by scattered private residences and nearby municipal or community water supply systems. Additionally, extensive dewatering of underground workings during mine operations created



Conceptual Site Model showing recharge of alluvial and bedrock aquifers.

a regionally extensive cone of depression into which oxygenated groundwater currently is flowing. The oxygenated groundwater may dissolve and mobilize unmined uranium and associated constituents within the aquifers.

Completed and Ongoing Activities

- Forty-two private wells have been sampled by EPA and NMED throughout the San Mateo Creek Basin as part of basin-wide studies. Six private drinking water wells were found to have radionuclides above the maximum contaminant level. EPA conducted removal actions to address the risk caused by the contamination.
- Public water supply wells have been sampled and found to meet drinking water standards for radionuclides.
- 2016 and 2018 – EPA, with support from NMED, released a Phase 1 Groundwater Investigation Report (2016) and a Phase 2 Groundwater Investigation Report (2018). Those two reports documented contamination of portions of the shallow alluvial and deeper bedrock aquifers in portions of the San Mateo Creek Basin. Information from these reports will help inform regulatory agencies in future decision-making.
- November 2019 – Under EPA oversight, three potentially responsible parties began the RI/FS of the SMCB Central Study Area (See Page 18 for information on the Site).

Planned Activities for 2024-2028

- NMED will continue to partner with DOE on annual sampling of private wells in the Homestake Mill Site and Bluewater Mill Site vicinity.
- NMED and DOE will collaborate to plan and develop enhanced off-site well network to further understand and characterize groundwater dynamics and conditions at the Bluewater site.
- EPA will continue to provide oversight for multiple studies being conducted under ASAOCs that include groundwater monitoring.

VI. Assessment and Cleanup of Abandoned Uranium Mines

CERCLA Site Assessment of Priority Mines

Lead Agency – EPA
Support Agencies – NMED, MMD, Pueblos, and Federal Agencies

Under the Superfund process, site assessment is the initial step most non-emergencies take in determining whether a site needs further action. The site assessment process begins with site discovery or notification of a release or potential release into the environment. Following discovery/notification, sites undergo Pre-CERCLA Screening to determine whether a site needs further assessment. A Pre-CERCLA Screen is an initial collection and review of existing information and helps determine whether the site should be evaluated under the Superfund program or under another federal, state, or tribal cleanup program.

EPA, or its state, federal, or tribal partners may conduct a preliminary assessment, and if warranted, a site inspection or other more in-depth assessment using the Hazard Ranking System criteria. A site reassessment

may also be performed to gather and evaluate new information at a site. At any step in the site assessment process a No Further Remedial Action Planned determination can be made.

Working with the state and Pueblo partners, EPA identified 97 priority mines within the GMD sub-districts of Ambrosia Lake, Laguna, and Marquez. The threshold for becoming a priority mine is: mine activities included surface expressions, such as an open pit, mine shaft, or mine structures; and Reported at least two years of production.

Mines not identified as a priority mine do not preclude EPA from assessing them but help prioritize limited resources on the sites most likely to impact human health and the environment.

Completed and Ongoing Activities

- October 2009 and August 2011 - EPA conducted aerial gamma radiation surveys. Data collected helped EPA and its partners identify areas needing additional assessment. No health-based decisions are made using this screening tool.
- EPA funded initial screenings assessments by NMED and MMD at 59 mines on private or tribal land.

Planned Activities for 2024-2028

- 2024 & 2025 – Complete Pre-CERCLA screens and decision documents for 8 mines in each year.
- Continued communications/coordination with Federal, State and Tribal partners on assessment, and where warranted, cleanup of AUMs.
- Support the DOE DRUM Verification & Validation Program, which includes a subset of the 97 priorities mines, and support their continued coordination with the Pueblo of Laguna on the assessment of mine sites on Pueblo lands.

DOE Defense Related Uranium Mines Verify & Validate Program

More Information: https://www.energy.gov/lm/defense-related-uranium-mines-program

Lead Agency: DOE
Support Agencies: EPA, BLM, USFS, and National Park Service, New Mexico, and Pueblo of Laguna

The DOE Defense Related Uranium Mines (DRUM) program is a partnership between DOE, federal land management agencies, EPA, state abandoned mine lands (AML) programs, and tribal governments to verify and validate the condition of a unique set of abandoned uranium mines. These mines provided uranium ore to the AEC for defense related activities.

Most mines are located on public land and are abandoned. Initiated in 2017, DRUM Campaign 1 focused on approximately 2,500 legacy mines located on public land administered by federal and state agencies throughout the United States. Campaign 2 commenced fieldwork in 2022 and assessed DRUM sites on tribal land. Campaign 3 will assess DRUM sites on private property and is scheduled to begin fieldwork in 2024. The DOE Office of Legacy Management implements the program by conducting verification and validation (V&V) activities, including:

- Exchanging information with other federal agencies and state governments to improve the quality of mine-specific data.
- Performing field inventories to document the condition of the mines.

V&V assessment work at the Crackpot Mine on Pueblo of Laguna.

- Conducting gamma surveys, soil sampling, and water sampling (as applicable), as well as collecting multiple lines of evidence to help evaluate hazards posed by the mines.
- Producing mine-specific reports that offer inventory results, as well as evaluations of physical hazards and potential chemical and radiological risks.

Ultimately, these V&V activities will result in preliminary risk screening to assess whether the mines pose potential risks to human health and the environment. This information will be shared with the BLM, U.S. Forest Service, and state and tribal governments to help them make decisions about how to address mines that pose the greatest risks.

Completed and Ongoing Activities

- October 2023 – Completed 55 V&V Reports for mines located on federally managed land within New Mexico, including mixed ownership where a portion of the mine site is on federal public land. Of the 55 V&V reports, 38 of those are on BLM including mixed ownership sites where there is a portion on BLM land.
- October 2021 – Secured funding to support implementation of Campaign 2 on pueblo/tribal land and began coordination with EPA and the Pueblo of Laguna for mines located on the Pueblo. DOE will defer the Jackpile Mine and its related mines to EPA because the mine site is final on the NPL.
- June 2022 – DOE transitioned to Campaign 2 and worked with EPA, along with affected pueblos/tribes. In spring 2022 revised the DRUM work plan and risk screening process, adopted risk scenarios and table values beneficial to future management decisions by tribes.

Planned Objectives for 2024-2028

- 2024 – DOE will transition to Campaign 3 field work. Campaign 3 is aimed toward assessing DRUM sites on private property.

- DOE will work collaboratively to V&V and safeguard hazardous mine openings and will secure the funding to perform V&V and safeguarding as required for these AUM sites.

BLM Defense Related Uranium Mines Verify & Validate Program

BLM has worked closely with DOE's DRUM Program as a support agency for DRUM sites located on BLM managed land since 2013. BLM and DOE entered in a memorandum-of-understanding that provides a framework for the partnership and identifies roles and responsibilities to support the on-the-ground verification and validation efforts at DRUM sites. These completed, ongoing, and planned activities highlight BLM's efforts as a support agency.

Completed and Ongoing Activities

- February 2020 – Reviewed 32 V&V Reports received from DOE DRUM Program. Review consisted of evaluating site characteristics, contamination profile, human health, ecological impacts, ground water and surface water, background concentrations, offsite migration potential, and physical safety dangers to develop a plan of action for each site as needed.
- 2021 – BLM completed the closure of 17 mine openings that were physical hazards. Closure of the openings included the use of bat-compatible doors to prevent human entry into mine features, plugging and backfilling boreholes, and filling in subsidence's.
- 2023/2024 – Enlisted contractor to evaluate all V&V Reports to develop a conceptual cost estimate for remediation of each site.

Planned Objectives for 2024-2028

- BLM will continue to implement safe-guarding physical hazard measures at mine sites where open shafts, vent holes, and other physical hazards were identified in the V&V Reports. In New Mexico, BLM expects to address 30 safe-guarding measures in the coming years.

New Mexico Uranium Mine and Mill Reclamation Initiative – House Bill 164

Lead Agency – NMED
Support Agency – EMNRD-MMD

New Mexico House Bill 164 was passed in 2022 that required both NMED and MMD to coordinate efforts across the State of New Mexico to clean up and reclaim former uranium mine and mill sites. HB164 requires NMED to 1) develop a strategic plan across 12 state agencies, including reclamation goals, timelines, and anticipated funding requirements, 2) coordinate uranium cleanup at formerly-operating mine and mill sites, 3) work with the economic development department, workforce solutions department and industry to develop and/or support the uranium mine and mill reclamation workforce in New Mexico, 4) develop, maintain and update a centralized data repository, and 5) report annually to the Radioactive and Hazardous Materials Committee on reclamation activities undertaken by all state agencies associated with the bill.

HB164 also created a uranium mining reclamation revolving fund for conducting uranium mine and mill reclamation activities, and in so doing authorized the State of New Mexico to address *neglected* uranium mine sites that remain under no federal, state, tribal, or other cleanup program.

Completed and Ongoing Activities

- 2023 – NMED began development of a Strategic Plan to take a comprehensive approach in addressing uranium cleanup across state agencies, with an expected finalization in 2024.
- 2023 – Developed of an interactive web mapping tool, a *Formerly-Operating Uranium Mine and Mill Sites Dashboard*, to provide the public with information and site cleanup statuses and can be found at: https://nmenv.maps.arcgis.com/apps/dashboards/690621694d4e4906b2ae2886f528eec1
- 2023–Development of framework for the economic development department and workforce solutions department to support a uranium reclamation workforce in New Mexico.

Planned Objectives for 2024-2028

- 2024 – Continuous updates to the *Formerly-Operating Uranium Mine and Mill Reclamation Dashboard*.
- 2024 – Development of a Uranium Reclamation Strategic Plan for New Mexico's state agencies
- 2024 – Development of a regulatory framework to address neglected AUMs (sites that are under no federal, state, tribal, or other cleanup program).
- 2024 – Ongoing identification of Potentially Responsible Parties associated with neglected AUMs.
- 2024 – Development of a job training pilot program with multi-lateral support from government, industry, and higher education entities.

Ambrosia Lake Study Area Mines

Map Location: Ambrosia Lake Figure, Page 7
Grants Mining District Sub-District Location: Ambrosia Lake
Lead Agency – EPA, NMED, and MMD

The Ambrosia Lake Study Area is located within the SMCB and is approximately 18 miles north of Grants, Cibola County, New Mexico and north of the intersection of New Mexico State Highways 509 and 605. This area is within the larger mining sub-district also known as "Ambrosia Lake." Within the Ambrosia Lake Study Area are 27 priority mines. Some of these mines were "wet mines" that required constant pumping and discharge of mine-impacted groundwater to access the ore body. Other mines were "dry mines" and had no groundwater discharges. A subset of the Ambrosia Lake Sub-District mines are the eleven Tronox NAUM Mine sites (See page 32 for information specific to the Tronox mines).

Completed and Ongoing Activities

- September 2021 – EPA entered into an ASAOC with Homestake to complete Removal Site Evaluations (RSEs) with EPA oversight at eight mines. The mines are Dysart #1, Dysart #2, Dysart #3, Section 13, Section 15, Section 23, Section 25, and Section 32. The RSEs will determine surface soil radioactive contamination and the exposure risk to human health and the environment. The data generated during the RSEs will be used to aid in cleanup decisions, including if an Engineering Evaluation/Cost Analysis (EE/CA) is necessary. An EE/CA identifies the objectives of the removal action and analyzes the effectiveness, implementability, and cost of various alternatives that may satisfy these objectives. The EE/CA also identifies the preferred alternative based on the analysis for public comment.

Planned Objectives for 2024-2028

- 2024 – Homestake will complete the RSEs for the eight mines. EPA will evaluate the RSEs and determine

if an EE/CA is necessary to develop potential cleanup alternatives to address risk to human health. Any EE/CAs for one or more of the eight mines will be released for a 30-day public comment period.

J.J. #1 Mine

Map Location: Jackpile Mine Area and L-Bar Mill Figure, Page 11
Grants Mining District Sub-District Location: Laguna
Lead Agency – MMD and NMED

The J.J. #1 Mine operated as a wet mine with production from 1976 through 1981. It is located near the L-Bar Uranium Mill northeast of the Pueblo of Laguna, on the Cebolleta Land Grant. Initial reclamation was undertaken in the late 1980s with waste rock located near the main shaft transported to the mill tailing area during the decommissioning of the L-Bar Uranium Mill.

The site has been under groundwater abatement with NMED since 2005. Constituents exceeding New Mexico groundwater standards include uranium, fluoride, total dissolved solids, and sulfate. Further reclamation of the mine site was initiated in 2009, under permit with the NM Mining Act. The site is now a candidate for release under the Mining Act after the regulatory 12-year monitoring of the site.

Completed and Ongoing Activities

- June 2011 – Surface reclamation of the site was completed by Sohio Western Mining Company. Boreholes and staging areas were sealed, fenced, covered, and revegetated.
- 2017-2022 – Submission and approval of Stage 1 abatement plans, and associated documents, as required under 20.6.2.4106 NMAC. NMED has reviewed all submitted documents and is working with Sohio on the Stage 2 abatement process where a final remedy for groundwater protection will be determined.
- Ongoing – Groundwater monitoring reports submitted to NMED.

Planned Activities for 2024-2028

- 2023-2024 – NMED will initiate the Stage 2 process with Sohio and reach an agreement on a final remedy to ensure long-term groundwater protection.
- 2025 – MMD is waiting for the operator, Sohio, to complete erosion repairs and revegetation of the site. The site is a candidate of release under the NM Mining Act.
- Groundwater monitoring reports submitted to NMED to verify if the approved remedy is effective.

Johnny M Mine Site

Map Location: Upper San Mateo Creek Study Area Figure, Page 10
Grants Mining District Sub-District Location: Ambrosia Lake
Lead Agency – EPA

The Johnny M Mine Site is an abandoned uranium mine located in the northeastern area of the SMCB, approximately 4.5 miles west of the Village of San Mateo. Development of the mine began in 1972 and production of ore began in 1976, ending in 1982. The mine consisted of an underground mining operation which utilized surface support facilities, including two mill tailings fill storage areas, two discharge ponds, a ditch with a water discharge pipe routed to a nearby drainage, a water supply well used to support mining operations, and an access road.

Johnny M Mine Site

The operation consisted only of ore removal; no milling occurred on-site. The mine operated as a "wet" mine; mine process water had to be pumped out of the mine workings in order to access the ore and was discharged to the surface, entering a series of existing arroyos on the southern and central portions of the Site, or through a discharge piping system that transported treated shaft water off the Site. Historical site operations left concentrations above health-based levels of radionuclides and their associated progeny in various on-site waste streams, including uranium mine/uranium mill waste, pond and surface drainage sediments, soil, and debris.

Completed and Ongoing Activities

- March 2011 – EPA initiated a time-critical removal action due to a private residence and ranching business located on the former ore stockpile area. This necessitated a temporary relocation of the resident that ended when an entity related to Hecla Mining, successor to Ranchers Exploration and Development, acquired the property.
- August 2017 – EPA completed the RSE that covered impacted areas from the mine site. The RSEs investigated surface soil radioactive contamination and determined the exposure risk to human health and the environment. The data generated during the RSE was used to assist in cleanup decisions at the sites through completion of EE/CA as part of a Non-Time Critical Removal Action.
- 2019 – Hecla Mining's development of a draft Engineering Evaluation/Cost Analysis was completed. The draft EE/CA was an initial step for EPA to begin consideration of cleanup alternatives and selecting a preferred alternative for public comment.
- October 2019 – EPA released the EE/CA to the public and conducted a public comment period, which included a public availability session. The EE/CA identified consolidation of surface mine waste above health-based cleanup levels from across the Site into an on-site repository as the preferred alternative.

Planned Activities for 2024-2028

- 2024 – Complete negotiations with the responsible parties to implement the Non-Time Critical Removal Action with EPA oversight.
- 2024 – 2025 – Complete design work for the waste repository and initiate and complete the removal action for the surface mine waste.
- 2025 – 2026 – Initiate post-removal action Operations & Maintenance of the site.

Mt. Taylor Mine

Map Location: Upper San Mateo Creek Study Area Figure, Page 10
Grants Mining District Sub-District Location: Ambrosia Lake
Lead Agency – NMED and MMD
Support Agency – USFS

The Mt. Taylor Mine is a former uranium mine located directly east of the San Mateo Village and lies on the northwestern foothills of Mt. Taylor. Development of the main shaft that reached over 3,000 feet began in 1975 and production started in 1980. The mine ceased production in 1990 and went on stand-by for nearly two decades. In 2017, the current mine owner, Rio Grande Resources, applied to reopen the mine but announced in December 2019 their intent to close the mine. The mine is currently undergoing Cleanup and Closure under New Mexico state regulations. A revised Closure/Closeout Plan (CCP) was submitted by Rio Grande Resources in June 2022 to both MMD and NMED. The CCP will address requirements under the NM Mining Act and NM Water Quality Act. The USFS administered a special-use permit for the treated water discharge pipeline. The site is currently covered with a financial assurance of $7.6 Million. Discharges associated with the Mt. Taylor Mine are regulated in accordance with groundwater Discharge Permit DP-61 and impacts to groundwater are addressed pursuant to the approved Stage 1 and Stage 2 groundwater Abatement Plans. Surface reclamation of the Mt. Taylor Mine is addressed under the Mining Act Permit No. CI002RE.

<u>Completed and Ongoing Activities</u>

- May 2020 – Rio Grande Resources began closeout and reclamation activities pursuant to state permits. Activities have included:
  - Removal of approximately 65,000 tons of low-grade ore to the White Mesa Mill in Blanding, Utah for processing as mill feed stock.
  - Removal of radiologically contaminated sediments from 8 water treatment ponds and depositing them in an on-site lined disposal cell, and reclamation grading of the treatment pond area.
  - Demolition of mine site facilities and buildings including a mine water treatment system and head frames.
  - Demolition of treated water discharge pipeline in coordination with the USFS that crosses National Forest System lands.

Head frame at Mt. Taylor before demolition

- Near surface plugging and surface capping of the 14 foot and 24 foot diameter shafts.
- Construction of stormwater pond and implementation of Best Management Practices at the site to prevent off-site discharges of stormwater. Construction of a lined pond for contaminated water.

- Continuation of groundwater monitoring pursuant to both DP-61 and the abatement plan.

Planned Activities for 2024-2028

- 2024 – The State agencies will be processing the update to the operator's Closure/Closeout Plan. This process will likely take about a year to complete. In the meantime, the operator will continue to conduct reclamation activities, moving toward complete closure/reclamation of the site.
- 2024 – NMED will work towards renewal of DP-61.

St. Anthony Mine

Map Location: Jackpile Mine Area and L-Bar Mill Figure, Page 11
Grants Mining District Sub-District Location: Laguna
Lead Agency – NMED and MMD

The St Anthony Mine is located on the Cebolleta Land Grant and was operated by UNC from 1975 to 1981. Two open pits, multiple waste rock piles, and an underground mine shaft were used during mining operations. St Anthony completed the NMED groundwater abatement process (Stage 1 and Stage 2) with the establishment of Alternative Abatement Standards in 2017. In January 2006, UNC submitted a site CCP as required under state regulations with NMED and MMD. The 2006 CCP was never approved due to technical deficiencies. A 2019 submitted CCP was not in alignment with the approvals granted by NMED in the abatement process. The State Agencies have been in communication with St Anthony since 2019 to determine a path forward with the submitted plan that deviates from previously approved designs.

UNC informally communicated with the Agencies that the previously approved abatement remedy will not be

St. Anthony Mine

protective of groundwater due to new modeling results. The Agencies requested UNC submit a modification to the Stage 2 abatement plan with a revised CCP that addressed sitewide closure/closeout. The Agencies received this document in October 2022 and are in the process of reviewing and commenting on the new proposed plan.

Completed and Ongoing Activities

- Numerous technical feasibility studies have been completed; however, no reclamation has occurred at the site at this time. The operator must obtain an approved CCP before reclamation can commence. Interim financial assurance consisting of a $25,000,000 surety bond and a $71,000,000 letter of credit are in place.
- October 2022 – UNC submitted a Stage 2 abatement plan modification and a 30% reclamation design CCP. The public participation process under MMD and NMED is complete at this time, with additional public engagement scheduled per the rules governing each agency.
- May 2023 – MMD and NMED submitted first round of comments on the CCP.
- August 2023 – UNC submitted response to the agencies first round of comments on the CCP.
- Ongoing – Groundwater monitoring reports submitted to NMED.

Planned Activities for 2024-2028

- Continued negotiations between UNC and the State Agencies are expected regarding the content of the revised CCP and modification of the Stage 2 Abatement Plan.
- State Agency review of the CCP during 2023 with possible approval in 2024 depending on the amount of technical review required. Potential public hearings with NMED and MMD on the CCP and modified Stage 2 abatement plan.
- Groundwater monitoring reports will continue to be submitted to NMED, and reclamation reports submitted to both agencies once the work on site begins.

Section 12 Mine

Map Location: Ambrosia Lake Figure, Page 7
Grants Mining District Sub-District Location: Ambrosia Lake
Lead Agency – MMD

The Section 12 Mine is an abandoned uranium mine located in Ambrosia Lake approximately 20 miles North of the village of Milan, NM in McKinley County New Mexico. This is an underground mine that was operated by Southwest Resources Inc. in 1959, 1962, and 1974-1982.

Currently this site is under full reclamation through a Director's Order on Consent issued by the State of NM Mining and Minerals Division on December 16, 2019. NMED is involved as a consulting agency on this site; there are no discharge permits or abatement plans.

Completed and Ongoing Activities

- December 2019 – MMD issued a Director's Order on Consent to start reclamation activities.
- November 2020 – MMD gave a conditional approval of final Reclamation Plan.
- July 2021 – The trustee for Southwest Resources began implementation of the reclamation plan. Reclamation activities onsite have been limited to the removal of structures such as the hoist and

Section 12 Head Frame

hoist house and resin waste left on the site. Two vent shafts have been fitted with bat cupolas. No work on the shaft or earthwork has been started on site and currently MMD and Empire Trust are engaged in Legal Conversations regarding funds left in the Trust and how much reclamation can feasibly be done. It is anticipated that Empire Trust will exhaust all funds before reclamation is complete.

Planned Activities for 2024 – 2028

- 2025 – Reclamation will be completed, including removal of head frame and other physical structures, and plugging of shafts and vents. This is contingent on available funds left in the Trust and legal negotiations between MMD and Empire Trust
- 2025 – Long-term monitoring will commence following completion of the reclamation.

Section 27 Mine

Map Location: Ambrosia Lake Figure, Page 7
Grants Mining District Sub-District Location: Ambrosia Lake
Lead Agency – NMED and MMD

The Section 27 mine is in Section 27, Township 14N, Range 9W, approximately 35 miles north of Grants, New Mexico and approximately two miles east of the Ambrosia Lake Mill in the Ambrosia Lake District of McKinley County. UNC produced uranium ore from the Section 27 mine during operations from 1970 to 1977. The Section 27 mineral lease covered approximately 200 acres in the southern half of Section 27 and was surrendered in 1988.

Prior to mine closeout construction conducted in 2010, features at the site included two shafts, three vent holes, two small piles of non-economic mine materials containing overburden rock, sands, and gravels, one small ore stockpile, two topsoil stockpiles and several small piles of ball mill reject materials. The mine site is currently inactive, and the mining features encompass approximately 14 acres. NMED initiated the abatement process in 2002 due to groundwater exceedances of multiple constituents at the site.

Completed and Ongoing Activities

- 2010 – NMED conditionally approved the Stage 1 Abatement Plan and activities under the plan began. These activities included characterization of groundwater and mining related soils and materials remaining on site. Additional reclamation activities under MMD that have required NMED concurrence have been ongoing since 2006.

- 2015 – NMED approved a request from UNC to reduce the constituents analyzed in accordance with the approved groundwater monitoring plan.
- 2019 – UNC's annual groundwater monitoring report stated regular groundwater monitoring would be ceased. NMED responded in a letter dated January 2021 that groundwater monitoring shall continue as approved.
- 2022 – NMED and MMD initiated communications with UNC for work to resume under abatement and final site reclamation. Those discussions continue.
- 2023 – NMED and MMD are currently working with UNC to revise Permit No. MK005RE to update the Closeout Plan.
- 2023 – 2024 – UNC shall continue the Stage 2 abatement process with NMED. NMED will defer the abatement process If any future CERCLA agreements to remediate groundwater under EPA oversight include all substantive NMED requirements.

Planned Activities for 2024-2028

- 2026 – Gamma radiation exposure rate surveys in 2011 (with soil sampling for Ra-226 correlation) showed residual contamination levels above target rates inside the permit boundary and outside the permit boundary. Additional removal and placement of the contaminated material into a new consolidation area should be performed, followed by grading, and covering the consolidation area with a 3-foot-thick layer of cover material from the borrow area and revegetation. The additional clean-up will be in accordance with the Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations in New Mexico, EMNRD and NMED, March 2016.

Tronox Navajo Area Uranium Mines

Map Location: Ambrosia Lake Figure, Page 7
Grants Mining District Sub-District Location: Ambrosia Lake
Lead Agency – EPA

The Tronox Navajo Area Uranium Mines (Tronox NAUMs) are located primarily in the Grants Mining District in New Mexico and in the Northern and Eastern Regions of the Navajo Nation. The Tronox Settlement provided over $900 million to assess and clean up 54 Tronox NAUMs; 20 of the mines are within Region 6. Six of the twenty mines in Region 6 did not have their own mine shaft, instead using the shaft of neighboring mines to bring ore to the surface. These six mine sites will be addressed through actions at the mines where the shaft was used, leaving 14 mines that need to be addressed.

One of the 14 mines, Spencer Mine, was reclaimed in 2015 by MMD's Abandoned Mine Lands Program through funding provided by BLM.

One of the 14 mines, Section 33, has waste commingled with the EPA Region 9 Section 32 mine located on Navajo Allotment Land. Due to the commingling of the mine waste, Region 9 will be the lead at the site. Section 10 Mine is a stand-alone site. This leaves 11 mine sites identified in the Tronox Settlement which

Region 6 divided into geographic sub-areas (GSAs) to manage field work. The areas are:

East GSA	Central GSA	West GSA
Section 35 Section 36	**Section 17** **Section 19** **Section 30** **Section 33**	Section 22 Section 22 Heap Leach Section 24 Section 24 Heap Leach Section 30 West

Completed and Ongoing Activities

- 2015 – MMD, utilizing funding from BLM, completed reclamation of the Spencer Mine.
- September 2019 – Completion of RSEs that covered impacted areas from Section 10, Section 33, and the three Tronox GSAs. The RSEs investigated surface soil radioactive contamination and determined the exposure risk to human health and the environment. The data generated during the RSE is used to assist in cleanup decisions at the sites through completion of EE/CAs as part of a Non-Time Critical Removal Action.
- 2020 – Completion of Alternative Analysis Memos (AAMs) for Section 10 and the three Tronox GSAs. The AAMs used data collected during the RSEs to identify potential cleanup alternatives. The AAMs were then shared with regulatory partners (New Mexico Environment Department, New Mexico Mining and Minerals Division, Navajo Nation EPA, and Navajo Nation DOJ). Technical discussions were offered, followed by an opportunity to comment on the cleanup alternatives being considered.
- December 2021 – EPA completed the Tronox NAUM Allocation Strategy. The strategy allowed for the transfer of $305 million to the Region 6 Tronox Special Accounts to be used to support assessment and cleanup actions. Based on current estimates, this funding is not adequate to complete response actions at all the Region 6 sites, but will be used for intramural and extramural costs, and may provide incentives for responsible parties to enter settlements to do the work pursuant to EPA settlement guidance.
- May 2023 – EPA released the EE/CA for the Tronox Section 10 mine for a 30-day public comment period. EPA extended the comment period an additional 30 days at the request of several entities. EPA is evaluating the comments received.

Planned Activities for 2024-2028

- 2025 – Complete EPA's internal reviews of the three Tronox GSA draft EE/CAs. These internal reviews help ensure consistency across regions and ensure technical guidance and policy is implemented appropriately.
- 2025 – Finalize EE/CAs that cover the three Tronox GSAs.
- 2025 – Release the three Tronox GSA EE/CAs for public comment. Community involvement is an important piece to the Superfund process, affording impacted communities and other interested stakeholders an opportunity to play a role in the decision-making process. EPA will release EE/CAs for public comment and hold, at a minimum, a 30-day public comment period to receive comments on the document and the preferred alternative. During this public comment period, an availability session will be held to answer questions members of the community may have.
- Continue to implement EPA's Enforcement First Policy. EPA will continue to pursue liable and viable

PRPs and negotiate or order enforcement instruments that will require potentially responsible parties (PRPs) connected with the Tronox NAUMs to conduct the cleanups.

- Implement non-time critical removal actions. It is expected PRPs will conduct the non-time critical removal actions under enforcement instruments. EPA expects removal actions will continue past the current period covered by this Five-Year Plan because of the volume of waste to be addressed.

VII. Assessment, Cleanup, and Long-Term Management of Former Uranium Milling Sites

Uranium mills took the mined uranium ore and used various methods to extract the uranium and create yellowcake. Along with yellowcake, the process also creates mill tailings that contain radium and metals. The processes used to create the yellowcake and the remaining mill tailings can impact human health.

Ambrosia Lake Disposal Site (Phillips Mill)

Map Location: Ambrosia Lake Figure, Page 7
Grants Mining District Sub-District Location: Ambrosia Lake
Lead Agency: DOE
More Information: https://www.energy.gov/lm/ambrosia-lake-new-mexico-disposal-site

The Ambrosia Lake disposal site is a former uranium-ore processing facility in McKinley County, approximately 25 miles north of Grants, New Mexico. The former mill processed more than 3 million tons of uranium ore between 1958 and 1963 and provided uranium for U.S. government national defense programs. Phillips Petroleum Company built the original mill at the site in 1957 to process ore from nearby mines. United Nuclear Corporation purchased and operated the mill for a brief period in 1963, then paused milling operations but retained ownership of the site.

From the late 1970s to early 1980s, United Nuclear Corporation operated an ion exchange system, extracting uranium from mine water. All mill operations ceased in 1982, leaving radioactive mill tailings, a predominantly sandy material, on approximately 111 acres. Wind and water erosion spread some of the tailings across a 230-acre area. Under Title I of UMTRCA, DOE remediated the site and local contaminated vicinity properties between 1987 and 1995. Surface remediation consisted of consolidating and encapsulating all contaminated material onsite in an engineered disposal cell.

Completed and Ongoing Activities

- 2019, 2020, 2021, 2022, 2023– Annual site inspection and reporting
- 2022, 2023 – Annual Engineering evaluation of observed erosion features for potential intervention (first one completed in 2022)
- 2022 – Baseline aerial survey conducted. No anomalies were identified or detected in the data gathered.
- 2019, 2022 – Triennial groundwater sampling was completed. Analysis and results are available on Geospatial Environmental Mapping System.

Planned Activities for 2024 – 2028

- 2024 – Pollinator study scheduled which will contribute to ongoing pollinator initiative efforts.
- 2025, 2028 – Triennial groundwater sampling scheduled.
- 2024, 2025, 2026, 2027, 2028 – Annual site inspections and reporting.
- 2024, 2025, 2026, 2027, 2028 – Annual Engineering evaluation of observed erosion features for potential intervention.

Ambrosia Lake - West Mill Site (Rio Algom Mill)

Map Location: Ambrosia Lake Figure, Page 7
Grants Mining District Sub-District Location: Ambrosia Lake
Lead Agency: NRC
More Information: https://www.nrc.gov/info-finder/decommissioning/uranium/rio-algom-ambrosia-lake.html

The Ambrosia Lake - West Mill Site, also known as the Rio Algom Ambrosia Lake Mill Site, is a uranium mill tailings site in the Ambrosia Lake uranium district of New Mexico. It is located approximately 25 miles north of Grants, New Mexico. The mill was built by the Kermac Nuclear Fuels Corporation in 1957 and historically consisted of the mill site, uranium mill tailings ponds, and associated outlying evaporation ponds. The mill began processing uranium ore in 1958 and was placed in standby status by 1985. The tailings impoundment at the facility contains 33 million tons of mill tailings and covers an area of approximately 370 acres.

The site was acquired by Rio Algom Mining, LLC (RAML) in 2001. The site status changed from standby status to reclamation status in August 2003 to reflect RAML's intent to begin full demolition and reclamation of the site leading to termination of the license. The mill was demolished and disposed of in the tailings impoundment in

Former Kerr-McGee Uranium Mill Site

late 2003. The demolition was completed in accordance with a mill demolition plan approved by NRC in 2004. Uranium mill tailings generated during the Facility's operational period were disposed within the footprint of historical ponds 1 and 2. Disposal cell 1, which overlies historical pond 1, was completed in 1998, and contains approximately 30 million tons of uranium mill tailings covering 260 acres. Disposal cell 2, which overlies historical pond 2, was completed in 2016 and contains approximately 3 million tons of uranium mill tailings covering 90 acres. Additionally, soil affected by windblown uranium mill tailings is expected to be placed into another, yet to be submitted, disposal cell.

Areas surrounding the disposal cells, possibly including land adjacent to the former Ambrosia Lake West mill, have been affected by windblown tailings. Windblown remedial work has been performed intermittently since 2003 and is on-going. The remedy for windblown-affected areas consists of excavation and disposal of affected soil in a disposal cell, the design of which has not yet been submitted to NRC.

The NRC approved a groundwater corrective action program for the Ambrosia Lake West mill in 1989. In 2000, RAML submitted alternate concentration limit (ACL) petitions for the Facility's alluvial and uppermost bedrock units to NRC. Following approval of the Facility's ACLs in February of 2006, RAML ceased its groundwater corrective action program and began a groundwater stability monitoring program, which is on-going. Field work based on a 2017 workplan that would support a future supplemental ACL request is ongoing.
NMED has four discharge permits for the RAML mill and associated mine sites. The site is currently in Stage 1 abatement. NMED and MMD currently hold joint financial assurance and an interim closure plan for reclamation activities not addressed by the other regulatory agencies involved in the site.

Completed and Ongoing Activities

- 2017 – RAML terminated the site environmental monitoring program, with the exception of radon monitoring.
- January 2019 – Final status surveys following the 5-point soil sampling grid approach laid out in the 2006 Soil Decommissioning Plan did not meet the required criteria. RAML and NRC held a public meeting on January 23, 2019. RAML proposed an alternative approach based on a Rank Set Sampling method to meet the criteria.
- 2020 – License amendment request by Rio Algom was submitted to update license conditions to reflect current site conditions and operations.
- 2023 – License amendment was completed to update the radiation protection and environmental monitoring program manual, incorporate performance-based licensing, replace two degraded monitoring wells, and add a license condition to characterize detected COCs at one of the monitoring well replacement locations.
- Annually – The Rio Algom annual surety is updated by license amendment.
- Annually – NRC Region IV inspects the Ambrosia Lake West site.

Planned Activities for 2024 – 2028

- NRC staff expects to complete its review of the Rio Algom's January 31, 2023 submittal entitled, "Summary of Select Historical Uranium Recovery Processes at In-scope Mines in the Ambrosia Lake Valley." Staff's review will determine which potential commingled mill/mine areas described in the report are covered under NRC's license for the Ambrosia Lake West site.
- NRC staff expects that Rio Algom will characterize the vertical extent of sediment with elevated COCs beneath the former ponds within the Ponds 4 area and submit the results to NRC for review. Staff also

anticipates Rio Algom may potentially request a license amendment for the unrestricted or restricted release of the Ponds 4 area at the Ambrosia Lake west site.

- NRC staff expects to receive a license amendment request to update the soil decommissioning plan with areas and activities for the removal of surface sediments containing licensed material.
- NRC staff expects to receive a license amendment request for the planned construction of a fourth disposal cell.
- NRC staff expects to receive Rio Algom's construction completion report for the fourth disposal cell.
- 2026 – Completion of NMED discharge permit renewal and updates for the site and move the site into State 2 abatement.

Bluewater Disposal Site

Map Location: Bluewater and Homestake Mills Figure, Page 9
Grants Mining District Sub-District Location: Ambrosia Lake
Lead Agency: DOE
More Information: https://www.energy.gov/lm/bluewater-new-mexico-disposal-site

The Bluewater disposal site is in Cibola County, approximately 9 miles northwest of Grants, New Mexico. Anaconda Copper Company constructed the original carbonate-leach mill at the site in 1953 to process limestone uranium ore mined in the vicinity of the site. An acid-leach mill was constructed in 1957 to process sandstone uranium ore from the Jackpile-Paguate mine, the largest open-pit uranium mine in North America, located on the Pueblo of Laguna. The carbonate-leach mill closed in 1959. Milling operations at the site ended in February 1982.

Uranium ore processing at the Bluewater mill produced radioactive tailings, a predominantly sandy material. The tailings were conveyed in slurry from the mill to two locations and the process water in the tailings slurry seeped into the underlying alluvial and bedrock (San Andres Glorieta) aquifers and contaminated the groundwater. Atlantic Richfield Company (ARCO), who acquired the original operator, Anaconda Copper Company, began decommissioning the mill in 1989 and began site reclamation in 1991. By 1995, all mill tailings, contaminated soils, demolished mill structures, and contaminated vicinity property materials were encapsulated in on-site disposal areas. The site was included under the NRC general license for UMTRCA Title II and transferred from ARCO to DOE for long-term custody in 1997.

Completed and Ongoing Activities

- March 2019 – to mitigate risk associated with depressions forming on the top slope of the Main Tailings Disposal cell, DOE engaged the U.S. Army Corps of Engineers (USACE) to complete a design and construction to repair these depressions and address water ponding issues. USACE completed an Aerial survey of the Main Tailings Pile in Spring of 2021 to support design work. USACE has also been engaged to plan and complete on-site road repairs in areas of extensive erosion.
- July 2020 – October 2021 - DOE and the National Laboratory Network (NLN) met to collaborate on actionable recommendations of effective methods for improved characterization of the site-related groundwater plume in order to reduce risk at the Bluewater site. The result was a planning document that outlined these actions related to the extent and projected behavior of the Bluewater groundwater plume. Work has started on several of the recommended action items. As part of the DOE-NMED Cooperative agreement, NMED continues to sample wells outside of the Bluewater site boundaries in the fall of each year.
- October 2021 – Wildlife cameras were installed to monitor for the Gunnison Prairie Dog on site.

- August 2021 – Phase I of a pollinator study was completed to observe Monarch butterflies, which is listed as a candidate species, which means its status is currently being reviewed to determine whether it warrants listing under the Endangered Species Act.
- 2022 -2023 – DOE partnered with NMED to develop a scope of work for the proposed installation of offsite monitoring wells in order to better characterize the SAG contaminant plume.
- 2022-2023 – DOE initiated key groundwater support activities associated with the NLN collaboration to include improving the site plume models using data visualization applications and statistical analysis of contaminant geochemical trends.

Planned Activities for 2024 – 2028

- Ground water monitoring activities will continue throughout the period covered by this plan.
- NMED will continue to partner with DOE on annual sampling of private wells in the Homestake Mill Site and Bluewater Mill Site vicinity.
- NMED and DOE will collaborate to plan and develop enhanced off-site well network to further understand and characterize groundwater dynamics and conditions at the Bluewater site.
- Various wildlife conservation efforts (e.g. bat habitat survey, elk habitat improvements, pollinator studies) will be developed and executed throughout the period covered by this plan.
- 2024 – USACE will complete road repair work.
- 2024 – Pre-engineering studies will continue for the Main Disposal Cell cover regrading project including geotechnical subsurface investigation completion, hydrology and hydraulic analysis and design alternative analysis. Development of full design package will occur from 2025-2027.
- 2024-2025 – Develop a Bluewater strategy document that will function as a work plan to identify the schedule and scope of groundwater actions that DOE plans to implement in order to better understand the extent and projected behavior of the groundwater plume."
- 2024 – 2025 – Continue to work with NMED on the procurement of drilling services and installation of offsite monitoring wells.
- 2024 – 2027 – Continue progress on groundwater site characterization tasks in accordance with DOE National Lab Network recommendations to reduce overall site risk.

Homestake Mill Site

Map Location: Bluewater and Homestake Mills Figure, Page 9
Grants Mining District Sub-District Location: Ambrosia Lake
Lead Agency for: NRC
More Information: https://www.nrc.gov/info-finder/decommissioning/uranium/homestake.html

Note – See also Homestake Mill Superfund Site on Page "Homestake Mill Superfund Site" on page 13 for a summary of activities under CERCLA.

The Homestake Mining Company of California (Homestake), Grants Reclamation Project (GRP, a/k/a Homestake Mill) is located 5.5 miles northeast of Milan, NM and is a conventional uranium mill site under reclamation. U.S. NRC Source Materials License No. SUA–1471 was originally issued to Homestake in 1957 by the Atomic Energy Commission. During operations, ore was brought to the site for processing from various mines up to 50 miles away. Homestake deposited uranium tailings into two unlined tailings piles that overlie the San Mateo

alluvium. Uranium processing continued until 1990. The site is in the decommissioning phase with an ongoing restoration program which began in 1997.

Tailings generated from the milling operation were placed on two piles, a large tailings pile (200 acres and approximately 100 feet high) and a small tailing pile (40 acres and approximately 25 feet high). The large tailings pile is capped currently with an interim soil cover on its top and a radon barrier and a stone erosion cover on the side slopes. The small tailings pile is also capped by an interim soil cover on its southern portion and is the location of Evaporation Pond 1 on the northern two-thirds of the pile. Final radon barriers will be constructed after groundwater remediation is completed. Seepage from the tailings piles was noted in 1975.

The current effort is a major groundwater corrective action plan which is also under the oversight of the EPA through Superfund. A Memorandum of Understanding has been executed between the NRC and the EPA for the Site regarding groundwater remediation. NMED maintains groundwater discharge permit DP-200 at the Site. The regulatory agencies NRC, EPA, and NMED are working cooperatively in the effort to remediate the GRP to levels that are protective of public health, safety, and the environment. The Site will eventually be turned over to the DOE under a General License for long-term surveillance and maintenance.

Completed and Ongoing Activities

- The NRC reviewed and approved several submissions from Homestake related to the Confirmatory Order issued by the NRC on March 28, 2017, including the Root Cause Protocol, Self-Assessment Report, Analysis of Impact of Exceedances of Groundwater Protection Standards in Injection Water, Collection for Re-Injection Mass Balance/Removal Analysis, Release of Former Groundwater Land Application Areas. Homestake submitted two Groundwater Corrective Action Program license amendment requests that were not accepted for detailed technical review.
- On November 12, 2019, the NRC staff completed license amendment 54 that updated the groundwater monitoring plan listed in Materials License SUA-1471, license condition 35A, to adjust the compliance monitoring for the groundwater restoration areas.
- On February 3, 2020, the NRC staff completed license amendment 55 that approved the use of a zeolite water treatment system as an additional method to remediate groundwater.
- On July 14, 2021, the NRC staff completed license amendment 57 that approved a performance-based license condition incorporating a Safety and Environmental Review Panel.
- On December 20, 2022, Homestake submitted a license amendment request to change the background monitoring location for radon and ambient gamma radiation. On August 15, 2023, the NRC staff denied the application request.
- On August 8, 2022, Homestake submitted a license amendment request for groundwater alternate concentration limits. On May 17, 2023, the NRC staff did not accept the application for detailed technical review.
- On March 21, 2022, Homestake submitted a license amendment request to change the design of the top cover of the large tailings pile from the approved rock cover to an evapotranspiration cover. On September 28, 2022, the NRC staff did not accept the application for detailed technical review. On July 28, 2023, Homestake submitted a revised license amendment request.
- The Homestake annual surety is updated annually by license amendment.
- NRC Region IV inspects the Grants Reclamation Project on a semi-annual basis.

Planned Activities for 2024 – 2028

- The NRC staff expects continued activity on the license amendment request to change the design of the top cover of the large tailings pile from the approved rock cover to an evapotranspiration cover.
- The NRC staff expects to continue activity regarding the request to change the background monitoring location for radon and ambient gamma radiation.
- The NRC staff expects continued activity regarding the groundwater corrective action program at the GRP, including the possibility of another Homestake license amendment request for groundwater alternate concentration limits.

L-Bar Disposal Site

Map Location: Jackpile Mine Area and L-Bar Mill Figure, Page 11
Grants Mining District Sub-District Location: Laguna
Lead Agency: DOE
More Information: https://www.energy.gov/lm/l-bar-new-mexico-disposal-site

The L-Bar disposal site is in Cibola County approximately 3 miles east of the Village of Seboyeta and 10 miles north of the Pueblo of Laguna. SOHIO Western Mining Company (SOHIO) operated an on-site mill from 1977 through 1981. About 2.1 million tons of ore was processed at the mill. The milling operation created radioactive tailings, a predominantly sandy material. Tailings and liquid wastes were pumped in slurry form into an on-site tailings impoundment for disposal. All aboveground structures, including the mine and mill buildings, have been demolished. SOHIO completed site surface reclamation in 2000 under Title II of UMTRCA. The site transitioned to DOE in 2004 and is administered under the provisions of a general NRC license. The site requires routine inspection and maintenance, groundwater monitoring, erosion and vegetation monitoring of the disposal cell cover, records-related activities, and stakeholder support.

Completed and Ongoing Activities

- 2021 – DOE established an interagency agreement with USACE to design and construct stormwater erosion control structures. The intent of this project is to reduce sedimentation of diversion channels, reduce erosional head cutting, and help stabilize drainage areas of the site. As of 2023, data collection and initial design activities are on-going.

Planned Activities for 2024 – 2028

- 2024 – Execution of road repair project
- 2024 – Finalization of subsurface geotechnical investigation in support of stormwater erosion control structure repairs.
- 2024–2025 Development of design preferred alternative and full design package
- 2027 – Award and construction of the stormwater erosion control structures are anticipated to begin.

United Nuclear Corporation Mill Site

Map Location: Grants Mining District, Page 1
Grants Mining District Sub-District Location: Church Rock/Crownpoint
More Information: https://www.nrc.gov/info-finder/decommissioning/uranium/united-nuclear-corporation.html
Lead Agency: NRC
Note – See also UNC Mill Superfund Site on Page 19 for a summary of activities under CERCLA.

The United Nuclear Corporation (UNC) Mill Site is a non-operating uranium mill and tailings disposal site located approximately 17 miles northeast of Gallup in McKinley County, New Mexico. UNC operated the site as a uranium mill facility from 1977 to 1982. The Mill Site included an ore processing mill and a tailings disposal area that covers approximately 25 and 100 acres, respectively. This privately owned facility is surrounded by the Navajo Nation Indian Reservation and Tribal Allotment. The mill, designed to process 4,000 tons of ore per day, extracted uranium using conventional crushing, grinding, and acid-leach solvent extraction methods. Uranium ore processed at the site came from the Northeast Church Rock and the Old Church Rock mines.

The milling of uranium ore produced an acidic slurry of ground waste rock and fluid (tailings) that was pumped to the tailings disposal area. The site is currently under decommissioning and reclamation. The previous reclamation plan for the tailings disposal area was reviewed and approved by NRC on March 1, 1991. Uranium milling and tailings disposal were processed, and an estimated 3.5 million tons of tailings were disposed in the tailings impoundments - three cells and two borrow pits. These tailings cells and borrow pits were reclaimed between 1989 and 1995, and they each include a radon barrier. Surface reclamation is complete, except for the area of the south tailings cell covered by two evaporation ponds, which are part of the ground water corrective action plan. The ground water corrective action plan is also under oversight of the U.S. EPA through Superfund. A MOU was executed between NRC and EPA for this site in August 1988 and amended September 2013.

On September 24, 2018, General Electric requested an amendment to their reclamation plan approved as described in License Condition 34 as well as the reclamation timelines defined in License Condition 35. This amendment, if granted, would allow activities at the site to include construction of a Repository for mine-impacted soil and debris on the licensed mill tailings disposal area. Mine waste will be removed from the Northeast Church Rock Mine Site, transported, and placed in the Repository, located on the existing tailings disposal area. On December 21, 2018, the NRC staff contacted GE-UNC, to advise them that the application had been deemed acceptable for review and the formal review process would begin.

The license amendment was granted in February 2023.

Completed and Ongoing Activities

- March 2019 – NRC staff held public meetings in Gallup, NM to support development of the EIS.
- September 2020 – Issued Safety Evaluation Report regarding General Electric's request to amend the license.
- November 2020 – The Draft EIS was released for public review and comment.
- December 2022 – Revised Safety Evaluation Report was completed.
- January 2023 – Final EIS was completed.
- February 2023 – License amendment was granted.

Planned Activities for 2024 – 2028

- Issue Revised Safety Evaluation Report
- Issue a final Environmental Impact Statement following reviewing of public comments and other stakeholder participation regarding General Electric's request to amend the license
- Issue decision regarding General Electric's request to amend the license to allow for the construction of a repository for mine-impacted soil and debris on the licensed mill tailings disposal area.

EPA Contractor conducting a residential gamma survey. The buggy contains GPS and measuring instruments.

VIII. Assessment & Cleanup of Contaminated Properties

Lead Agency: EPA
Support Agencies: Pueblo and state environmental agencies

Uranium mining or milling waste was occasionally used as sand for aggregate (in foundations and stucco) and contaminated stones were incorporated into the walls and floors of structures, including homes. Structures may also be contaminated by the presence of mined or naturally occurring radioactive materials in outside dust and soil brought into homes on shoes and clothing, or materials being used in the home or in residential landscaping.

Completed and Ongoing Activities

- During the primary structure assessment period, from 2010 through 2015, the EPA's Removal Program assessed over 900 structures and properties for gamma and elemental uranium contamination. All the villages of the Pueblo of Laguna and communities of the Acoma Pueblo, the villages of Bluewater, San Mateo, and the Cebolleta Land Grant, and the subdivisions south of the Homestake Mill site were assessed. Seven hundred seventy-two (772) structures were found below action levels and deemed to require no action; however, one hundred twenty-eight (128) of the assessed properties had soil radiation above action levels and cleanup actions were completed to address the risk to human health. One structure was demolished, and another was replaced with a modular house. One resident living near the Johnny M legacy uranium mine was relocated.

- Subsequent structure assessments have occurred since the primary structure assessment period. One additional tribal structure and one non-tribal structure were identified for removal actions to address elevated levels of indoor-air radon and/or soil contamination in the immediate area of the structure.

Planned Activities for 2024 – 2028

The EPA has completed the residential structure assessment program at properties where consent to access was granted. The EPA will consider additional structure assessments if new information is provided.

IX. Public Health Consultation of the San Mateo Creek Basin

More Information: https://www.atsdr.cdc.gov/hac/products/consultation.html

Lead Agencies: New Mexico Department of Health with Support from ATSDR
Background: A health consultation is a verbal or written response from ATSDR or ATSDR's Cooperative Agreement Partners, here being the New Mexico Department of Health, to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. To prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material. In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR or ATSDR's Cooperative Agreement Partner which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

Completed and Ongoing Activities

- 2010 - 2011 – The NMDOH Environmental Health Epidemiology Bureau (EHEB) recruited volunteers in the Grants Mineral Belt during May and June of 2010 as part of public health surveillance for uranium exposure. The majority of drinking water samples collected were below the safe drinking water standard and the average urine concentration of participants was greater than the national average.
- December 2019 – EPA requested ATSDR initiate a PHA of the San Mateo Creek Basin following an agreement between EPA and three former mine operators to conduct the RI/FS of the San Mateo Creek Basin Central Study Area.
- August 2022 – An ATSDR team visited Grants, NM and conducted a site tour of the San Mateo Creek Basin Site with the assistance and guidance of the NMED. ATSDR was able to visit the site, take pictures and notes on site characteristics which will be used for the health assessment. ATSDR also met with representatives from IHS Albuquerque to keep them informed on the site, since the site is located adjacent to several tribal communities.

Planned Activities for 2024 – 2028

- NMDOH's APPLETREE Program is a cooperative agreement with ATSDR which will support responding to health questions from members of the various communities in the GMD.

- In 2024, ATSDR will provide U.S. EPA with the type of environmental sampling data ATSDR public health professionals require to conduct a public health assessment or health consultation evaluations in determining whether people living in the basin are being exposed to toxic substances at levels that could harm people's health. ATSDR recognizing that data are collected at hazardous waste sites for a variety of purposes and that ATSDR data needs are not intended to supplant the professional judgment and discretion of those responsible for protecting public health and the environment by cleaning up contaminated sites.
- 2024 - 2025 – EPA will collect or compile groundwater sampling data of the basin as part of ongoing investigations and share with ATSDR. ATSDR will conduct a health consultation evaluation on the groundwater sampling data to determine whether people living in the basin are being exposed to toxic substances, whether that exposure is harmful to people's health, and what must be done to stop or reduce exposure. This evaluation enables ATSDR to identify and prioritize follow-up activities to protect public health.

X. Environmental Justice, Disadvantage Communities, and Climate Change

Executive Order 14096, Revitalizing Our Nation's Commitment to Environmental Justice for All, signed on April 21, 2023, creates a government-wide approach to ensuring each agency makes achieving environmental justice a part of its mission. The EO builds upon efforts being taken under prior EOs, notably EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations and EO 14008, Tackling the Climate Crisis at Home and Abroad.

The federal partners are committed to incorporating environmental justice and climate change into efforts to assess and address the legacy of uranium mining and milling in the Grants Mining District. These efforts include, but are not limited to:

- Federal agencies that are party to the Five-Year Plan will improve the communication between federal partners and overburdened communities impacted by legacy mining and milling. This can include participating in tribal events such as council meetings and Feast Days to discuss progress with the tribes, meetings with community representatives to discuss environmental data, and regularly scheduled updates on progress under the Five-Year Plan.
- Federal agencies will have meaningful engagement with tribes and communities to have a role in participating in the formal federal decision-making process.
- Federal agencies will work with tribal partners to better incorporate traditional ecological knowledge into the CERCLA process and work with tribes on tribal-specific risk values that account for cultural and traditional uses of the land.
- EPA will ensure proposed cleanup remedies will continue to be protective in the face of climate change. Sites having five-year reviews to evaluate the implementation and performance of a remedy to determine whether it remains protective of human health and the environment.
- EPA will increase oversight of responsible parties performing work under enforceable instruments to ensure risk to human health is being addressed according to EPA's decision-making documents such as Action Memos for removal sites and Record of Decisions for remedial sites.

XI. Communication & Coordination with Communities

A priority of the federal and state agencies is meaningful dialogue and collaboration with communities and tribes impacted by mining and milling activities. Throughout the duration of this plan, EPA, along with the agency's federal and state partners, will continue to hold community meetings and to apprise the communities in the Grants Mining District with progress under the plan and provide a forum for discussions.

- Meet with Tribal elected officials to provide updates on progress and discuss their concerns with impacts from legacy mining and milling.
- Participate in tribal community events, such as information booths at tribal feast days.
- Public Meetings for Proposed Plans for sites on the NPL or SA Approach Sites.
- Community outreach, including public availability sessions, for when EPA releases Engineering Evaluation/Cost Analysis documents for public comment.
- Community meetings to update the impacted communities on progress under the Five-Year Plan.
- Community meetings for general site updates by federal agencies.

Grants Mining District EPA Region 6 Webpage:

https://www.epa.gov/grants-mining-district

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2024 - 2028

Grants Mining District

Five-Year Plan

Appendix I

Summary of Accomplishments and Future Goals

September 2024

Objective: Sites on the National Priorities List or Superfund Alternative Approach Sites		
Site	2010 - 2023 Major Accomplishments	2024 - 2028 Primary Goals
Homestake Mill Site	• June 2020 - A Final Remedial Investigation Report was completed by Homestake for OU1 and OU2 that included a baseline risk assessment. • March 2021 - The EPA National Remedy Review Board (NRRB) met with EPA Region 6 and key stakeholders to discuss the site and hear statements from the stakeholders on expectations for a Superfund remedy. • August 2021 – EPA Region 6 and HQs initiated an ambient air modeling study for radon and progeny sourcing from the large tailing pile to verify or update EPA's risk estimates on radon exposure. • September 2021 - A Superfund Five-Year Review (FYR) was completed by EPA. • April 2023 – EPA HQs Superfund Program National Radiation Expert and the Office of Indoor Air Radiation, in working with Region 6 staff, completed an air modeling study for radon and progeny at the site. • May 2023 - The Groundwater Background Reassessment Technical Memorandum was completed by EPA and NMED. • August 2023 – EPA approves Homestake's Addendum to the 2020 Remedial Investigation Report for the baseline human health risk assessment for OU1 and OU2.	• 2025 - Complete the Technical Impracticability evaluation. • 2026 - Meet with state and tribal stakeholders to discuss the Proposed Plan and the EPA's preferred remedy and seek state and tribal concurrence. • 2026 - Release a Proposed Plan to the public that identifies EPA's preferred Superfund remedy for OU1 and OU2 and hold a formal public meeting to present the preferred remedy and a 30-day public comment period for receiving written comments. • 2027 - Issue a ROD that describes the Superfund remedy selected by EPA.
Jackpile-Paguate Mine	• 2013 – Site was finalized on the National Priorities List • 2019 – Administrative Settlement and Order on Consent Signed, beginning the Remedial Investigation/Feasibility Study	• Continue oversight of the Remedial Investigation/Feasibility Study
San Mateo Creek Basin – Central Study Area	• 2019 – Administrative Settlement and Order on Consent signed for Remedial Investigation/Feasibility Study • 2019 – EPA began oversight of 3 parties conducting the investigation	• Continue oversight of the Remedial Investigation/Feasibility Study

Objective: Sites on the National Priorities List or Superfund Alternative Approach Sites		
Site	2010 - 2023 Major Accomplishments	2024 - 2028 Primary Goals
United Nuclear Corp. Mill Site	• Ongoing oversight be EPA of UNC's implementation of the ground water remedy's pump and treat system.	• Ongoing oversight be EPA of UNC's implementation of the ground water remedy's pump and treat system. • Negotiate a judicial settlement with the responsible party to conduct the Remedial Action to place mine waste from Northeast Church Rock Mine at the UNC Mill Site.

Objective: Assess Water Supply Sources for Contamination		
Site	2010 - 2023 Major Accomplishments	2024 - 2028 Primary Goals
San Mateo Creek Basin	• 2009-2010 – 32 private wells sampled • 2009 – Three Milan public water supply wells sampled • 2012 – New Mexico Environment Department completed Phase I and Phase II Expanded Site Investigations • 2014-2015 – 43 private wells sampled • 2014 – Three Milan public water supply wells sampled • 2016 – EPA, with support from NMED, released a Phase 1 Groundwater Investigation Report (2016) • 2018 – EPA, with support from NMED, released the Phase 2 Groundwater Investigation Report. Those two reports documented contamination of portions of the shallow alluvial and deeper bedrock aquifers in portions of the San Mateo Creek Basin.	• EPA will review sampling results from private wells collected by the NMED.
New Mexico Environment Department Well Sampling Program under Department of Energy Cooperative Agreement	• 2015: 13 wells sampled • 2016: 9 wells sampled • 2017: 11 wells sampled • 2018: 12 wells sampled • 2019: 21 wells sampled (2 field events) • 2021: 17 wells sampled • 2023: 13 well sampled	• Continue annual sampling event of wells near Bluewater, including municipal water supplies. • Install new SAG and alluvial wells outside of the DOE long-term care boundary. • Evaluate data from the new wells to inform the groundwater impacts. • Continue working collaboratively on project development and review of relevant document with EPA and other regulatory partners.

Objective: Assess and Cleanup Legacy Uranium Mines		
Site	2010 - 2023 Major Accomplishments	2024 - 2028 Primary Goals

Grants Mining District	• 97 uranium mines assessed
	  • Aerial gama surveys
	  • Screening Assessments
	  • Site investigations
	• 4 CERCLA Removal Action conducted by USFS
	  • La Jara, Taff, Vallejo, and Zia Mines
	• 1 CERCLA Removal Action with USFS Oversight
	  • San Mateo Mine
	• 4 Mine Reclamations
	  • 2016 - Barbara J #1
	  • 2016 - Barbara J #2
	  • 2016 - Barbara J #3
	  • 2016 - Spencer Mine
	• AML Safeguarding
	  • 2015 - Hogan Mine
		• 2025 - Complete the Technical Impracticability evaluation.
		• 2026 - Meet with state and tribal stakeholders to discuss the Proposed Plan and the EPA's preferred remedy and seek state and tribal concurrence.
		• 2026 - Release a Proposed Plan to the public that identifies EPA's preferred Superfund remedy for OU1 and OU2 and hold a formal public meeting to present the preferred remedy and a 30-day public comment period for receiving written comments.
		• 2027 - Issue a ROD that describes the Superfund remedy selected by EPA.

Johnny M Mine	• 2017 – Removal Site Evaluation was completed by EPA • 2019 – Released Engineering Evaluation/Cost Analysis for Public Comment	• Provide oversight to the construction and implementation of the selected remedy, waste consolidation in an on-site repository
Homestake Uranium Mines (8 Mines)	• 2019 – Administrative Settlement and Order on Consent signed for Removal Site Evaluations	• Submittal of final Removal Site Evaluation • Data Gaps Analysis • Release EE/CA for Public Comment • Initiate Non-Time Critical Removal Action

Department of Energy Defense Related Uranium Mine Program	• 2023 – Conducted Verification & Validation Assessment on 3 mines on the Pueblo of Laguna
	  • Crackpot
	  • Paisano
	  • Sandy
		• DRUM Program will work with Pueblo of Laguna on the review of the V&V Reports

Objective: Sites on the National Priorities List or Superfund Alternative Approach Sites		
Site	2010 - 2023 Major Accomplishments	2024 - 2028 Primary Goals

Tronox Navajo Area Uranium Mines
• Section 10
• East Geographic Sub-Area (Section 35, Section 36)
• Central Geographic Sub-Area (Section 17, Section 19, Section 30, Section 33)
• West Geographic Sub-Area (Section 22, Section 24, Section 30W)
• Spencer Mine
	• 2016 – Spencer Mine – State Reclamation
	• 2019 – Completed Removal Site Evaluations
	• 2020 – Complete Alternative Analysis Memos/Draft EE/CAs
	• 2022 – Section 10 EE/CA Released for Public Comment
		• 2024-2025 – Release EE/CAs for public comment and begin negotiations with potentially responsible parties for cleanup of mine sites
		  • East Geographic Sub-Area (Section 35, Section 36)
		  • Central Geographic Sub-Area (Section 17, Section 19, Section 30, Section 33)
		  • West Geographic Sub-Area (Section 22, Section 24, Section 30W)
		• 2026 – Initiate Non-Time Critical Removal Actions
		  • East Geographic Sub-Area (Section 35, Section 36)
		  • Central Geographic Sub-Area (Section 17, Section 19, Section 30, Section 33)
		  • West Geographic Sub-Area (Section 22, Section 24, Section 30W)

Objective: Assessment, Cleanup, and Long-Term Management of Former Uranium Milling Sites		
Site	2010 - 2023 Major Accomplishments	2024 - 2028 Primary Goals
Ambrosia Lake (Phillips) Mill Title I Site	• NRC Annual Inspections	• 2024 - NRC will complete review of overlapping jurisdictional issues in commingled areas with mine waste • NRC expects to begin review of a license amendment request for an additional disposal cell once submitted by Rio Algom.
Ambrosia Lake West (Rio Algom) Mill Title II Site	• 2013 – Site was finalized on the National Priorities List • 2019 – Administrative Settlement and Order on Consent Signed, beginning the Remedial Investigation/Feasibility Study	• Continue oversight of the Remedial Investigation/Feasibility Study
Bluewater Mill Title I Site	• DOE Annual Inspections • 2019-2023 – Pre-Design Work conducted to address depressions at the Main Tailings Disposal Facility	• DOE Annual Inspections • 2027 – Complete full design package to address depressions at the Main Tailings Disposal Facility
Homestake Mill Title II Site	• NRC Annual Inspections • 2022 – License Amendment Request to change the design of the top cover was submitted. NRC did not accept the application.	• NRC Annual Inspections • Expected License Amendment Request to change the design of the top cover of the large tailings pile • Expected activity regarding groundwater corrective action program
L-Bar Mill Title I Site	• DOE Annual Inspections	• DOE Annual Inspections • Maintain Disposal Cells
UNC Mill Title II Site	• 2023 – NRC Approved license amendment allow waste from the Northeast Church Rock Mine to be disposed of at the mill site	• DOE Annual Inspections

Objective: Assessment and Cleanup of Contaminated Structures and Properties		
Site	2010 - 2023 Major Accomplishments	2024 - 2028 Primary Goals
Pueblo of Acoma	• 247 Property Owners Contacted • 93 Assessments Conducted • 2 Soil Removal Actions Taken • 1 Radon Abatement System Installed	• EPA will review future requests as needed
Pueblo of Laguna	• 545 Properties Contacted • 422 Assessments Conducted • 23 Soil Removal Actions Taken • 5 Structural Materials Removal Actions Taken • 24 Radon Abatement System Installed • 1 New structure installed	• EPA will review future requests as needed
Non-Tribal Lands	• 599 Property Owners Contacted • 408 Assessments Conducted • 68 Soil Removal Actions Taken • 2 Structural Materials Removal Actions Taken • 29 Radon Abatement Systems Installed	• EPA will review future requests as needed

Objective: Public Health		
Site	2010 - 2023 Major Accomplishments	2024 - 2028 Primary Goals
Biometric Survey	• 2011 – Completed biometric survey, showing participants had 6 to 9 times higher uranium in urine than national average	• None Identified
Public Health Assessment	• 2019 – EPA requested ATSDR conduct a Public Health Assessment	• EPA will share groundwater sampling data with ATSDR as it is collected to facilitate completion of the Public Health Assessment.

2024 - 2028
Grants Mining District
Five-Year Plan

Appendix II

Response to Comments

September 2024

Acronyms

ADAMS – U.S. Nuclear Regulatory Commission's Agency-wide Documents Access and Management System

ATSDR – Agency for Toxic Substances and Disease Registry

BVDA – Bluewater Valley Downstream Alliance

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act

CWA – Clean Water Act

DOE – U.S. Department of Energy

DOE-LM – U.S. Department of Energy Office of Legacy Management

EPA – U.S. Environmental Protection Agency

MCL - Safe Drinking Water Act Maximum Contaminant Levels

NMAC – New Mexico Administrative Code

NMEID - New Mexico Environmental Improvement Division

NMED – New Mexico Environment Department

NPL – National Priorities List

NRC – U.S. Nuclear Regulatory Commission

OSE – New Mexico Office of the State Engineer

RI/FS – Remedial Investigation/Feasibility Study

SAG – San Andres-Glorieta

TDS – Total Dissolved Solids

UMTRCA – Uranium Mill Tailing Radiation Control Act

UNC – United Nuclear Corporation

USGS – U.S. Geological Survey

WQCC - New Mexico Water Quality Control Commission

This is a compilation of substantive comments on the 2024-2028 Five-Year Plan received during the public comment period and during tribal and community meetings. Comments have been organized by broad subject areas and the Agencies' responses are provided below each comment. Comments on formatting have been omitted. Many comments were received specific to outcomes of previously performed studies and known impacts from legacy mining and milling. Those questions are beyond the scope of this document, but necessitate detailed responses by EPA and its partners. Those questions will be addressed through ongoing engagement with stakeholders, including monthly meetings and community outreach.

General Comments on the Five-Year Plan

Comment 1: Why isn't Poison Canyon or Rio Algom West included in a study area?
Response to Comment 1: *The Five-Year Plan identifies priorities for the partners where resources to conduct the work have been identified. The Poison Canyon area will be included in future updates to the Five-Year Plan as additional resources are identified. EPA assumes "Rio Algom West" is a reference to the Ambrosia Lake West Mill site. This site is being address by Rio Algom under a license from the Nuclear Regulatory Commission (NRC) who implements the Uranium Mill Tailings Radiation Control Act (UMTRCA) and is discussed under the "Assessment, Cleanup, and Long-Term Management of Former Uranium Milling Sites" section in the plan.*

Comments on Cleanup Alternatives

Comment 2: As the regulators evaluate the most protective cleanup options for the San Mateo Creek Basin and watershed, public health and safety must be prioritized over corporate profits.
Response to Comment 2: *EPA notes your comment. In the removal and remedial process under CERCLA, capital and operational and maintenance cost of a potential remedy is one of the criteria all potential cleanup remedies are independently and comparatively evaluated on. That evaluation does not consider impacts to EPA appropriations for fund-lead cleanups or impacts to parties performing the work for Potentially Responsible Party-lead cleanups.*

Comment 3: The Multicultural Alliance for a Safe Environment (MASE) urges that all regulations and remedies rely on the best available science, and that their implementation be guided by the best available technology, with the expertise of affected environmental justice communities.
Response to Comment 3: *EPA notes your comment.*

Comment 4: MASE further urges that the burden of proving the need for regulatory waivers and exemptions be science-based, not cost-based. And cost-effective measures should not be tolerated when they pose unacceptable risks to human health and our environment.
Response to Comment 4: *EPA notes your comment.*

Comment 5: How will EPA factor in drier climate and weather conditions that could contribute to more windblown contamination from dry creek beds and arroyos?
Response to Comment 5: *In 2021, the EPA Office of Land and Emergency Management (OLEM) issued a directive recommending approaches for EPA regional offices to consider when evaluating climate resilience throughout the Superfund cleanup process for non-federal National Priorities List (NPL) sites. For non-NPL sites where removal authorities are being used, certain removal site remedies, such as on-site waste management, necessitate understanding site-specific conditions to ensure the protectiveness of removal action selected by EPA.*

Comments on Assessing Water Supplies

Comment 6: Assess Water Sources for Contamination – Page 20 of the Draft Plan identifies planned activities for 2024-2028 to assess drinking water sources for contamination. The first two action items concern the Bluewater Mill, an UMTRCA Title II Site for which the U.S. Department of Energy (DOE) has had long-term care obligations since 1997. During DOE's oversight, concentrations of contaminants of concern have increased in certain downgradient monitoring wells, including those drilled in the San Andres-Glorieta (SAG) aquifer, which is the primary drinking water source for the region. Moreover, the groundwater plume associated with the Bluewater Mill has never been fully delineated.

UNC supports EPA's plans to work with DOE on additional groundwater delineation and characterization. We also request that this objective be added to the "2024-2028 Primary Goals" for the Bluewater Mill on page 5 of the table at the end of the Draft Plan.
Response to Comment 6: *DOE and NMED note your comment. The objective has also been added to the Bluewater Mill section.*

Comment 7(a): How will EPA safeguard our health and water supplies into the future?
Response to Comment 7(a): *EPA uses its authority under the following federal environmental laws to protect water supplies, human health, and the environment:*

- *Federal Water Pollution Control Act of 1948, as amended in 1972 (Clean Water Act), aims to protect surface waters of the United States. EPA regulates discharges of pollutants and quality standards for surface waters.*
- *Safe Drinking Water Act of 1974, as amended in 1986 and 1996, aims to protect drinking water and its sources, which include groundwater and surface water sources. This law authorizes EPA to establish minimum standards to protect tap water and requires all owners or operators of public water systems to meet such standards.*
- *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended in 1986, also known as the Superfund law, aims to protect human health and the environment through the cleanup of uncontrolled or abandoned hazardous waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through CERCLA, EPA has the authority to seek out those parties responsible for any release and assure their cooperation in the cleanup.*

Comment 7(b): How will EPA assess the risks posed by tailing seepage and the migration of contaminants into San Mateo Creek, the Rio San Jose, and the SAG aquifer over the next 200 years?
Response to Comment 7(b): *San Mateo Creek is dry near the Homestake Site (except during storm events) and tailing seepage from the Large Tailing Pile does not enter the creek bed. Tailing seepage along the flank of the Large Tailing Pile is collected by toe drains constructed around the entire circumference of the Pile. Over 420 million gallons of tailing seepage have been collected by the toe drains since they were constructed in 1992. The Grants Reclamation Project annual monitoring reports prepared by Homestake and Hydro-Engineering, LLC, provide a description of the toe drains and volumes of tailing seepage collected. The reports are available for review in the NRC ADAMS database.*

Tailing seepage from the unlined Large Tailing Pile and Small Tailing Pile at the Homestake Site infiltrated the subsurface and percolated downward to impact the San Mateo Creek alluvial aquifer and underlying bedrock aquifers of the Chinle Formation. The downgradient migration of tailing seepage in San Mateo Creek alluvial

groundwater also contaminated the Rio San Jose alluvial aquifer at the confluence of the two aquifer systems. Tailing seepage at the DOE Bluewater Site, located approximately three miles northwest of the Homestake Site, also contaminated the Rio San Jose aquifer and the SAG aquifer (DOE, 2014).

The Homestake Site was placed on the NPL in 1983. As a CERCLA site, if any EPA remedy results in contaminants remaining above levels that allow for unlimited use and unrestricted exposure, the remedy will be subject to five-year reviews to ensure protection of human health and the environment. Unlimited use and unrestricted exposure mean that the selected remedy will place no restrictions on the potential use of the land or other natural resources. Although EPA has yet to select a CERCLA remedy for the Homestake Site, it has performed five-year reviews, beginning in 2001, as a matter of policy. Under UMTRCA and the NRC License, the tailing piles will remain in place, stabilized, and covered with a final radon barrier and evapotranspiration cover. Once this work and the groundwater corrective action are completed, the Homestake Site will be transferred to DOE's Legacy Management Program for long-term surveillance and monitoring, with land-use restrictions remaining in place within a defined long-term care boundary, controlled by DOE. After EPA selects a CERCLA remedy for the Homestake Site, statutory five-year reviews will be required for as long as the tailing piles remain at the site, even after the site is transferred to DOE's Legacy Management Program.

Comment 7(c): How does EPA plan to address depletions caused by mine dewatering and Homestake's SAG wells?

Response to Comment 7(c): *EPA's CERCLA authority does not include addressing depletions. However, EPA, as are all federal and state partners to the Five-Year Plan, are cognizant of the concerns raised by stakeholders on groundwater usage and will continue to work with stakeholders and parties performing work to identify ways to minimize future depletions.*

Comment 7(d): Is EPA continuing to evaluate an onsite disposal cell option for mine waste and mill tailings?

Response to Comment 7(d): *EPA continues to evaluate multiple disposal options for mine waste that would be protective of human health. One option that is being discussed with NRC and DOE is whether disposal of mine waste within the long-term surveillance boundary of former mill sites would be protective of human health allowable under current statutes and regulations. Whether this option would result in separate disposal cells for mine waste and UMTRCA regulated mill waste is presently unknown. If this option were deemed feasible, it would be independently and comparatively evaluated with other options in the Engineering Evaluation/Cost Analysis, or EE/CA, that is developed by the EPA and similar to the Record of Decision at NPL sites. The EE/CA would be released for a minimum 30-day public comment period and community meetings would be held to discuss the options and the preferred remedy.*

EPA is also evaluating disposal options for mill tailings at the Homestake Site in a CERCLA Feasibility Study being conducted by Homestake under a 2020 EPA Administrative Settlement Agreement and Order on Consent for groundwater contamination (Operable Unit 01) and long-term tailing stabilization, surface reclamation, and site closure (Operable Unit 02). The removal of tailing material and its disposal onsite in a lined and capped cell is an option being evaluated in the initial development and screening phase of the FS. However, this option is not likely to be carried forward to a second, detailed phase of the FS due to the potential human health risks from excavating radioactive tailings. Excavating tailing material would significantly increase radon and other radionuclide emissions into the air during the work. Once the initial development and screening phase of the FS is completed by Homestake, and approved by EPA, the work will be recorded in a document entitled: "Development and Screening of Remedial Alternatives Technical Memorandum" to be made available for review at EPA's website www.epa.gov/superfund/homstake-mining. EPA anticipates a 2025 completion date for this work.

Comment 8: Please note that the SAG aquifer is a source of recharge for the Rio San Jose, which remains a perennial stream at Acoma Pueblo.
Response to Comment 8: *The federal and state agencies note this comment.*

Comment 9: Acoma's March 25, 2023 statement to the National Remedy Review Board was not mentioned on page 14 of the draft plan. Acoma's statement noted: "Put simply, the SAGA, is the only remaining viable water source in the basin for all communities in the basin, and it cannot be compromised further." Acoma Governor Brian Vallo further noted that "Acoma supports selection of an alternative that will continue to remediate available groundwater and the cleanup of the contaminant pile in full."
Response to Comment 9: *The EPA acknowledges the submitted statement identified above and the Plan identifies the Pueblo of Acoma as a participant in the National Remedy Review Board. The Grants Mining District Five-Year Plan is meant to identify priorities for the upcoming five-year period and summarize past accomplishments.*

Comment 10: Our communities believe that the only way to achieve long-term protectiveness in the basin is to dewater the Homestake mill tailings and encapsulate the remaining hazardous material with engineered liners. UMTRCA, Title II and 10 CFR Part 40, Appendix A Criteria. While costly, this remedy is practicable from an engineering perspective and more effectively isolates the source of contamination, as opposed to addressing concentration limits in the groundwater plumes.
Response to Comment 10: *EPA and NRC note your comment. The tailings that are left at the site at license termination for long-term care and maintenance by the long-term care custodian must be designed to the standard in the regulation found at 10 CFR Part 40, Appendix A: Criterion 6—(1) In disposing of waste byproduct material, licensees shall place an earthen cover (or approved alternative)over tailings or wastes at the end of milling operations and shall close the waste disposal area in accordance with a design which provides reasonable assurance of control of radiological hazards to (i) be effective for 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years, and (ii) limit releases of radon-222 from uranium byproduct materials, and radon-220 from thorium byproduct materials, to the atmosphere so as not to exceed an average release rate of 20 picocuries per square meter per second (pCi/m2s) to the extent practicable throughout the effective design life determined pursuant to (1)(i) of this Criterion.*

Comment 11(a): Is a Basin-wide (San Mateo Creek Basin) surface water and groundwater study being considered?
Response to Comment 11(a): *A multi-phased basin-wide groundwater investigation was completed by EPA's Site Assessment Program and documented in the following two groundwater reports, which are all available at: www.epa.gov/superfund/san-mateo-creek-basin. Findings of these investigations have been presented at several several community meetings. The reports are:*

- Expanded Site Inspection – Phase 1 Groundwater Investigation Report for San Mateo Creek Basin Legacy Uranium Mines Site, Cibola and McKinley Counties, New Mexico (Weston Solutions, Inc., 2016)
- Expanded Site Inspection – Phase 2 Groundwater Investigation Report for San Mateo Creek Basin Legacy Uranium Mines Site, Cibola and McKinley Counties, New Mexico (Weston Solutions, Inc., 2018)

USGS performed an investigation of San Mateo Creek surface water in the upper basin near San Mateo in 2009-2010. The results are presented in Scientific Investigations Report 2012-5019 (Langman and others, 2012). USGS also completed an integrated hydrologic flow model of the Rio San Jose Basin and surrounding areas in 2023 and documented the results in Scientific Investigation Report 2023-5028 (Ritchie and others, 2023). It was prepared in cooperation with the U.S. Bureau of Reclamation, Pueblo of Acoma, and Pueblo of Laguna.

Comment 11(b): Pre-mining quantity and quality
Response to Comment 11(b): *EPA and NMED completed a groundwater background reassessment for the Homestake Site that focused on natural background quality (pre-mining and milling quality) in lower floodplain San Mateo Creek alluvial groundwater and three Chinle Formation aquifers (Longmire and Purcell, 2023). The original background assessment, which was conducted by Homestake in 1999 (alluvial groundwater) and 2003 (bedrock groundwater), led the NRC to establish site Groundwater Protection Standards that are higher than federal MCLs and State of New Mexico groundwater standards for uranium (0.16 mg/L), selenium (0.32 mg/L), and other constituents in the alluvial aquifer. Current MCLs for uranium and selenium are 0.03 mg/L and 0.05 mg/L, respectively.*

Comment 11(c): Current groundwater quality
Response to Comment 11(c): *Three potentially responsible parties, Homestake, Rio Algom Mining, LLC, and United Nuclear Corporation (UNC) entered into an Administrative Settlement Agreement and Order on Consent with EPA, in 2019, to perform a CERCLA groundwater remedial investigation and feasibility study (RI/FS) for an approximate eight square mile area in the central part of San Mateo Creek Basin (known as the "Central Study Area"). The Central Study Area begins near the intersection of NM State Highways 605 and 509 (referred to as the Crossroads Area) and extends southward to near the Homestake Site. The RI will include the installation of additional alluvial and bedrock monitoring wells and collection of groundwater quality data for at least a two-year period. Borehole drilling and monitoring well construction are planned for 2024.*

NMED through a cooperative agreement with the U.S. Department of Energy-Office of Legacy Management (DOE-LM), conducts a voluntary groundwater sampling initiative encompassing private, irrigation and public water supply wells completed in the San Andres-Glorieta aquifer (SAG) located in the lower San Mateo Creek Basin in Cibola County, New Mexico. The SAG aquifer serves as the primary potable water supply for the Milan, Bluewater and Grants areas. The purpose of the voluntary sampling program is for protection of public health. The target area for sampling is down-gradient of both the former Bluewater and Homestake uranium mills. There are concerns that the uranium tailing impoundments and former milling operations have impacted the SAG aquifer. NMED started the voluntary sampling program in 2015 and continues to sample annually. Water quality data from Bluewater monitoring wells constructed in the SAG aquifer indicate uranium exceedances above the New Mexico Water Quality Control Commission (WQCC) 20.6.2.3103 NMAC groundwater standards for uranium outside the DOE-license boundary. Based on a review of Homestake SAG aquifer monitoring well water quality data in addition to water quality results from wells NMED samples under the voluntary program, there are no exceedances of 20.6.2.3103 NMAC standards for uranium in wells located downgradient of the Homestake Mill.Groundwater sampling is also part of the annual site inspection and monitoring reports. Those reports can be found on DOE's website, https://www.energy.gov/lm/bluewater-new-mexico-disposal-site.

Comment 11(d): Inform apportionment of damages to surface and groundwater caused by each facility.
Response to Comment 11(d): *Environmental data collected is shared with natural resource trustees at both a federal, state, and tribal level to support the trustees' efforts. EPA is not involved in any decision-making in terms of natural resource damages.*

Comment 12(a): What about characterization of San Mateo Creek surface water and alluvial groundwater?
Response to Comment 12(a): *EPA has not performed a characterized of San Mateo Creek surface water. San Mateo Creek is an ephemeral stream in most of the basin. In the upper San Mateo Creek basin, near Mount Taylor, San Mateo Creek is a perennial stream with continuous flows at its headwaters, near the community of San Mateo. The creek becomes an ephemeral stream about one mile downstream of San Mateo due to*

streamflow losses. USGS investigated San Mateo Creek surface water flow and quality in the upper San Mateo Creek Basin from 2009 to 2010 and reported the results in Scientific Investigation Report 2012-5019 (Langman and others, 2012).

San Mateo Creek alluvial groundwater was characterized during the multi-phased basin-wide groundwater investigation conducted by EPA (Weston Solutions, Inc., 2016 and 2018). San Mateo Creek alluvial groundwater will also be characterized as part of the ongoing CERCLA groundwater RI/FS being performed at the Central Study Area by Homestake, Rio Algom Mining, LLC, and United Nuclear Corporation pursuant to the 2019 CERCLA Administrative Settlement Agreement and Order on Consent with EPA.

Comment 12(b): Pre-mining
Response to Comment 12(b): *There is very little historical information on groundwater quality in the San Mateo Creek Basin prior to uranium mining and milling activities (i.e., prior to about the mid-1950s). The USGS reported on the chemical quality of groundwaters for the alluvium, basalt, Chinle Formation, and the SAG from about 1933 to 1958 (Gordon, 1961). The chemical data provided in the USGS report are for Chloride, Sulfate, Bicarbonate, Carbonate, Iron, Magnesium, Calcium, Potassium, Sodium, Nitrate, Fluoride, Boron, Total Dissolved Solids, and pH.*

It is not known if analytical data for groundwater contaminants of potential concern typically associated with uranium mining and milling sites, such as uranium, selenium, molybdenum, radium 226+228, and other metals and radionuclides, are available for the San Mateo Creek Basin prior to the start of uranium mining and milling activities. The first uranium ore production began in the Morrison Formation Westwater Canyon Member at the Poison Canyon Mine in 1951 (Melancon, 1963). Uranium was discovered at Ambrosia Lake in 1955 (Melancon, 1963). Milling activities began at the DOE Bluewater Site in 1953 and at the Homestake Site in 1957.

Comment 12(c): Current surface water quality impacted by the Homestake Large Tailings Pile
Response to Comment 12(c): *To date, there is no evidence of surface water impacts from the Large Tailing Pile or Small Tailing Pile. In 2010, after a large storm event, there were several locations within the subdivisions where flooding occurred. At that time, the Bluewater Valley Downstream Alliance (BVDA) was very concerned about contaminated water breaching the tailing impoundments and mixing with storm water. NMED responded to this concern by conducting limited sampling of surface water and soil in the flooded area to determine if the community was exposed to potential contamination from storm-water runoff at the tailing piles. NMED also measured radiation levels using a hand-held Ludlum radiation detector at about 30 locations in the area of flooding within the subdivisions and inside the Homestake licensed facility boundary. Based on the radiation survey and sample analytical results, NMED determined that there were no elevated radiation levels associated with the storm-water runoff in the area of flooding and no elevated concentrations of radionuclides or metals in the surface water and soils sampled. NMED sent a letter report and supporting analytical data, dated March 6, 2011, to BVDA documenting the findings for the storm event.*

Lateral flow of tailing seepage outward from the edge of the Large Tailing Pile is prevented by a toe drain collection system. The toe drains are constructed around the entire perimeter of the pile to capture tailing seepage. In 2022, approximately 1.5 million gallons of tailing seepage were pumped from the toe drains. This volume represents a decrease from the 2 million gallons of tailing seepage pumped from the toe drains in 2021. A table of the yearly volumes of seepage collected by the toe drains and a map and cross-sectional view of the location and depth of the drains are presented in the Homestake and/or Hydro-Engineering, LLC, annual monitoring reports that are available for review in the NRC ADAMS database.

Homestake Mining Company's 2023 Annual Monitoring Report/Performance Review for Homestake's Grants Project (ML24092A405) provides the most recent characterization data for the alluvial aquifer beneath

and downgradient from the mill site. The document can be found at: https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML24092A405.

Comment 13(a): Has Rio San Jose surface water and shallow alluvial groundwater been characterized?
Response to Comment 13(a): *With regards to the Rio San Jose surface water quality, the federal Clean Water Act (CWA) establishes the basic structure for regulating the discharge of pollutants into the waters of the United States and regulating quality standards for surface water. The CWA allows states and federally recognized tribes to enact water quality standards that are consistent with the CWA and serves the purpose of protecting waters in a state or on Tribal lands. The State of New Mexico and Pueblo of Acoma have enacted water quality standards that are applicable to the Rio San Jose. They include numeric water quality criteria necessary to protect designated uses of surface water and to comply with antidegradation policies. Surface water quality is regulated by the New Mexico Water Quality Control Commission (WQCC) and standards are established in New Mexico Water Quality Act (WQA) Section 20.6.4 New Mexico Administrative Code (NMAC). The Pueblo of Acoma standards are established in Appendix A of the Pueblo of Acoma Water Quality Standards. The NMED Surface Water Quality Bureau and Pueblo of Acoma monitor water quality of the Rio San Jose to determine whether their water quality standards are being attained.*

The Surface Water Quality Bureau's monitoring program aims to provide data for evaluating the quality of surface waters and guiding water quality management efforts. The Surface Water Quality Bureau's surface water monitoring strategy involves gathering chemical, physical, and biological information from various aquatic environments. The comprehensive approach is outlined in the State of New Mexico Surface Water Quality 10-Year Monitoring and Assessment Strategy (NMED Surface Water Quality Bureau 2016 or latest revision). Since around 1998, the Surface Water Quality Bureau has primarily employed a rotating basin system for water quality monitoring, where specific watersheds are monitored for two years, with a return frequency of approximately eight to ten years based on factors such as staff availability, watershed conditions, and financial resources.

Comment 13(b): Pre-mining quantity and quality
Response to Comment 13(b): *There are no known Rio San Jose surface water data or groundwater data that are older than the mid-1950s, when uranium mining and milling activities commenced in the Grants Mining District.*

Comment 14(a): What about characterization of San Andres-Glorieta aquifer? Will a groundwater baseline study be performed to identify contaminants of concern?
Response to Comment 14(a): *Based on historical SAG groundwater data collected for the Homestake Site, concentrations of site-related contaminants of concern do not exceed federal drinking water standards or WQCC groundwater standards (Homestake and/or Hydro-Engineering, LLC, annual monitoring reports). However, EPA acknowledges the importance of characterizing SAG groundwater quality at the Homestake Site to establish baseline conditions, especially when considering the SAG contamination at the nearby DOE Bluewater Site and the hydraulic connection between the SAG aquifer and Rio San Jose alluvial aquifer at the SAG subcrop area. A limited characterization of the SAG aquifer was completed by Homestake in the subcrop area (HDR, 2022) (see also Response to Comment No. 5, above).*

DOE's Office of Legacy Management (DOE-LM) is also performing characterization of the SAG aquifer to define the extent of contamination directly related to the DOE Bluewater Site. NMED, through a cooperative agreement with the DOE-LM, conducts a voluntary groundwater sampling initiative encompassing private, irrigation and public water supply wells completed in the SAG aquifer. The purpose of the voluntary sampling program is for protection of public health. The target area for sampling is down-gradient of both the DOE

Bluewater Site and the Homestake Site. NMED started the voluntary sampling program in 2015 and continues to sample annually.

EPA continues to coordinate with NMED and DOE on the NMED voluntary sampling initiative for the SAG aquifer as well as assess SAG water quality data when it is collected. EPA will utilize such data in assessing the need for future water quality monitoring and/or characterization of the SAG aquifer in the area south of the DOE Bluewater and Homestake sites as part of future CERCLA activities at the Homestake Site.

Comment 14(b): Water quality in sub-crop study area
Response to Comment 14(b): *Data are reported in the Homestake and Hydro-Engineering, LLC, 2022 annual monitoring report. Additionally, Homestake's 2023 Annual Monitoring Report/Performance Review for Homestake's Grants Project (ML24092A405) provides the most recent characterization data for the sub-crop area. In particular, wells 551, 647, 649, and 996 are located in the alluvial aquifer in the vicinity of the sub-crop area. Section 4 and Appendix B of the Annual Monitoring Report provides monitoring data for these wells. The document can be found at: https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML24092A405.*

Comment 14(c): Depletions attributable to the mining industry
Response to Comment 14(c): *The New Mexico Office of the State Engineer (OSE) is a cooperator with the United States Geological Survey (USGS) on the Groundwater Data Program, which monitors groundwater levels in wells in New Mexico. As part of this program, there are currently ten active wells monitored annually in the OSE administrative groundwater basin called the Bluewater Basin (the San Mateo Creek watershed generally falls within it). These wells can be used to understand regional water-level trends in the Bluewater Basin. Several of these wells are in the San Andres-Glorieta (SAG) aquifer. Water-level data from wells currently or formerly monitored and recorded can also be searched for on the USGS website: https://nwis.waterdata.usgs.gov/nm/nwis/gwlevels*

Within the San Mateo Creek watershed, there are 9 water rights with designations of mining/milling/industrial (mining-related)/dewatering purposes and 1,189 Points of Diversion (Wells) under these water right file numbers. The primary owners of these wells are Homestake Mining Company, Rio Algom Mining LLC, Rio Grande Resource Corp., and ARCO Environmental Remediation. Some of these wells pump from the SAG while others do not. Homestake Mining Company is the only entity that has a strict allowance of how much water can be extracted from the SAG, and they are limited to 500 acre-feet per year (this restriction expires December 31, 2024).

The OSE does not regulate water quality but recognizes that water levels and hydrogeologic characteristics of an aquifer are important considerations when understanding water quality issues.

Comments on Former Uranium Mill Sites

Comment 15(a): Page 36 of the Draft Plan notes that mill tailings produced at the Bluewater Mill "were conveyed in slurry from the Mill to two locations and the process water in the tailings slurry seeped into the underlying alluvial and bedrock (San Andres Glorieta) aquifers and contaminated the groundwater." The Draft Plan should acknowledge that these impacts have not been delineated to drinking water standards.
Response to Comment 15(a): *The Bluewater Site is regulated by NRC. DOE is required to ensure that groundwater leaving the site remains below the NRC health-based risk standard for uranium (0.44 mg/L). However, DOE is committed to working with NMED to better delineate the SAG plume through installation of new offsite monitoring wells.*

Comment 15(b): The first bullet (March 2019) addresses efforts by DOE to repair depressions on the top slope of the Main Tailings disposal cell and associated water ponding issues. The Draft Plan should note that these depressions have been in place since 1997, when DOE took over responsibility for the Bluewater Mill, and have continued to erode in the 25 years since that time. Water ponding on top of the tailings cell is a serious concern and could explain the increasing uranium and sulfate trends observed in several Bluewater SAG wells.
Response to Comment 15(b): *DOE is mitigating any impacts of infiltration by monitoring and discharging any ponded water off the cell through an installed siphon. Although there is evidence of surficial subsidence, no erosional features have been identified. DOE has completed a geotechnical investigation of the subsided areas and the information obtained will be used to select a repair remedy.*

Comment 15(c): The second bullet (July 2020) discusses a planning document generated pursuant to DOE's and the National Laboratory Network's collaboration "on actionable recommendations of effective methods for site characterization and groundwater remediation leading to risk reduction at the Bluewater site." The Draft Plan should note that the vertical and horizontal extent of contamination associated with the Bluewater Mill is not fully delineated and expansion of the plume may go undetected.
Response to Comment 15(c): *DOE notes this comment.*

Comment 15(d): The second bullet also states that "[w]ork has started on several of the recommended action items" and that NMED continues to sample wells outside of the Mill boundaries once a year. The Draft Plan should identify all of the action items recommended by the National Laboratory Network and identify those that have been started or are planned to be started, because it does not appear that these recommendations have been made public. It should also state whether DOE and/or ARCO is planning to install additional wells to delineate the groundwater plume outside of the Mill boundaries to current drinking water standards.
Response to Comment 15(d): *The Five-Year Plan has been updated to include additional information.*

Comment 16: "Assessment, Cleanup, and Long-Term Management of Former Uranium Milling Sites" - Ambrosia Lake - West Mill Site (Rio Algom Mill) – There is no mention of the transfer to DOE for long-term surveillance and maintenance. Consider clarifying whether that is the long-term intention for this site.
Response to Comment 16: *The Ambrosia Lake West Mill Site is not expected to transition to DOE during this five-year period. The document covers expected accomplishments 2024-2028. Activities beyond this timeframe are not incorporated in the document.*

Comment 17(a): Communities in the San Mateo Creek Basin have been historically subjected to radon releases from contaminated soil and imported uranium for processing at the Homestake uranium mill. Contaminant releases from the two unlined hazardous tailings piles since the 1970s continue to the present day.
Response to Comment 17(a): *An NRC License condition requires Homestake to monitor outdoor radon, air particulate levels and direct gamma radiation at the NRC License boundary for the Homestake Site to ensure that conditions in the adjacent subdivisions do not significantly change before final site closure. In the event that conditions change at the License boundary with respect to releases of contaminants in air or soil from the Homestake Site, Homestake will be directed to conduct the appropriate corrective action to mitigate such releases.*

Comment 17(b): Environmental justice, or the equitable sharing of burdens, must not take a backseat to Homestake-Barrick Gold's bottom line. Protectiveness for overburdened populations exposed to toxic releases from the Homestake uranium mill and other sites within the Grants Uranium Mining District, adjacent communities residing next to these sites in the San Mateo Creek Basin, and our downstream communities must remain paramount.
Response to Comment 17(b): *EPA notes your comment.*

Comment 17(c): Ecological damage to a once healthy stream system and permanent impacts to the regional hydrology that is so essential to our survival into the future must also be factored into the remedy.
Response to Comment 17(c): *The CERCLA process includes an ecological risk assessment and establishment of remedial action objectives include ecological receptors.*

Comment 17(d): Doing otherwise would amount to a sacrifice of our traditional cultures, our agricultural way of life, and will rob New Mexico of the clean water sources we need to survive into the future.
Response to Comment 17(d): *The federal agencies note this comment.*

Comment 17(e): Please address the disparity in regional mill tailings site cleanup efforts. An estimated $844 million to $1.1 billion was spent to remove a much smaller volume of mill tailings from the old Atlas Mill in Moab, Utah. The population in Moab is largely White non-Hispanic. By comparison, the population around the Homestake Superfund site is 65.3% Hispanic and is situated upstream of the Acoma and Laguna Pueblos. The population surrounding the UNC Churchrock mill tailings site is 95% Native American. The estimated costs for removal of mine waste at Churchrock to the top of UNC's mill tailings was estimated to cost $40-45 million in 2020.
Response to Comment 17(e): *The primary difference between the Moab, UT Uranium Mill Tailings Remedial Action (UMTRA) Project and the Churchrock and Homestake, NM sites lies in the original authority found in the Uranium Mill Tailings Radiation Control Act (UMTRCA) legislation. Title I of UMTRCA applies to sites where uranium ore milling had ceased and the milling licenses had been terminated as of 1978, when UMTRCA legislation was originally was passed. Congress assigned responsibility for remediating these sites to the US Department of Energy. Title II of UMTRCA applies to sites where uranium ore was being processed under an active license when UMTRCA was passed. A key difference for Title II UMTRCA sites, including Churchrock and Homestake, is the original licensee is responsible for full remediation responsibility and costs, not the US Government. Since all three of these remedial projects are still ongoing and will be for many more years, it is currently impossible to capture or compare total project costs, nor compare or contrast the nuances of the drivers and assumptions that drive total project costs between the three sites.*

Comments on Abandoned Uranium Mines

Comment 18: "Ambrosia Lake Subdistrict mines, J.J.#1, Johnny M Mine Site, Mt Taylor Mine, St Anthony Mine, Section 12 Mine, Section 27 Mine, Tronox Navajo Area Uranium Mines" - These mines (or groups of mines) are explicitly named and described in the 5 Year Plan – please clarify why these mines, and not others of the 100s (1000s?) within the GMD are specifically highlighted in the report. In other words, please include the reasons/ criteria led to these particular mines being highlighted in the document.
Response to Comment 18: *EPA, working with the New Mexico Environment Department and New Mexico Mining and Minerals Division identified 97 priority mines throughout the Grants Mining District in the Marquez, Laguna, and Ambrosia Lake Sub-District. The criteria established was a mine with surface expressions (i.e. a mine shaft or other surface features) and two years of reportable production. The mines identified in the Five-Year Plan are ones which have been identified as a priority mine and resources have been identified to address them during this five-year timeframe.*

Comment 19: Ambrosia Lake Sub-District Mines – This section of the Draft Plan notes that there are 27 "priority mines" located in the Ambrosia Lake Sub-District and that some of these mines were wet mines that "required constant pumping and discharge of mine-impacted groundwater to access the ore body." Yet the current and planned activities focus only on the completion of Removal Site Evaluations to characterize surface soils, and do not include any groundwater characterization effort.

UNC maintains that the negotiation of a groundwater RI/FS with potentially responsible parties ("PRPs") should be a primary goal and added to the Draft Plan for 2024-2028. EPA invited PRPs to negotiate a groundwater RI/FS

in the ALSA (then referred to as the "West Study Area") more than four years ago, in August 2019. In May, 2020, two PRPs – Homestake Mining Company of California ("Homestake") and Rio Algom Mining, LLC ("RAML") – developed and proposed a statement of work to EPA. It is our understanding that this proposal remains pending with the Agency. Earlier this year, UNC expressed to EPA its commitment to cooperate with Homestake and RAML in this effort and requested that EPA set aside resources in 2023 or 2024 to negotiate and finalize plans for this work. Particularly with three viable, experienced and capable PRPs at the table that are already performing a groundwater RI/FS in the CSA, it is very disappointing to see that the negotiation and commencement of a groundwater RI/FS in the ALSA is not even identified as an objective of the Agency and its stakeholders over the next five years. We again encourage EPA to prioritize this work.
Response to Comment 19: *EPA notes your comment.*

Comments on Risk Assessments or Public Health Investigations

Comment 20: "Public Health Consultation of the San Mateo Creek Basin" - This section does not directly mention any outreach or consultation with Tribal governments as a part of the Public Health Consultation process. Tribal members may have different exposures, risks, and needs that may need to be taken into consideration in future evaluations. Consider including more information about direct consultation with Tribal governments in the Public Health Consultation process.
Response to Comment 20: *New Mexico Department of Health (NMDoH) will work with Tribal partners through the Tribal Epidemiologist and engage the tribes through NMDoH's Tribal Liaison as part of the Public Health Consultation Process.*

Comment 21: The draft Five-Year Plan should identify ongoing human health risks to residents in the GMD exposed to chronic low dose radiation from multiple sources and exposure pathways.
Response to Comment 21: *The Grants Mining District is a very diverse region with large population centers, small villages, and dispersed residential structures in addition to sparsely populated areas with differing land uses. All these areas, and the residents or users of the land can be impacted in various ways and making generalized statements about health risks would not be appropriate. ATSDR has conducted public health assessments for Jackpile-Paguate and Homestake Mill Site and they can be accessed by going to: https://wwwn.cdc.gov/TSP/PHA/PHALanding.aspx. The NM Department of Health is also working to conduct a public health consultation of the San Mateo Creek Basin.*

Comment 22: EPA's updated health risk assessment should not rely solely on environmental sampling to identify health risks and potential mitigation, but should include health surveys of all mining district residents (past and present), and uranium mine and mill workers to identify adverse health outcomes and trends.
Response to Comment 22: *EPA engages and the supports ATSDR and the State Health Department to take part in health surveys at sites on the NPL and communities can petition ATSDR (https://www.atsdr.cdc.gov/hac/petitionatsdrdchi.html). EPA's role in assessing the risk from the environmental sampling is frequently complemented by participation from the public health community in evaluating and supporting community concerns regarding past or present exposure.*

Comment 23: The Albuquerque Area Indian Health Service should be consulted about their collection of mortality statistics since the 1950s that note the cause of death for uranium workers and residents living in or near the Grants Mining District. This information will be useful for zeroing in on specific adverse health outcomes that could be related to radiological exposures.
Response to Comment 23*: ATSDR and the NM Department of Health note your comment.*

Comment 24: All compensable conditions under the Radiation Exposure Compensation Act (RECA) amendments should be explored and surveyed for their occurrence among residents and uranium mine and mill workers within the Grants Mining District.
Response to Comment 24: *Under the Radiation Exposure Compensation Act, the EPA and ATSDR does not have a statutory role in private individuals' potential medical claims under the Act. ATSDR has undertaken public health studies at certain sites in the Grants Mining District and those reports can be found at their website (https://wwwn.cdc.gov/TSP/PHA/PHALanding.aspx). More information on the Radiation Exposure Compensation Act can be found at the U.S. Department of Justice website (https://www.justice.gov/civil/common/reca).*

Comment 25: Cumulative exposures to contaminated air, water and soil by resident environmental justice communities must also be considered by the regulators during the design and selection of remedies to protect our health and environment for generations to come.
Response to Comment 25: *EPA evaluates all the sample data from air, water, and soil regardless of the source of the contamination. EPA examines multiple chemicals and multiple exposure pathways during the risk evaluation.*

Comments on Community Involvement and Environmental Justice

Comment 26: "Communication & Coordination with Communities" - Considering including more detail on engagement strategies and frequency of engagement including specific engagement with and collaboration with Tribal Nations and Pueblos.
Response to Comment 26: *A section on Environmental Justice and Disadvantage Communities has been added.*

Comment 27(a): Environmental Justice must be comprehensively integrated throughout EPA's updated Five-Year Plan for the Grants Mining District.
Response to Comment 27(a): *An Environment Justice and Climate Change section has been added to the Five-Year Plan to broadly summarize efforts under the plan to address environmental justice and climate change impacts.*

Comment 27(b). As currently written, the plan is biased toward remedies presented and studied exclusively by the mining companies and the regulators. Our EJ communities are not allowed to review any studies or offer our input until studies are finalized and final decisions are made.
Response to comment 27(b): *All work under the CERCLA process is performed pursuant to agreed upon enforcement instruments and statements of work and the work plans approved by EPA under those instruments. Potentially responsible parties, such as mining companies, do not have unilateral say in what remedies are studied. Additionally, EPA has held frequent calls with community groups, held community meetings, and held listening sessions for impacted communities to share, discuss, and hear from participants.*

Comment 27(c): When EPA undertook an analysis of equivalency for Homestake-Barrick Gold's remedial actions under CERCLA, it neglected to prepare a formal community relations plan (CRP), based on the community interviews and other relevant information specifying the community relations activities that the lead agency expects to undertake during the remedial response, that would ensure community involvement in a wide variety of site related decisions, including site analysis and characterization, alternatives analysis, and selection of remedy. 40 CFR 300.155 ("Public Information and Community Relations"); and 300.435(c) (relating to community relations for the remedial/design/remedial action and operation and maintenance stages of a remedial action).
Response to comment 27(c): *The National Contingency Plan (NCP) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires the creation of a Community Involvement Plan (CIP) [formerly known as a Community Relations Plan] for Superfund cleanups. A CIP for the Homestake Site within the broader Grants Mining District was created in 2016 and was updated in 2020. The Homestake CIP is currently*

undergoing another update for new personnel and site progress and will be republished later this year in accordance with the CERCLA five-year timeline for CIP updates. The EPA has also held or participated in more than 40 community events, meetings, or virtual calls since 2020 to maximize community awareness and involvement.
Comment 27(d): Nor has EPA developed any public outreach plans to the share information gathered during its Remedial Investigation or Feasibility Study phases for the Homestake-Barrick Gold Superfund site.
Response to Comment 27(d): *See Response to Comment 27(c).*

Comment 27(e): Our EJ communities do not agree with EPA's assessment that Homestake-Barrick Gold's past activities addressing groundwater contamination are the functional equivalent of the RI/FS process under CERCLA or that they will result in a CERCLA-quality cleanup.

Response to Comment 27(e): *The EPA notes this comment.*

Comment 28: The Five-Year Plan update, as currently written, does not address the concerns of our EJ communities within the San Mateo Creek Basin as stated at public meetings or during the National Remedy Review Board meeting that was held in March, 2023.
Response to Comment 28: *An Environment Justice and Climate Change section has been added to the Five-Year Plan to broadly summarize efforts under the plan to address environmental justice and climate change impacts. The Five-Year Plan is meant to be a summary of completed activities and expected major activities to be completed in the next five years. It is not meant to address site-specific issues that addressed throughout the CERCLA process.*

Comment 29: Community input into the selection of a remedy embodies the very essence of what environmental justice means. This is what environmental justice demands to counter historical deference to the industry by the regulators, all to the detriment of our community health and safety.
Response to Comment 29: *EPA notes your comment. A section on actions to support federal environmental justice initiatives has been added to the plan. Additionally, the CERCLA process requires public input before remedies are selected.*

Comment 30: Long-term protectiveness for our EJ communities cannot be achieved with waivers and exemptions from the regulatory protections of the Clean Water Act and Safe Drinking Water Act.
Response to Comment 30: *EPA notes your comment.*

Other Topics Outside of the Scope of the Five-Year Plan

Comment 31: Nor is an aquifer exemption for NuFuels protective of the Westwater aquifer, which is used by the Crownpoint community as a drinking water supply, considering that no ISL facility in the US has ever been able to restore impacted groundwater to pre-mining conditions, or applicable federal and state concentration limits. Yet this high-quality water source, like the San Andres-Glorieta aquifer, is presently the only freshwater source available for nearby communities now and into the reasonably foreseeable future.
Response to Comment 31: *The EPA notes this comment. The Superfund program's role in the Five-Year Plan is to address impacts using CERCLA authority. Any future project related to the site of the aquifer exemption would not fall under the Superfund program but under the authority of the State of New Mexico. The existing aquifer exemption granted by EPA's Water Division only impacts the immediate area of the exemption and does not include other portions of the Westwater aquifer or any other freshwater source currently being used by communities in the area.*

Comment 32: Continuing an outdated exemption for NuFuels will give regulators across the nation more authority to exempt one of the most polluting industries from conducting the requisite cleanup because it is "too burdensome."

Before government regulators are allowed to exempt the mining industry from its regulatory cleanup obligations, they have a high bar to clear. They must show that aquifer exemptions or a technicaI Impracticability waiver is protective of public health and the environment. This is a near impossibility when it can be shown that the waiver or exemption will result in the release of hazardous constituents to groundwater.

Response to Comment 32: *The EPA notes this comment. The Superfund program's role in the Five-Year Plan is to address impacts using CERCLA authority. The exemption previously granted by EPA does not fall under the authority of the Superfund program. Any future project operating under the exemption will be required to meet the more strict standards currently in place for obtaining discharge permits from the State of New Mexico and ultimate restoration requirements of the NRC and the State for groundwater cleanup than might have previously been in place when the exemption was granted.*