

## What Criteria Does U.S. EPA Use to Select a Remedy Decision?

**Effectiveness** – Evaluates the ability of each alternative to meet the removal action objectives and protect human health and the environment. It is evaluated in terms of short-term and long-term effectiveness. Short-term effectiveness focuses on impacts during and immediately after the action on the community, workers, and local environment as a result of performing the work. Long-term effectiveness focuses on the ability of the completed action to protect human health and the environment and meet the removal action objectives in the future.

**Implementability** – Evaluates the difficulty of performing each alternative. This includes, for example, administrative issues such as permits, land access, and the ability to enforce land use controls. It also includes whether a given technology or construction technique is technically feasible and whether equipment and personnel are readily available.

**Cost** – Evaluates the capital costs of planning, design, and construction and long-term costs for maintenance.

## Next Steps in the Cleanup Process

EPA will consider input and feedback from the community and other Navajo Nation representatives on recommended alternative in the Engineering Evaluation/Cost Analysis document (EE/CA). In coordination with Navajo Nation, EPA will collect input on the recommended alternative during the **public comment period from October 21 – December 20, 2023**. It is important that community members from Mariano Lake and Smith Lake chapters attend this meeting and provide their input during the formal comment period of the Superfund Process. The EE/CA will be made available, and a public meeting will be held to gather stakeholder comments on October 21, 2023. **Comments can also be submitted to [huang.danielle@epa.gov](mailto:huang.danielle@epa.gov) or by toll-free phone number: 1-833-561-8555.**

## How Can You Learn More?

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Public Meeting to present  
Mariano Lake EECA and  
recommended cleanup alternative

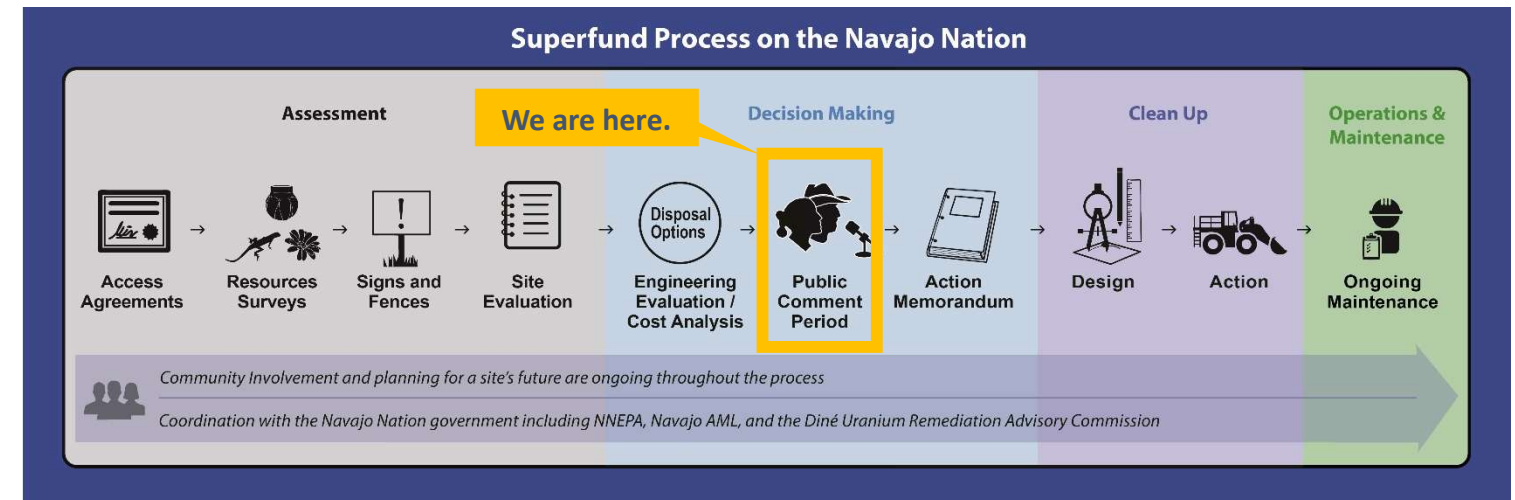
October 21, 2023  
10:00am 2:00pm

Pinedale Chapter House

Mariano Lake Mine: <https://www.epa.gov/navajo-nation-uranium-cleanup/mariano-lake-mine>

# EPA Mariano Lake Mine (Old Gulf Mine) Clean Up Alternatives

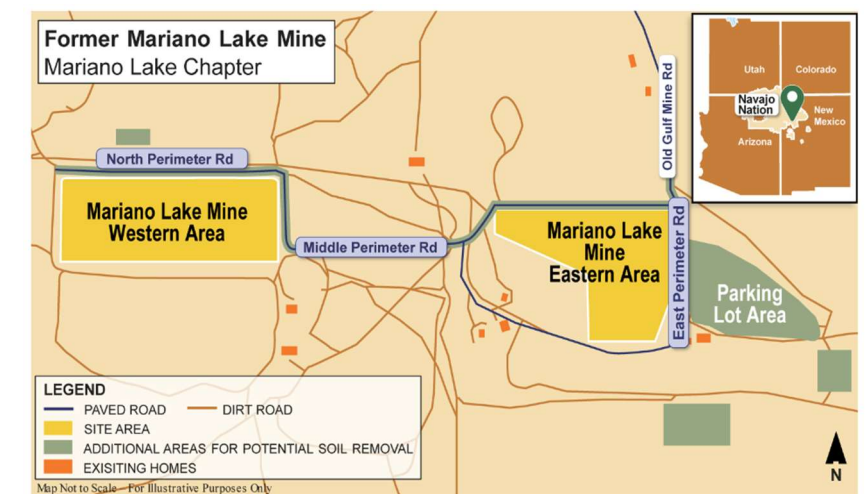
The U.S. EPA and Navajo Nation EPA want your feedback on potential clean-up options for the Mariano Lake Mine (historically referred to as the Old Gulf Mine). This fact sheet presents background information on the mine sites, the alternatives being considered as part of the response action decision making, and the next steps in the process including providing input on the Engineering Evaluation/Cost Analysis (EECA).



## Background

Mariano Lake Mine is located in the Mariano Lake Chapter of the Navajo Nation and 25 miles east of Gallup, New Mexico. The uranium mine was operated from approximately 1977 to 1982 by Gulf Mineral Resources Company, which has since been merged with Chevron. The mine primarily includes two distinct fenced areas, the Eastern Mine Area (12.5 acres) where the main mine shaft was located and the Western Mine Area (18.5 acres) which was used as a dewatering pond.

The Gulf Mining Corp. reclaimed the site after mining operations ended. The working shaft and vent holes were plugged with a slurry of sand and water, and a soil cover was added to portions of the Eastern Mine Area and Western Mine Area. The two mine areas are fenced and do not currently pose a risk to the community.



## Clean-up Alternatives

Based on the site investigation results, Mariano Lake contains 280,124 cubic yards of material that may need to be cleaned up. The Engineering Evaluation and Cost Analysis (EE/CA) identified seven remedial alternatives. Some of the Alternatives are further subdivided into "A" and "B" options. "A" Alternatives will excavate material down to 8 feet, while "B" Alternatives will excavate material down to 3 feet. **The U.S. EPA is recommending Alternative 4A – Regional Repository at the Mac No. 1 Mine Site.**

ALTERNATIVES	TIME FRAME	EVALUATION	IMPACTS TO COMMUNITY AND EARTH			
			Trucks through community	Equipment/Trucks Mileage	Water Usage	Cost
<b>1 No Action</b> , Site left in the existing condition. No removal or consolidation of impacted materials.	Not Applicable	<ul style="list-style-type: none"> <li>Does not protect people and the environment</li> <li>Baseline alternative for comparison</li> <li>Ineligible for selection, it is not protective of human health</li> </ul>	Ineligible for selection, not protective of human health			
<b>2 Excavation and Cover Onsite in the Eastern Mine Area</b> 2A) Excavate down to 8 feet bgs 2B) Excavate down to 3 feet bgs	2A) 9 months 2B) 8 months	<ul style="list-style-type: none"> <li>Protective of human health and environment</li> <li>Allows for future use of Western Mine Area</li> <li>Construction occurs on site, no waste is hauled off site</li> <li>Final capped area is very visible (24 acres)</li> </ul>	2A) 25,971 2B) 20,528	2A) 12,986 miles 2B) 10,264 miles	2A) 4.4M gallons 2B) 3.8M gallons	2A) \$29.8M 2B) \$25M
<b>3 Excavation and Cover Onsite in the Western Mine Area</b> 3A) Excavate down to 8 feet bgs 3B) Excavate down to 3 feet bgs	3A) 10 months 3B) 8 months	<ul style="list-style-type: none"> <li>Protective of human health and environment</li> <li>Allows for future use of Eastern Mine Area</li> <li>Construction occurs on site, no waste is hauled off site</li> <li>Final capped area is very visible (26.3 acres)</li> </ul>	3A) 33,554 3B) 29,108	3A) 16,777 miles 3B) 14,554 miles	3A) 4.8M gallons 3B) 4M gallons	3A) \$29.3M 3B) \$32.6M
<b>4A Regional Repository at the Mac No. 1 Mine Site</b> Excavate down to 8 feet bgs	10 months	<ul style="list-style-type: none"> <li>Protective of human health and the environment</li> <li>Allows for unrestricted future use of the Eastern and Western Mine Areas</li> <li>Restricted future land use of Mac No. 1 Regional Repository</li> </ul>	44,389	44,389 miles	5M gallons	\$42M
<b>4B Regional Repository at the Mac No. 1 Mine Site</b> Excavate down to 3 feet bgs	9 months	<ul style="list-style-type: none"> <li>Protective of human health and the environment</li> <li>Allows for restricted future use of the Eastern and Western Mine Areas</li> <li>Restricted future land use of Mac No. 1 Regional Repository</li> </ul>	34,592	34,592 miles	5M gallons	\$35.2M
<b>5 Regional Repository at the Black Jack No. 1 Mine Site</b> 5A) Excavate down to 8 feet bgs 5B) Excavate down to 3 feet bgs	5A) 10 months 5B) 9 months	<ul style="list-style-type: none"> <li>Protective of human health and the environment</li> <li>Allows for future use of the Eastern and Western Mine Areas</li> <li>Restricted future land use of Black Jack No. 1 Regional Repository</li> </ul>	5A) 44,389 5B) 34,592	5A) 377,306 miles 5B) 293,837 miles	5A) 5M gallons 5B) 4.5M gallons	5A) \$46.3M 5B) \$38.5M
<b>6 Excavation and Off-Navajo Nation Disposal at an existing licensed facility</b> 6A) Excavate down to 8 feet bgs 6B) Excavate down to 3 feet bgs	6A) 10 years 6B) 8 years	<ul style="list-style-type: none"> <li>Protective of human health and the environment</li> <li>Allows for future use of the Eastern and Western Mine Areas</li> <li>Licensed facility available for disposal services in Colorado</li> </ul>	6A) 44,389 6B) 34,592	6A) 25.7M miles 6B) 20M miles	6A) 55M gallons 6B) 43.5M gallons	6A) \$207M 6B) \$162M
<b>7 Consolidating and Cover Onsite in Eastern and Western Mine Areas</b>	10 months	<ul style="list-style-type: none"> <li>Protective of human health and the environment</li> <li>More future land restrictions compared to other alternatives</li> <li>Construction occurs on site, no waste is hauled off site</li> </ul>	13,570	6,785 miles	2.6M gallons	\$25.9M

**U.S. EPA's Recommended Alternative**

### Why is U.S. EPA Recommending Alternative 4A?

U.S. EPA is recommending Alternative 4A: Regional Repository at the Mac No. 1 Mine Site. This alternative protects the community and environment and consolidates mine waste from 5 sites into 2 footprints, limiting land future land restrictions to those two sites. Alternative 4A reduces community impacts along haul routes and the construction duration for the repositories is less than most alternatives. The cost of Alternative 4A is similar in cost to other cover in place alternatives and less than most of the other alternatives