

Next Steps in the Cleanup Process

Community Involvement

Community members are encouraged to contact USEPA and NNEPA to participate and stay involved in the removal action planning and process for Ruby Mines. Residents and local leaders are encouraged to provide input on future land uses at the site, discuss their concerns, and ask questions. Regular updates will be given to the community at the monthly chapter meetings. The agencies will hold public meetings for community discussion and input during the cleanup process..

Planning for the Removal Action

USEPA will get permits and access agreements with the Navajo Nation before the removal action. Federal, state, and Navajo Nation regulations will be identified and incorporated into the removal action design.

Pre-Design Investigation

A study to collect more data will be done to get more information about the site conditions and the amount of contaminated material that needs to be removed. This information will be used to determine the cleanup area and the removal action design.

Removal Action Design

Options for how to do the removal action are being developed. The design phase includes steps to plan the removal action and incorporate feedback from USEPA and NNEPA throughout the process. Important parts of the removal action include: :

- Construction details and designs
- Plan for monitoring the site during construction activities
- Plan for transporting waste material, including haul routes
- Plan for site restoration and monitoring after cleanup

Removal Action Implementation

The removal action will include digging up, combining, and covering contaminated soils at the Ruby Mines. During the removal action, the team will control dust, cover trucks with tarps, and prevent contamination from getting into stormwater.

Site Restoration

After the cleanup is done, caps on the repositories will be planted with native plants to restore the land and support traditional Navajo lifeways. USEPA will ensure the cap design is protective for traditional activities at the site. Native vegetation will be planted to prevent erosion and control stormwater. The future land use for Ruby Mines after cleanup will be decided by the Navajo Nation.

Long-Term Maintenance and Post-Removal Site Controls

Maintenance and site inspections will be made regularly at the repositories. Access to the repositories will be restricted while native vegetation is starting to grow. The caps will be monitored to ensure they remain effective.

How Can You Learn More?

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Ruby Mines: <https://www.epa.gov/navajo-nation-uranium-cleanup/ruby-mines>
Diné Bizaad translations are available upon request.

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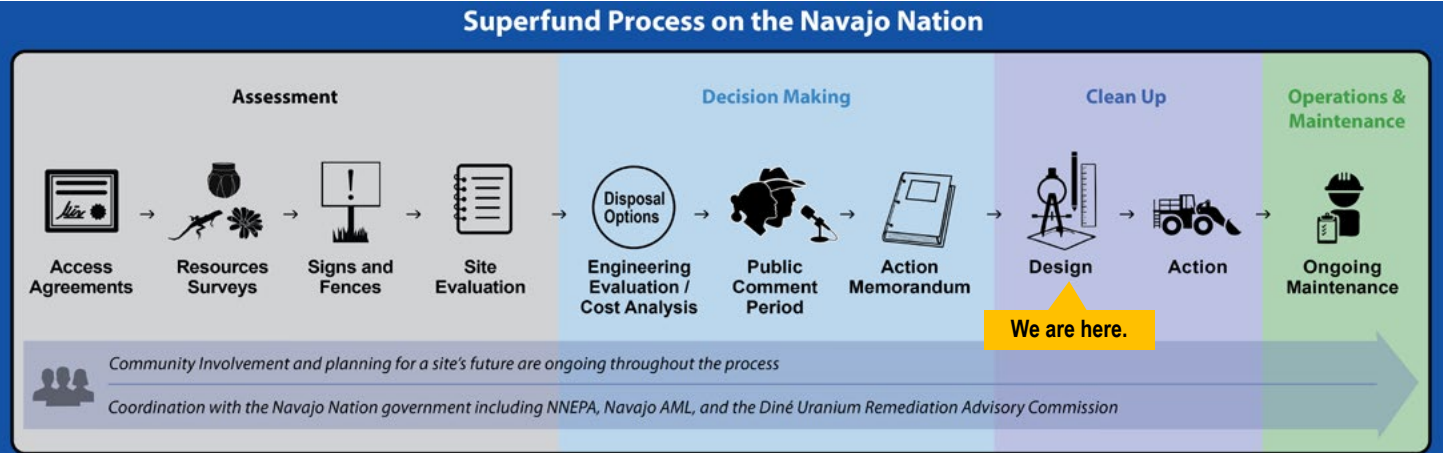


Ruby Mines Removal Action Planning

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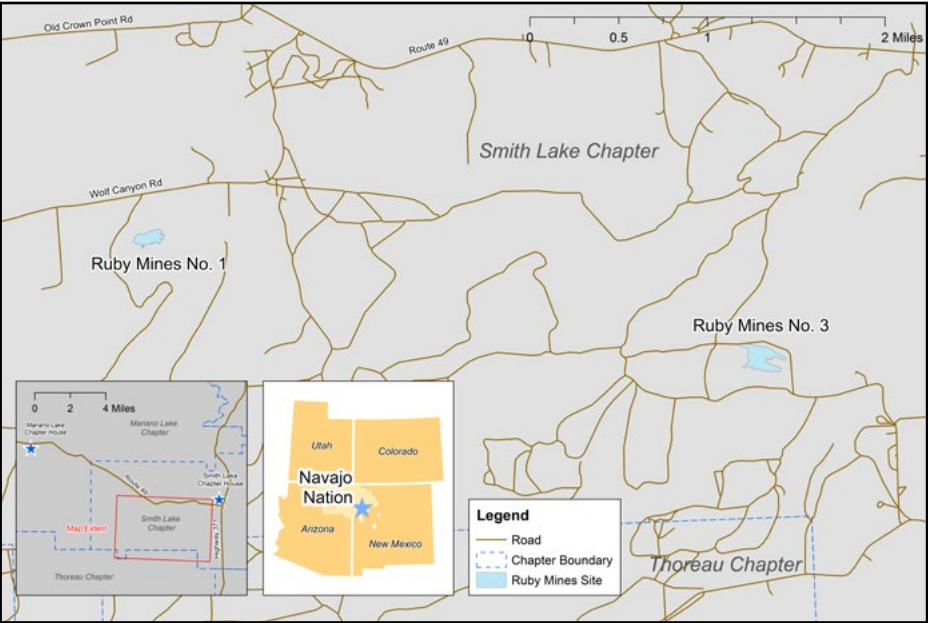
The U.S. Environmental Protection Agency (USEPA) has issued an action memorandum for a plan to clean up waste from historical uranium mining operations at Ruby Mines. This fact sheet presents background information on Ruby Mines, the cleanup option selected, and the next steps for cleaning up waste material, also referred to as the removal action. The cleanup at Ruby Mines is currently in the design phase.

Superfund Process on the Navajo Nation



Location

Ruby Mines is located in the Smith Lake Chapter of the Navajo Nation in McKinley County, New Mexico, shown on the map to the right. It is about 4 miles southwest of the Smith Lake Chapter House, 2 miles south of Bureau of Indian Affairs Route 49, and 3 miles west of State Highway 371. The closest buildings to Ruby Mines are homes, and they have not been affected by the site.



Background

Ruby Mines was operated by Western Nuclear Incorporated from September 1975 to February 1985. The site has four inactive, underground mines (Ruby Mines Nos. 1, 2, 3, and 4). Ruby Mines were connected and mined underground. Ore from Ruby Mines No. 2 and No. 4 were moved up the mine through openings at the surface called adits. Waste rock is rock created during development of the underground mines that did not have uranium at levels that were economical to process. Waste rock was put outside of the adits of Ruby Mines No. 1 and No. 3. A total of 790,360 tons of ore were mined and trucked off-site for milling.

In 1985, reclamation efforts were performed by Western Nuclear Incorporated with approval from the appropriate agencies. As part of the reclamation, the Ruby Mines No. 1 and No. 3 adits were physically closed, and waste rock piles were capped with soil and revegetated. Known vents were sealed with concrete and buildings were removed.

Cleanup options were identified in the Engineering Evaluation and Cost Analysis (EE/CA) and the recommended option was presented to the public in multiple meetings. There was a public comment period from October 21, 2023 to March 8, 2024. USEPA and the Navajo Nation EPA (NNEPA) considered input and feedback from the community and other Navajo Nation representatives on the cleanup options. The EE/CA identified six cleanup options to deal with radium-226, selenium, uranium, and vanadium in soils. Those are the contaminants that pose a risk to human and environmental health at the site. NNEPA worked with USEPA to ensure the cleanup aligns with Navajo Nation laws and community priorities. The soils will be cleaned up to levels that are safe for local residents and near levels that exist naturally in the environment, also called background concentrations.

Action Memorandum

The action memorandum was published on September 27, 2024. The document describes the plan for implementing the selected cleanup option. The cleanup includes combining soils with contamination into repositories at each site and installing evapotranspiration (ET) covers to cap the repositories in-place at Ruby Mines No. 1 and No. 3.

Radium-226, selenium, uranium, and vanadium have been identified as contaminants in soil at Ruby Mines. The concentrations of these contaminants exceed safe levels for human health. The soils will be cleaned up to levels that are close to background concentrations and are safe for local residents.

Removal Action Implementation

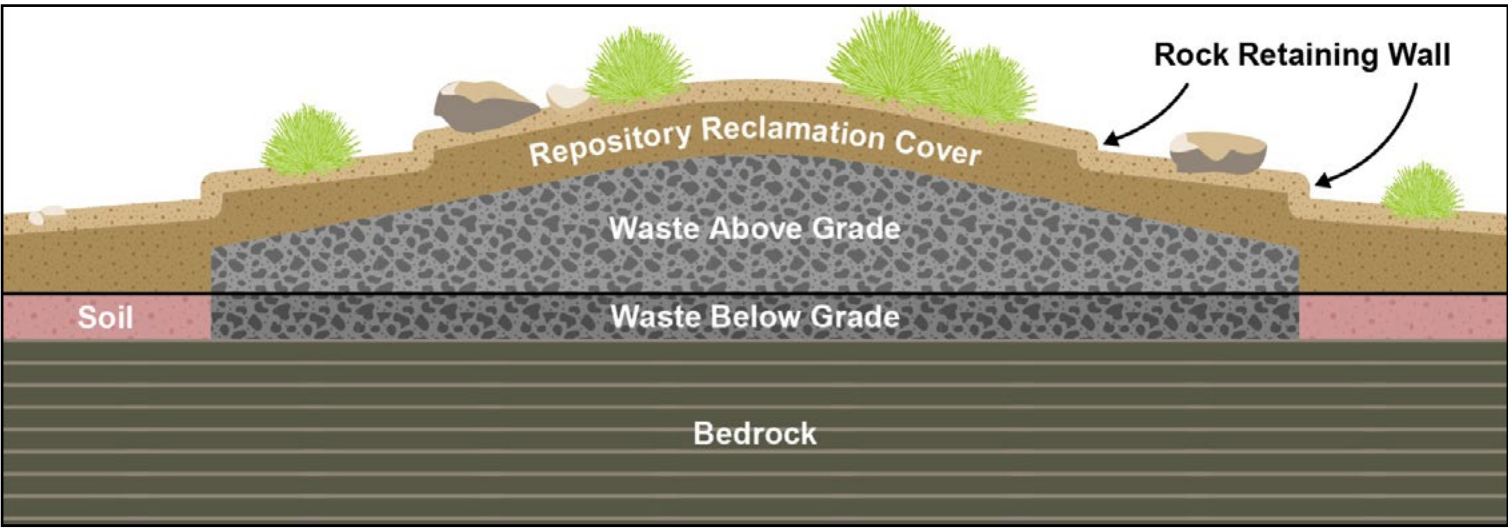
About 338,000 cubic yards of contaminated material need cleanup at Ruby Mines. The actual amount of waste will be determined in the design phase. Material where concentrations exceed the cleanup levels for radium-226, selenium, vanadium, and uranium will be combined in repositories at Ruby Mines No. 1 and Ruby Mines No. 3.

The removal action will last about 7 months, including combining and capping soils and restoring the site. After the cleanup is done, the affected areas will be sampled to check that the soil meets cleanup goals.

Repository Design

Repositories in-place will be constructed at Ruby No. 1 and No. 3 after contaminated soils are dug up and combined. USEPA’s selected cleanup option for the Ruby Mines Site is capping waste material in-place with a repository reclamation cover, such as an ET cover, after waste has been combined. An ET cover is designed to hold enough moisture to support native plant growth at the surface. The cover prevents water from infiltrating near the surface and moving through the repository waste material into the groundwater. The land area of the repositories at both locations will be smaller than the area of the mine boundaries.

The repositories are designed to protect the public and prevent contamination of soil and water. The repositories are located away from drainage pathways and include features to deflect the flow of surface water. Waste material buried in the repository will be covered with clean soil and rock to form a protective layer on top of the ET cover. The ET covers are designed for long-term stability to prevent surface water from contacting the waste. An example repository design is shown on the figure on the opposite page. This figure shows waste buried underground, mounded, and covered with a reclamation cover and rock retaining wall.



Site Restoration and Long-Term Maintenance

After the cover is placed, the repository caps and construction areas at Ruby Mines will be restored with native plants. Native plants will prevent erosion and restore the natural landscape. Excavations will be filled with clean soil and these areas will be landscaped to prevent erosion, control the flow of stormwater, and support traditional land uses such as grazing, water sourcing, sacred sites, cultural preservation, and gathering in the future.

The repositories in-place at Ruby Mines will be maintained in perpetuity. Signage and fencing will be installed to protect the regrowth of native vegetation. The signs and fences will be removed once vegetation is well established to ensure long-term sustainability. Ongoing maintenance on the cover and site inspections will be completed regularly.

Glossary	
Action memorandum	A written record of a decision to remove hazardous materials from a site.
Cleanup goal	The level of contamination remaining in soil that is safe for people and the environment at the site after a cleanup is done.
Cleanup option	An option for a cleanup design to remove or safely contain hazardous materials at a contaminated site.
Design phase	A step in the cleanup process to plan the details of the construction and how the cleanup will be completed.
Evapotranspiration (ET) cover	A type of cover placed over a repository to prevent water from reaching the contaminated material and to isolate it from people and wildlife. ET covers store water from rainfall and snowmelt until drier or warmer weather evaporates the water, or plant roots take up the water and release it to the air as water vapor through the leaves and stems in a process called transpiration.
Engineering Evaluation and Cost Analysis (EE/CA)	A document comparing the advantages and disadvantages of different cleanup options to plan for the removal action.
Removal action	An action to clean up hazardous materials that pose a danger to people and wildlife. A removal action may include the excavation of contaminated soil, safely burying and covering contaminated material in a repository, and/or hauling contaminated material to a repository or a certified landfill located away from the site. After a removal action, the natural landscape is restored and vegetation is planted.
Repository	A central location where contaminated material is stored, covered, and managed.