REGION 9
SAN FRANCISCO, CA 94105

MEMORANDUM

DATE: September 30, 2025

SUBJECT: Approval and Funding for Non-Time Critical Removal Action at Section 32 and 33 Mines Site, Casamero Lake Chapter and Adjacent Private Land, Navajo Nation Indian Reservation, McKinley County, New Mexico

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TO: Michael Montgomery, Director
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PURPOSE

The purpose of this Action Memorandum is to request and document: (1) the selection of the non-time-critical removal action (NTCRA) described herein for the Section 32 and 33 Mines site (Site); (2) approval to spend up to $9.8 million to complete the NTCRA at the Site; and (3) approval of an emergency exemption from the 12-month and $2 million statutory limits on removal actions requiring obligations from the Fund.

The Site is located on the Navajo Nation within the Casamero Lake Chapter and privately-owned land in McKinley County, New Mexico and is comprised of two underground abandoned uranium mines (AUMs), waste piles and a consolidation stockpile (see Figure 1, Site Location Map). The removal action involves excavating waste from the Site and disposing of it off-site in a planned disposal cell that will be permitted by the State of New Mexico to hold radioactive waste at the Red Rocks Disposal Facility

located near Thoreau, New Mexico (see Figure 2, Proposed Removal Action Extent). The purpose of this removal action is to mitigate the immediate threats to human health and the environment posed by elevated levels of contaminants of concern (COCs), including radium-226 (Ra-226), manganese, selenium and uranium, and to achieve removal action goals. These COCs are hazardous substances as defined in Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Section 9601(14). The removal of hazardous substances will be undertaken pursuant to Section 104(a)(1) of CERCLA, 42 U.S.C. Section 9604(a)(1), and Section 300.415 of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Section 300.415.

This removal action is estimated to cost $9.8 million and take approximately four years to remove waste from the Site, followed by restoration and monitoring. Approval of this memorandum provides for an emergency exemption from the 12-month and $2 million statutory limits on CERCLA removal actions for non-NPL sites and approval to spend up to $9.8 million on this removal action. The Site's special account contains funds from the Tronox settlement (In re Tronox Inc., No. 09-10156) that will be sufficient to fund the removal action.

SITE CONDITIONS AND BACKGROUND

Site Status: Non-NPL
Category of Removal: Non-time-critical
Nationally significant: No
CERCLIS ID: NNN000908747
SITE ID: O9XN

Site Description

Physical Location

The Site is located nine miles north of Prewitt, New Mexico, exit on Interstate 40 at 35.490 degrees latitude and 108.017 degrees longitude. The Section 32 Mine is located on land owned by the United States and held in trust for allottees within the Casamero Lake Chapter of the Navajo Nation in the Eastern AUM Region, under the jurisdiction of USEPA Region 9, and the Section 33 Mine is located on privately-owned land adjacent to Section 32 in McKinley County, New Mexico, under the jurisdiction of USEPA Region 6. Pursuant to the NCP requirement for multi-regional responses, 40 C.F.R. Section 300.140, there shall be only one Remedial Project Manager at any time during the course of a response action for a cross-boundary site. On September 28, 2020, USEPA Region 6 transitioned lead authority for the Section 33 Mine to USEPA Region 9 to implement the cleanup with the Section 32 Mine.

The Site is accessed from Prewitt, New Mexico, by traveling north on paved County Road 19 and then east on an unpaved access road. The unpaved access road passes by multiple residences and ends along the southern boundary of the temporary stockpile at the Section 32 Mine. A fence borders the west boundary of the Section 33 Mine. The relatively flat terrain slopes 3 degrees to the west, starting at the base of a ridge 0.64 mile east of the Section 32 and 33 mines. An ore transfer station was located

on Section 32 but was cleaned up as part of the Time-Critical Removal Action performed in 2012 by USEPA Region 9.

Several residences are located near the Section 32 and 33 mines, with the closest residence being 0.5 mile to the west of the Site. The closest population center is the community surrounding the Casamero Lake Chapter House, which is located 1.4 miles northwest of the Site.

Site Characteristics

Portions of the Navajo Nation contain geologic formations rich in radioactive uranium ores. Beginning in the 1940s, widespread mining and milling of uranium ore on Navajo Tribal lands for national defense and energy purposes led to a legacy of AUMs. The Site contains two of approximately 523 AUMs located on or near the Navajo Nation.

The Site is located on the Colorado Plateau at an elevation of approximately 7,000 feet above mean sea level. The current topography of the Site is generally flat or gently sloping. The Site is sparsely vegetated and has a semiarid desert climate. The Colorado Plateau frequently experiences severe weather, including thunderstorms, strong winds, and blizzards. Days are typically clear or partly cloudy with monsoonal precipitation patterns in the summer and variable snowfall in the winter. Conditions are hot and dry with occasional high winds and strong thunderstorms during the summer; high winds and cold temperatures characterize the winter months. Rapid weather changes pose a danger of flash flooding. Flash floods occur locally as a result of thunderstorm activity between July and September.

The Section 32 and 33 mines and surrounding mesas are semiarid with low precipitation, high temperatures, and strong winds. Daily temperature and precipitation data from the Western Regional Climate Center station in nearby Thoreau, New Mexico are available from 1971 to 2010. Data from 2010 to the present from this station and other stations near the Section 32 and 33 mines were not available. The station data from 1971 to 2010 indicates the following weather trends:

Average annual precipitation (recorded) is 10.71 inches.
Average monthly maximum temperatures range from 43.2 degrees Fahrenheit (°F) in January to 85.5 °F in July.
Average minimum monthly temperatures range from 18.6 °F in January to 55.8 °F in July, with freezing being common from November through April.
In the summer, seasonal monsoon rains can occur from July until October, limiting use of access roads.

Pursuant to Atomic Energy Commission ore production records, approximately 38,137 tons of uranium ore were shipped from the Section 32 and Section 33 mines between 1960 and 1978. The Section 32 and 33 mines were deep, dry underground mines accessed through near-vertical mine shafts. The mines were likely developed using underground room-and-pillar mining techniques to extract lenticular ore bodies containing uranium and vanadium. The Section 32/33 Transfer Station, located south of the main mining area on Section 32, was used for both mines.

Much of the waste produced at the Section 32 and 33 mines was overburden that was piled near the mine shafts. Overburden is low-grade native material that miners had to get through to access the ore.

No surface features such as subsidence, fissures, or cracks that may indicate mine collapse were observed during the Weston removal site evaluation (RSE) investigation (Weston 2019).

The estimated volume of waste at the Section 32 and 33 Mines site is 67,000 cubic yards. Mine features at the Section 32 and 33 Mines include mine shafts and unmapped underground workings, waste piles, mine debris, a transfer station, and a haul road. Reclamation of some of these mine features occurred during the Time Critical Removal Action performed in 2012. During the removal action, mine waste at the Section 32 Mine and from the Section 32/33 Transfer Station was consolidated in a temporary stockpile at the Section 32 Mine in an area immediately to the west of the Section 33 Mine. Mine waste at the Section 33 Mine has not been reclaimed or addressed through interim actions. Section 33 Mine waste is located in five piles on flat terrain above a 1- to 3-foot slope. Surface water flow on the Section 33 Mine converges into a small ephemeral drainage that flows west toward the waste stockpiles and is head-cutting into the Section 33 Mine area.

In summary, waste is found in the following features and areas of the Section 32 and 33 Mines:

Unreclaimed Section 33 mine waste piles;
Section 32 mine and transfer station stockpile;
Reclaimed mine shafts (included in the footprint of other site features);
Contaminated surface soils surrounding site features resulting from the migration of mine waste; and
Haul road used to haul ore from the Site.

Removal Site Assessment

The nature and extent of contamination at the Site was characterized through numerous investigations, collectively referred to as the "Removal Site Assessment." The Removal Site Assessment for the Section 32 and 33 Mines include:

Preliminary assessment in 2009 to verify the location and type of waste present at each mine site.
Removal assessment in 2012 to determine the contamination extent and removal area. Activities included gamma scan surveys of soil and waste piles, sampling of soil and waste piles, and assessments of homesites near the Site. A cultural resource inventory survey was completed as part of the removal assessment, which included field surveys and the review of records at the Navajo Nation Heritage and Historic Preservation Department.
RSE field investigations in 2019 that included gamma radiation surveys and collection and analysis of surface soil samples. The gamma investigation included the Section 32 and 33 Mines, the haul road, and surrounding mesas.
A cultural resource inventory survey was completed on the Section 32 Mine and the western half of the Section 33 Mine and included with the RSE. The survey found various resources, some of which are in the removal action area, and recommended for avoidance.
Data gaps field investigation in 2022 that included gamma radiation surveys, collection and analysis of surface soil samples, establishment of background study areas, and a biological survey. The investigation covered the Section 32 and 33 Mines, haul road, and Section 32/33 Transfer Station.

Background studies were conducted at the Site in 2022 as part of the data gap investigation. Background study areas were sampled in the predominant geology of the site, Quaternary alluvium. The results found that the background threshold values (BTV) at the Site are 1.9 picocuries per gram (pCi/g) for Ra-226, 279 milligrams per kilogram (mg/kg) for manganese, 2.5 mg/kg for selenium, and

1.5 mg/kg for uranium. For purposes of the EE/CA, the BTV was used to represent background for delineating contaminated areas.

Release or Threatened Release into the Environment of a Hazardous Substance, Pollutant, or Contaminant

There is a release of hazardous substances into the environment at the Section 32 and 33 Mines site and there is a continued potential for further release. The Removal Site Assessment documents releases of hazardous substances, as defined by CERCLA, 42 U.S.C. Section 9601(14), including Ra-226, manganese, selenium, uranium 234 (U-234), uranium 238 (U-238) and total uranium, at the Site. The Removal Site Assessment also contains data characterizing the extent of contamination, identifies mine waste extent, evaluates contamination migration pathways, and supports USEPA's risk assessment and removal action decisions.

A Human Health Risk Assessment (HHRA) and an Ecological Risk Assessment (ERA) were performed for the Site to evaluate current and future human health and ecological risks under appropriate reasonable maximum exposure scenarios and based on the known ecosystems of the region. The HHRA and ERA were performed in accordance with the Navajo Abandoned Uranium Mines Program Risk Assessment Methodology, consistent with procedures outlined in USEPA guidance on risk assessment. They focus on the completed exposure pathways, primary risk drivers, and source material as indicated in USEPA's "Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA."

The HHRA evaluated whether site-related contaminants of potential concern (COPC) detected in soil pose potentially unacceptable risks to people undertaking Navajo-specific land uses at the Site now or in the future. The HHRA includes the following components: data evaluation and selection of COPCs, exposure assessment, toxicity assessment, and risk characterization. Any contaminant with a maximum detected value exceeding its COPC screening level was retained as a COPC for the HHRA risk calculations. The COPC screening levels were based on a $1x10^{-6}$ cancer risk and a hazard index of 0.1 for a Navajo resident.

The ERA evaluated the likelihood that the environment would be impacted as a result of exposure to one or more environmental stressors, such as radionuclides or metals. The objective of the ERA is to evaluate whether ecological receptors may be adversely affected by exposure to contaminants.

The results of the HHRA and ERA indicate that unacceptable risks are present at the Site for human and ecological receptors; human health risk COCs and contaminants of ecological concern (COEC) are Ra-226, manganese, selenium and uranium.

The cumulative cancer risk for the age-adjusted adult and child and noncancer hazard for the child receptor (or adult receptor in the case of the worker) for each exposure unit and soil interval are provided in Table 1. Details on the risk assessment can be found in the EE/CA.

Table 1. Cancer Risks and Noncancer Hazards

Exposure Unit	Soil Interval	Cancer Risk	Adult Noncancer Hazard	Child Noncancer Hazard
Section 32 Mine	Surface Soil	**1×10^{-2}**	**10**	**20**
	Subsurface Soil	**2×10^{-2}**	**10**	**20**
Section 33 Mine	Surface Soil	**2×10^{-3}**	0.5	**5**
	Subsurface Soil	**3×10^{-3}**	0.5	**5**

The removal action goals (RAGs) were derived for COCs. The RAG is the lower of the human health preliminary remediation goal (PRG) or preliminary ecological removal goal (PERG). When one or both PRGs or PERGs are less than the BTV, the BTV becomes the RAG. Table 2 summarizes the RAGs for the Site.

Table 2. Selected RAG for Each COC and COEC

COC/COEC	Unit	Exposure Unit	RAG	RAG Basis
Radium-226	pCi/g	Section 32 Mine, Section 33 Mine	1.9	BTV[1]
Manganese	mg/kg	Section 32 Mine	279	BTV[1]
Selenium	mg/kg	Section 32 Mine, Section 33 Mine	3.4	PERG
Uranium	mg/kg	Section 32 Mine	3.2	HH PRG (Navajo Resident)
		Section 33 Mine	16	HH PRG (Default Resident, Non-Navajo)

Notes:

[1] The BTV is used to represent background for delineating contaminated areas.

BTV Background threshold value
COC Contaminant of concern
HH Human health
mg/kg Milligram per kilogram
pCi/g Picocurie per gram
PERG Preliminary ecological removal goal
PRG Preliminary removal goal
RAG Removal action goal

National Priorities List Status

The Site is not on the NPL, nor is it proposed for inclusion on the NPL.

Maps, Pictures and Other Graphic Representations

Attachment II contains the Site location and feature maps.

Other Actions to Date

USEPA Region 9, in coordination with USEPA Region 6 and Navajo Nation Environmental Protection Agency (NNEPA), conducted a Time Critical Removal Action and reclamation work at the Section 32 portion of the Site in 2012. Three mine shafts were closed and waste rock from the Section 32 Mine and Section 32/33 Transfer Station was placed in a temporary onsite stockpile at Section 32. No previous actions have been taken at the Section 33 Mine.

State and Local Authorities' Roles

The Section 32 Mine is located on land owned by the United States and held in trust for allottees within the Casamero Lake Chapter of the Navajo Nation and the Section 33 Mine is located on private land in New Mexico. The Red Rocks Disposal Facility is located on private land owned by the Northwest New Mexico Regional Solid Waste Authority in New Mexico.

USEPA Region 9, in coordination with USEPA Region 6, has worked closely with New Mexico to ensure that the proposed waste disposal repository at the Red Rocks Disposal Facility described in Alternative 3, the removal action selected in this document, is a viable option under New Mexico state regulations. The New Mexico Energy, Minerals, and Natural Resources Department (EMNRD), Mining and Minerals Division (MMD) will be the state agency responsible for issuing a mining permit for design, construction, operation, and closure of the waste disposal repository at the Red Rocks Disposal Facility. The New Mexico Environment Department (NMED) will be the state agency responsible for issuing a groundwater protection permit to ensure that construction and operation of the waste disposal repository at the Red Rocks Disposal Facility is protective of groundwater and surface water, and to require long-term operation and maintenance of the waste disposal repository at the Red Rocks Disposal Facility be performed by the operator after closure to prevent groundwater discharges in perpetuity.

USEPA Region 9 completed government-to-government consultation with the Navajo Nation government regarding the selection of the removal action alternative described herein for the Site. The government-to-government consultation with Navajo Nation included two phases: (1) consultation on the draft EE/CA prior to USEPA's selection of a recommended alternative; and (2) consultation following the release of the final EE/CA with a recommended alternative and completion of the public comment period. These two phases of the government-to-government consultation were completed in June 2023 and November and December 2024, respectively.

THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Current Site conditions include direct exposure to hazardous substance above background levels and ongoing erosion, posing a threat of ongoing and future releases of hazardous substances including Ra-226, manganese, selenium and uranium and its progeny and associated gamma radiation. USEPA and the National Academy of Sciences, Committee on Biological Effects of Ionizing Radiation, have stated that radium is a known human carcinogen (see Agency for Toxic Substances and Disease Registry (ATSDR), "Radium ToxFAQs," CAS#: 7440-14-4 (July 1999)). Neither the National Toxicology Program, International Agency for Research on Cancer, nor USEPA have classified uranium with respect to

carcinogenicity. However, USEPA has identified uranium and its progeny as likely lung cancer contributors. Kidney damage has been seen in humans and animals after inhaling or ingesting uranium compounds. Inhaled insoluble uranium compounds can also damage the respiratory tract (ATSDR Toxicological Profile for Uranium, February 2013).

The likelihood of direct human exposure, via ingestion of soil and local foods and/or proximity to the hazardous substances, and the threat of future releases and migration of those substances pose an imminent and substantial endangerment to public health or welfare, or the environment based on the factors set forth in Section 300.415 of the NCP, 40 C.F.R. Section 300.415(b)(2).

These factors include:

Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants

As described in this Action Memorandum and in the Removal Site Assessment, elevated levels of Ra-226, manganese, selenium, and uranium have been documented in waste at the Site. Analytical results indicate that concentrations of Ra-226, manganese, selenium, and uranium identified in waste at the Site exceed risk-based cleanup levels.

The unreclaimed waste piles on Section 33 and the temporary Section 32 stockpile experience continued erosion resulting in direct contact exposure to contaminated soils at the Site which will continue to pose unacceptable risks to nearby residents and practitioners of Navajo lifeways if no removal action is taken. Residential areas exist within 0.5 miles of existing waste piles at the Site. The HHRA concluded that the waste remaining at the Site poses unacceptable risks to potential future residents at the Site and for practitioners of Navajo lifeways, including hunting, grazing livestock, and gathering herbs and plants.

High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate

Contamination in soils at the Site may migrate offsite due to erosion, high winds, and seasonal flash flooding from heavy rains. Continued erosion at the Site could expose additional contamination at the Site's surface and transport contamination on and off-site if an action is not taken. Nearby residences are at risk from migrating contamination. Details about substances of concern, concentrations, estimated quantities, realistic pathways and exposure scenarios, and how the levels exceed standards are provided in Sections A.3 and A.4 above.

Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released

Rainfall events could result in the transport of contamination from the Site towards residences and grazing areas and pose a continuing threat of migration. High soil erosion could result in contamination moving from the Site, constituting a release of hazardous substances and resulting in additional areas of contamination requiring interim cleanup actions. In addition, as noted above, exposed, surface

contaminants may migrate during frequent high wind events due to the propensity for uranium, Ra-226, and other contaminants to adhere to windborne dust particles.

Availability of other appropriate federal or state response mechanisms to respond to the release

The Navajo Nation (for the Section 32 mine) and the State of New Mexico (for the Section 33 mine) do not have the resources and/or capacity to address the contamination at the Site at this time.

ENDANGERMENT DETERMINATION

There are documented releases of hazardous substances from this Site. If not addressed by implementing the removal action selected in this Action Memorandum, the actual or threatened releases of hazardous substances from the Site may present an imminent and substantial threat to public health, or welfare, or the environment.

EXEMPTION FROM STATUTORY LIMITS

Pursuant to Section 104(c)(1)(A) of CERCLA, 42 U.S.C. Section 9604(c)(1)(A), additional funds shall not be obligated from the Fund for a specific removal action after $2 million has already been obligated from the Fund or 12 months have elapsed from the date of initial response to a release or threatened release of hazardous substances unless the President finds that: (1) continued response actions are immediately required to prevent, limit, or mitigate an emergency; (2) there is an immediate risk to public health or welfare or the environment; and (3) such assistance will not otherwise be provided on a timely basis. This authority was delegated from the President to the Administrator of USEPA by Executive Order 12580, 52 Fed. Reg. 2 923 (Jan. 29, 1987), from the Administrator of USEPA to the Assistant Administrator for Land and Emergency Management by USEPA Delegation 14-2 (1200 TN 531, Nov. 30, 2022), from the Principal Deputy Assistant Administrator for Land and Emergency Management to the Regional Administrator of USEPA Region 9 by USEPA Office of Land and Emergency Management Delegation 14-2 (1200 TN 531, July 19, 2024), and from the Regional Administrator of USEPA Region 9 to the Director of the Superfund and Emergency Management Division by Region 9 Delegation R9 14-2 (R9-1200 TN 2023-06, Feb. 28, 2025).

The Director of the Superfund and Emergency Management Division in USEPA Region 9 has authority to approve a specific removal action that exceeds the $2 million and/or 12 months statutory limits so long as the removal action is estimated to cost less than $100 million, as memorialized in the decision document, and the site is located within Region 9, unless there is a memorandum of agreement (MOA) that authorizes cross-boundary response. If the removal action invokes the emergency exemption and is estimated to cost greater than $12 million, the Assistant Administrator of the Office of Land and Emergency Management must provide approval. Since this removal action is estimated to cost less than $12 million, the Director of the Superfund and Emergency Management Division in USEPA Region 9 can approve this Action Memorandum. Further, even though this is a cross-boundary site located in USEPA Regions 6 and 9, since USEPA Region 6 formally transferred lead authority for the Site to USEPA Region 9, the Region 9 Director of the Superfund and Emergency Management Division has authority to approve of a response action for the Site that exceeds the 12-month and $2 million statutory limits.[1]

[1] Memorandum from USEPA Region 6 Administrator to USEPA Region 9 Administrator, "Transition of Lead Authority for the Tronox Navajo Area Uranium Mines Sections 32 and 33 Mines Site," Sept. 28, 2020.

Since this removal action is estimated to cost $9.8 million and take more than one year to complete, USEPA Region 9 requests approval of an emergency exemption from the 12-month and $2 million statutory limits on Fund-financed removal actions from the USEPA Region 9 Director of the Superfund and Emergency Management Division. As described in more detail below, the Site satisfies the requirements for an emergency exemption because: (1) it contains approximately 67,000 cubic yards of eroding mine waste that currently migrates through wind and water transport, which the removal action will safely and permanently address through disposal, thereby preventing further erosion and exposure; (2) the mine waste rock contains unsafe levels of hazardous substances that pose potentially unacceptable health risks to nearby residents and may further contaminate the environment; and (3) the Navajo Nation and State of New Mexico do not have the resources or capacity to address the Site in a timely manner.

Emergency Exemption Conditions

This request for an emergency exemption is based on Site-specific information. Approximately 67,000 cubic yards of mine waste is located in several areas across the Site and poses an immediate risk to public health and welfare, and to the environment. Homes are located within 0.5 miles of the temporary Section 32 waste stockpile and the unreclaimed Section 33 waste piles. An interim response action was completed in 2012 to provide temporary protections from eroding waste piles on Section 32 and at the Section 32/33 Transfer Station, but precipitation and wind are likely to cause further erosion and potentially releases. A response action is required to prevent or mitigate an emergency caused by eroding mine waste piles containing hazardous substances being located near homes.

Immediate Risk to Public Health or Welfare or the Environment

The Site poses an immediate risk to the public health, welfare, and the environment because of continued erosion of existing waste piles that contain hazardous substances, including Radium-226, manganese, selenium and uranium at levels that pose unacceptable risks (see Section II.A.2 and II.A.3). The Site contains approximately 67,000 cubic yards of waste, the majority of which is located in above-grade waste piles and the Section 32 waste stockpile. The 2012 Time Critical Removal Action provided only temporary safeguards against migration of contaminants and exposure risk and only addressed a portion of the Site. The Site is exposed to frequent winds and storms throughout the year that may continue to result in the offsite migration of contamination through water and wind transport mechanisms. Water and wind transport may result in hazardous substances being ingested by nearby residents and visitors, contaminating local soil, livestock, and other food sources, and entering waterways.

Continued Response Actions Immediately Required to Prevent, Limit, or Mitigate an Emergency

As noted above, exposed waste piles at the Site pose an ongoing threat to public health, welfare and the environment because high levels of hazardous substances, including Radium-226, manganese, selenium, and uranium have been and are likely to continue being released through erosion, thereby posing risks to nearby residents, visitors and the environment. If approved, this removal action will excavate and remove 67,000 cubic yards of mine waste from the Site for disposal off-site. After the hazardous mine waste is removed, the Site will be regraded, erosion and stormwater controls will be

implemented, and the impacted areas will be revegetated. The excavated waste will be disposed of at the Red Rocks Disposal Facility in a disposal cell designed and constructed to hold radioactive waste, thereby preventing exposure to the communities surrounding the Site and the communities along the haul route and near the disposal cell. The Red Rocks Disposal Facility will be permitted by the State of New Mexico and monitored and maintained in perpetuity by the facility operator to ensure continued prevention of migration of contaminants.

Contaminated mine waste must be addressed at the Site to eliminate the risks to nearby residents and visitors who may ingest or inhale contamination, and to prevent further contamination of the environment. If the emergency exemption from the $2 million and 12-month limits is not granted, USEPA will not be able to conduct the NTCRA due to the time and costs required to complete the removal action, and risks posed by erosion and contaminant migration at the Site will not be addressed. Due to the frequency of wind and storm events and ongoing erosion at the Site, failing to implement a permanent solution to address the mine waste increases the risk of migration off-site, potentially resulting in exposure of nearby residents, visitors, food sources and waterways.

Assistance Will Not Otherwise be Provided on a Timely Basis

Eroding mine waste piles threaten to expose nearby residents, visitors and the environment to hazardous substances being transported via wind and water, and to the best of USEPA's knowledge, neither the Navajo Nation nor the State of New Mexico have the resources or capacity to mitigate these threats in a timely manner. New Mexico is working with USEPA to support the removal action by advising on the permitting process and requirements for the disposal cell at the Red Rocks Landfill, which is being managed by the Northwest New Mexico Regional Solid Waste Authority. USEPA has also conducted government-to-government consultations with the Navajo Nation on this removal action. Given the emergency situation outlined above, USEPA is seeking to initiate the removal action in the near term. The special account funds allocated to the Site are currently adequate to cover the estimated total cost of this action.

PROPOSED ACTIONS AND ESTIMATED COSTS

Removal Action

Removal action description

USEPA selects Alternative 3 from the EE/CA as the removal action for the Site. Implementing Alternative 3 will require removing all waste exceeding RAGs from the Site and transporting and disposing of it in a new, state-permitted Red Rocks Disposal Facility, located 6 miles east of Thoreau, New Mexico. The Red Rocks Disposal Facility will be permitted, constructed, operated, maintained and monitored for the management of waste from the Section 32 and 33 Mines site. This removal action addresses all existing releases at the Site and will prevent future releases of hazardous substances into the environment. It will also prevent direct exposure of residents and visitors to hazardous substances at concentrations that exceed risk-based RAGs in mine waste currently located at the Site. Once natural vegetation is reestablished, USEPA will consider the Site to be safe for unrestricted use. The removal action will be implemented in two phases as described below.

Removal Action Phase 1: State Permitting and Construction of the Waste Disposal Repository at the Red Rocks Disposal Facility

The removal action requires a one- to three-year State permitting and facility construction period prior to commencement of waste removal from the Site. This phase involves the Northwest New Mexico Regional Solid Waste Authority applying for and receiving permits from the State of New Mexico's EMNRD MMD and NMED and constructing the Red Rocks Disposal Facility.

The Northwest New Mexico Regional Solid Waste Authority will need to secure a mining permit from EMNRD MMD. The State's mining permit focuses on design, construction, operation, closure, and surface reclamation of the waste disposal repository. EMNRD MMD will hold financial assurances from the facility operator and monitor the Red Rocks Disposal Facility for at least 12 years following its final closure. The EMNRD MMD mining permit application process requires public participation with the option of a public hearing, if requested.

The Northwest New Mexico Regional Solid Waste Authority will also need to secure a groundwater protection permit from NMED. The State's groundwater protection permit process requires the applicant to prepare and submit baseline groundwater quality data, site geology and hydrology information, a repository design, an operations and maintenance plan, a groundwater protection plan, and a closure plan. NMED's groundwater protection permit typically requires two public notice periods: one when the application is received; and one when the draft permit is published. The NMED groundwater protection permit does not expire, allowing monitoring and maintenance of the waste disposal repository to continue in perpetuity.

Following receipt of the two state permits, the Northwest New Mexico Regional Solid Waste Authority will construct the new waste disposal repository, which will be separate from the existing solid waste Subtitle D landfill located at the Red Rocks Landfill. The Northwest New Mexico Regional Solid Waste Authority will charge a tipping fee for disposal of mine waste to recover costs associated with permitting, construction, operation, closure, and long-term monitoring and maintenance of the waste disposal repository.

Removal Action Phase 2: Waste Removal, Transportation, and Disposal Activities

Once the Red Rocks Disposal Facility is ready to accept waste and USEPA Region 6 determines that the facility is in compliance with the Off-Site Rule (see 40 C.F.R. Section 300.440), excavated waste from the Section 32 and 33 Mines site will be transported to the Red Rocks Disposal Facility. The preferred haul route for transporting waste from the Site to the Red Rocks Disposal Facility exits the Site and then proceeds south on County Road 19 and then west on Ranch Road to Red Rocks Landfill, passing through the Casamero Lake community. The total one-way distance of the preferred haul route is approximately 13 miles (see Figure 3 in Attachment II for a map of the preferred and alternative haul routes and an analysis of waste transport from the Site to the Red Rocks Disposal Facility). Transportation of the waste from the Site to the Red Rocks Disposal Facility is estimated to take approximately four to five months.

Following complete removal of all waste from the Site, the Site will be restored as closely as possible to natural conditions. This will involve site contouring, erosion control, and revegetation, then monitoring and maintaining the Site to ensure vegetation is established. The post-waste removal work may also

involve repairing any roads that may have been damaged during the excavation and reinforcing structures, as needed.

Post-Removal Action: Monitoring and Maintenance at the Red Rocks Disposal Facility

Once the Red Rocks Disposal Facility is finished receiving waste from the Section 32 and 33 Mines site (and the Quivira Mines site)[2], the Northwest New Mexico Regional Solid Waste Authority will close the waste disposal repository according to State permit requirements and initiate long-term monitoring and maintenance of the repository with the State oversight and USEPA's technical assistance. Monitoring will involve regular groundwater well sampling and inspections of run-on control and run-off management systems to ensure no migration is occurring. If an evapotransporative (ET) cover is established at the Red Rocks Disposal Facility, monitoring of its function and effectiveness will also be conducted by the facility operator. Long-term operation and maintenance for the Red Rocks Disposal Facility will be the responsibility of, and performed by, the Northwest New Mexico Regional Solid Waste Authority in perpetuity, as required by State of New Mexico permits. These permits will stipulate the requirements for financial assurance for the facility operator. The Northwest New Mexico Regional Solid Waste Authority will be responsible for costs associated with long-term compliance with the permit requirements.

Consideration of Treatment Technologies

CERCLA and the NCP express a preference for the treatment of contaminated materials to reduce toxicity, mobility, or volume. USEPA evaluated treatment options and found that currently there are no waste treatment technologies available to effectively address the Ra-226, manganese, selenium, and uranium in soils at the Site. In 2023, a treatability study of High-Pressure Slurry Ablation (HPSA) was completed at three AUMs on Navajo Nation and concluded that the HPSA technology alone would not achieve RAGs at those sites.[3] Because the waste at the Section 32 and 33 Mines site is similar to the waste at two of the sites included in the treatability study and because the RAGs for the Site are similar to the RAGs at those sites, HPSA was not selected for further evaluation in the Section 32 and 33 Mines site EE/CA and was not selected for inclusion in the removal action.

Contribution to Remedial Performance

The Site is not listed on the NPL, nor is it proposed for inclusion on the NPL. USEPA has identified imminent threats posed by Ra-226, manganese, selenium, U-234 and U-238 at the Site. It is expected that this NTCRA will remove the threats of direct contact with hazardous substances and inhalation or ingestion of hazardous substances from the mine waste and contaminated soils at the Site. The

[2] The Quivira Mines Site is a separate and distinct abandoned uranium mine site which requires a separate removal action and action memorandum. On Jan. 6, 2025, the Assistant Administrator of USEPA's Office of Land and Emergency Management signed the Action Memorandum for the Quivira Mines Site, approving the selection of a removal action that will involve excavating waste from the Quivira Mines Site and disposing of it in the same disposal repository at the Red Rocks disposal facility that is being selected for disposal of the waste from the Section 32 and 33 Mines Site in this Action Memorandum.

[3] *See* Final High-Pressure Slurry Ablation Treatability Study Report, submitted to USEPA by Tetra Tech, Inc. and Disa Technologies, Inc., Dec. 2023, https://www.epa.gov/system/files/documents/2024-01/raes-68he0923d0002-task-0004-nnaum-final-high-pressure-slurry-ablation-treatability-study-report-2023-12.pdf.

selected removal action described in this Action Memorandum is anticipated to be the final response action at this Site.

Community Engagement During the Engineering Evaluation/Cost Analysis

This section summarizes USEPA's community involvement activities leading up to the issuance of the EE/CA for public comment, includes a brief description of USEPA's government-to-government consultation with the Navajo Nation, summarizes the public comments received on the EE/CA during the public comment period, and provides the basis for selecting Alternative 3 as the removal action in this Action Memorandum.

Community Involvement Activities

Since 2019, USEPA has worked closely with the communities located near both the Quivira Mines Site and Section 32 and 33 Mines site to develop and evaluate removal action alternatives for the two sites. Because similar alternatives were recommended for both sites, many of the community involvement activities addressed both sites. Prior to 2019, community involvement activities focused on interim actions and site characterization. The latest community involvement activities involved meeting with individual communities to discuss the removal action alternatives and conducting the government-to-government consultation process previously agreed to by both the USEPA and the Navajo Nation government.

Community outreach activities included, but were not limited to, the following community meetings and open houses attended by USEPA and NNEPA:

10/18/2022: The USEPA presented EE/CA alternatives to the Casamero Lake community concurrently with providing the draft EE/CA to the Navajo Nation government for review and comment.

March 2023: USEPA completed a Community Involvement Plan (CIP) for the Section 32 and 33 Mines site and presented the plan to the Casamero Lake community.

8/6 and 8/7/2023: The USEPA presented Alternative 3 and the preferred and alternate haul routes to the Thoreau community and conducted a Red Rocks Landfill tour for community members.

11/8 and 11/9/2023: The USEPA presented Alternative 3 and the preferred and alternate haul routes through a presentation and with posters to the Casamero Lake community.

12/12 to 12/15/2023: The USEPA held three open house listening sessions in the Baca/Prewitt and Thoreau communities to gather public input on the EE/CA alternatives and haul routes, and to hear questions and concerns from community members. The USEPA presented posters describing Alternative 3 and preferred and alternate haul routes to the Thoreau and Baca Prewitt Chapters. USEPA used the information gathered from these listening sessions to improve aspects of the EE/CA and the proposed haul routes.

1/22 to 1/26/2024: The USEPA gave presentations on Alternative 3 and the recommended and alternate haul routes in six Chapters (Baca/Prewitt, Casamero Lake, Pinedale, Standing Rock, Thoreau and Church Rock) answered questions, accepted comments, and listened to concerns raised by the public.

Government-to-Government Consultation between the Navajo Nation Government and USEPA

The Navajo Nation and USEPA developed and agreed upon a two-phase government-to-government consultation process where USEPA first consults with the Navajo Nation on EE/CA cleanup alternatives before selecting a recommended alternative, and then USEPA consults with the Navajo Nation again

after selecting a recommended alternative and soliciting public comments during a formal public comment period. Tribal consultation is conducted between the USEPA Region 9 Superfund and Emergency Management Division and the Navajo Nation Office of the President and Vice President (OPVP) and may include representatives from the Navajo Nation Council and other agencies, as needed. Tribal consultation is not open to the public.

On June 20, 2023, the USEPA and the Navajo Nation government conducted the first of the two phases of government-to-government consultation to present the cleanup alternatives in the Section 32 and 33 Mines site EE/CA prior to selecting a recommended alternative and publishing the EE/CA for public comment.

On November 8 and December 2, 2024, the USEPA held the second phase of the government-to-government consultation to discuss USEPA's recommended removal action, Alternative 3, for the Site and the public comments USEPA received. The primary issues raised during the second phase of consultation included the location of the proposed Red Rocks Disposal Facility and the impacts that might have on allottee mineral rights. The NNEPA invited the U.S. Bureau of Indian Affairs to the consultation meetings to discuss the allotment and mineral rights issues. The Navajo Nation representatives also raised concerns about impacts to roadways and requested that they receive general updates on the permitting as it proceeds. Several other points of discussion raised by the Navajo Nation concerned broader technical and policy issues that impact cleanup decisions at abandoned uranium mine sites more generally. These topics included how to employ HPSA as a treatment technology at mine sites and how to address areas of natural-occurring radioactive materials left behind after cleanup. No specific objections to the selected alternative were raised. USEPA agreed to provide updates on several aspects of the cleanup action after issuing this Action Memorandum identifying the selected removal action and during the permitting and design process.

EE/CA Publication and Public Comment Period

After completing the community outreach and the first phase of government-to-government consultation described above, the USEPA published EE/CAs for both the Quivira Mines site and the Section 32 and 33 Mines site on March 23, 2024, and held a public meeting the same day to start the public comment period for the two sites. While the Quivira Mines site is a separate site from the Section 32 and 33 Mines site, both EE/CAs considered similar alternatives and recommended selecting alternatives involving disposal of waste at the Red Rocks Landfill Disposal Facility.

The March 23, 2024 public meeting was held at the University of New Mexico campus in Gallup, New Mexico. Over 100 individuals attended the public meeting and it lasted for five hours. USEPA used a court reporter to transcribe all comments made during the meeting and considered them in its review of public comments received regarding the EE/CAs. The USEPA provided pre-paid postcards, physical mail and email addresses for the USEPA project management staff, and a toll-free voicemail phone number for community members to provide comments on the EE/CAs and recommended alternatives.

On May 15, 2024, USEPA, NNEPA, and State of New Mexico representatives gave a presentation at the Thoreau High School, located in Thoreau, New Mexico, regarding the Quivira Mines and Section 32/33 Mines sites EE/CAs. Over 200 students attended the school-wide assembly.

The USEPA also advertised the availability of the EE/CAs after they were published, the public meeting date, time, and location, and shared other ways for the public to voice opinions, concerns, and submit comments. USEPA's advertising efforts included making radio announcements on KTNN, KGLP, and KGAK, publishing newspaper advertisements in the Gallup Independent and the Navajo Times, and distributing flyers in the Gallup, Red Water Pond Road, Pipeline Road, and Thoreau communities and to the Thoreau, Baca Prewitt, Casamero Lake, and Church Rock Chapters. Handouts, which included fact sheets on the cleanup alternatives and phone and email contact information for the USEPA project management staff, were distributed at the meetings and added to information repositories. The public comment period for the Section 32/33 Mines site EE/CA opened on March 23, 2024, and closed on May 22, 2024.

Summary of Public Comments on the EE/CA

The USEPA received comments from community members and interested parties at the following venue and in the following formats:

March 23, 2024, public meeting at the University of New Mexico in Gallup: In-person and by phone and video call; and
Via postcards, toll-free voice mail, email, and USPS mail sent to the USEPA.

USEPA received 69 comments regarding the Section 32 and 33 Mines site EE/CA. The USEPA carefully reviewed each comment and provided a response addressing each comment directly or as part of a group of similar comments (see Attachment V, Response to Comments). Many comments were not specific to the Section 32 and 33 Mines site or the EE/CA and instead provided general input about community recommendations and concerns about the AUMs. Comments specific to the Section 32 and 33 Mines site centered around support for and opposition to the recommended cleanup alternative, support for and opposition to cleanup alternatives not recommended, and comments about the cleanup alternatives evaluated in the EE/CA. Comments also posed recommendations and concerns about engagement with communities on Navajo Nation, with a particular focus on the mine-impacted communities located around the Section 32 and 33 Mines site and the Thoreau community, where the recommended Red Rocks Disposal Facility is proposed to be located.

USEPA received comments from Thoreau High School students which were submitted as part of a class assignment. Comments from the Thoreau High School students all opposed the selection of Alternative 3. USEPA received 43 comments supporting the selection of Alternative 3. A majority of the supportive comments were from members of the Red Water Pond Road and Pipeline Road communities, which are the communities most directly impacted by the Quivira Mines site.

A detailed record of all comments received from the public meeting, including through postcards and USPS mail, emails, and toll-free voice mails, is included in the Administrative Record for the Section 32 and 33 Mines site EE/CA and the Responsiveness Summary.

Selected Action (Alternative 3)

This Action Memorandum is informed by the EE/CA and the Administrative Record for this NTCRA. The EE/CA considered numerous removal action alternatives to address the mine waste at the Site, including the application of waste treatment technologies. All but four alternatives were screened out

from further evaluation. The remaining four alternatives were evaluated pursuant to criteria established by the USEPA, effectiveness, implementability, and cost. These alternatives included:

Alternative 1: No Action;
Alternative 2: Consolidate and Cap All Waste on Site;
Alternative 3: Dispose of All Mine Waste Off-Site at the Red Rocks Disposal Facility; and
Alternative 4: Dispose of All Mine Waste Off-Site at a Resource Conservation and Recovery Act (RCRA) C or Low-Level Radioactive Waste Facility (LLWF).

The selected alternative is Alternative 3: Dispose of All Mine Waste Off-Site at the Red Rocks Disposal Facility. This alternative was selected based on an evaluation of: effectiveness (overall protection of human health and the environment); compliance with applicable or relevant and appropriate requirements (ARARs), and other criteria, advisories, and guidance; long-term effectiveness and permanence; reduction in toxicity, mobility, or volume through treatment; and short-term effectiveness, implementability (technical feasibility; administrative feasibility; and Tribal and/or state acceptance; and community acceptance), and cost.

USEPA's evaluation of these criteria for Alternative 3 is summarized below:
Alternative 3 provides protection of human health and the environment by excavating waste and transporting it off-site to a newly permitted facility, located at the Red Rocks Landfill property, that will be designed and constructed to manage radioactive waste material.
Alternative 3 significantly minimizes the potential long-term human and environmental exposure to mine waste rock by removing all waste from the Site and taking it to a newly permitted and designed off-site disposal facility. The Site would need no land use restrictions following the complete implementation of Alternative 3.
Alternative 3 will be constructed and implemented in accordance with all ARARs.
Alternative 3 will ensure long-term effectiveness by requiring the installation, management, and maintenance of an ET cover at the Red Rocks Disposal Facility to prevent infiltration of precipitation into the mine waste cells.
Alternative 3 will also protect groundwater because there is a layer of low-permeability shale bedrock between the proposed Red Rocks Disposal Facility and groundwater.
Alternative 3 has the potential for increased short-term risk due to offsite transportation of the mine waste. Short-term environmental impacts could occur from excavation, hauling and placement of waste at the Red Rocks Disposal Facility. These risks include traffic accidents, residual track-in and track-out effects of soil and mud, noise, disturbed vegetation and dust generation. Other environmental impacts include additional fuel burning and releasing of emissions that would lead to increased climate impacts.
Alternative 3 is technically feasible and would use conventional techniques, materials and labor for excavation and associated activities. The Site is readily accessible. Excavation would be scheduled and performed to maximize direct loading and ensure worker and public safety. Engineering controls for fugitive dust and Site air monitoring would be used to control potential exposures to sensitive receptors, such as nearby residents.
Alternative 3 is considered effective when balancing protection of human health and the environment, future reuse, effectiveness (long-term and short-term) and community acceptance.

While not the least costly alternative, Alternative 3 provides better long-term effectiveness and technical feasibility due to complete removal of all waste from the Site and the assurance that the Red Rocks Disposal Facility will be monitored and maintained under state permits in perpetuity by the facility operator. In addition, the geologic and geographic conditions at the Red Rocks Disposal Facility location provide for better long-term waste disposal and management. The Red Rocks Disposal Facility is also further from residential areas and has pre-existing access restrictions and restrictions on future residential development.

Below is a summary chart from the EE/CA comparing the four alternatives evaluated, followed by a more detailed comparative analysis of the alternatives using the USEPA's evaluation criteria:

	Alternative	Attainment of Threshold Criteria	Effectiveness	Implementability	Costs (Million)
1	**No Action**	Not Protective. Does not meet ARARS	Short-Term: Average Long-Term: Very Poor	Tech: Very Good Admin: Very Good	$0
2	**Consolidate and Cap All Waste On Site**	Protective. Meets ARARs	Short-Term: Good Long-Term: Good	Tech: Good Admin: Good	$4.4
3	**Dispose of All Waste Off Site at Red Rocks Disposal Facility**	Protective. Meets ARARs	Short-Term: Average Long-Term: Very Good	Tech: Very Good Admin: Average	$9.8
4	**Dispose of All Waste Off Site at RCRA C or Low-Level Radioactive Waste (LLRW) Facility**	Protective. Meets ARARs	Short-Term: Very Poor Long-Term: Very Good	Tech: Very Good Admin: Good	$36.4

Threshold Criteria and Effectiveness Analysis

The EE/CA provides an evaluation of the threshold criteria and a comparative analysis of the effectiveness of the removal action alternatives considered for addressing contamination at the Site:

Alternative 1, the no action alternative, is not protective because it does not protect those exposed to the health risks identified in the HHRA and is therefore eliminated from further consideration.

Alternatives 2, 3 and 4 are anticipated to provide adequate protection to human health and the environment.

Both Alternatives 3 and 4 are long-term effective since these alternatives eliminate exposure at the Site by removing waste and are expected to comply with ARARs.

Alternative 3 was rated average for its short-term effectiveness due to relatively low risks to workers onsite and exposure to human health risks during the extended period of waste removal and transport to the waste disposal repository at the Red Rocks Disposal Facility.

Alternative 4 was rated very poor for short-term effectiveness because of the increased water use for dust control and community disturbance over a longer project duration, and very large energy requirements and greenhouse gas production as a result of the long waste hauling distances to distant approved disposal facilities. Increased risk of transport accidents also contributed to the very poor rating.

Based on the summary above and the detailed analysis in the EE/CA, Alternatives 2 and 3 received the most favorable ratings for overall effectiveness (short- and long-term). Alternative 4 did not rate as effective as other alternatives due to the significantly longer haul distance.

Implementability Analysis

The EE/CA provides a comparative analysis of the implementability of the removal action alternatives considered. For technical feasibility:

Alternative 1 is rated very good, since it does not require any removal activity or maintenance.

Alternative 2 is rated good because this alternative involves implementation with available materials and uses standard construction practices. However, available space at or near the Site is limited and it would be geographically challenging to place a permanent repository.

Alternative 3 is rated very good, since this alternative involves implementation with materials that are readily available and uses standard construction practices and removes all waste from the Site to a facility that will be designed and constructed specifically to accept this waste. However, this alternative does require the permitting, design and construction of a new waste disposal facility.

Alternative 4 is rated very good, since this alternative involves implementation with available materials and standard construction practices and waste will be taken to an existing facility that accepts this type of waste.

For administrative feasibility:

Alternative 1 is rated very good because implementation would not have additional administrative requirements.

Alternative 2 is rated good because implementation would require extensive and active post-removal site controls as well as land use restrictions where waste is left in place. Geologic and geographic conditions at the Site complicate long-term maintenance of an on-site repository.

Alternative 3 is rated average, due to the needed planning, permitting, and constructing of the Red Rocks Disposal Facility. Additionally, contracting efforts with multiple agencies and private entities (primarily related to off-site transport and disposal), and interaction with a licensed facility and multiple on- and off-Navajo Nation authorities will also be required.

Alternative 4 is rated good because only RCRA Subtitle C and LLRW facilities are already permitted to accept waste such as that at the Site, but additional administrative considerations such as annual disposal limits or concentration limits may impose additional constraints and needed actions.

Based on the summary above and the individual ratings presented in the EE/CA, Alternative 1 is the most implementable, followed sequentially by the other three alternatives, which have similar levels of implementability. Alternative 4 has very poor short-term effectiveness because of the significant predicted roadway accidents and fatalities due to the significantly longer distance to the disposal facility but is comparable in long-term effectiveness with Alternative 3 because it removes all waste from the Site.

Cost Analysis

The EE/CA provides a comparative analysis of the cost of the response alternatives considered for addressing contamination at the Site:

Alternative 1 has no associated cost because no action is taken.

Alternative 2 would cost $4.4 million dollars (net present value).

Alternative 3 would cost $9.8 million dollars (net present value).

Alternative 4 would cost $36.4 million dollars (net present value).

In summary, Alternative 4 is significantly (more than three times) more costly than Alternatives 2 and 3 and provides no greater protectiveness.

Applicable or Relevant and Appropriate Requirements (ARARs)

A complete list of ARARs for this action is provided as Attachment III.

Section 300.415(j) of the NCP provides that removal actions must attain ARARs to the extent practicable, considering the exigencies of the situation. No such exigencies exist for this action and all ARARs will be complied with.

Section 300.5 of the NCP defines applicable requirements as cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, or contaminant, remedial action, location, or other circumstances at a CERCLA site.

Section 300.5 of the NCP defines relevant and appropriate requirements as cleanup standards, standards of control and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, or contaminant, remedial action, location, or other circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site and are well-suited to the particular site.

Section 300.400(g)(3) of the NCP comments that in addition to applicable or relevant and appropriate requirements, the lead and support agencies may, as appropriate, identify other advisories, criteria, or guidance to be considered for a particular release. The "to be considered" (TBC) category consists of advisories, criteria, or guidance that were developed by USEPA, other federal agencies, or states that may be useful in developing CERCLA remedies.

Pursuant to CERCLA Section 121(e), CERCLA onsite response actions do not require permitting; only substantive requirements are considered as possible ARARs. Administrative requirements such as approval of, or consultation with administrative bodies, issuance of permits, documentation, reporting, record keeping, and enforcement are not ARARs for the CERCLA actions confined to the Site.

Project Schedule

The implementation of Alternative 3, excavation of waste from the Site and disposal at a newly constructed Red Rocks Disposal Facility, will take approximately one to three years to reach completion, not including the revegetation and erosion control to restore the Site following waste removal. The removal action will be carried out in two phases. The following table provides the timeframes estimated for each phase.

Phase	Description	Estimated Duration (Years)
1	Permitting and Construction of the Red Rocks Disposal Facility	1-3
2a	Removal of Waste from the Site and Transport to and Disposal at the Red Rocks Disposal Facility	0.4 (4-5 months)
2b	Establish Vegetation and Control Erosion	5-6

Estimated Costs

The total cost for Alternative 3 is estimated to be $9.8 million or $144 per cubic yard. This cost assumes the Red Rocks Disposal Facility would be responsible for the long-term maintenance of the waste it receives. A breakdown of the major cost categories associated with implementing Alternative 3 for the Site is presented in Table 3.

Table 3. Alternative 3 Cost Breakdown

Cost Component Section 32 and 33 Mines	
Excavated Surface Area (acres)	24
Excavated Volume (bank cubic yards)	67,000
Capital Costs	
Field Overhead and Oversight	$306,000
General Site Work	$286,800
Earthwork	$783,000
Transportation and Disposal	$5,567,000
Subtotal Direct Capital Costs	$6,944,000
Indirect Capital Costs	$405,000
Contingency Allowance (15%)	$1,102,350
Total Capital Costs	**$8,451,000**
Maintenance Costs	
Present Worth of 30 Years Maintenance at a Discount Rate of 3.5%	$1,091,000
Contingency Allowance (25%)	$273,000
Total Maintenance Costs	$1,364,000
Total Costs	**$9,815,000**

USEPA allocated funds received from the Tronox settlement to the Site which it intends to use to perform this removal action. Kermac Nuclear Fuels Corporation, a subsidiary of Kerr-McGee Oil Industries, Inc. until 1964 when it merged into Kerr-McGee Oil Industries, Inc., which later changed its name to Kerr-McGee Corporation, conducted exploration and development of the Section 32 and 33 mines and is a potentially responsible party as a former owner and/or operator of the Site. In the early 2000s, Kerr-McGee Corporation separated its oil and gas assets from its legacy liabilities and renamed the company holding the legacy liabilities, Tronox, Inc. Anadarko Petroleum Corporation acquired Kerr-McGee Corporation's oil and gas assets in 2006 and Tronox filed for bankruptcy in 2009. During Tronox's bankruptcy proceedings, the United States, Navajo Nation, and other parties intervened seeking response costs for environmental cleanups at sites formerly operated by Kerr-McGee Corporation, alleging that Tronox had fraudulently transferred assets so it would be unable to pay to resolve its environmental liabilities. In November 2014, the U.S. District Court for the Southern District

of New York approved a settlement agreement to resolve fraudulent conveyance claims against Kerr-McGee Corporation and related subsidiaries of Anadarko Petroleum Corporation (see In re Tronox Inc., No. 09-10156 (Bankruptcy, Southern District of New York, Nov. 23, 2010)). In January 2015, the Tronox settlement agreement went into effect and, pursuant to the agreement, Anadarko Petroleum Corporation paid $5.15 billion plus interest to a litigation trust, 20 percent of which (approximately $915 million) was designated for the cleanup of more than 50 AUMs that were operated, and subsequently abandoned, by Kerr-McGee Corporation in and near the Navajo Nation, including the Section 32 and 33 Mines site.[4]

EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the Site conditions, the nature of the hazardous substances documented at the Section 32 and 33 mines, and the potential exposure pathways to nearby populations described in Sections III and IV above, actual or threatened releases of hazardous substances from the Site will continue to present an imminent and substantial endangerment to public health or welfare or the environment. Unless the removal action selected in this Action Memorandum is implemented, migration of hazardous substances off-site and potential exposures will continue, and interim actions will be required to control such migration and exposure.

OUTSTANDING POLICY ISSUES

No outstanding policy issues with respect to the Site or this removal action have been identified.

ENFORCEMENT[5]

At this time, USEPA anticipates that the removal action will be conducted by USEPA using funds from the Tronox special account, as noted above. To the extent USEPA is able to identify any viable PRPs during implementation of the removal action, USEPA will pursue PRP take-over of the ongoing action or cost recovery. The total USEPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be $9.8 million.

[4] USEPA, Tronox Navajo Area Uranium Mines and Quivira Mine Site FY2024 Financial Report (June 2025).

[5] Direct costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only, and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recover.

RECOMMENDATION

This decision document represents the selected removal action for the Section 32 and 33 Mines site, located in the Casamero Lake Chapter of the Navajo Nation (Section 32) and on adjacent private land in McKinley County, New Mexico (Section 33), which was developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the Administrative Record for the Site.

Conditions at the Site meet the criteria for a removal action defined in Section 300.415(b)(2) of the NCP and the CERCLA Section 104(c) emergency exemption from the 12-month and $2 million statutory limitations, and I recommend you approve the removal action and the 12-month and $2 million emergency exemption. The total project ceiling, if approved will be $9.8 million.

Approve:

\\ signed by Mike Montgomery on 9/30/2025\\

Mike Montgomery, Director Date
Superfund and Emergency Management Division
United States Environmental Protection Agency Region 9

Disapprove:

Mike Montgomery, Director Date
Superfund and Emergency Management Division
United States Environmental Protection Agency Region 9

Attachments:
Index to the Administrative Record
Site Location Map, Removal Extent Map, and Recommended and Alternate Haul Routes
Applicable or Relevant and Appropriate Requirements (ARARs)
Response to Comments

Attachment I
Index to the Administrative Record

Document ID	Document Date	Title	Author	Addressee
EE/CA Records				
100029210	02/01/2014	Removal action rpt, Tronox AUM Section 32, Eastern Agency, w/appendices A-E	R09: (Ecology & Environment, Inc)	R09: (Environmental Protection Agency - Region 9)
100029207	03/01/2016	Joint guidance for cleanup & reclamation of existing uranium mining operations in NM	R09: (NM Environment Dept), R09: (NM Energy, Minerals & Natural Resources Dept - Mining & Minerals Div)	
100029209	09/01/2019	Removal site evaluation (RSE) rpt, w/appendices A-L	R09: (Weston Solutions, Inc)	R09: (Environmental Protection Agency - Region 6)
100029204	09/12/2019	Ltr: Abandoned uranium mine remediation on Tribal trust & allotted lands within Eastern Navajo Agency	R09: Tsosie, Lester (US Dept of the Interior - Bureau of Indian Affairs)	R09: Duncan, Will (Environmental Protection Agency - Region 9), R09: Carroll, Craig (Environmental Protection Agency - Region 6)
100029206	03/23/2020	Action Memo: Request to conduct Engineering Evaluation/Cost Analysis (EE/CA) for Sections 32 & 33 site, w/concurrence signature, w/o attchs or approval signatures	R09: Zehner, Warren (Environmental Protection Agency - Region 6), R09: Patel, Anish (Environmental Protection Agency - Region 6)	R09: Stenger, Wren (Environmental Protection Agency - Region 6), R09: Duncan, Will (Environmental Protection Agency - Region 9)
100029205	06/01/2020	Memo (Draft): Alternatives analysis memo (AAM) for Tronox settlement NAUM Sections 32 & 33 mines of Ambrosia Lake Sub-district, Grants Mining District, McKinley County, NM, w/appendices	R09: (Weston Solutions, Inc)	R09: (Environmental Protection Agency - Region 6)
100029208	09/28/2020	Memo: Transition of lead authority for Tronox NAUM Sections 32 & 33 Mines Site to Region 9 (Region 6 formerly lead for Section 33)	R09: Mcqueen, Ken (Environmental Protection Agency - Region 6)	R09: Busterud, John (Environmental Protection Agency - Region 9)
100026872	09/15/2021	Draft Navajo Tribe provisional reasonable maximum exposures (RME) for Navajo risk assessments (Specific Risk Parameters)	R09: (Navajo Nation Environmental Protection Agency)	

Document ID	Document Date	Title	Author	Addressee
100029605	07/14/2022	Navajo Nation EPA guidance for uniform application of fundamental law of the Dine to AUM cleanup activities	R09: Shirley, Valinda (Navajo Nation Environmental Protection Agency)	
1247691	08/23/2022	List of US EPA guidance documents consulted during development & selection of response action for site	R09: (Environmental Protection Agency - Region 9)	
100029766	09/06/2022	Tronox Section 32/33 Casamero Lake Chapter of the Navajo Nation, state of NM engineering evaluation/cost analysis administrative record (AR) index	R09: (Environmental Protection Agency - Region 9)	
100036435	03/19/2023	List of EPA guidance documents consulted during the development of the EE/CA (Engineering Evaluation/Cost Analysis) for the Section 32/33 Mines site	R09: (Environmental Protection Agency - Region 9)	
100036438	10/01/2023	Section 32 and 33 Mines data gap investigation report, w/appendices A-G & attachments 1 & 2	R09: (Tetra Tech, Inc)	R09: (Environmental Protection Agency)
100036436	02/01/2024	Community involvement plan, Section 32 and 32 Mines site, February 2024, w/Appendices A-O	R09: (Tetra Tech, Inc)	R09: (Environmental Protection Agency)
100036437	03/01/2024	Final Engineering Evaluation/Cost Analysis (EE/CA), Section 32 and 33 Mines, Casamero Lake Chapter, Navajo Nation, NM, w/Appendices A-F	R09: (Tetra Tech, Inc)	R09: (Environmental Protection Agency)
100036447	03/01/2024	Fact Sheet: Section 32 and 33 Mines site recommended cleanup alternative - Red Rocks Disposal Facility, March 2024	R09: (Environmental Protection Agency - Region 9)	
100036459	03/22/2024	Tronox Section 32/33, Casamero Lake Chapter of the Navajo Nation and private land, NM, Engineering Evaluation / Cost Analysis (EE/CA) administrative record (AR) index	R09: (Environmental Protection Agency - Region 9)	

Document ID	Document Date	Title	Author	Addressee
Action Memorandum Records				
100043263	06/14/2012	Map: Navajo VIPER SensorRead results, 17 x 11 in, 1000 ft = 6.5 in		
100043273	08/01/2012	Oversize Map: Gamma radiation assessment results - Tronox AUM Sections 32 and 33, 36 x 48 in, 2.5 in = 400 ft	R09: (Navajo Nation Environmental Protection Agency), R09: (Environmental Protection Agency - Emergency Response Div)	
100043270	09/27/2012	Memo: Request for concurrence on proposed nationally significant or precedent-setting removal at Section 32 AUM (Abandoned Uranium Mine) site (unsigned), w/attachment (draft ceiling increase action memo)	R09: Meer, Daniel (Environmental Protection Agency - Region 9)	R09: Stanton, Lawrence (Environmental Protection Agency - Office of Emergency Management)
100043240	10/01/2012	Fact Sheet: Abandoned Uranium Mines - Sections 32 and 33 Mines	R09: (Environmental Protection Agency - Region 9)	
100043267	10/23/2012	Map: Figure 1, removal areas - Tronox AUM Section 32 removal, 3.6 in = 400 ft	R09: (Ecology & Environment, Inc)	
100043268	10/23/2012	Map: Figure 1, removal areas, mine area - Tronox AUM Section 32 removal, 3.6 in = 400 ft	R09: (Ecology & Environment, Inc)	
100043258	11/08/2012	Map: Figure 1, Section 32 excavation areas, Tronox AUM Section 32 removal, 3 in = 400 ft	R09: (Ecology & Environment, Inc)	
100043259	11/09/2012	Map: Figure 1, Transfer area excavation areas, Tronox AUM Section 32 removal, 3.1 in = 500 ft	R09: (Ecology & Environment, Inc)	
100043264	02/28/2014	New Mexico Mining Act - Title 19 Natural resources and wildlife, Chapter 10 non-coal mining	R09: (NM Administrative Code)	
100039217	06/06/2017	Ltr: Response to New Mexico 05/26/2017 letter re disposal options being considered for waste from Quivira mine site	R09: Strauss, Alexis (Environmental Protection Agency - Region 9)	R09: Tongate, Bruce (NM Environment Dept), R09: Mcqueen, Ken (NM Energy, Minerals & Natural Resources Dept)

Document ID	Document Date	Title	Author	Addressee
100039218	08/16/2022	Ltr: State of New Mexico permitting requirements for alternative to dispose of Quivira Mine waste & Section 32/33 Mine waste at property owned by Red Rock Landfill, McKinley County, NM	R09: Shepherd, Holland (NM Energy, Minerals & Natural Resources Dept - Mining & Minerals Div), R09: Fox, Joseph (NM Environment Dept)	R09: Nichalson, Brandon (Environmental Protection Agency - Region 9)
100043269	10/01/2022	Fact Sheet: Section 32 & 33 mines cleanup alternatives (October 2022)	R09: (Environmental Protection Agency - Region 9)	
100043257	04/01/2023	Presentation: EE/CA (Engineering Evaluation/Cost Analysis) overview and recommended alternative briefing for Section 32 & 33 Mines (Eastern Agency removal action)	R09: (Environmental Protection Agency)	
100039228	06/20/2023	Presentation: Recommended cleanup alternatives for ten Eastern Agency AUM sites (Mac and Black Jack, Mariano Lake, Quivira, Section 32/33, Ruby Mines)	R09: (Environmental Protection Agency)	R09: (Navajo Nation Council - Resources & Development Committee)
100039223	07/09/2023	Resolution of the Baca-Prewitt Chapter (#BPC/23/07/60) opposing the EPA transporting of uranium waste-ore to Thoreau, NM and surrounding communities	R09: (Baca/Prewitt Chapter, Navajo Nation)	
100039229	09/01/2023	Technical Memo: US EPA Region 9 consultation with US EPA Headquarters - disposal of uranium mine spoils Stennett evaluation (final), w/attachments 1-4	R09: (US Army Corps of Engineers)	
100039907	09/14/2023	(Redacted) Ltr: Discusses concerns with mineral rights and Navajo land allotments at or near landfill that could be affected by remedial alternative to take uranium mine tailings from Church Rock Mine to Thoreau Landfill - transmits map, w/attachment	R09: Degroat, Jerry (US Dept of the Interior - Bureau of Indian Affairs)	R09: (Eastern Navajo Land Commission)

Document ID	Document Date	Title	Author	Addressee
100043241	09/22/2023	Presentation: Red Rock Landfill proposal - Casamero Lake Chapter community meeting - September 22, 2023		
100043239	10/26/2023	Flyer: Open House, November 8 & 9 2023 for Section 32/33		
100043292	11/03/2023	(Redacted) Email: Transmits flyer and discusses November 8 & 9 open house for Community Involvement Plan (CIP) for Casamero Lake community (Section 32-33 mine sites), w/attachments	R09: Shuey, Chris (Southwest Research & Information Center)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100043242	11/07/2023	Community Involvement Plan (CIP) interview form, revision 2		
100043291	11/08/2023	(Redacted) Open house sign in sheet - Section 32/33 Mine community involvement planning, November 8 & 9, 2003		
100039214	11/29/2023	Mtg Notice: Open House meetings, December 12, 13, & 14, 2023 - disposal options for Quivira and Section 32 & 33 mines (English)	R09: (Navajo Nation Environmental Protection Agency), R09: (Environmental Protection Agency - Region 9)	
100039243	12/07/2023	Mtg Notice: Open House meetings, December 12, 13, & 14, 2023 - disposal options for Quivira and Section 32 & 33 mines (revised location for 12/14) (English)	R09: (Navajo Nation Environmental Protection Agency), R09: (Environmental Protection Agency - Region 9)	
100039242	12/12/2023	Ltr: Urgent request to halt transport of uranium tailings to Thoreau Landfill, on behalf of concerned citizens of New Mexico	R09: Munoz, George (NM Senate - Office of George K Munoz)	R09: (Nuclear Regulatory Commission)
100039215	12/19/2023	Ltr: Community response to 12/12 Munoz letter to Nuclear Regulatory Commission - corrects some misunderstandings about the proposed plan & transport of uranium tailings, w/attachments	R09: (Red Water Pond Road Community Assn)	R09: Munoz, George (NM Senate - Office of George K Munoz)

Document ID	Document Date	Title	Author	Addressee
100039250	01/01/2024	Presentation: Quivira Mines and Section 32/23 cleanup alternatives overview (community meeting, January 2024)	R09: (Navajo Nation Environmental Protection Agency), R09: (Environmental Protection Agency - Region 9)	
100039225	01/16/2024	Mtg Notices (6): Important meeting presentation on proposed uranium mine cleanup alternatives for Quivira and Section 32/33 mines (January 23rd to January 26th, 6 meetings for different chapters)	R09: (Navajo Nation Environmental Protection Agency), R09: (Environmental Protection Agency - Region 9)	
100039251	01/16/2024	Public Notice: Presentation on proposed uranium mine cleanup alternatives for Quivira and Section 32/33 mines - meeting dates January 23, 24, 25, & 26 2024	R09: (Navajo Nation Environmental Protection Agency), R09: (Environmental Protection Agency - Region 9)	R09: (Gallup Independent (Newspaper))
100039236	02/29/2024	Newsclip: Disposal of radioactive waste, & additional letters (Letters to the Editor, Navajo Times, February 29 2024, accessed 04/30/2024)	R09: Tracey, Resident, Stefen (Chinle Chapter, Navajo Nation)	
100039239	03/23/2024	Presentation: New Mexico Energy, Minerals, and Natural Resources Dept (EMNRD) Mining and Minerals Div (MMD) state permitting process, Quivira & Section 32/33 waste rock disposal	R09: (NM Energy, Minerals & Natural Resources Dept - Mining & Minerals Div)	
100039240	03/23/2024	Presentation: NM Environment Dept Overview of groundwater discharge permitting process (March 23, 2024)	R09: Maurer, Anne (NM Environment Dept)	
100039231	03/26/2024	Newsclip: Quivira uranium waste - 'We don't want it in our community'	R09: Volkert, Vida (Gallup Independent (Newspaper))	
100039232	04/10/2024	Newsclip: Navajo leadership urges EPA to transfer over 70K truckloads of uranium waste to Ambrosia Lake Site	R09: Volkert, Vida (Gallup Independent (Newspaper))	
100039716	04/15/2024	(Redacted) Public comment card on East Quivira Mines site - wants all hazardous materials removed, objects to building windmill	R09: Murphy, Ray	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)

Document ID	Document Date	Title	Author	Addressee
100039819	04/15/2024	(Redacted) Public comment form - suggests fixing roads first (comment on Quivira East Mines site proposed cleanup plans)	R09: Murphy, Ayden	R09: (Environmental Protection Agency)
100039820	04/15/2024	(Redacted) Public comment form in support of removing uranium mine waste (East Quivira Mine site), and 3 additional requests	R09: Murphy Barraza, Lasey	R09: (Environmental Protection Agency)
100039862	04/15/2024	(Redacted) Public comment form - Quivira Mine option #3 preferred, Pipeline Rd needs repair	R09: Murphy, Sr, Alfred	R09: (Environmental Protection Agency - Region 9)
100039864	04/15/2024	(Redacted) Public comment form re East Quivira Mine - concerns with health of relative, need for paving of Pipeline Road	R09: Barraza, Pete	R09: (Environmental Protection Agency)
100039675	04/16/2024	Public comment form - opposes dumping of uranium waste at Red Rock Landfill in Thoreau (unsigned)		R09: (Environmental Protection Agency)
100039676	04/16/2024	Public comment form - opposes dumping of uranium waste near Thoreau or Crownpoint (unsigned)		R09: (Environmental Protection Agency)
100039677	04/16/2024	Public comment form - in favor of Alternative 5 and against dumping of uranium waste in Thoreau or Crownpoint (unsigned)		R09: (Environmental Protection Agency)
100039678	04/16/2024	Public comment form - opposes dumping of waste at Thoreau or Crownpoint, in support of moving it to Colorado (unsigned)		R09: (Environmental Protection Agency)
100043272	04/18/2024	Newsclip: Thoreau High sophomores want no uranium waste in their town (letter to the editor, Navajo Times)	R09: (Thoreau High School Students)	R09: (Navajo Times, The)

Document ID	Document Date	Title	Author	Addressee
100039219	04/19/2024	Memo: Quivira and Section 32/33 Mine sites Environmental Evaluation/Cost Analysis (EE/CA) recommended cleanup alternative - notifies Section 28 allottees (for Tracts 216311 and 216313) of possible impact on allotment parcels, w/o enclosures	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)	
100043271	04/25/2024	Newsclip: Strongly opposing nuclear waste in Thoreau (letter to the editor, Navajo Times)	R09: (Thoreau High School Students)	R09: (Navajo Times, The)
100039704	05/01/2024	Email: Public comment from resident expressing concerns about proposed plan to dispose of waste in Thoreau, NM landfill	R09: Pagett, Resident, Jamie (City of Thoreau, NM)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039249	05/15/2024	Presentation: Quivira Mines and Section 32/33 Mines recommended cleanup alternative (Thoreau High School, May 15 2024)	R09: (Environmental Protection Agency - Region 9)	
100039238	05/16/2024	Newsclip: Clearing the air - why we support moving uranium mine waste to the Red Rock landfill (Navajo Times guest column, p A6)	R09: Hood, Edith (Red Water Pond Road Community Assn), R09: Keyanna, Teracita (Red Water Pond Road Community Assn)	
100039670	05/16/2024	(Redacted) Ltr: Public comment from student expressing concern with issue of uranium waste being dumped in Thoreau, NM landfill, w/email forward to Kenyon Larsen from Anne Uhring 05/21/2024	R09: (Thoreau High School Students)	R09: (Environmental Protection Agency)
100039689	05/16/2024	(Redacted) Email: Public comment from student on uranium mine waste - questions whether waste removal is a reasonable solution, w/forward to Kenyon Larsen from Anne Uhring 05/21/2024	R09: (Thoreau High School Students)	R09: Uhring, Anne (Gallup-McKinley County Public Schools)

Document ID	Document Date	Title	Author	Addressee
100039691	05/16/2024	(Redacted) Email: Public comment & thanks from student for visiting school - expresses concerns with transport & disposal of uranium in Thoreau landfill (ref uranium landfill in New Mexico), w/forward to Anne Uhring & Kenyon Larsen 05/21/2024	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9), R09: Uhring, Anne (Gallup-McKinley County Public Schools)
100039693	05/16/2024	(Redacted) Email: Public comment from student objecting to putting uranium in landfill on Navajo Nation, w/forward to Kenyon Larsen from Anne Uhring 05/21/2024	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9), R09: Uhring, Anne (Gallup-McKinley County Public Schools)
100039597	05/17/2024	Ltr: Comments on Tronox Settlement Section 32 and 33 Mines Engineering Evaluation Cost Analysis (EE/CA)	R09: Maurer, Anne (NM Environment Dept)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039883	05/17/2024	(Redacted) Email: Public comment from student opposing dumping of uranium near Thoreau community	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039896	05/17/2024	(Redacted) Email: Student questions & comments opposing dumping uranium waste in Red Rock Landfill in Thoreau	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039898	05/17/2024	(Redacted) Email: Student public comment on health concerns about putting uranium (waste) in Thoreau - should be taken somewhere else	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039682	05/20/2024	(Redacted) Email: Public comment - high school student concerned about transport of uranium waste to Thoreau NM, w/forward from Anne Uhring to Kenyon Larsen 05/21/2024	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9), R09: Uhring, Anne (Gallup-McKinley County Public Schools)
100039713	05/20/2024	Ltr: Rio Algom Mining LLC comments on Quivira Mines final engineering evaluation cost analysis (EE/CA)	R09: Ramsay, Kevin (Rio Algom Mining L L C)	R09: (Environmental Protection Agency - Region 9)

Document ID	Document Date	Title	Author	Addressee
100039865	05/20/2024	(Redacted) Ltr: Questions from high school senior class about proposal to move uranium waste to landfill near Thoreau, NM, w/email forward 05/22/2024 from Anne Uhring	R09: (Thoreau High School Students)	R09: Hogan, Sean (Environmental Protection Agency - Region 9), R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039884	05/20/2024	(Redacted) Email: Student opinion on using Thoreau (landfill) for uranium disposal - expresses numerous concerns	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039885	05/20/2024	(Redacted) Email: Public comment from student on putting uranium in landfill in Thoreau, NM	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039886	05/20/2024	(Redacted) Email: Student opinion strongly disagreeing with disposal of uranium at Thoreau landfill	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039888	05/20/2024	(Redacted) Email: Public comment from student disagreeing with uranium dumping in Thoreau landfill	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039891	05/20/2024	(Redacted) Email: Student opinion opposing putting uranium waste in Red Rock Landfill (Thoreau landfill)	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039892	05/20/2024	(Redacted) Email: Student questions and comments on disposing of uranium in landfill (ref Thoreau's reputation)	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039893	05/20/2024	(Redacted) Email: Student questions & comments in opposition to dumping uranium in New Mexico (ref Uranium Land Field in Thoreau New Mexico)	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039897	05/20/2024	(Redacted) Email: High school student comment - no uranium waste should be disposed of in Redrock Landfill close to Thoreau's community	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)

Document ID	Document Date	Title	Author	Addressee
100039899	05/20/2024	(Redacted) Email: Student / resident comment opposing bringing uranium waste to Thoreau and using Thoreau landfill for uranium disposal	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039900	05/20/2024	(Redacted) Email: Student comment opposing using Thoreau Landfill for uranium disposal - dangerous for town and surrounding areas like Smith Lake	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039596	05/21/2024	Ltr: Bureau of Indian Affairs Navajo Regional Office comments on response actions recommended in Engineering Evaluation/Cost Analysis (EE/CA) for Section 32/33 mines & Quivira mines	R09: Shirley, Deborah (US Dept of the Interior - Bureau of Indian Affairs)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039671	05/21/2024	(Redacted) Email: Public comment from student opposing bringing uranium to Thoreau, w/forward from Anne Uhring	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039673	05/21/2024	(Redacted) Memo: Red Water Pond Rd (comment in support of alternative 3, from Vietnam veteran), w/email TL to Kenyon Larsen	R09: Hood, Johnny	R09: (Navajo Tribal Council)
100039685	05/21/2024	(Redacted) Email: Public comment from high school student disagreeing with dumping uranium in landfill, w/history	R09: Uhring, Anne (Gallup-McKinley County Public Schools)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039698	05/21/2024	(Redacted) Email: Public comment in support of choosing Alternative 3	R09: Hogue, Sam	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039708	05/21/2024	Email: Public comment in support of Alternative 3 (using Thoreau landfill for uranium disposal)	R09: Porter, Anne	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039715	05/21/2024	Email: Public comment supporting Alternative 3	R09: Lowery, Christine	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)

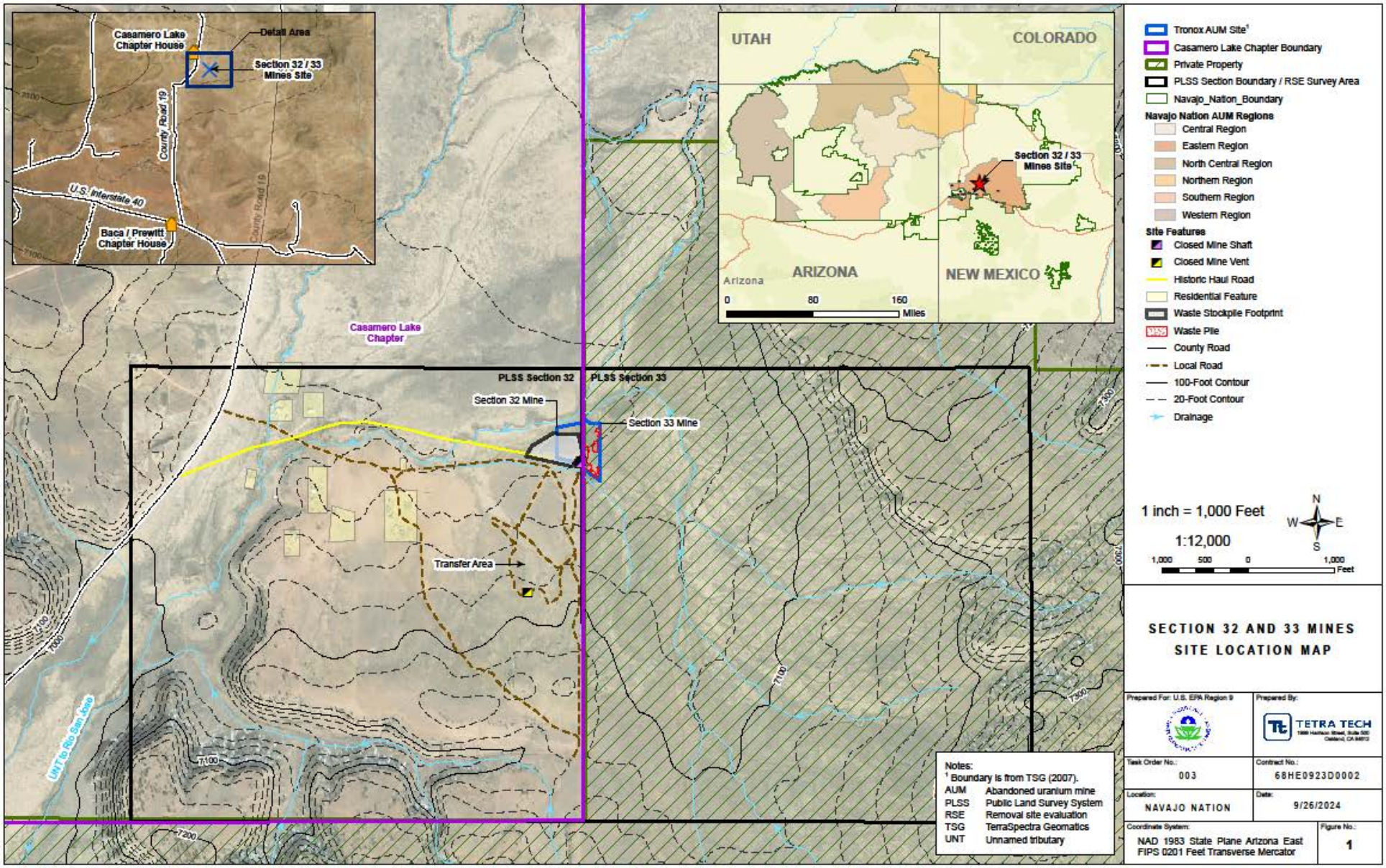
Document ID	Document Date	Title	Author	Addressee
100039818	05/21/2024	(Redacted) Email: Public comment strongly in support of Alternative 3 - transmits detailed comments on Quivira Mines site proposed cleanup plan, w/attachment	R09: Sheehy, Resident, Patricia (City of Gallup, NM)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039857	05/21/2024	(Redacted) Email: Public comment - requests that EPA choose Alternative 3 for the Quivira Engineering Evaluation / Cost Assessment (EE/CA)	R09: Weahkee, Laurie	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039861	05/21/2024	(Redacted) Email: 14 messages from Thoreau High School students commenting on uranium disposal in Thoreau	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039881	05/21/2024	(Redacted) Email: Public comment from high school student not in support of using Thoreau landfill for uranium waste disposal	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039882	05/21/2024	(Redacted) Email: Public comment - urgent request from student to protect Thoreau from uranium waste transfer	R09: Uhring, Anne (Gallup-McKinley County Public Schools)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039887	05/21/2024	(Redacted) Email: Public comment - student expresses appreciation for presentation & concern for transporting uranium on I-40 (ref my opinion)	R09: (Thoreau High School Students)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100043435	05/22/2024	(Redacted) Email: Provides author name for public comment in support of Alternative 3, w/history	R09: Popelish, Linda	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039683	05/22/2024	Email: Public comment on behalf of Citizens for Alternatives to Radioactive Dumping (CARD) in support of Alternative 3 (Red Water Pond)	R09: Greenwald, Janet (Citizens for Alternatives to Radioactive Dumping)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039695	05/22/2024	Email: Public comment - please choose Alternative 3	R09: Parks, Katrina	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)

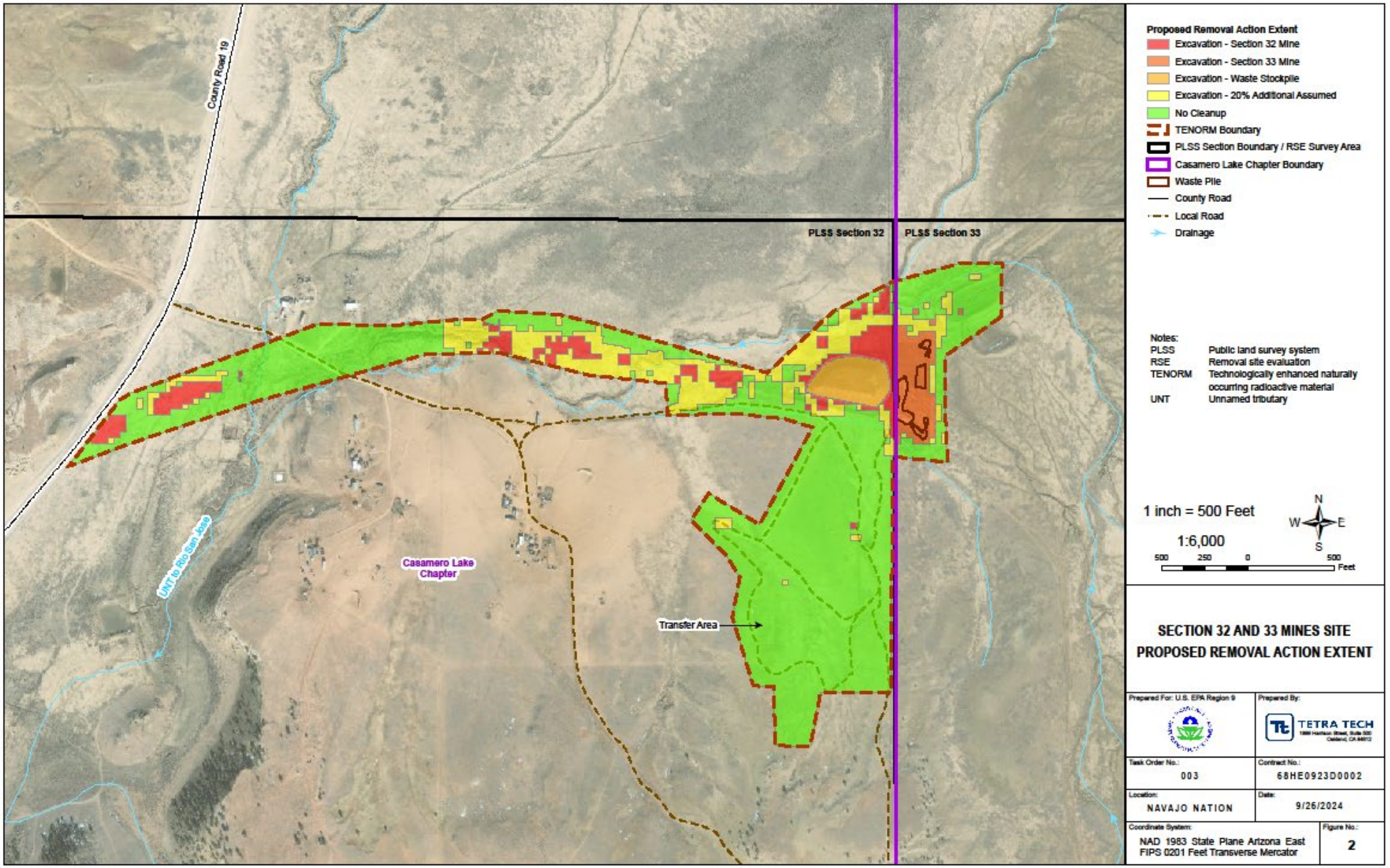
Document ID	Document Date	Title	Author	Addressee
100039703	05/22/2024	Email: Navajo EPA Executive Director comments to final EE/CAs for Quivira and Section 32/33 - discusses land use policy and recommends that US EPA provides more analysis of high-pressure slurry ablation technology	R09: Etsitty, Stephen (Navajo Nation Environmental Protection Agency)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039717	05/22/2024	Email: Public comments in support of Alternative #3 (for Navajo AUM Quivira waste), w/history	R09: Tate, Ryan (Interfaith Power & Light - New Mexico & El Paso Region)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039725	05/22/2024	Email: Public comments in support of Alternative 3 from two Red Water Pond Road area residents	R09: Nez, Bertha (Red Water Pond Road Community), R09: Nez, Jennifer (Red Water Pond Road Community)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039817	05/22/2024	(Redacted) Email: Public comment in support of Alternative 3 to protect the Red Water Pond Road Community and other communities nearby	R09: Gordon, Resident, Susan (City of Santa Fe, NM)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039860	05/22/2024	(Redacted) Email: Public comment in support of Alternative #3 for the community (ref Navajo AUM Quivira)	R09: Cleveland, Chassity (City of Bloomfield, NM)	
100039901	05/22/2024	(Redacted) Email: Public comment from friend of Red Water Pond Road family in support of Alternative 3	R09: Notah, Jason	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039909	05/22/2024	(Redacted) Comments on Environmental Evaluation/Cost Analysis (EE/CA) for Section 32/33 and for NE Churchrock Quivira and US EPA communications with public	R09: Martinez-silversmith, Leeanna (Navajo Nation Environmental Protection Agency - Superfund Program)	R09: (Environmental Protection Agency - Region 9)
100039700	05/23/2024	Email: Public comment in support of moving Quivira mine waste using Alternative 3	R09: Brown, Judy (Interfaith Power & Light - New Mexico & El Paso Region)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100039701	05/23/2024	Email: Comment in support of choosing Alternative 3 for Navajo AUM Quivira uranium mine waste	R09: Watchempino, Laura (Multicultural Alliance for a Safe Environment)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)

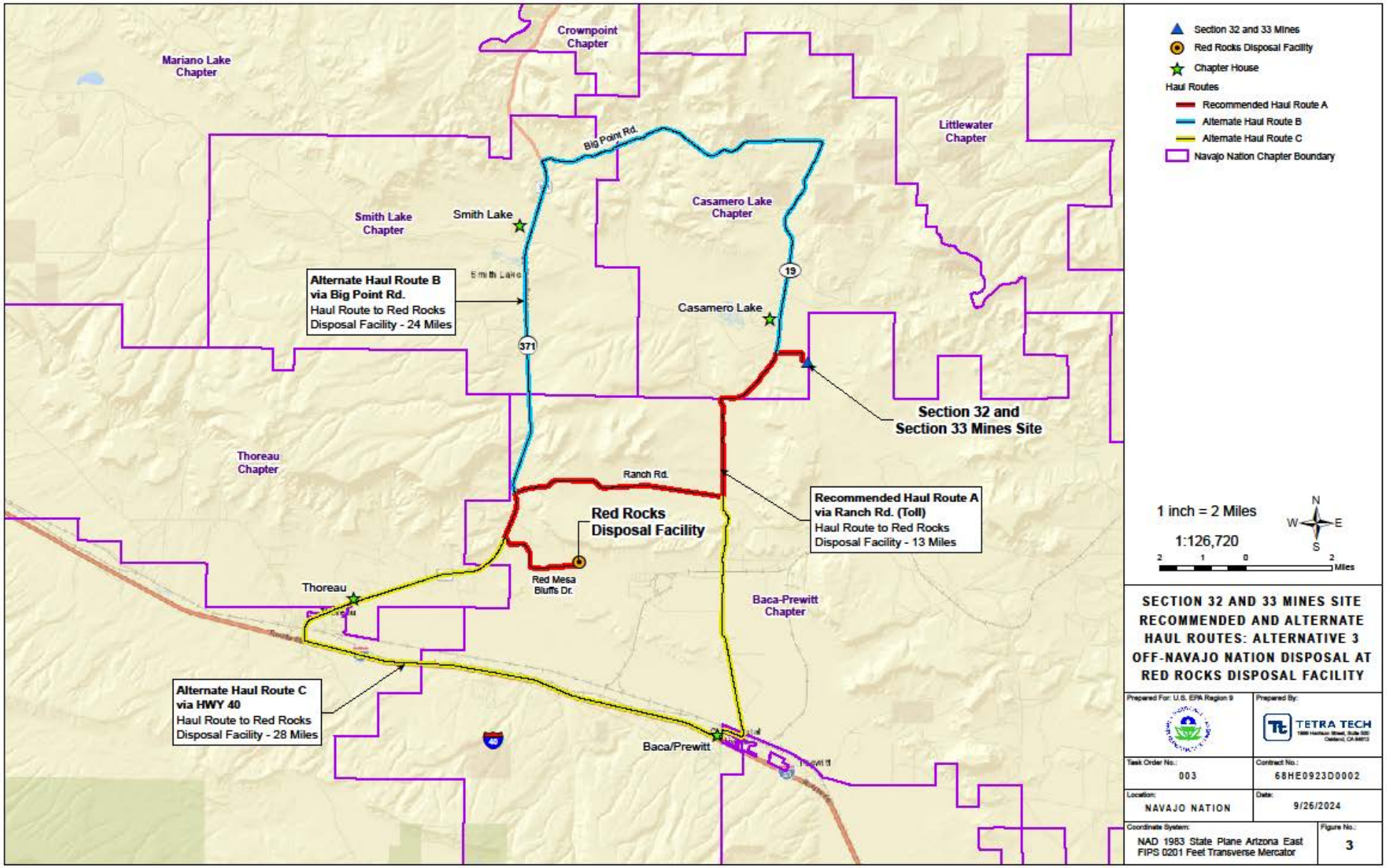
Document ID	Document Date	Title	Author	Addressee
100039821	05/23/2024	(Redacted) Email: Public comment in support of Alternative 3	R09: Windisch, Resident, Betsy (City of Gallup, NM)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)
100043261	06/11/2024	Newsclip: A letter to the 10th grade class at Thoreau High School (Navajo Times)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)	R09: (Navajo Times, The), R09: (Thoreau High School Students)
100039254	07/12/2024	Ltr: Gives notice of adoption of Joint Resolution 001 - RWPRCA and PRC's formal support of the US EPA selection of alternative 3, disposal of Quivira Mine wastes at the Red Rock Landfill property, w/resolution and attachments	R09: Hood, Edith (Red Water Pond Road Community Assn)	R09: Nygren, Buu (Navajo Nation Office of the President & Vice President)
100039237	09/19/2024	Memo: Summary of comments on Quivira Mines EE/CA (Environmental Evaluation/Cost Analysis) and the Section 32/33 Mines EE/CA	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)	R09: Duncan, Will (Environmental Protection Agency - Region 9)
100039244	09/20/2024	Memo: Confirms 10/09/2024 government-to-government consultation on Navajo AUM risk assessment methodology and recommended cleanup alternatives for Quivira Mines site and Section 32/33 Mines sites	R09: Montgomery, Michael (Environmental Protection Agency - Region 9)	R09: Etsitty, Stephen (Navajo Nation Environmental Protection Agency), R09: Jesus, Brenda (Navajo Nation Council - Resources & Development Committee)
100039230	09/23/2024	Email: 2nd phase government-to-government consultation for Quivira and Section 32/33 Mine sites, w/forward to Kenyon Larsen, et al from Sean Hogan, w/attachments	R09: Duncan, Will (Environmental Protection Agency - Region 9)	R09: Etsitty, Stephen (Navajo Nation Environmental Protection Agency), R09: Jesus, Brenda (Navajo Nation Council)
100039869	11/06/2024	Memo: Use of Ambrosia Lake region in McKinley County, New Mexico, for abandoned uranium mines waste disposal, w/attachment	R09: Breen, Barry (Environmental Protection Agency - Office of Land & Emergency Management), R09: Villa, Clifford (Environmental Protection Agency - Office of Land & Emergency Management)	R09: Montgomery, Michael (Environmental Protection Agency - Region 9), R09: Crossland, Ronnie (Environmental Protection Agency - Region 6)

Document ID	Document Date	Title	Author	Addressee
100039591	11/21/2024	Memo: Post-public comment period government-to-government consultation on recommended cleanup alternatives for Quivira Mines & Section 32/33 Mine sites, & pre-public comment consultation on draft environmental evaluation for Section 9 mine site	R09: Montgomery, Michael (Environmental Protection Agency - Region 9)	R09: Etsitty, Stephen (Navajo Nation Environmental Protection Agency), R09: Jesus, Brenda (Navajo Nation Council - Resources & Development Committee)
100039603	12/18/2024	Memo: Post-public comment period government-to-government consultation on recommended cleanup alternatives for Quivira Mines site and Section 32/33 Mines site, w/o enclosure	R09: Montgomery, Michael (Environmental Protection Agency - Region 9)	R09: Etsitty, Stephen (Navajo Nation Environmental Protection Agency), R09: Jesus, Brenda (Navajo Nation Council - Resources & Development Committee)
100043266	04/03/2025	Technical Memo: Red Rocks permit requirements summary - Quivira Mines & Section 32/33 mines waste rock disposal project	R09: Juntunen, Ryder (Tetra Tech, Inc)	R09: Larsen, Kenyon (Environmental Protection Agency - Region 9)

Attachment II
Site Location Map, Removal Extent Map, and Recommended and Alternate Haul Routes


Casamero Lake Chapter House
Detail Area
Section 32 / 33 Mines Site
County Road 19
U.S. Interstate 40
Baca / Prewitt Chapter House
UTAH
COLORADO
ARIZONA
NEW MEXICO
Arizona
0
80
160
Miles
Casamero Lake Chapter
PLSS Section 32
PLSS Section 33
Section 32 Mine
Section 33 Mine
Transfer Area
UNT to Rio San Jose
Tronox AUM Site[1]
Casamero Lake Chapter Boundary
Private Property
PLSS Section Boundary / RSE Survey Area
Navajo_Nation_Boundary
Navajo Nation AUM Regions
Central Region
Eastern Region
North Central Region
Northern Region
Southern Region
Western Region
Site Features
Closed Mine Shaft
Closed Mine Vent
Historic Haul Road
Residential Feature
Waste Stockpile Footprint
Waste Pile
County Road
Local Road
100-Foot Contour
20-Foot Contour
Drainage
1 inch = 1,000 Feet
1:12,000
1,000
500
0
1,000
Feet
N
W
E
S
Notes:
[1] Boundary is from TSG (2007).
AUM Abandoned uranium mine
PLSS Public Land Survey System
RSE Removal site evaluation
TSG TerraSpectra Geomatics
UNT Unnamed tributary
SECTION 32 AND 33 MINES
SITE LOCATION MAP
Prepared For: U.S. EPA Region 9
Prepared By:
TETRA TECH
Task Order No.: 003
Contract No.: 68HE0923D0002
Location: NAVAJO NATION
Date: 9/26/2024
Coordinate System: NAD 1983 State Plane Arizona East FIPS 0201 Feet Transverse Mercator
Figure No.: 1


County Road 19
PLSS Section 32
PLSS Section 33
UNT to Rio San Jose
Casamero Lake Chapter
Transfer Area
Proposed Removal Action Extent
Excavation - Section 32 Mine
Excavation - Section 33 Mine
Excavation - Waste Stockpile
Excavation - 20% Additional Assumed
No Cleanup
TENORM Boundary
PLSS Section Boundary / RSE Survey Area
Casamero Lake Chapter Boundary
Waste Pile
County Road
Local Road
Drainage
Notes:
PLSS Public land survey system
RSE Removal site evaluation
TENORM Technologically enhanced naturally occurring radioactive material
UNT Unnamed tributary
1 inch = 500 Feet
1:6,000
500 250 0 500 Feet
N
W E
S
SECTION 32 AND 33 MINES SITE
PROPOSED REMOVAL ACTION EXTENT
Prepared For: U.S. EPA Region 9
Prepared By:
TETRA TECH
Task Order No.: 003
Contract No.: 68HE0923D0002
Location: NAVAJO NATION
Date: 9/26/2024
Coordinate System: NAD 1983 State Plane Arizona East FIPS 0201 Feet Transverse Mercator
Figure No.: 2


Crownpoint Chapter
Mariano Lake Chapter
Littlewater Chapter
Big Point Rd.
Smith Lake Chapter
Smith Lake
Casamero Lake Chapter
Alternate Haul Route B via Big Point Rd.
Haul Route to Red Rocks Disposal Facility - 24 Miles
Smith Lake
19
Casamero Lake
371
Section 32 and Section 33 Mines Site
Thoreau Chapter
Ranch Rd.
Recommended Haul Route A via Ranch Rd. (Toll)
Haul Route to Red Rocks Disposal Facility - 13 Miles
Red Rocks Disposal Facility
Red Mesa Bluffs Dr.
Thoreau
Baca-Prewitt Chapter
Alternate Haul Route C via HWY 40
Haul Route to Red Rocks Disposal Facility - 28 Miles
40
Baca/Prewitt
Section 32 and 33 Mines
Red Rocks Disposal Facility
Chapter House
Haul Routes
Recommended Haul Route A
Alternate Haul Route B
Alternate Haul Route C
Navajo Nation Chapter Boundary
1 inch = 2 Miles
1:126,720
N
W
E
S
2 1 0 2
Miles
SECTION 32 AND 33 MINES SITE RECOMMENDED AND ALTERNATE HAUL ROUTES: ALTERNATIVE 3 OFF-NAVAJO NATION DISPOSAL AT RED ROCKS DISPOSAL FACILITY
Prepared For: U.S. EPA Region 9
Prepared By:
TETRA TECH
Task Order No.: 003
Contract No.: 68HE0923D0002
Location: NAVAJO NATION
Date: 9/26/2024
Coordinate System: NAD 1983 State Plane Arizona East FIPS 0201 Feet Transverse Mercator
Figure No.: 3

Attachment III
Applicable or Relevant and Appropriate Requirements (ARARs)

Table A-1 and Table A-2 list the federal and Navajo Nation location- and action-specific applicable or relevant and appropriate requirements (ARAR) and "To Be Considered" (TBC) requirements, respectively, that have been identified for the selected response action described in the action memorandum (AM) for the Section 32 and 33 Mines site (Site). The U.S. Environmental Protection Agency (USEPA) did not identify chemical-specific ARARs or TBCs because potential federal, State of New Mexico, and Navajo Nation chemical-specific ARARs were not as conservative as the risk-based cleanup standards developed for this action. Chemical-related requirements tied to an action such as cap design were included in the action-specific table (Table A-2).

Cleanup standards were derived through the USEPA risk assessment process in accordance with the following USEPA guidance.

- "Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remediation Goals under CERCLA" (USEPA 1997a)
- "Establishment of Cleanup Levels for CERCLA [Comprehensive Environmental Response, Compensation, and Liability Act] Sites with Radioactive Contamination" (USEPA 1997b)

The following Navajo Nation laws, regulations, and guidance are not considered ARARs or TBCs for the response action selected in this AM; however, they are listed here because situations may arise during implementation of the selected alternative or during future actions at the Section 32 and 33 Mines site where these requirements may be applicable.

- Navajo Nation CERCLA, 4 *Navajo Nation Code* (N.N.C.) Sections (§§) 2101-2805 – The Navajo Nation CERCLA requirements must be complied with during implementation of the response action if petroleum contamination is discovered at the Section 32 and 33 Mines site because Navajo Nation CERCLA Section (§) 2104.Q includes petroleum in the definition of hazardous substance. Based on site investigations thus far, petroleum contamination is not anticipated.
- Navajo Nation Underground and Aboveground Storage Tank Act of 2012 (NNSTA), 4 N.N.C. §§ 1501-1577 – If any permanent storage tanks are found at the Site, including both underground and aboveground storage tanks and tanks holding not only petroleum but any hazardous substances, NNSTA § 1542(C)(1) requires removal of the tanks. (The guidance for temporary/mobile storage tanks brought on site is included in Table A-2 as a TBC because that situation is anticipated to arise.)
- Navajo Nation Business Opportunity Act, 5 N.N.C. §§ 201-214, and the Navajo Preference in Employment Act, 15 N.N.C. §§ 601-619 – While these are not environmental regulations and, therefore, are not ARARs, these regulations give preference to Navajo Nation businesses and individuals when hiring employees and contractors to perform the removal action selected in this AM.
- Navajo Nation Diné Radioactive Materials Transportation Act (RMTA), 18 N.N.C. §§ 1304-1307 – RMTA is not applicable to onsite activities; however, its requirements may be applicable to transportation on public roads on the Navajo Nation between sites that are subject to a combined action pursuant to CERCLA § 104(d)(4), as well as for shipment of radioactive materials through the Navajo Nation generally. RMTA § 1307 includes specific

requirements that are not found in federal law, including advance notice of the transportation of radioactive and related substances, equipment, vehicles, persons, and materials over and across the Navajo Nation, as well as license fees, bonding requirements, route restrictions, and curfews.

The removal action for which the ARARs tables below were prepared does not address groundwater and, therefore, ARARs for groundwater are not included. If any groundwater contamination is found at the Section 32 and 33 Mines site, the related ARARs will be addressed at that time.

References:

U.S. Environmental Protection Agency (USEPA). 1997a. "Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remediation Goals under CERCLA." Office of Solid Waste and Emergency Response (OSWER) Directive No. 9200.4-23. August.

USEPA. 1997b. "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination." OSWER Directive No. 9200.4-18. August.

USEPA. 1998. "Use of Soil Cleanup Criteria in 40 CFR Part 192 as Remediation Goals for CERCLA Sites." OSWER Directive No. 9200.4-25. February.

USEPA. 2014. "Radiation Risk Assessment at CERCLA Sites: Q&A." OSWER Directive No. 9200.4-40. May.

Table A-1. Location-Specific ARARs and TBC Information

Media	Requirement	Requirement Synopsis	Prerequisites, Status, and Rationale
Cultural Resources	**FEDERAL** **The Native American Graves Protection and Repatriation Act** **25 U.S.C. §§ 3002(c) and (d)** 43 CFR §§ 10.3(b)-(c) and 10.4(b)-(e)	Protects Native American cultural items from unpermitted removal and excavation and requires the protection of such items in the event of inadvertent discovery. Excavation or removal of cultural items must be done under procedures required by this act and the Archaeological Resources Protection Act (Section 3 (c)(1)).	**Applicable** Substantive requirements are applicable if cultural items (meaning human remains and associated or unassociated funerary objects, sacred objects, or cultural patrimony) are inadvertently discovered or intentionally excavated or removed within the area to be disturbed. If cultural items are discovered, on-going activity in the area of discovery must stop, the relevant Indian tribe official must be notified immediately, and reasonable effort must be made to protect such cultural items.
Cultural Resources	**FEDERAL** **National Historic Preservation Act** **54 U.S.C. §§ 306101(a), 306102, 306107, and 306108** 36 CFR §§ 800.3(a) and (c); 800.4(a)-(c); 800.5(a)-(b); 800.6(a)-(b); 800.10(a); 800.13(b)-(d)	Federal agencies are required to consider the effects of federally funded (in whole or in part) activity on any historic property or objects and minimize harm to any National Historic Landmark. Federal agencies may be required to identify historic properties or objects, determine whether proposed activity will have an adverse effect on historic properties or objects, and develop alternatives or modifications to the proposed action that could avoid, minimize, or mitigate adverse effects through the National Historic Preservation Act's Section 106 process.	**Applicable** Substantive requirements are applicable if a federally funded activity could adversely affect historic property (meaning a prehistoric or historic district, site, building, structure, or object) included on, or eligible for inclusion on, the National Register of Historic Places.
Cultural Resources	**FEDERAL** **Preservation of Historical and Archaeological Data** **54 U.S.C. §§ 312502(a) and 312503**	Protects significant scientific, prehistorical, historical, and archaeological data. When a federal agency action may cause irreparable loss or destruction of significant data, the agency must notify DOI and either recover, protect, and preserve the data itself or request DOI to do so.	**Applicable** Substantive requirements are applicable if a federal agency action may cause irreparable loss or destruction to significant scientific, prehistorical, historical, or archaeological data.

Table A-1. Location-Specific ARARs and TBC Information

Media	Requirement	Requirement Synopsis	Prerequisites, Status, and Rationale
Cultural Resources	**FEDERAL** **Archaeological Resources Protection Act of 1979** **16 U.S.C. §§ 470cc(a)-(c) and 470ee(a)** 43 CFR §§ 7.4(a), 7.5(a), 7.7, 7.8(a), 7.9(c), and 7.35	Prohibits the excavation, removal, damage, or alteration or defacement of archaeological resources on public or Indian lands unless by permit or exception.	**Applicable** Substantive requirements are applicable if eligible archaeological resources are within the area to be disturbed.
Cultural Resources	**FEDERAL** **American Indian Religious Freedom Act** **42 U.S.C. § 1996**	Policy of the United States to protect access to and the use of religious, ceremonial, and burial sites and sacred objects by Native American groups.	**TBC** Policy should be followed if Native American sacred sites are identified within the area to be disturbed.
Biological Resources	**FEDERAL** **Migratory Bird Treaty Act** **16 U.S.C. § 703(a)** 50 CFR §§ 10.13 and 21.10	Prohibits the killing, capturing, taking, and incidental taking of protected migratory bird species, their parts, nests, and eggs without DOI's prior approval. Protected migratory birds species are listed at 50 CFR § 10.13.	**Applicable** Substantive requirements are applicable if migratory birds or their nests are present at or near the site.
Biological Resources	**FEDERAL** **Bald and Golden Eagle Protection Act** **16 U.S.C. §§ 668(a)** 50 CFR §§ 22.10; 22.80(a), (c)-(f); 22.85(a)-(b) and (d)-(e) 50 CFR § 13.21(b)	Prohibits the unpermitted taking, including the killing, disturbing, or incidental taking, of bald and golden eagles, their parts, nests, and eggs.	**Applicable** Substantive requirements are applicable if bald or golden eagles or their nests are identified at or near the site.

Table A-1. Location-Specific ARARs and TBC Information

Media	Requirement	Requirement Synopsis	Prerequisites, Status, and Rationale
Biological Resources	**FEDERAL** **Endangered Species Act** **16 U.S.C. §§ 1531(c); 1536(a)(2), (c)-(d), (g)-(h), and (l); 1538(a) and (g); 1539(a)** 50 CFR §§ 17.21(a)-(c);17.22(b); 17.31(a) and (c);17.32(b); 17.82; and 17.94(a) 50 CFR §§ 402.09; 402.12 (a)-(b) and (i); 402.14(a); 402.15(a)	Federal agencies must ensure that any activities funded, carried out, or authorized by them do not jeopardize the continued existence of any threatened or endangered species or result in the destruction or alteration of such species' habitats. Endangered and threatened species are listed at 50 CFR Part 17, Subpart B.	**Applicable** Substantive requirements are applicable if endangered or threatened species are identified at the site.
Cultural Resources	**NAVAJO NATION** **Navajo Nation Cultural Resources Protection Act** **11 N.N.C. §§ 1003(S); 1021; and 1031**	Prohibits alteration, damage, excavation, defacement, destruction, or removal of cultural properties.	**Applicable** Substantive requirements are applicable to activities at the AUM sites where cultural resources may be encountered.
Cultural Resources	**NAVAJO NATION** **Navajo Nation Policy for the Disposition of Cultural Resources Collections** **Sections 2 and 6.1** (These sections would trigger other provisions in the policy)	Establishes procedures and guidelines to be followed for excavation (as a last resort) and disposition of cultural resources recovered on the Navajo Nation, including the handling of inadvertent discovery.	**TBC** TBC for activities on AUM sites where cultural resources may be encountered.

Table A-1. Location-Specific ARARs and TBC Information

Media	Requirement	Requirement Synopsis	Prerequisites, Status, and Rationale
Cultural Resources	**NAVAJO NATION** **Navajo Nation Guidelines for the Treatment of Discovery Situations**	Establish procedures and guidelines to be followed in any situation involving the discovery of cultural or historic property, including historical and prehistoric archaeological sites and traditional cultural properties and human remains whether or not previously identified.	**TBC** NNHHPD performs these functions pursuant to a contract with BIA under which NNHHPD serves as the BIA's agent.
Cultural Resources	**NAVAJO NATION** **Navajo Nation Policy for the Protection of Jishchaá: Gravesites, Human Remains, and Funerary Items**	Establishes principles for locating and handling of gravesites, human remains, and associated artifacts and soil in the area to be disturbed by AUM removal activities. See in particular Section IV (Traditional Concerns), which contains requirements if the AUM activity comes into contact with gravesites, human remains, or funerary items. It imposes specific requirements for how to navigate around, prepare for, and respond to burial grounds and uncovered remains. See also Section V (Encountering Gravesites, Human Remains, and Funerary Items), which specifies the procedures when an inadvertent discovery is made. Sections VI and VII contain additional requirements in that event.	**TBC**
Biological Resources	**NAVAJO NATION** **Navajo Nation Endangered Species Act** **17 N.N.C. §§ 500-508** **Navajo Nation Endangered Species List** – Resource Committee Resolution RCAU-103-05	NNESA § 507 makes it unlawful for any person to "take, possess, transport, export, process, sell or offer for sale or ship any species or subspecies of wildlife" listed as endangered or threatened on federal or Navajo Nation lists, which also protect those species' critical habitat. NNESA §§ 500-504 and 506-508 also protect, to various extents, game fish, game birds, songbirds, game animals, fur-bearing animals (all defined under § 500), and hawks, vultures, and owls from being taken. The Navajo Nation Endangered Species List includes species that are not on the federal list. It also provides broader criteria for when species would be listed based on their prospects of survival or recruitment within the Navajo Nation (see categories "G2" and "G3"). Category G4 provides a means for the Navajo Nation Department of Fish and Wildlife to include additional species (or exclude species),	**Applicable** Substantive requirements applicable if protected species or habitat are identified within the area to be disturbed on AUM sites.

Table A-1. Location-Specific ARARs and TBC Information

Media	Requirement	Requirement Synopsis	Prerequisites, Status, and Rationale
		making it possible for the list to change during the course of work.	

Notes:

§	Section
§§	Sections
ARAR	Applicable or relevant and appropriate requirement
AUM	Abandoned uranium mine
BIA	Bureau of Indian Affairs
CFR	*Code of Federal Regulations*
DOI	U.S. Department of the Interior
N.N.C.	*Navajo Nation Code*
NNESA	Navajo Nation Endangered Species Act
NNHHPD	Navajo Nation Heritage and Historic Preservation Department
TBC	To be considered
U.S.C.	*United States Code*

Table A-2. Action-Specific ARARs and TBC Information

Media	Requirement	Requirement Synopsis	Prerequisites, Status, and Rationale
Air	**FEDERAL** **Clean Air Act** **42 U.S.C. §§ 7401, *et seq.*** 40 CFR § 61.92	Emissions of radionuclides to the ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 millirems per year.	**Relevant and Appropriate** This standard is applicable to a DOE facility. The site is not a DOE facility; therefore, this standard is not applicable. However, this standard has been determined to be relevant and appropriate during removal action activities because of potential emissions of radionuclides during excavation of the waste and movement of the waste.
Air	**FEDERAL** **Clean Air Act** **42 U.S.C. §§ 7401, *et seq.*** 40 CFR §§ 61.222(a)	Radon-222 emissions to the ambient air from a uranium mill tailings pile that is no longer operational shall not exceed 20 picocuries per square meter per second.	**Relevant and Appropriate** These requirements are applicable to nonoperational uranium mill tailings piles. The site's waste to be disposed of is not uranium mill tailings. These requirements have been determined to be relevant and appropriate to the design of the engineered cover to be constructed in Alternative 2, which consists of onsite containment of the contaminated soil and uranium waste rock.
Water	**FEDERAL** **Clean Water Act** **33 U.S.C. § 1342(p)(3)(A)** NPDES – Stormwater Discharges 40 CFR §§ 450.21	Requires BMPs to abate discharges of pollutants from stormwater discharges, including erosion and sediment control BMPs. All treatment and control systems and facilities will be properly operated and maintained.	**Applicable** If there are discharges to WOTUS. **Relevant and Appropriate** If there are discharges to Navajo Nation surface waters (as defined in Table 206.1 of Navajo Nation Surface Water Quality Standards 2015).

Table A-2. Action-Specific ARARs and TBC Information

Media	Requirement	Requirement Synopsis	Prerequisites, Status, and Rationale
Water	**FEDERAL** **Clean Water Act 33** **U.S.C. § 1342(p)** NPDES 2022 Construction General Permit for Stormwater Discharges from Construction Activities Part 2. Technology-Based Effluent Limitations. Section 2.2. Erosion and Sediment Control Requirements, Subsection 2.2.1.	Requires implementation of erosion and sediment controls to minimize the discharge of pollutants in stormwater from construction activities. Natural buffers or equivalent erosion and sediment controls must be provided and maintained for discharges to receiving waters within 50 feet of the site's earth disturbances. For any discharges to receiving waters within 50 feet of the site's earth disturbances, one of the following alternatives must be complied with: i. Provide and maintain a 50-foot undisturbed natural buffer ii. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer iii. If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.	**Applicable** For operators of construction activities if weather events necessitating stormwater runoff controls occur during onsite excavation, waste consolidation, and repository construction.
Water	**FEDERAL** **Clean Water Act 33** **U.S.C. § 1344** CWA § 404(b) Guidelines 40 CFR §§ 230.10; 230.61, and 230.71-76	Prohibits the unpermitted discharge of dredge or fill material into WOTUS other than incidental fallback. Should dredge and fill material be discharged to a WOTUS, the chemical, biological, and physical impacts to the WOTUS must be tested and evaluated. Any adverse effects shall be minimized by treating the material before discharge, limiting the mobility of the discharge materials and avoiding or limiting impacts to WOTUS that serve as wildlife habitat, recreational space, or other use by humans.	**Applicable** If there are discharges to WOTUS. **Relevant and Appropriate** If there are discharges to Navajo Nation surface waters (as defined in NNCWA § 1302(43) and listed in Table 206.1 of Navajo Nation Surface Water Quality Standards 2015).

Table A-2. Action-Specific ARARs and TBC Information

Media	Requirement	Requirement Synopsis	Prerequisites, Status, and Rationale
Water	**FEDERAL** **Clean Water Act 33** **U.S.C. § 1344** **CWA § 404** Nationwide Permit 38 – Clean Up of Hazardous and Toxic Waste	Onsite CERCLA actions conducted by a federal agency that involve the discharge of dredged or fill material into WOTUS must comply with the substantive requirements of the Nationwide Permit 38 general conditions, as appropriate, and any regional or case-specific conditions recommended by the U.S. Army Corps of Engineers district engineer after consultation.	**Applicable** If there are discharges to WOTUS. **Relevant and Appropriate** If there are discharges to Navajo Nation surface waters (as defined in NNCWA § 1302(43) and listed in Table 206.1 of Navajo Nation Surface Water Quality Standards 2015).
All	**NEW MEXICO** **NMAC § 20.3.13.1317**	Requires the protection of the general population from the release of radioactivity.	**Relevant and Appropriate** This regulation is the same as 40 CFR § 192. This requirement is not applicable to the site but is relevant and appropriate.
All	**NEW MEXICO** **NMAC § 20.3.4**	Establishes standards for protection against radiation.	**Relevant and Appropriate** This regulation is the same as 10 CFR § 20. This requirement is not applicable to the site but is relevant and appropriate.
Soil	**NEW MEXICO** **NMAC §§ 19.10.5.507 and 19.10.5.508**	Establishes performance and reclamation standards and requirements for noncoal mining operations.	**Relevant and Appropriate** This regulation provides revegetation requirements for existing noncoal mining operations, as well as other reclamation requirements.
Soil and Water	**NEW MEXICO** **New Mexico Soil and Water Conservation District Act** New Mexico Statutes Annotated 73-20-25	Establishes state authority to control and prevent soil erosion, prevent floodwater and sediment damage to soil, and conserve natural resources.	**TBC** This regulation will be a TBC to the extent that it does not conflict with CERCLA, the National Contingency Plan, 40 CFR Part 300, or other federal requirements.

Table A-2. Action-Specific ARARs and TBC Information

Media	Requirement	Requirement Synopsis	Prerequisites, Status, and Rationale
Soil	**NEW MEXICO** **Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations in New Mexico (March 2016)**	This guidance is used to assist mine site responsible parties in addressing soil radiation at existing uranium mines as part of reclamation activities.	**TBC** This guidance will be a TBC to the extent that it does not conflict with CERCLA, the National Contingency Plan, 40 CFR Part 300, or other federal requirements.
Soil	**NEW MEXICO** **Guidance for Soil Suitability, Revegetation and Self-Sustaining Ecosystem (1996)**	Used to implement and evaluate vegetation success and soil cover material properties and reclamation.	**TBC** This guidance will be a TBC for restoration of excavated or covered waste.
All	**NAVAJO NATION** **Navajo Nation Fundamental Law 1 N.N.C. §§ 201-206** Navajo Nation Guidance on the Uniform Application of Fundamental Law to AUM Cleanup Activities (2022)	The Navajo people have an obligation under the Navajo Nation Fundamental Law to listen to elders and medicine people and respect, preserve, and protect Mother Earth as stewards and guardians for the benefit of future generations. The 2022 guidance explains the principles of the Navajo Nation Fundamental Law and how the principles would be applied at the various stages of AUM cleanup.	**TBC** Navajo Nation Fundamental Law and the 2022 guidance will be TBCs to the extent that they do not conflict with CERCLA, the National Contingency Plan, 40 CFR Part 300, or other federal requirements.
Soil and Water	**NAVAJO NATION** **Navajo Nation Underground and Aboveground Storage Tank Act of 2012 – 4 N.N.C. §§ 1501-1577, as amended** NNEPA Storage Tank Program Guidance No. 3 (ASTs at Construction Sites) – Section III (Operating Guidelines)	Regulates storage of petroleum and other regulated substances in underground tanks and ASTs. This guidance clarifies that the NNSTA applies to ASTs that are temporarily placed at construction sites within the Navajo Nation. It requires such ASTs to file tank information forms with NNEPA, locate the tank within a secondary containment area, secure the tank to prevent movement on the containment surface or mount it on metal skids (not on an elevated stilt rack), and contact the Navajo Nation Storage Tank Program for an inspection of the AST to check for evidence of soil contamination both before the first deposit of a regulated substance and when the AST is removed from the site.	**TBC** Guidance should be followed for AUM response activities requiring ASTs to be brought to sites (for example, for fuel needed for equipment and vehicles).

Notes:

§	Section
§§	Sections
ARAR	Applicable or relevant and appropriate requirement
AST	Aboveground storage tank
AUM	Abandoned uranium mine
BMP	Best management practice
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
CWA	Clean Water Act
DOE	U.S. Department of Energy
NMAC	*New Mexico Administrative Code*
N.N.C.	*Navajo Nation Code*
NNCWA	Navajo Nation Clean Water Act
NNEPA	Navajo Nation Environmental Protection Agency
NNSTA	Navajo Nation Underground and Aboveground Storage Tank Act
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
TBC	To be considered
UMTRCA	Uranium Mill Tailings Radiation Control Act
U.S.C.	*United States Code*
WOTUS	Waters of the U.S.

Attachment IV
Response to Comments

This Response to Comments, also known as a Responsiveness Summary, is included as an attachment to United States Environmental Protection Agency's (USEPA) Action Memorandum for the Section 32 and 33 Mines site (Site) and is included in the Administrative Record for the Section 32 and 33 Mines site Engineering Evaluation/Cost Analysis (EE/CA) (available at https://www.epa.gov/navajo-nation-uranium-cleanup/section-3233-mines-site-tronox#docs). This Response to Comments includes the following sections:

A. Overview of the Section 32 and 33 Mines site

B. Community Involvement and Navajo Nation Consultation

C. Summary of Comments Received During the Public Comment Period and USEPA's Response

Part I: Summary and Response to Community Concerns

Part II: Comprehensive Response to Specific Legal and Technical Questions

D. Acronyms

A. OVERVIEW OF THE SECTION 32 AND 33 MINES SITE

The Section 32 and 33 Mines site is located in the Eastern Abandoned Uranium Mine (AUM) Region of the Navajo Nation, approximately 9 miles north of Prewitt, New Mexico. The Section 32 and 33 Mines are former underground uranium mines with an associated transfer station in the Grants Mining District. The Section 32 Mine is located on land owned by the United States and held in trust for allottees within the Casamero Lake Chapter of the Navajo Nation, and the Section 33 Mine is located on privately-owned land adjacent to Section 32 in McKinley County, New Mexico.

The Section 32 and 33 Mines produced approximately 38,137 tons of ore between 1960 and 1978. In 2012, USEPA Region 9 closed three mine shafts and excavated and consolidated waste rock from the Section 32 Mine and Section 32/33 Transfer Station in a temporary stockpile as part of a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Superfund cleanup action. The features at the Section 32 and 33 Mines include three closed mine shafts, five unreclaimed waste piles, one reclaimed transfer station, and one temporary stockpile. No mine waste has been removed from the Section 32 and 33 Mines site.

The Section 32 and 33 Mines are located near several rural residences and 1.2 miles southeast of the Casamero Lake Chapter House. The Section 32 and 33 Mines area is currently used for grazing and recreation. All areas are relatively flat.

The draft EE/CA was prepared by Tetra Tech, a contractor to USEPA, reviewed and commented on by USEPA and Navajo Nation EPA, and then finalized by USEPA in coordination with Navajo Nation EPA (NNEPA). USEPA published the final EE/CA for public comment in March 2024 at the same time that it published the final EE/CA for the Quivira Mines site, which is an abandoned uranium mine site in the same region. A separate responsiveness summary and action memorandum was prepared for the Quivira Mines site.

The Section 32 and 33 Mines site EE/CA details multiple removal action alternatives and compares the effectiveness, implementability and cost of the alternatives. The removal action alternatives are:

- Alternative 1: No Action

- Alternative 2: Consolidate Waste, Blend into Landscape, and Cap On Site
- Alternative 3: All Waste Removed and Disposed of at Proposed Red Rocks Disposal Facility
- Alternative 4: All Waste Removed and Disposed of at RCRA C or Low-Level Radioactive Waste Facility

After comparing the alternatives and consulting with communities and Navajo Nation, USEPA selected Alternative 3, All Waste Removed and Disposed of at Proposed Red Rocks Disposal Facility as the recommended removal action in the EE/CA. After concluding a formal public comment period and conducting additional consultation with communities and Navajo Nation, USEPA is now selecting Alternative 3 in the Action Memorandum for the Site. Cleanup goals were developed for the Site that are protective of human health and the environment. Materials exceeding the cleanup goals at the Site will be excavated and transported to a newly constructed repository, the Red Rocks Disposal Facility near Thoreau, New Mexico. The recommended haul route extends from the Site, south on County Road 19, and then west on Ranch Road to the Red Rocks Disposal Facility, passing through the Casamero Lake community. After completing the selected removal action, the Site will have pre-mining risk levels that allow for unrestricted land uses, as preferred by USEPA and the Navajo Nation government.

B. COMMUNITY INVOLVEMENT AND NAVAJO CONSULTATION

Before publishing the EE/CA and initiating the public comment period for the Quivira Mines site and Section 32 and 33 Mines site EE/CAs, USEPA worked closely with the communities near the sites to develop and evaluate cleanup alternatives. USEPA met with communities potentially impacted by the hauling and disposal of the mine waste rock at the Red Rocks Disposal Facility. USEPA also implemented a two-phase government-to-government consultation process with Navajo Nation regarding the EE/CA that was agreed to by both USEPA and the Navajo Nation government. Outreach activities included:

<u>Community Meetings and Open Houses:</u>

- **Spring 2020 to Present:** USEPA held meetings with the Casamero Lake community and attended chapter meetings to provide updates.
- **8/6 and 8/7/2023:** USEPA presented the Red Rocks Disposal Facility alternative and preferred and alternate haul routes to the Thoreau community and conducted a Red Rocks Disposal Facility tour for community members.
- **9/21/2023:** USEPA presented the Red Rocks Disposal Facility alternative and preferred and alternate haul routes to the Church Rock community.
- **11/8 and 11/9/2023:** USEPA presented the Red Rocks Disposal Facility alternative and preferred and alternate haul routes in a presentation and on posters to the Casamero Lake community.
- **12/12 to 12/15/2023:** USEPA held three Open House listening sessions with the Baca/Prewitt and Thoreau communities to gather public input about EE/CA alternatives and haul routes, and to hear questions and concerns from community members. USEPA presented posters of the Red Rocks Disposal Facility alternative and preferred and alternate haul routes to the Thoreau and Baca/Prewitt Chapters.

- **1/22 to 1/26/2024:** USEPA gave presentations in six Chapters (Baca/Prewitt, Casamero Lake, Pinedale, Standing Rock, Thoreau, Church Rock) answering questions and responding to concerns raised during December 2023 open houses regarding the Red Rocks Disposal Facility alternative and recommended and alternate haul routes.

Between October 2023 and March 2024, USEPA undertook a community engagement effort to develop a Community Involvement Plan for the Casamero Lake community and the Section 32 and 33 Mines site. This process included hosting two Open Houses in November 2023 to present information and listen to communities. USEPA also interviewed community members to solicit input for the Community Involvement Plan. In March 2024, USEPA finalized and published the Section 32 and 33 Mines site Community Involvement Plan, which can be found on the internet here: https://www.epa.gov/system/files/documents/2024-03/section-32-33-mines-site-community-involvement-plan-2024-02.pdf

Government-to-Government Consultation between USEPA and the Navajo Nation Government:

On June 20, 2023, USEPA and the Navajo Nation government conducted the first of two phases of government-to-government consultation meetings regarding the Quivira Mines and Section 32 and 33 Mines site EE/CAs. The meeting was held between USEPA and the Navajo Nation Council's Resources and Development Committee and NNEPA. In accordance with a process agreed to by the Navajo Nation and USEPA, the first government-to-government consultation meeting presented the draft EE/CA alternatives without recommended alternatives, prior to USEPA issuing the final EE/CAs with recommended alternatives for public comment.

On November 8, and December 2, 2024, USEPA and Navajo Nation conducted the second of two phases of government-to-government consultation meetings regarding the Quivira Mines and Section 32 and 33 Mines site EE/CAs. This phase of government-to-government consultation involved discussing issues and concerns raised by the Navajo Nation and members of the public during the public comment periods for the EE/CAs and USEPA presenting its recommended cleanup alternatives. The primary issues discussed included the location of the Red Rocks Disposal Facility and the impacts it might have on allottee mineral rights. NNEPA invited the United States Bureau of Indian Affairs (BIA) to the consultation meetings to discuss the allotment and mineral rights issues. Navajo Nation representatives also raised concerns about impacts to roadways and expressed a desire to receive general updates on permitting of the Red Rocks Disposal Facility as it proceeds. Based on the discussion, USEPA agreed to follow up with the Navajo Nation government on several aspects of the cleanup action during the permitting and design process.

Several points of discussion raised by Navajo Nation during the second phase of the government-to-government consultation on the Quivira Mines and Section 32 and 33 Mines site EE/CAs concerned broader technical and policy issues that impact cleanup decisions at sites across Navajo Nation. These topics included how to employ high-pressure slurry ablation as a treatment technology at mine sites and how to address areas of naturally occurring radioactive material left behind after cleanup. No specific objections to the recommended alternative were raised.

EE/CA Publication and Public Comment Period:

After completing the extensive community outreach described above, USEPA published EE/CAs for both the Quivira Mines and Section 32 and 33 Mines sites simultaneously and held a public meeting on

March 23, 2024. This meeting was held at the University of New Mexico campus in Gallup, New Mexico and marked the opening of the 60-day public comment periods for both EE/CAs. Over 100 individuals attended the March 23, 2024, public meeting which lasted for five hours. USEPA used a court reporter to transcribe all comments made during the March 23, 2024, public meeting.

On May 15, 2024, during the public comment periods, USEPA, NNEPA, and State of New Mexico representatives gave a presentation regarding the recommended alternatives at the Thoreau High School. Over 200 students attended the school-wide assembly. USEPA provided pre-paid postcards, USPS mail and email addresses for USEPA project management staff, and a toll-free voicemail phone number for community members to provide comments on the EE/CAs and USEPA's recommended alternatives.

The public comment periods for the Quivira Mines and Section 32 and 33 Mines sites EE/CAs opened on March 23, 2024, and closed on May 22, 2024.

Advertising:

USEPA advertised the availability of the EE/CAs, the March 23, 2024 public meeting date, time and location, and other ways for the public to voice opinions and concerns, and submit comments. Advertising methods included making radio announcements on KTNN, KGLP and KGAK, publishing newspaper advertisements in the Gallup Independent and the Navajo Times and distributing flyers in the Red Water Pond Road and Pipeline Road communities, the Thoreau, Baca/Prewitt, Casamero Lake and Church Rock Chapters, and the Thoreau community. The mailings included factsheets on the cleanup alternatives, and phone and email contact information for USEPA project management staff.

C. SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND USEPA RESPONSES

USEPA received comments in-person and via phone and video calls from community members during the March 23, 2024 public meeting held at the University of New Mexico in Gallup. USEPA also received comments via postcards, toll-free voicemail, email and USPS mail. While many comments refer primarily to the Quivira Mines site, any comments related to Alternative 3, All Waste Removed and Disposed of at Proposed Red Rocks Disposal Facility, are also considered relevant to the Section 32 and 33 Mines site. The public comment period for both the Quivira Mines site and the Section 32 and 33 Mines site overlapped, and comments were collected together. This responsiveness summary for the Section 32 and 33 Mines site therefore includes the comments received during the public comment period that were deemed by USEPA to be relevant to the Site.

USEPA received a letter co-signed by 66 members of the Senior Class at Thoreau High School, approximately 40 emails from other students at Thoreau High School and approximately 15 comments from Thoreau and Crownpoint community members. Thoreau is located approximately 6 miles west of the proposed Red Rocks Disposal Facility. USEPA received approximately 25 comments (mostly regarding the Quivira Mines site, but on topics pertinent to the Section 32 and 33 Mines site) from members of the Red Water Pond Road and Pipeline Road communities, which are the communities most directly impacted by the Quivira Mines site. In addition, there were several comments from other Navajo Nation community members who are concerned about AUM issues.

USEPA also received comments from multiple government agencies including NNEPA, the Diné Uranium Remediation Advisory Commission (DURAC), BIA, the State of New Mexico Environment Department (NMED) and the State of New Mexico Energy, Minerals and Natural Resources Department (EMNRD).

USEPA also received comments from several nonprofit organizations and from Rio Algom Mining, LLC, which is a potentially responsible party (PRP) for the Quivira Mines site.

In total, USEPA received input from over 150 commenters. USEPA carefully reviewed and considered each comment received and provided a response addressing each comment directly or as part of a group of similar comments. Because of the large number of comments received and to streamline its response, USEPA provided a single response where possible to address similar comments made by multiple commenters.

Many comments were not specific to the Quivira Mines or Section 32 and 33 Mines sites or the EE/CAs and instead provided general input about community recommendations and concerns about the AUM sites and the legacy of harmful impacts from mining. Other comments were focused on topics related to the Quivira Mines site but were deemed to also be relevant to the Section 32 and 33 Mines site. Nonetheless, those comments are identified, and a response is included that relates to the Section 32 and 33 Mines site.

Many comments focused on support for and opposition to Alternative 3, the recommended cleanup alternative, support for and opposition to cleanup alternatives not recommended, and the evaluation of alternatives in the EE/CA. Some comments also provided recommendations and identified concerns about engagement with communities on Navajo Nation. Comments that were specific to the Section 32 and 33 Mines site were primarily from the State of New Mexico and addressed regulatory purview, consistent cleanup approach with Quivira, impacts to area groundwater, and construction considerations.

All comments collected from the public meeting and received via postcard, email, USPS mail, and toll-free voice mail are included in the Administrative Record for the Section 32 and 33 Mines site EE/CA (available at: https://semspub.epa.gov/work/09/100036462.pdf).

Part I: Comments on Alternatives

For Part I, USEPA reviewed all comments and categorized them, if possible, into specific topics or issues presented and discussed below. Responses to comments are, therefore, a response to the issue and not necessarily the commentor. To avoid mischaracterization of comments, USEPA has summarized comments for each topic using direct excerpts from public comments without correcting grammar.

Most of the commenters focused on the recommended alternative, Alternative 3, with more commenters supporting the recommended Alternative 3 than opposing it. In general, commenters opposing the recommended alternative were from the Thoreau community, which is located near the proposed Red Rocks Disposal Facility. While some of the commenters that supported the recommended alternative were from the Casamero Lake community, most were from the Red Water Pond Road and Pipeline Road communities, which are located near and impacted by the Quivira Mines

site. Several comments supporting Alternative 3 were from individuals who do not live in the Red Water Pond Road, Pipeline Road, Casamero Lake, or Thoreau communities.

Other comments received cover a wide variety of topics, including: descriptions of the harmful effects on family members and friends from the legacy of uranium mining; concerns for respecting the Diné culture and Mother Earth; technical issues about the characterization and extent of the mine waste rock; environmental factors at the mines and the disposal facility (e.g., geology, hydrology, erosional factors); suggestions for logistical improvements to support implementing a cleanup action; support for Alternative 5 (disposal at Deer Trails, CO); support for a new Alternative 6 to transport mine waste rock to a new repository located at mines in Ambrosia Lake; support for a more holistic approach for cleaning up the more than 500 mines on Navajo Nation and possibly managing the mine waste rock on federal lands; distrust of the federal government; and impacts to communities resulting from the cleanup of the mines (e.g., truck traffic, and dust).

I-1. Support for the Recommended Alternative 3, All Waste Removed and Disposed of at Proposed Red Rocks Disposal Facility

Comment (General Support of Alternative 3): Many community members expressed support for the recommended Alternative 3 – Disposal at the Red Rocks Disposal Facility. USEPA received approximately 40 comments supporting Alternative 3. Several comments were from family members of Red Water Pond Road and Pipeline Road community members or non-profits, submitted on behalf of larger groups without internet access or resources to comment. Below is a collection of excerpts summaries of the comments received on this topic:

- It is the only practical solution that protects the communities near the mine while not harming others.
- The waste can be safely transported and capped at the proposed Red Rocks Disposal Facility.
- Alternative 3 protects Navajo people and land because the waste would go to a professional facility with monitoring.
- The waste at the mines is on the side of a mesa and can't be controlled like at the Red Rocks Disposal Facility which is engineered to handle waste.
- The proposed Red Rocks Disposal Facility can be built specifically to protect air, water and people, and it is already a landfill facility where my trash goes, so there would not be new harm to the land and environment by making an area specifically for uranium mine waste rock.
- There could be potential problems from transporting waste on I-40, but this seems like the best overall option.
- The Red Rocks Disposal Facility is better than capping in-place because the communities near the mine have been impacted for too long and the Red Rocks Disposal Facility can safely protect groundwater and the communities near the facility.
- Alternative 3 is the best option for the local communities and the Navajo Nation; people live within a few hundred feet of the waste currently and there isn't an engineered containment like there would be at the Red Rocks Disposal Facility.
- There are people who live near the Red Rocks Disposal Facility, but the facility is large and there aren't people who would be right next to the waste.
- Transport to the Red Rocks Disposal Facility is the best compromise to minimize travel distance and accidents.

- We want the waste removed so that our plants and animals can grow again; we want the waste removed so our kids and future generations can live here on our Navajo and ancestral land with complete use of the land without restrictions or risk.
- A resident from near the Jackpile-Paguate Superfund site supported Alternative 3 because they have seen their parents and grandparents harmed by the legacy of uranium mining; taking the waste to a safe place away from the Red Water Pond Road community will help that community where cancer currently exists.

Response: USEPA appreciates the feedback and recognizes the physical and emotional impacts caused by the presence of the waste in the impacted communities during the years of mining and the many years since. USEPA will continue to work with the communities throughout the permitting, design, construction, closure, and long-term stewardship of the waste disposal facility within the Red Rocks Landfill property, and throughout the design and cleanup at the Section 32 and 33 Mines site.

The cleanup goals calculated for the Site carefully consider the various ways people, animals and the environment could be exposed to the mine waste rock and are based on conservative assumptions to ensure protectiveness of human health and the environment. USEPA worked with NNEPA to select goals so that the Site will be suitable for unrestricted use for future generations.

Comment (Waste Transport): Several people commented that transporting the waste to the proposed disposal area at the Red Rocks Disposal Facility is not as bad as some people think. They explained that it is dirt and not ore or mill material with higher concentrations of contamination. The ore was hauled on the same roads years ago without concerns.

Response: Based on its evaluation in the EE/CA, USEPA agrees that the mine waste rock has concentrations of contaminants that can be safely handled and transported on the recommended haul route with minimal impact to the community.

Comment (Support of Alternatives 2 and 3): The EMNRD Mining and Minerals Division and NMED both commented that the State could support both Alternative 3 (disposal at the proposed Red Rocks Disposal Facility) and Alternative 2 (cap on-site) which could be protective of human health and the environment. The State does not support Alternative 1 (no action) because it is not protective, nor does it support Alternative 4 (disposal at Deer Trails, CO) because it is cost prohibitive and may present great risk to human health and the environment. The State notes that Alternative 2 (cap on-site) meets state applicable or relevant and appropriate requirements (ARARs) and complies with the policies in the 2016 Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations in New Mexico. While Alternative 3 costs significantly more and poses additional short-term risks due to the transport of mine waste rock, it does completely remove the mine waste rock from within the impacted communities. Alternative 3 also requires a Mining Act Permit from EMNRD MMD and a Discharge Permit from NMED to construct the waste disposal cell within the Red Rocks Disposal Facility.

Response: USEPA appreciates the input from the State of New Mexico and will work closely with the State throughout the design and permitting process.

Comment (Traffic Suggestions for Alternative 3): Comments requested that USEPA reconsider the recommended haul route to avoid hauling waste through Thoreau. One recommendation is to drive the waste to the I-40 offramp in Prewitt and reconsider the problems described in the EE/CA concerning a

surface railroad crossing. The second recommendation is to transport the waste by rail to the Red Rocks Disposal Facility. Additional recommendations include electronic traffic controls at Challenger Road and several other locations, additional street lighting along Hwy 566 within the Village of Church Rock, limiting hauling to low traffic times, and properly covering and securing all loads.

Response: USEPA appreciates the suggestions for traffic controls and other traffic mitigation factors. USEPA will consider these suggestions in developing the traffic control plan and will engage with the communities on traffic control measures during the design phase. Working with the local Chapters, schools and communities is an integral part of the design process. USEPA's current analysis determined that the recommended route from I-40 along Hwy 371 is the safest and most cost-effective route considering multiple factors, however, USEPA will continue to consider all potential haul routes.

The number of trucks per day required for hauling the mine waste rock is minimal compared to the existing traffic on Hwy 371. USEPA estimates Alternative 3 will require 96 truck trips per day for approximately four years, compared to the 6,000 trucks and 14,000 cars that travel daily on I-40 near Thoreau. Hwy 371 through Thoreau handles 4,900 vehicles per day. The haul trucks would be covered and secured to minimize any potential risk of dust release during transport through the Thoreau community.

Rail transport does not offer benefits over truck hauling because the waste would still need to be transported by truck through the Church Rock community and past schools to a train depot, then it would be handled a second time (increasing costs and risk) to transfer the mine waste rock from the trucks to the train, and then handled a third time after train off-loading for final trucking to the Red Rocks Disposal Facility.

I-2. Opposition to the Recommended Alternative 3, All Waste Removed and Disposed of at Proposed Red Rocks Disposal Facility

In general, community members in the Thoreau, Baca/Prewitt and Crownpoint area, including many students at Thoreau High School, expressed opposition to the disposal of uranium mine waste rock at the proposed Red Rocks Disposal Facility. These comments related to waste coming from both the Quivira Mines site and the Section 32 and 33 Mines site. The comments were grouped into related categories below to streamline responses.

Comment (Health Concerns): Multiple commenters had concerns about potential harmful health impacts from creating a new uranium mine waste rock disposal facility in Thoreau. These comments included:

- Uranium waste is highly toxic and can cause kidney failure, cancer, birth defects, and harm organs.
- People will become radioactive and maybe grow extra eyes or two heads and other health impacts.
- The proposed new mine waste rock disposal facility poses potential harmful health effects to their communities and visitors, particularly the large number of elderly and future generations.
- The proposed new mine waste rock disposal facility poses potential harm to kids playing outside.

- The proposed new mine waste rock disposal facility could have harmful effects on the diverse local ecosystem, including contamination of local air, groundwater and soil that could lead to long-term ecological damage.
- The uranium could kill all of us in Thoreau and surrounding areas.
- The closest residents are families living only 0.5 mile away and they will be harmed.

Response: USEPA appreciates the concerns expressed about potential health impacts, especially to elders and youth. USEPA wants to provide additional information about the type of mine waste rock at issue at the Site, its source and how it differs from other radiological waste. The mine waste rock at the Quivira Mines and Section 32 and 33 Mines sites that requires cleanup is mostly soil and rock the miners excavated to reach the ore that contained higher levels of uranium and other valuable metals. Therefore, the mine waste rock that remains at the Quivira Mines and Section 32 and 33 Mines sites is made up of soil and rock with naturally occurring uranium and other metals too low in concentrations to be sold as ore. The mine waste rock does not have the same concentrations of uranium and other metals that radiological waste resulting from nuclear weapons manufacturing or nuclear power plants may contain. The Quivira Mines and Section 32 and 33 Mines sites waste is considered mine waste rock with very low radiation levels that is not regulated by the Nuclear Regulatory Commission (NRC). While the Quivira and Sections 32 and 33 Mines sites waste rock with low concentrations of metals and radiation can potentially pose a risk to someone in some circumstances, for example someone living on top of the waste rock or next to an uncontrolled mine waste rock pile for most or all of their life, the waste rock can be safely handled during transport and managed in the long term at the Red Rocks Disposal Facility without posing a risk to the community.

The Red Rocks Disposal Facility is located on a large parcel of private land 6 miles east of the Thoreau community and more than 1 mile from any residence. The Red Rocks Disposal Facility will have controlled access and be monitored to prevent exposure and releases. When all the waste rock from the Quivira and Section 32 and 33 Mines that is required to be removed has been transported, the waste disposal cell will be permanently closed by constructing an earthen cover, safely burying the waste to protect the community. The surface soil of the cover at the closed waste disposal cell at the Red Rocks Disposal Facility will have radiation levels similar to those of the natural surrounding soil.

Some commenters seemed to believe that USEPA's proposed action for the Quivira Mines and Section 32 and 33 Mines sites is related to a 2018 proposal by the NRC and Holtec International to transport spent fuel with high levels of radioactive substances from nuclear reactors through the Thoreau community. To distinguish these two unrelated projects, USEPA gave a presentation at the Thoreau High School on May 15, 2024, and provided an opportunity to ask USEPA questions.

Comment (Transportation Concerns): Multiple commenters had concerns about Alternative 3 and its potential harmful impacts from hauling waste to a new disposal facility in Thoreau. As with other comment topics, some of these comments were relevant to waste coming from either the Quivira Mines site or the Section 32 and 33 Mines site. These comments included statements about the:

- Potential for additional traffic accidents involving haul trucks.
- Potential for spilling hazardous material during transport.
- Destruction of roads from heavy haul trucks.
- Increased diesel air pollution in the community from the haul trucks.

Response: USEPA estimates that 3,855 haul truckloads will be required to transport waste from the Section 32 and 33 Mines site under Alternative 3. USEPA recommended Alternative 3, in part, to

minimize the risk of traffic accidents and emission of air pollution and greenhouse gases. For the Section 32 and 33 Mines site, USEPA selected the Alternative 3 removal action partially because it requires haul trucks to travel 13 miles from the Site to the Red Rocks Disposal Facility, compared to the 567 miles each truck would need to travel from the Site to dispose of the waste in Deer Trail, CO. The number of truck trips made per day on County Road 19 will increase noticeably, but the change will be relatively small compared to the current volume of vehicle traffic. Approximately 5 miles of the haul route from the Section 32 and 33 Mines site to the Red Rocks Disposal Facility will be on a private toll road called Ranch Road. Because Ranch Road is a private toll road, traffic issues will not impact the public for over one third of the haul route. Additionally, the proposed haul route will not pass the communities of Thoreau or Baca/Prewitt. USEPA estimates approximately 100 truck trips per day for approximately 2 to 3 months of hauling. Route 19 is already in poor condition between the Site and the turnoff to Ranch Road. Therefore, USEPA will work to ensure that the road quality is improved before hauling begins. The additional truck traffic from the project will cause a small increase in traffic and air emissions and will not materially increase overall traffic risks.

In addition, the project will include measures to further prepare for and prevent impacts to the community and reduce risks. Transportation plans will include procedures for responding to spills and any training requirements. Excavation and hauling would likely be slowed or paused during any periods of bad weather, and the trucks will be scanned, and if necessary, cleaned before leaving the Site. Each truck will be covered to prevent dust while driving and to minimize spills in the event of an accident. If a truck was to spill its load, the cleanup would be relatively simple and require picking up the waste rock. The waste rock poses no short-term acute health risks, so risks to the community from a spill will be minimal. Risks from a truck spill to people driving on the road or living nearby would be minimal and short-term. USEPA also considered the greater risk of possible injury to truck drivers and other vehicles on the road. USEPA notes that transporting the waste to the Red Rocks Disposal Facility poses much lower risks of injury or death due to traffic accidents than any other off-site disposal option, which are significantly further distances from the Site and would require haul trucks to drive more miles.

Comment (Economic Concerns): Several commenters noted the proposed Red Rocks Disposal Facility could create economic impacts to the Thoreau community. These comments included statements such as:

- The presence of a nuclear waste disposal facility could deter investors, businesses and tourists.
- The Thoreau landfill should only be for local residents' trash.
- There could be damage to the natural landscape from building a new dump.
- No dumping on the land that our ancestors lived on and loved.
- Get more money from the government or donations to find a better solution.
- Several commenters questioned USEPA staff if they would live in or visit Thoreau if it had a uranium dump.

Response: The waste at the Quivira Mines and Section 32 and 33 Mines sites that requires cleanup is mostly soil and rock with low-grade protore that mining companies excavated and discarded to reach the ore which had higher levels of uranium and other valuable metals. As a result, the mine waste rock is primarily made up of dirt and rock with low concentrations of naturally occurring uranium and other metals that were too low to be sold as ore. The mine waste rock is not the same as radiological waste from nuclear weapons manufacturing or nuclear reactors. Consequently, the proposed Red Rocks Disposal Facility would not be a "nuclear waste disposal facility." The waste rock from the Quivira Mines

and Section 32 and 33 Mines sites has low levels of radiation which can safely be handled with typical earth moving equipment and capped by layers of clean dirt and rock.

USEPA, the State of New Mexico, Navajo Nation and community leaders plan to conduct additional education and outreach events regarding the low-level threat from the waste rock and how it will be safely disposed of at the proposed Red Rocks Disposal Facility to alleviate economic and other concerns. After closure, the disposal cell at the proposed Red Rocks Disposal Facility will be graded and revegetated with native plants to look like the natural surrounding land. The proposed Red Rocks Disposal Facility is on private land that has an operating municipal solid waste landfill, and the proposed waste disposal cell will not increase impacts on the surrounding land or communities. The Red Rocks Landfill will continue to operate under existing permits and regulations.

In 2015, USEPA recovered almost $1 billion from a litigation settlement to address over 50 mines on and near the Navajo Nation for which Kerr McGee Corporation and its successor, Tronox, have responsibility. The total cost for implementing the Alternative 3 cleanup, including monitoring and maintenance oversight of the Red Rocks Disposal Facility, at the Section 32 and 33 Mines site is estimated to be $9.8 million. Getting more money from the government or donations would not change the recommended alternative because the analysis in the EE/CA showed that the proposed Red Rocks Disposal Facility is the best alternative for safely disposing of the mine waste rock.

Workers at the Red Rocks Disposal Facility will be protected from radiation exposure by worker protection requirements set forth in the Occupational Safety and Health Act (OSHA). These regulations require safe work practices and training to ensure worker safety. USEPA also adheres to these requirements when conducting work at AUM sites. Access to the Red Rocks Disposal Facility will be restricted to workers only.

Comment (Technical Concerns): Multiple commenters expressed concerns over technical issues related to building and operating a new disposal facility. These comments included statements such as:

- 30-60 mph winds seen locally could blow the cover topsoil off of the uranium waste and then uranium waste dust being spread to the community.
- The tarp at the bottom of the waste will create a swimming pool effect that will eventually leak.
- Rain and snow leaking into the waste in the landfill or trucks and uranium and water mixing can create explosions.
- Uranium could leak into the underlying aquifer; the uranium could contaminate water and kill our animals if the tanks leak or overflow.
- The facility may be safe at first but what about 1,000 years from now.
- Will the arroyos near the landfill carry water from the repository or cause erosion.
- The waste won't stay where you put it.
- Even secure buried barrels will eventually come out and harm the land and families in Thoreau.
- The presentation was confusing about whether liners would be used at the proposed facility or for the on-site option. The use of liners seems to change with every presentation.

Response: Design of the waste disposal cell at the Red Rocks Disposal Facility has not yet been completed. Permit requirements set by the State of New Mexico will be the basis for the design parameters and criteria for the proposed waste disposal cell. Therefore, any information provided at this time about the design of the waste disposal cell is general in nature and typical of other disposal facilities that accept this type of mine waste rock.

It is typical that components of a waste disposal cell such as the cover (also referred to as a "cap") will be designed and built to be protective against extreme climate/weather impacts, such as high winds and rainfall. The waste disposal cell design will also consider geological and hydrogeological features. After closure of the waste disposal cell, USEPA and the State of New Mexico will conduct regular inspections to ensure that the facility operator performs any needed maintenance and repairs any damage or erosion on the waste disposal cell cover surface. Regular monitoring and maintenance will identify and repair issues before any waste will be exposed. Covers for mine waste rock disposal cells are commonly designed to withstand a 1,000-year storm event. Even with that type of historic storm, the cap should last much longer with routine inspections and maintenance.

The design will likely partially bury the mine waste rock within waste disposal cell and cover the cell with an evapotranspiration (ET) soil and rock cap that will prevent water from entering into the mine waste rock disposal cell. Details regarding the need for liners for the disposal cell will be specified in the final State of New Mexico permits. The ET cap and a disposal cell liner (if necessary) will provide multiple features to protect groundwater. Any liners, if specified, would be an extra fail-safe measure because no water is expected to infiltrate through the ET cap.

The uranium in the mine waste rock is not reactive with water. Therefore, there is no possibility of an explosion or reaction of any kind. This is the same uranium-bearing rock found naturally at the surface in many mining areas on the Navajo Nation and elsewhere. The waste rock will be transported in trucks directly to the disposal facility and will not be stored in tanks or barrels and, thus, there is no possibility of leakage or overflow from such containers. The waste rock will be capped at the Red Rocks Disposal Facility and there will be no transport by surface water run-off or into arroyos.

Comment (Other Potential Alternatives to Consider): Several commenters requested that USEPA consider alternatives not evaluated in the EE/CA. These comments included statements such as:

- Why can't the waste be placed back into the mine.
- The mine waste rock could be buried in deep geological disposal units or reprocessed into new fuel.
- Explore solutions that prioritize the safety of residents and the environment by investing in renewable energy sources and implementing stricter regulation on nuclear waste management.
- What about relocating people similar to what happened between the Navajo and Hopis so that people don't live near the waste.

Response: Placing the waste rock back into the mine was evaluated in the EE/CA and found to be not feasible. One impediment to this option is that the historical mine shafts are all filled and closed. In addition, the depth of the mine workings at the Section 32 and 33 Mines site are unknown but could be deep enough to render placement of waste back in the mine impossible and even if it is possible, backfilling the mine would only address a portion of the waste. Returning waste rock to the mines would require drilling new boreholes and creating a slurry of the mine waste rock, which would take millions of gallons of scarce water and potentially cement that would greatly increase the waste volume. Consequently, even if other technical challenges were overcome, much of the mine waste rock volume would require disposal elsewhere. By comparison, the composition and nature of the mine waste rock means it can be safely handled at the proposed Red Rocks Disposal Facility.

The mine waste rock is not spent nuclear fuel or other enriched uranium product. When mined, the waste rock had concentrations too low to be sent to a mill to be processed into fuel. The concentrations

of uranium and other minerals in the mine waste rock are still generally too low to be economically recovered. New energy policies will not affect the need to address the current piles of waste rock at the Site and safely clean up existing mine waste rock. Also, new, stricter nuclear waste management regulations would not change the need to address this current mine waste rock. This mine waste rock is not nuclear waste and therefore would not be affected by any new nuclear waste management regulations.

Permanent relocation of nearby residents was not considered as an alternative because it would remove people from their land. Permanent relocation is only used as a last resort when no other viable alternatives are available. Alternative 3 can be safely implemented without permanent relocation of nearby residents.

Comment (No Trust in USEPA or the government): Several commenters claimed that USEPA is lying when USEPA says that the waste can be safely transported to, and capped at, the Red Rocks Disposal Facility and USEPA is lying about the Red Rocks Disposal Facility being a good solution. A commenter at the public meeting stated they do not trust the government and that the Thoreau Chapter would pass a resolution opposing Alternative 3.

Response: USEPA acknowledges that the commenters are distrustful of the government. USEPA is required to prepare detailed scientific and technical documents following the statutes, policy and guidance. USEPA's EE/CA and related documents, as well as statements made during public meetings, are based on science and engineering and are backed by data and experience addressing similar mine sites across the country. USEPA is required by CERCLA, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Agency policy and guidance to follow a process for site evaluation and cleanup that involves extensive scientific review. The EE/CA and supporting USEPA documents and analysis supporting the EE/CA followed this process, which included review by NNEPA. USEPA is open to listening and clarifying any specific statements that the commenters believe are untruthful. USEPA received a copy of a resolution passed by the Thoreau Chapter and has included it in the Administrative Record for this action.

Comment (Community Concerns): Many comments expressed community concerns related to dumping uranium waste on Navajo lands. These comments included statements such as:

- The U.S. government has historically and currently mistreated native Americans.
- Why dump in Thoreau? Is it because it is a small town of mostly native American people with no big companies or people who will object?
- Why not somewhere else away from Navajo lands, like Albuquerque or the existing landfill in Colorado or Yucca Mountain, NV?
- What if this kills off our Native families who have already lived with uranium mining for 70-80 years? Who then will teach us our ways?
- The government abuses their power and disregards the needs of indigenous people, and this is a form of colonialism.

Response: By selecting Alternative 3, USEPA is removing the waste from a Navajo community and taking it to an off-Navajo location. To help build and strengthen relationships, USEPA engaged with the communities, Chapters and the Navajo government during the development of these documents and held many meetings to solicit community input and comment. USEPA has been meeting monthly with

the mine-impacted Casamero Lake community for more than 2 years to understand their concerns and help develop and select a cleanup alternative that meets their needs. For the past year, USEPA has been meeting with communities located along the proposed haul routes and near the Red Rocks Disposal Facility to explain the cleanup approach and why transporting the mine waste rock poses a low risk to their communities and outweighs the long-term challenges of leaving the mine waste rock in the Casamero Lake community, where it is located now.

The selected alternative of excavating and disposing of the mine waste rock at the proposed Red Rocks Disposal Facility removes the mine waste rock from a Navajo community and places it on private land in New Mexico that has an existing municipal solid waste landfill where the mine waste rock can be safely managed away from residential properties. The waste disposal cell will be constructed, maintained, and permanently capped to protect the surrounding land and resources into the future. Disposing of the mine waste rock at a facility such as at Deer Trails, CO or facilities in other regions or states poses many additional challenges and risks from the long hauling distances and would not provide additional protection for the affected communities.

The mine waste rock can be safely managed at the proposed Red Rocks Disposal Facility, which will pose no immediate threat to community health and will not impact the ability of community members to teach Navajo ways to future generations. This permanent solution for the mine waste rock also protects everyone in the Casamero Lake community, located closest to the Section 32 and 33 Mines site, who have been living with uranium mining and mine waste rock for decades. It also provides for long-term, permanent management of the mine waste rock at a disposal facility with state and federal oversight.

Comment (More Waste Will Come to Thoreau from Other Sites): Several commenters asked if uranium waste from other parts of New Mexico or out of state would be disposed of at the facility. Other commenters added that once some uranium waste is placed at the Red Rocks Disposal Facility, they know that more mine waste rock will come from many other mine sites.

Response: Before mine waste rock can be disposed of at the Red Rocks Disposal Facility, the State of New Mexico must first issue permits allowing the proposed disposal facility to accept mine waste rock. The State has said that only waste from the Quivira Mines and the Section 32 and 33 Mines sites would be included in the permit. USEPA supports this position. This permit has not yet been granted, and any changes to a final permit would require public input.

Comment (Thoreau High School Students Concerns): A total of 66 graduating senior students at Thoreau High School submitted a joint letter with multiple detailed questions and comments, summarized below:

> **Comment:** Why would USEPA place waste on uncontaminated land when usually waste is placed onto areas or facilities that are already contaminated? Why is USEPA proposing placing the waste at a Subtitle D Municipal Waste Facility that is only a few miles from a town of 2,500 people? What is the breakdown of costs for the new facility and payments to the State of New Mexico and Navajo Nation?
>
> **Response:** USEPA often manages waste in-place in an already contaminated area like on-site at a mine or in an existing waste management facility, but the primary goal of the removal action

is to handle waste in a way that best protects human health and the environment into the future. Sometimes the best alternative can be disposing of waste within an existing waste management facility, such as at the Red Rocks Landfill. The proposed new mine waste rock disposal cell would be separate from the existing solid waste landfill and permitted by the State of New Mexico to accept and manage mine waste rock only from the Quivira Mines and Section 32 and 33 Mines. The waste is rock and soil with low concentrations of naturally occurring uranium and metals that can be safely handled without endangering the town or residents who live near the facility. A permit application fee would be paid to the State of New Mexico, but the State requires no other payments. The landfill is located on private land and the Navajo Nation does not have regulatory authority over the landfill and therefore would not receive any payments.

Regarding cost breakdowns, the response action for the Section 32 and 33 Mines site is estimated to cost $9.8 million, most of which is associated with transporting the mine waste rock and constructing and maintaining the proposed new repository. The disposal costs would be paid for through tipping fees to the facility operator as waste is disposed of at the facility.

Comment: Is there a hydrology report for the existing landfill and where can the public view it (Like water run-off, saturation and retention)? What about the aquifer condition and levels and its distance from the containment areas? Are there estimated erosion control plans using a 100-year flood? What is the water source for construction and daily dust control and what is the estimated monthly use?

Response: The hydrology at the proposed waste disposal cell will be fully evaluated during the permitting process and shared with the public by the State of New Mexico. The shallowest groundwater beneath the landfill property is 45 to 60 feet below the ground surface at the proposed Red Rocks Disposal Facility location and has dropped approximately 1 to 3 feet since 2008. This groundwater is located in a narrow sandstone layer with relatively low permeability that flows away from Thoreau to the northeast. This shallowest aquifer is not used regionally as a drinking water source. Beneath this shallow sandstone aquifer is the 500-foot thick Middle Chinle Mudstone aquiclude that protects the much deeper Sonsela Sandstone regional drinking water aquifer. In addition, the groundwater below the proposed repository location will be protected from infiltration by an ET cap and possibly a liner beneath the mine waste rock. Water for construction and dust control at the Red Rocks Disposal Facility will likely be sourced locally from existing on-site wells. The commenters should contact the Northwest New Mexico Regional Solid Waste Authority (NWNMRSWA) or McKinley County to obtain copies of the Subtitle D landfill hydrology or other reports.

Comment: Do you have an estimate for the number of jobs, worker training, pay scales and duration of time to construct and operate the new facility, install fences and new side roads, repair main roads and build new holding tanks?

Response: USEPA has not estimated the number of jobs created or related pay scales, but the new operation would require a significant number of new jobs to construct, operate and monitor the facility. Depending on their position and duties, construction workers would typically require OSHA safety training, with the workers handling or potentially being exposed to the mine waste rock requiring additional hazardous material safety training. The estimated

duration for the removal of mine waste rock from the Section 32 and 33 Mines site is 2 to 3 months and for the total project is about 5 months. Permitting and constructing the waste disposal cell at the Red Rocks Disposal Facility is estimated to take 2 to 3 years. Regarding holding tanks, none would be necessary because the waste is dry dirt and rock that will be placed into repository cells and covered with an ET earthen cover/cap.

Comment: Will the facility receive uranium mine waste from other areas? How much is the maximum that the facility will hold?

Response: The State of New Mexico must first approve a permit allowing the proposed disposal facility to accept mine waste rock and the State has said that only waste from the Quivira Mines and the Section 32 and 33 Mines sites would be allowed to be disposed of at the facility pursuant to the permit. USEPA supports this position. Any changes to a final permit require public input.

The estimated combined waste volume from the Quivira Mines and Section 32 and 33 Mines sites is approximately 1.2 million cubic yards. The State will hold public hearings during the permit process to share information about the facility and receive comments from the community.

Comment: Is there a weather station in Thoreau? What is the average rain and snow in the area and predictions for future weather based on climate change?

Response: The closest weather station to Thoreau is at the Grants-Milan Municipal Airport (KGNT); however, Gallup Municipal Airport (KGUP) has a more complete historical climate record. The impacts on future weather from changes to climate are difficult to evaluate, but the current predicted storm event that would happen just once every 100 years (a 100-year storm) is a 10-minute storm delivering 0.994 inch of precipitation. Historical records from 1976 to 2016 at KGUP show 11.08 inches of annual precipitation with the most rainfall typically occurring in July (1.72 inches) and August (1.92 inches). Nonetheless, the area is semiarid with a high annual net evaporation rate of 54 inches per year, far exceeding the annual precipitation of 11.08 inches.

Comment: Is there an assessment of current conditions of all roads, bridges, exits, overpasses and underpasses on the proposed highways that will be used for the transport of the waste? Are there signed agreements for right-of-way authorizations from the proper authorities? Are there plans to reconstruct roads to prevent road damage, accidents and to not impede traffic

Response: The roads proposed in the haul route for the selected alternative for the Section 32 and 33 Mines site includes County Route 19, which is managed by state and county agencies that have requirements for their ongoing inspection and maintenance. County Route 19 is currently in significant disrepair due to existing truck traffic and is in need of improvement before additional trucks can haul waste. Ranch Road is privately owned and part of the toll charges for its use will support ongoing maintenance and repair of the road structures. Ranch Road is currently used by trucks to haul waste from the wood products facility to the Red Rocks Landfill for disposal.

All trucks will meet the required Navajo Nation, State of New Mexico and/or federal Department of Transportation requirements for size and weight. Rights of way are not required for transport across state and federal roads. For other roads, USEPA commonly conducts pre-work inspections of the roads to determine conditions prior to use for the removal action. Any required authorizations and permissions will be obtained closer to when the work begins on the removal action.

USEPA will ensure that roads along the haul route are repaired and improved to support equipment and trucks prior to the start of construction. If the trucks used for the Section 32 and 33 Mines site cleanup are found to have caused damage to roads beyond normal wear and tear, USEPA will repair the roads after excavation and transport is completed.

USEPA will prepare traffic control plans to ensure traffic is not impeded and to try to prevent accidents. There will be approximately 100 haul trucks per day during the waste hauling portion of the response action, which will account for a noticeable increase of traffic on County Road 19 and account for additional traffic on Ranch Road which otherwise has little traffic. Each of the trucks will carry approximately 25 tons of mine waste rock and the hauling portion of the construction schedule will last approximately 2 to 3 months.

Comment: What is the safety and legal jurisdiction of the private landfill? What is the chain of authorization in the event of an emergency or natural disaster?

Response: The new disposal facility will require permits from the State of New Mexico that specify how it will comply with all safety and emergency response requirements consistent with any applicable laws and regulations.

Comment: What is the composition of the containment units and their useful life to hold the mine waste contents, including dust, erosion, cracking, chipping, pealing, corroding, destruction by destructive devices, weather or natural disasters?

Response: The waste being excavated and disposed of at the Red Rocks Disposal Facility is comprised of mine waste rock and dirt that will be partially buried and capped with an ET earthen cap expected to be maintained in perpetuity. The proposed Red Rocks Disposal Facility, including the ET cap, will be designed to resist erosion from wind, water and disasters, such as a 1,000-year flood. There will be no risk of peeling or corroding because there will be no tanks or other metal or mechanical holding components. Regular inspections will identify any erosion of the cap, and maintenance and repairs will be performed to address any problems that arise. Because of the thickness and robust nature of the ET cap, there is no expectation that erosion will ever be deep enough to expose waste before the erosion is identified and repaired.

Comment: How will USEPA address the negative public perception of Thoreau being reclassified as a uranium dumping ground and the subsequent negative impacts on economic development and the education system? What are the plans for financial compensation to the community for the destructive reputation of a uranium holding ground?

Response: USEPA understands the Thoreau community's concern regarding negative perceptions of mine waste rock. USEPA will work with the community, the town of Thoreau and the State to further inform the public that the waste is waste rock and dirt with low

concentrations of uranium and metals and that the Red Rocks Disposal Facility should not be considered a "uranium dumping ground." USEPA will continue to educate people that the facility will be designed, constructed and maintained to be protective and not release contamination to the surrounding areas.

Comment: Are there other locations where these uncovered holding tanks are used?

Response: The selected removal action does not include any holding tanks because the waste is rock and soil. The proposed repository will be partially dug into the ground and capped with an ET earthen cover.

Comment: Why did USEPA pick the Thoreau landfill? USEPA mentioned the word "easy" three times in the presentation to the high school.

Response: USEPA selected the Red Rocks Disposal Facility for several reasons. First, the State of New Mexico has worked with USEPA to identify the Red Rocks Disposal Facility as a possible disposal location. Second, the owner and operator of the facility is willing to apply for the necessary permits from the State of New Mexico, construct the repository and manage the waste on its private property, which is located off the Navajo Nation. The NWNMRSWA has a history of successfully managing waste at its landfill and has demonstrated an understanding of what will be required to manage the mine waste rock in perpetuity. The proposed Red Rocks Disposal Facility is the closest off-site waste disposal location to the Site and will require the shortest haul distance. Therefore, it will result in the least air pollution, greenhouse gas emissions, cost, and potential for traffic accidents. The landfill offers the benefits of removing the waste from its current location on the Navajo Nation immediately next to homes and placing it in an off-Navajo disposal facility designed and constructed to safely hold the mine waste rock indefinitely. USEPA determined that Alternative 3 is the best alternative considering long- and short-term effectiveness, compliance and implementability.

I.3 Support for Alternative 4, Disposal at Deer Trails

Comment (Support for Alternative 4): Many members from Thoreau and nearby communities, along with DURAC, supported Alternative 4 because it removes the waste from the Navajo Nation and takes it far away. Community members stated that the high cost of Alternative 4 should not matter compared to the health of their communities. One person noted that they can't drink the water from their community well and that the same is true in Thoreau, Churchrock, Pinedale and many other Chapters. The commenter said that this shows the need to get all the waste from all the mines away from the Navajo Nation.

Response: USEPA understands some people's preference for completely removing uranium mine waste rock from the Navajo Nation, and that the proposed Red Rocks Disposal Facility, while on private land, is still near Navajo communities. With that understanding, the EE/CA documents the much more significant short-term impacts of trucking mine waste rock from Section 32 and 33 Mines site to a disposal facility located more than 500 miles away. Comparatively, the short-term impacts of trucking the mine waste rock a shorter distance to the Red Rocks Disposal Facility are much smaller. Cost is one of several criteria used to compare and evaluate alternatives, along with other factors such as short- and long-term effects on the community.

With respect to water resources, USEPA understands the importance of access to clean water on Navajo lands and Alternatives 2, 3, and 4 would all similarly protect water from future contamination by preventing mine waste from contacting or migrating to surface water or groundwater.

I-4 Support for a New Alternative at Ambrosia Lake

Comment (Support for a New Alternative at Ambrosia Lake): Several community members and Navajo Nation representatives asked about taking all the waste to mines or mills in Ambrosia Lake. One commenter stated that this is an area with hardly any residents, located near the mines, and it already has a large amount of mine waste that could be managed together. They said that the communities have brought this up many times and been told that the State of New Mexico said that no waste from Navajo Nation could be brought to New Mexico. But this is racist and the waste was not made by Navajo people. A solution like Ambrosia Lake would not pit one Navajo community against another, like moving waste to the Red Rocks Disposal Facility is doing. A mining company commented that the Ambrosia Lake area is outside of the Navajo Nation, has private land with similar uranium mine waste rock that could function as a repository location without contaminating new land, the Section 32 and 33 Mines site waste is a small fraction of waste already present, and the haul distance is similar to the Red Rocks Disposal Facility.

Response: The Ambrosia Lake area was considered and screened out for several reasons. One reason is that in 2017, the State of New Mexico sent a letter to USEPA Region 9 demanding that USEPA not consider mines and mills in the Ambrosia Lake area as potential disposal alternatives for waste from the Quivira Mines site. This letter was signed by the Secretaries of NMED and EMNRD at that time. The State of New Mexico remains opposed to importing mine waste rock from outside Ambrosia Lake because it would reduce the capacity of such locations for mine cleanup actions in the Ambrosia Lake area. In November 2024, USEPA's Office of Land and Emergency Management signed a policy memorandum that highlighted the priorities for waste disposal and management in the Ambrosia Lake area. This memo states that the priority should be to use waste disposal capacity in Ambrosia Lake for mine waste from the immediate area.

The communities of Milan and Bluewater are located about the same distance from the mines and mills in Ambrosia Lake as the Thoreau community is from the Red Rocks Landfill. The members of these communities along the potential haul route strongly oppose additional waste being disposed of in Ambrosia Lake. They likewise request that waste be taken to other locations outside their communities.

An additional reason for screening out disposal locations in Ambrosia Lake is because it would take extensive time to address waste at dozens of existing Ambrosia Lake uranium mines that would be given priority to use mines and mills as disposal locations, thereby significantly delaying cleanup. In addition, there is NRC-regulated material in the Ambrosia Lake area that may need to be placed at Uranium Mill Tailings Radiation Control Act (UMTRCA) cells and would require license amendments by NRC. The Department of Energy (DOE) and NRC regulations and policies currently do not regulate low-level mine waste rock to be addressed under UMTRCA, the law that USEPA and NRC use to manage uranium mill tailings. Therefore, additional NRC and DOE regulatory requirements would need to be addressed before mine waste rock could be mixed with UMTRCA mill waste.

I-5 Support for a Holistic Approach

Comment (Support for a Holistic Approach): Several people commented that there are over 500 mines on Navajo lands and that there should be a holistic approach to address all the mines and not do it one-by-one. A comment acknowledges that it is not within the scope of the USEPA EE/CA to evaluate a holistic solution to the intractable problem of historic uranium mine waste rock within the Navajo Nation. However, the comment urges USEPA to begin a dialogue between frontline communities, the Navajo Nation government, the New Mexico government and various federal agencies to work together toward a holistic solution for all uranium mine waste rock. For example, USEPA could take a leadership role in convening a series of intergovernmental and community working groups to identify potential sites for one or more regional uranium mine waste disposal facilities. The community sees this moment as an opportunity to move away from capping mine waste rock in place as the default uranium mine waste disposal policy. Other people opposed moving mine waste rock from one Navajo community to another and asked for a comprehensive approach to all the mines that results in the waste rock from all the mines being taken away from the Navajo Nation. One person stated that the Navajo Nation bought a ranch near Pueblo, Colorado and that this location should be a new Alternative 5 as a closer alternative than Alternative 4 at Deer Trails to dispose of waste rock from many mines. Commenters also asked about taking the mine waste rock to the White Mesa Mill and to sites on land managed by the Department of the Interior. Navajo people have been asking about these other possible locations for years and they would all be better than the alternatives presented here and would not pit Navajo communities against one another by moving mine waste rock between Navajo communities.

Response: USEPA appreciates the desire to find comprehensive solutions that result in all mine waste rock being taken away from the Navajo Nation. USEPA has been working with the Navajo Nation government and several federal land management agencies for several years to investigate the potential for large regional repositories to handle mine waste rock from multiple mines on federally owned land. The proposed Red Rocks Disposal Facility is an example of a solution to remove waste from one of the largest mines on the Navajo Nation. Currently, the State of New Mexico is only willing to permit the facility to accept waste from the Quivira Mines site and the Section 32 and 33 Mines sites. USEPA also appreciates the suggestions of other solutions that Navajo officials and community members have shared many times over the years.

For over 5 years, USEPA has been working with other federal agencies to identify solutions for taking uranium mine waste rock off the Navajo Nation and disposing of it on federal lands. USEPA has spent countless hours discussing these issues with federal land management agencies in the Department of the Interior, the Department of Agriculture's U.S. Forest Service, DOE, and the Department of Defense. To date, no such solutions have been identified; however, USEPA will continue to engage with our federal partners to identify any opportunities in the future for other sites. The Navajo Nation has purchased numerous properties (including the ranch noted in the comment), but to USEPA's knowledge, none have been proposed by the Navajo Nation as potential locations for uranium mine waste disposal.

Part II: Specific Regulatory, Legal and Technical Questions

II-1. Concerns about Descriptions of Land Use and Navajo Nation Legal Processes, Cleanup Levels and Treatment in the EE/CA

Comment (Allotment Land Issues): BIA commented that the haul routes from the Quivira Mines and the Section 32 and 33 Mines sites across multiple allotment lands, which are held in trust by the United States government for the benefit of allottees and their heirs. BIA advises that USEPA should investigate

the status of any rights-of-way encumbering those allotments. USEPA or any PRP acting at USEPA's direction should consider securing a right-of-way to authorize traversing allotments if no right-of-way currently exists.

BIA, NNEPA and DURAC all commented that the proposed Red Rocks Disposal Facility, while on private property, is within Indian Country and allottees and the Navajo Nation retained mineral rights underlying the location of the proposed repository. The EE/CA does not discuss the issue of mineral rights having different ownership than the land surface. The construction of the repository would remove the ability to develop the mineral rights for oil drilling in the future. In addition, the excavation of the repository cells may constitute "mining" itself. BIA urges USEPA to ensure that proper consent is obtained and that the mineral rights holders receive fair market value compensation.

The NMELC, on behalf of the Red Water Pond Road community, noted that claims by several Navajo Nation officials that Navajo Nation or Navajo allottees own subsurface rights at the Red Rock Disposal Facility property are unsupported.

Response: USEPA appreciates the information and will work with the BIA, the allottees and the Navajo Nation to investigate the existing rights-of-way and to resolve any potential access issues prior to performing the removal action. USEPA agrees that such issues will need to be resolved prior to the start of a cleanup action and USEPA appreciates BIA's willingness to work diligently with USEPA during this process.

USEPA agrees that any potential access issues for mineral rights or other issues related to surface land usage over an area with separate mineral rights should be resolved between USEPA, the NWNMRSWA, the State of New Mexico, BIA, the Navajo Nation and the allottees prior to any issuance of a permit for the proposed Red Rocks Disposal Facility. The issue of subsurface mineral rights at the Red Rocks Disposal Facility would need to be resolved during the State of New Mexico permitting process. Because the Red Rocks Landfill property is privately-owned land in New Mexico, efforts to resolve mineral rights issues would be initiated by the landowner and would need to be resolved prior to permitting of the mine waste disposal facility.

Comment (White Mesa Mill and Ablation): The NMELC, on behalf of the Red Water Pond Road community, stated strong opposition to any current or future disposal at the White Mesa Mill and to the use of ablation treatment for the mine waste rock at the Quivira Mines site. While this comment specified the Quivira Mines site, the comment and response are relevant to the Section 32 and 33 Mines site.

Response: USEPA acknowledges some community members' opposition to disposal at the White Mesa Mill and to ablation treatment at this time for mine waste rock from the Quivira Mines and Section 32 and 33 Mines sites. In the EE/CAs, USEPA screened out high-pressure slurry ablation (HPSA) treatment from further consideration for the Quivira Mines and Section 32 and 33 Mines sites based on results of a USEPA Treatability Study. HPSA would not achieve the cleanup levels necessary to leave processed mine waste rock on site for unrestricted reuse. HPSA results in two primary solid outputs: a concentrated fines waste stream and a treated coarse fraction. Because concentrations of contaminants of concern in both outputs would be higher than cleanup levels, both outputs would require disposal off-site. This would not reduce disposal costs and would significantly add to the cost of cleanup due to HPSA treatment costs.

Regarding White Mesa Mill, USEPA considered the facility as a disposal option in the EE/CA and stated that if it came into compliance with USEPA's Off-Site Rule, it would be considered as a disposal location under Alternative 4. While White Mesa Mill is currently in compliance with the Off-Site Rule, USEPA did not recommend and is not selecting Alternative 4. Therefore, the specific facility to which mine waste rock would be transported for disposal under Alternative 4 is irrelevant. Disposal of mine waste rock at White Mesa Mill would not significantly lower the cost or improve short-term effectiveness compared to other facilities considered for Alternative 4, since it is over 200 miles from the Section 32 and 33 Mines site and would pose significant transportation risks.

II-2. Comments from NNEPA.

NNEPA provided multiple comments on specific legal, policy, technical and community engagement issues. The specific comments and responses are listed below.

Comment (Consideration of Land Use): Several statements in the EE/CA concerning land use and land use policy on the Navajo Nation are not completely accurate. The entire discussion of land use restrictions or land use policy on the Navajo Nation is incomplete and should be fully examined if they are to be included or referenced as critical factors in establishing cleanup goals.

The Navajo Nation does employ land use restrictions in the development of Navajo Nation lands. The Navajo Nation Division of Natural Resources utilizes land development regulation, policy and criteria to restrict land use in identified flood plain areas; in identified areas where there are known cultural resources that require protection pursuant to the National Historic Preservation Act; and in identified areas where endangered and sensitive species habitat requires protection. These land use restrictions are prominent aspects of the Navajo Nation's review of proposed Home Site Lease applications.

The NNEPA Superfund Program coordinates directly with the Division of Natural Resources on such land use development matters, and NNEPA is a party to the proposed Home Site Lease application review processes, specifically to advise the Division of Natural Resources Land Department on the locations of identified AUM sites. This effort is focused on minimizing the construction of new homes on or very near to existing and known AUM sites and is focused on increasing safety for Navajo Nation home developers and owners by reducing human exposures to known and potential contaminants of concern at these AUM sites. This effort began in 2007 with the publication and distribution of the AUM Atlas maps and metadata to Navajo Nation programs and Chapters.

NNEPA is coordinating with the Navajo Nation Department of Justice and Division of Natural Resources on developing and improving land use policy to address the needs for AUM cleanup projects and the eventual completion of AUM cleanup projects that may result in the creation of mine waste rock piles that will require long term maintenance and monitoring.

Response: USEPA appreciates the clarification on Navajo Nation land use policies and the implementation of those policies. USEPA will continue to work with NNEPA, Navajo Nation Department of Justice and the Navajo Nation Natural Resources Department to ensure that future EE/CAs accurately describe the necessary information and that all decisions that might be influenced by land use considerations are made in consultation with the Navajo Nation. USEPA developed a risk assessment methodology that is consistent with these land use policies, assuming residential use of all lands that are not restricted from use as residential. Because of this assumption, future residential

reuse scenarios are common and used for the Section 32 and 33 Mines site. This results in the most protective cleanup levels for the entire site.

Comment (NNEPA Consideration of Ablation): While the final EE/CA includes information about the potential retention of a treatment technology known as ablation, there seems to be an inconsistent logic in reading some of the stated conclusions for how ablation would increase costs without reducing risk of some of the stated Alternatives.

The recent High-Pressure Slurry Ablation Treatability Final Study developed by DISA Technologies, USEPA and NNEPA was reviewed and verified by USEPA in December 2023. In the final EE/CAs, USEPA states, "the pretreatment technology pilot-scale studies at three (3) sites on the Navajo Nation including the Quivira Mines site has shown that up to 95 percent removal of uranium mass from the coarse sand fraction can be achieved, that the treated materials are not RCRA hazardous, and do not generate leachable metals or radionuclides above USEPA and Navajo Nation water quality standards."

The Treatability Study further states, "ablation pretreatment could be retained after additional scalability testing and when a viable off-site disposal alternative at a similar cost is not available and the community would like containment mass and volume reduction before on-site consolidation and capping."

NNEPA would like to recommend that before USEPA finalizes its selection of a final cleanup alternative that USEPA provide more analysis and clearly depict the pros and cons of the application of HPSA technology and consider the following:

1) The January 2024 USEPA PowerPoint presentation to NNEPA of the pilot-scale results demonstrated cost reductions for the proposed cleanup alternatives, primarily due to the reduction of mass and volume of the contaminants of concern.
2) The aspect of the costs for mine waste rock removal/hauling and long-term maintenance of containment on site are not incorporating the reduction of volume.
3) The improvements in reducing leachability of metals and radionuclides and the increased protection of Navajo Nation water resources are not explained.
4) USEPA has not provided adequate outreach to the communities regarding the results of the HPSA Technology Treatability Final Study; perhaps this is because the final study was approved in December 2023. The 2022 field demonstrations and actual acquisition of soil samples for the Treatability Study established an expectation to follow through with communication to the communities regarding the final results.
5) USEPA and NNEPA should work together to scale up the technology and test it again at higher treatment rates to verify its efficacies and ability to effectively reduce waste volumes, increased water resources protections, and potentially reduce overall costs, including the long-term maintenance costs for smaller disposal cells and caps.

Response: USEPA agrees that ablation treatment is promising and may have some applications for future uranium mine sites on the Navajo Nation and may be retained for other sites if cleanup levels can be achieved. However, while the ablation treatability study demonstrated reductions of uranium and radium 226 (Ra-226) concentrations, the levels attained did not meet the cleanup standards for the Quivira Mines site or the Section 32 and 33 Mines site. Thus, for this Site, there would be no reduction in volume and all the mine waste rock would still require either capping on-site or excavation and hauling off-site to a disposal facility, consistent with Alternatives 2, 3, and 4 presented in the EE/CA. The

reduction in the concentrations of the coarse fraction after treatment may reduce leachability, but the mine waste rock will be protected from leachate generation at the proposed Red Rocks Disposal Facility, so the concentration reduction significantly increases costs without providing additional environmental or health benefits. USEPA notes that in addition to the selected quotes from the EE/CA highlighted by the commenter, the following quote provides a final decision about whether to consider ablation further, "ablation was not retained as a standalone or pretreatment treatment technology because it would increase costs without significantly reducing risk."

Ablation treatment also generates a smaller portion of highly concentrated waste requiring disposal at a licensed hazardous waste landfill, such as the one at Deer Trails, CO, or a licensed low-level radioactive waste disposal facility like Waste Control Specialists in Texas. Transport and disposal of this concentrated waste adds extra risk to the action due to the long hauling distances compared to the recommended alternative at the Red Rocks Disposal Facility. USEPA looks forward to working with NNEPA to continue investigating and considering the uses of ablation treatment. USEPA notes that the Red Water Pond Road and Pipeline Road communities have received extensive consultation about HPSA from the Southwest Research and Information Center (SRIC), the Multicultural Alliance for a Clean Environment (MACE), and NMELC. They have also coordinated with the Ute Mountain Ute Tribe to better understand the Tribe's concerns with the White Mesa Mill facility. These communities have expressed a concern about HPSA and disposal of waste at the White Mesa Mill.

Ablation treatment was discussed further with NNEPA during the second phase of government-to-government consultation in November and December 2024. These discussions further explained why HPSA was screened out as a cleanup alternative for the Quivira Mines and Section 32 and 33 Mines sites. USEPA also provided additional data received in November 2024 from Energy Fuels regarding waste disposal costs at White Mesa Mill, which confirmed that any revenue from uranium recovery would not significantly reduce the increased transportation cost of waste disposal at that facility.

II-3. Regulatory Issues Related to the Site and Permitting a New Facility at Red Rocks to Accept Uranium Mine Waste

Comment (State Regulatory Jurisdiction): The NMED commented that unlike Section 32 on Navajo Nation, Section 33 is privately-owned land in the State of New Mexico. Therefore, proposed alternatives for Section 33 must adhere to ARARs and to be considered (TBC) under the CERCLA process provided by NMED in a letter to USEPA dated December 14, 2022, stating the ARARs and state guidelines for TBCs for work proposed within Section 33. NMED also commented that a single uniform cleanup approach should be used at the Site with a single most stringent cleanup level across both Sections 32 and 33. Additionally, a single approach for the Site should also apply to addressing plant collection, gardening and livestock management, and plugging any discovered boreholes.

Response: USEPA understands the regulatory jurisdictions relative to Section 32 versus Section 33, is using a single cleanup goal and approach for the Site and will work closely with the State of New Mexico to address its ARARs and TBCs including biological, cultural and mine closure considerations. The ARARs and TBCs can be found in a separate attachment to this Action Memo.

Comment (State Permit for New Facility): The NMED commented that the Red Rocks Landfill is only currently permitted to receive domestic and industrial waste and that mine waste rock is specifically excluded. Thus, the recommended alternative requires the construction of a new facility on property owned by the NWNMRSWA and new permits issued by the State of New Mexico specifically allowing

uranium mine waste disposal. The State further commented it will only consider such a permit for acceptance of mine waste rock from the Quivira Mines site and Section 32 and 33 Mines site and that waste from the latter would only be accepted if Alternative 3 were selected for both sites.

Response: USEPA selected Alternative 3 for both sites, acknowledges the permitting issues, and will work closely with the State of New Mexico throughout the permitting process for the proposed mine waste rock disposal facility.

Comment (Soil Sampling): The NMED noted that sample results from the Quivira Mines and Section 32 and 33 Mines sites passed the RCRA toxicity characteristic leaching procedure test and are thus not defined as RCRA hazardous waste, but the State asked if sampling results from the sites were compared against *State of New Mexico Risk Assessment Guidance for Site Investigations and Remediation – Volume 1 Soil Screening Guidance for Human Health Risk Assessment*. The State further noted that any State of New Mexico regulations or guidance which could apply to transport and disposal of mine waste rock should be considered as ARARs or TBCs and that sampling results should be compared against those ARARs or TBCs.

Response: The sampling results from the sites were not compared against State of New Mexico soil screening levels. The State of New Mexico soil screening levels are meant to be used in human health risk assessments and are not regulatory standards for transport or disposal of waste. USEPA conducted risk assessments consistent with both USEPA and the State of New Mexico risk assessment guidance and determined that the mine waste rock poses an unacceptable risk in its current condition. USEPA identified, in consultation with the State of New Mexico, state laws and regulations which are considered ARARs or TBCs in the EE/CA. USEPA does not consider the Soil Screening Guidance as an ARAR or TBC for transport or disposal because it is not a standard for cleanup, transport, or disposal. USEPA requests that the State identify any additional potential ARARs and TBCs for USEPA's consideration prior to implementing this action.

Comment (Geotechnical Testing and Construction Water Testing): The State of New Mexico requested additional detail and results for geotechnical testing of the mine waste rock. The State requested testing of all water used in construction and dust control to ensure the water quality meets State of New Mexico water quality standards for all waste which could be transported and disposed of at the Red Rocks Disposal Facility.

Response: USEPA agrees and, consistent with the required permitting process, will work with the NWNMRSWA to perform and report the required geotechnical testing. USEPA will also work with the NWNMRSWA to test all water to be used for construction and dust control to ensure compliance with the appropriate state, Tribal and federal standards.

II-4. Concerns over Deficiencies and Discrepancies in the EE/CA

Rio Algom Mining, LLC (RAML) submitted several comments claiming: the EE/CA contains deficiencies and discrepancies in the evaluations of alternatives; the EE/CA contains inconsistencies with EE/CAs USEPA has published for similar Navajo Nation AUM sites; and the EE/CA did not analyze all viable alternatives. The comments are summarized by broad categories below for responses.

Comment (Short-Term Effectiveness): The EE/CA inappropriately assigned a rating of "Average" for short-term effectiveness to both Alternative 2 (Cap On-site) and Alternative 3 (Disposal at the Red

Rocks Disposal Facility). The Non-Time Critical Removal Action (NTCRA) Guidance states that short-term effectiveness should analyze risks to the community and workers in the time it takes to complete the action. These risks include, among other items, potential exposure to the contaminants during that time, transportation accidents, fuel consumption and greenhouse gas emissions. The EE/CA states that Alternative 3 will have 10 times higher risk for construction and traffic fatalities and in fact, that risk is higher than the cancer risk under No Action. The greenness score which aggregates many short-term effectiveness considerations is significantly higher for Alternative 2 than for Alternative 3. Given that Alternative 2 is significantly better than Alternative 3 for nearly every consideration, USEPA should re-evaluate the scoring for short-term effectiveness to use a consistent approach.

Response: USEPA agrees that Alternative 2 provides better short-term effectiveness than Alternative 3 and should have received a short-term protectiveness rating of "Good." This rating change is reflected in the updated Exhibit 1, shown below. Exhibit 21 of the EE/CA would change similarly. It is important to note that although Alternative 2 would take nearly as long as Alternative 3 and Alternative 2 would likewise require extensive use of heavy equipment to move all the mine waste rock to one consolidated on-site repository, the extent of off-site truck hauling for Alternative 3 warrants a rating of "Average" while Alternative 2 warrants a rating of "Good" for short-term effectiveness. This distinction is reflected in the written evaluations. The ratings are meant to illustrate the evaluation and are not a "score." The recommended alternative is selected based on a comprehensive evaluation of all the criteria including both positive and negative impacts. In this case, while the short-term effectiveness of Alternative 2 may be somewhat better than the other alternatives, the long-term effectiveness of moving the mine waste rock out of a community and into a managed facility outweighs the difference in short-term benefits.

Exhibit 1. Summary of Alternative Ratings

Alternative		Attainment of Threshold Criteria[a]	Effectiveness	Implementability	Cost Rating (Million)[b]
1	No Action	Fail	Short-Term: Average Long-Term: Very Poor	Tech: Very Good Admin: Very Good	Very Good ($0)
2	Consolidate and Cap All Waste On Site	Pass	Short-Term: Good Long-Term: Good	Tech: Good Admin: Good	Very Good ($4.4)
3	Dispose of All Mine Waste Off Site at Red Rocks Disposal Facility	Pass	Short-Term: Average Long-Term: Very Good	Tech: Very Good Admin: Average	Average ($9.8)
4	Dispose of All Mine Waste Off Site at a RCRA C or LLRW Facility	Pass	Short-Term: Very Poor Long-Term: Very Good	Tech: Very Good Admin: Good	Very Poor ($36.4)

Notes:

[a] Threshold criteria are (a) overall protection and (b) compliance with ARARs.

[b] Estimated costs are net present value.

Admin	Administrative feasibility
LLRW	Low-level radioactive waste
RCRA C	Resource Conservation and Recovery Act, Subtitle C
Tech	Technical feasibility

Comment (Long-Term Effectiveness): The EE/CA claims that only short-term maintenance for revegetation would be necessary on-site after complete removal of contaminated soils and thus implies that there would be no long-term maintenance of the mine waste rock material. However, this is not accurate because mine waste rock disposal will require long-term maintenance at the disposal site. There was no evaluation in the EE/CA of whether a new facility at the Red Rocks Landfill Facility could handle this type of material and no technical basis for why maintenance and long-term protectiveness would be better at a new facility. Thus, the relative scoring of "Good" for Alternative 2 and "Very Good" for Alternatives 3 and 4 should be reconsidered.

Response: USEPA agrees that long-term maintenance would be required at any disposal facility. However, long-term maintenance at the proposed Red Rocks Disposal Facility would be the responsibility of the facility operator, with the State of New Mexico and USEPA providing oversight. If waste is left on the Site, as would be the case under Alternative 2, the level of monitoring and maintenance required would be significantly greater. The proposed Red Rocks Disposal Facility is unique in that it would be newly constructed and permitted specifically and only for mine waste rock from the Quivira Mines and Section 32 and 33 Mines sites. The current Red Rocks Landfill operator has over 30 years of experience operating and maintaining a RCRA-permitted solid waste landfill with no significant permit violations. In many respects, management and maintenance of mine waste rock is less complex than municipal solid waste. The permits issued by the State of New Mexico for the new repository will specify the monitoring and maintenance requirements and it will require the operator to maintain financial assurances to cover the cost of cleanup in the case of future inability to pay.

Management and monitoring of the mine waste rock will be easier to implement at a permitted, operating facility like the proposed Red Rocks Disposal Facility. Disposal of the mine waste rock at the Red Rocks Disposal Facility keeps the waste away from the residential communities and in a more geologically suitable location. The current locations of the mine waste rock are at the base of steep mesas with uncontrolled water run-on and near major arroyos that could cut into the mine waste rock. Finally, the mine waste rock can be partially buried at the proposed Red Rocks Disposal Facility to reduce surface elevation contours and thus offer better erosion control than any on-site consolidated configuration.

Comment (Implementability/Technical Feasibility): The EE/CA did not correctly apply the criteria as defined in the NTCRA Guidance for implementability and should have rated Alternative 2 as "Very Good," rather than "Good," and Alternative 3 as "Good," rather than "Very Good." Key criteria considerations were not fully evaluated including:

- Construction: Alternatives 2 and 3 both require the design and construction of a new disposal cell. However, the EE/CA does not provide an explanation for why construction at the Red Rocks Disposal Facility would be any different than construction on-site.
- Demonstrated Performance: Because neither location has demonstrated performance, there is no difference between Alternatives 2 and 3 for this consideration.

- Adaptability to Environmental Conditions: Both Alternatives 2 and 3 require completely new facility design and no evidence is provided for why one may be more adaptable to environmental conditions than another.
- Timing: The EE/CA says that Alternative 2 would take years less to plan and complete than Alternative 3.

Here, the first three considerations for technical feasibility were indistinguishable between Alternatives 2 and 3 and the timing consideration was shorter for Alternative 2. It would thus be appropriate to revise the scoring to reflect that Alternative 2 is better than Alternative 3 for technical feasibility. At a minimum, Alternative 2 should not score lower than Alternative 3 in technical feasibility.

Response: The primary difference between Alternatives 2 and 3 is in management, monitoring, and maintenance in perpetuity, which are not described in the bullets from the commenter, but are described in Section 4.3.6.2 of the EE/CA. The requirements for managing, monitoring, and maintenance of an on-site repository under Alternative 2 would also include extensive institutional controls which would lower the rating for implementability. The management, monitoring, and maintenance for Alternative 3 will be performed by the Red Rocks Disposal Facility operator with State of New Mexico and USEPA notification and oversight. Therefore, the rating for this component of implementability is significantly higher for Alternative 3 than for Alternative 2. Note that timing is evaluated under Effectiveness rather than Implementability. As previously stated, the recommendation for Alternative 3 was not based on a computation from the ratings. Because the comparative analysis rating for Effectiveness did not differentiate between the two alternatives, this did not affect the selection of the recommended alternative.

Comment (Implementability/Administrative Feasibility): The EE/CA underrepresented the difficulties in engineering and permitting a new uranium mine waste disposal facility. RAML believes that the 2-5 year estimated timeframe to permit a new disposal facility at the Red Rocks Landfill is unrealistic. The planning and technical work is likely to take 2-5 years and the permitting process is likely to consume an additional 2-5 years. Finally, the controversial nature of uranium recovery and uranium waste disposal in northwest New Mexico may prevent issuance of required permits. Thus, the rating for administrative feasibility for Alternative 3 should have been “Poor.” Finally, because on-site work requires no permits, the rating for administrative feasibility for Alternative 2 should be revised from “Good” to “Very Good.”

Response: The timeframes for permitting in the EE/CA are based on estimates provided by the State of New Mexico, which supports the recommended Alternative 3. The EE/CA was written based on the best available information. Opposition by communities to uranium waste disposal is likely to impact the timing of all alternatives. As shown in this Response to Comments, USEPA has received community comments opposing Alternatives 2, 3 and 4. Based on the implementability considerations described in the EE/CA, the assigned rating for Alternative 2 was better than the rating for Alternative 3 and the text explains that Alternative 2 is administratively easier than Alternative 3. A reason provided in the EE/CA for why Alternative 2 was not rated “Very Good” is that, even though no permits are required, significant coordination with the Casamero Lake Chapter and the Navajo Nation would be required for consolidating and capping on-site.

Comment (Cost): The EE/CA did not describe how alternatives were evaluated based on cost. Alternative 3 is three times more expensive than Alternative 2 and thus should have been scored as “Very Poor” rather than “Poor.” The inclusion of the very high cost of Alternative 4 may skew the

scoring and it should have been screened out according to language in Section 4.1.1 that an option can be eliminated if its cost is substantially higher than other options and at least one retained option is protective. While this comment is written to be specific to the Quivira Mines site, the relative cost of alternatives is also applicable to the Section 32 and 33 Mines site.

Response: The EE/CA showed the overall costs for all alternatives and those costs are more informative to decision making than the ratings. As previously explained, all the ratings are subjective, are not computed as a score, and are meant for comparative purposes. Alternative 4 was retained to be consistent with all other EE/CAs for Navajo Nation AUM sites and at the request of the Navajo Nation government during consultation. The language on being able to eliminate a high-cost alternative is "can be" rather than "must be," therefore, USEPA chose to retain Alternative 4 despite its high cost.

Comment (Uncertain Cost Estimate): Exhibit 17 shows the strong dependency of the total cost of Alternative 3 on the tipping fees. However, the EE/CA states that, "exact costs have not been obtained for the Red Rocks Disposal Facility yet. This placeholder cost … will be updated with information from the facility when available." It is inappropriate to use a placeholder cost to support selection of a recommended alternative. Additionally, the EE/CA does not establish the facility's experience with uranium waste disposal and offers no explanation for why the costs are three to four times lower that costs at facilities with appropriate experience such as Deer Trails. This benchmarking suggests that the estimated tipping fees are significantly underestimated, which would affect the evaluation of a recommended alternative. While this comment is written to be specific to the Quivira Mines site, the topic is also applicable to the Section 32 and 33 Mines site.

Response: The estimated tipping fees in the EE/CA were provided by the NWNMRSWA (the owner/operator of the Red Rocks Landfill and the proposed Red Rocks Disposal Facility). While the cost estimates in the EE/CA are preliminary estimates, they are likely to be reasonably accurate and more than a placeholder as termed in the EE/CA. The lower estimated tipping fees for the uranium mine waste rock at the proposed Red Rocks Disposal Facility compared to current fees at licensed hazardous waste facilities such as Deer Trails reasonably reflects the nature of the waste. The waste from the Quivira Mines and Section 32 and 33 Mines sites is rock and dirt with low concentrations of uranium. A hazardous waste facility handles combinations of liquids and solids with much higher concentrations of a broad range of contaminants. Thus, mine waste rock and dirt with low concentrations of uranium, radium, and metals is easier to handle and manage, leading to lower costs for the construction, operation, closure and post-closure maintenance of the proposed Red Rocks Disposal Facility. Note that any tipping fee quoted at the time of the EE/CA that is provided by any facility is considered an estimate, since the actual fee at the time of waste disposal is likely to differ from the quote used for the EE/CA.

Comment (Uncertainties with Alternative 3): The EE/CA did not adequately evaluate the: availability of land and size required for the proposed disposal facility; suitability of environmental conditions at the proposed facility; ability to comply with the CERCLA off-site rule with no operating history; land use at the proposed facility and surrounding areas and need for long-term institutional controls; or availability of specialized workers and equipment to run a uranium disposal facility.

Response: The NWNMRSWA's property covers 640 acres and the proposed repository will be located in a suitable portion covering less than 25 acres. The environmental conditions at the property are suitable for mine waste rock disposal as evidenced by the permitted solid waste landfill at the property.

Complete details about the repository design and construction will be developed and available through the State of New Mexico permitting process. The CERCLA Off-Site Rule determination will be made by USEPA Region 6 considering the operating history of the solid waste landfill and the permit conditions for the proposed uranium mine waste rock facility. It is likely that institutional controls will be necessary for the proposed uranium mine waste rock repository at the Red Rocks Landfill Facility. This land is privately-owned and will be under institutional controls because of the adjacent municipal solid waste landfill, so future development or impacts on housing or traditional Diné use is not likely, unlike at the Section 32 and 33 Mines site.

Comment (Long-Term Viability of Red Rock Landfill Operator): The EE/CA did not provide information about the NWNMRSWA, which is the entity that will operate the proposed facility, and little information is publicly available. This precludes any ability to judge the ability of the NWNMRSWA to properly manage the uranium waste. Is the NWNMRSWA a government agency? How is it funded? Does it have the qualifications to manage the waste? Will it be viable to manage the waste in the long-term? What type of waste would be accepted and how would it be handled?

Response: USEPA acknowledges the EE/CA did not provide detailed information which could help evaluate the short-term and long-term capabilities of the Red Rocks Disposal Facility's owner/operator. This information is best suited for the State of New Mexico to consider and evaluate in its permit process. The EE/CA considered implementability uncertainty related to whether the State would approve a permit. For short-term and long-term effectiveness, evaluation of the viability and suitability of the Red Rocks Disposal Facility operator will be addressed by the State in its permitting process. The State of New Mexico will require financial assurances from the NWNMRSWA as part of the permit process to ensure that the facility continues to operate even if the current operator becomes unviable.

The NWNMSRWA is a private entity formed from several local agencies and regulated by the State of New Mexico. The proposed Red Rocks Disposal Facility would be funded by the tipping fees for the disposal of mine waste rock from the Quivira Mines and Section 32 and 33 Mines sites. The State of New Mexico has indicated that only mine waste rock from the Quivira Mines and Section 32 and 33 Mines sites will be allowed to be disposed of at the Red Rocks Disposal Facility.

Comment (Not All Viable Alternatives Were Developed): Several alternatives were screened out which had the same limitations as the recommended alternative, such as a new permit required, new construction required and long lead times. The EE/CA should explain why these limitations were responsible for screening out several alternatives while the limitations did not negatively impact the selection of the recommended alternative. Specifically, there were two suitable locations screened out which have many benefits compared to the proposed Red Rocks Disposal Facility. The United Nuclear Corporation (UNC) Mill, which is the selected disposal facility for the nearby Northeast Church Rock (NECR) Mine site, is close to the Quivira Mines site, is on private land, will be managed long-term by the DOE, and is designed to handle uranium waste. The Ambrosia Lake area is outside of the Navajo Nation and has private land with similar uranium mine waste that could function as a repository location without contaminating new land, the Quivira Mines waste is a small fraction of waste already present, the haul distance is similar to the proposed Red Rocks Disposal Facility, and joint and several liability concerns could be resolved with a dedicated cell. While this comment is written to be specific to the Quivira Mines site, the UNC Mill and Ambrosia Lake questions are also applicable to the Section 32 and 33 Mines site.

Response: With regards to the UNC Mill, the NRC stated only waste from NECR would be considered in the permit modification for the former mill to accept mine waste rock. Thus, there is no currently viable alternative for disposing of waste rock from the Quivira Mines and Section 32 and 33 Mines at the former UNC Mill. The Ambrosia Lake area is heavily impacted by multiple mill sites and mine sites with downgradient groundwater contamination impacting a community and private water wells. USEPA Region 6 and the State of New Mexico are considering using the Ambrosia Lake area for disposal of mine waste from mines in that area rather than from outside Ambrosia Lake. USEPA's Office of Land and Emergency Management issued a policy memorandum in November 2024 stating USEPA's position on waste disposal and management in the Ambrosial Lake area. Thus, the Ambrosia Lake region was screened out.

Comment (Target Risk): The EE/CA should not discuss other issues or sites without a clear nexus to the issues at the Site. In particular, the EE/CA quotes USEPA policy which allows an upper limit to cancer risk of $3x10^{-4}$ but then selects $1x10^{-4}$ as the target risk for cleanup at the Quivira Mines site. The EE/CA should justify the selection of a target risk which is lower than that allowable under USEPA guidance. While this comment is written to be specific to the Quivira Mines site, the target risk topic is also applicable to the Section 32 and 33 Mines site.

Response: The acceptable risk range as published in regulations and law is 10^{-4} to 10^{-6}. This is a purposefully wide range and without a defining integer in front of the scientific notation. USEPA policy interprets 10^{-4} as allowing up to $3x10^{-4}$, but that is not a default upper limit. In fact, USEPA frequently selects $1x10^{-6}$ as a target cancer risk and generally uses $1x10^{-4}$ in making risk management decisions. The point made in the EE/CA is that $3x10^{-4}$ is the absolute upper bound and that the selected cleanup goal is more conservative than that, while still being less conservative than 10^{-6}. The $3x10^{-4}$ upper bound is rarely used to develop cleanup levels and almost never used for arsenic. Because both Ra-226 and arsenic are present in uranium mine waste, consistency with typical decisions for an upper bound for arsenic was one factor considered when deciding to use $1x10^{-4}$ as the target cancer risk.

Comment (Groundwater): NMED noted the lack of groundwater information available for wells within 4 miles of the Site during the 2019 Weston Removal Site Evaluation to evaluate the groundwater impacts and recommended an additional search for any nearby water wells.

Response: As part of the design phase of the removal action, area groundwater wells and resources will be fully evaluated for impacts and also as potential sources for construction dust control. USEPA will also access any State databases and conduct field surveys to identify groundwater wells.

Part III. Comments on Health Effects, Historic Impacts from Uranium Mining, United States Government Injustice, Honoring Navajo Culture and Community Engagement

III-1: Mistrust of the United States Government and United States Government Injustice

Comment (Government Discrimination Against Indigenous People): Several commenters stated that the US government has a history of ignoring and/or harming indigenous people and the US government and USEPA continued this with inadequate responses to the harmful effects of uranium mining. Spills in non-native communities get cleaned up much faster. The slow response to cleaning up the waste is discrimination.

Response: USEPA acknowledges the distrust of the US government agencies by the Navajo Nation. USEPA addresses the AUMs on the Navajo Nation using the same CERCLA authorities and processes as it does at other sites around the country. In addition, USEPA incorporates several policies and processes specific to CERCLA cleanups on Tribal lands that require additional effort, and sometimes additional time. For example, consistent with USEPA's *Policy on Consultation with Indian Tribes*, USEPA engages in government-to-government consultation with Tribal governments when USEPA actions or decision may affect Tribes. As stated above, USEPA implemented a government-to-government consultation process on the EE/CA and Action Memorandum that was agreed to by both USEPA and the Navajo Nation government. In addition, cultural surveys and biological clearances and the need for cultural monitors during work also require additional resources and time. USEPA also incorporates Navajo-specific lifeways into risk assessments to reflect the unique exposure considerations more accurately for Navajo lifeways used by the Navajo people. Finally, the complex network of Chapters and Chapter governments necessitates more extensive community engagement which requires resources and time. USEPA works hard to effectively and efficiently cleanup AUMs on the Navajo Nation.

Comment (Community Engagement): Several commenters stated that there is very little trust from Native communities for the federal government. This lack of trust has caused an unintended consequence in the EE/CA process that Diné communities are now in conflict over alternatives in the EE/CA. USEPA and the Navajo Nation leaders should explore peacemaking processes consistent with NNEPA's Guidance. Many community members live in remote areas and do not have computers or internet access. The outreach by USEPA depended too heavily on internet and USEPA should use culturally appropriate methods to engage with community members. Several community members commented that the presentation at the public meeting was hard to follow, used lots of jargon and provided information that conflicted with previous presentations. The presentation focused on the "USEPA will" which sounds like USEPA already decided. They said that the Red Rocks Disposal Facility "will be permitted" and that the facility "will be created." The presentation should make it clear that the permit is uncertain and that the communities will be able to voice their opinions during the permit process and that the permit may not be approved. USEPA should spend more time asking what the community wants. USEPA met with Thoreau Chapter officials several times prior to the public meeting and was not clear on where waste was coming from, they first said Churchrock, then Quivira and then at a later meeting added the Section 32 and 33 Mines. They also did not explain that the waste was uranium waste during the first meetings. One person said that Alternative 3 was presented at a Navajo Council meeting and that this looks like a predetermined decision and that the community comments do not matter.

Response: USEPA acknowledges the lack of trust that Native communities have towards the federal government and appreciates the feedback and advice on ways to build trust. USEPA is working with communities, Chapters and Navajo Nation government agencies to build trust and approaches that transcend individual EE/CAs and looks forward to seeking input from the communities and making additional progress in the future. USEPA appreciates the advice on engaging with community members and will continue to work with Navajo Nation and Chapter officials as well as the individual communities to ensure that all interested people can share their experiences and knowledge and learn about what USEPA is doing.

USEPA also appreciates the feedback on the public meetings. USEPA will continue to work with the Navajo staff and NNEPA to improve future presentations and the information shared with communities. Some issues have evolved over the years so new information may be different from what was

presented years ago. USEPA will work with its partners to identify specific issues that may require explaining changes to technical approaches in future meetings. USEPA notes that it meets monthly, in person with the Red Water Pond Road and Pipeline Road communities and has been doing so for over 4 years. These regular meetings and continuous dialogue over years about community concerns has resulted in support from those communities for Alternative 3.

USEPA first met with the community of Thoreau at the Chapter House on August 6, 2023, and outlined the alternatives being considered in the EE/CA. At that time, USEPA noted that one of these alternatives was to take the mine waste rock to a proposed new facility on the property of the Red Rocks Landfill. Between that meeting and meetings held in Thoreau in the winter of 2023, the State of New Mexico agreed to allow USEPA to also consider disposing of mine waste rock from the much smaller Section 32 and 33 Mines site at the proposed Red Rocks Disposal Facility. This permission was granted because the Quivira Mines site and the Section 32 and 33 Mines site impact both Navajo Nation and private New Mexico lands. In the winter of 2023/2024, USEPA conducted a two-step community engagement process with the Thoreau, Baca/Prewitt, and Casamero Lake Chapters at which time USEPA discussed the inclusion of the Section 32 and 33 Mines site for disposal at the proposed Red Rocks Disposal Facility. This community engagement process included multiple listening sessions in December 2023 to hear community concerns, followed a month later by presentations to six Chapters to answer specific questions and concerns raised in the previous month.

USEPA acknowledges that the permitting process for the Red Rocks Disposal Facility is not yet complete and while that was explained during one part of the presentation, it should have been clearly conveyed throughout the presentation. Further, USEPA will try to avoid using terms like “will” for issues that have not yet been decided. USEPA presents a range of alternatives at the public meetings and asks for community input during this public comment process. USEPA is always open to feedback and wants to hear what the community members think.

III-2. Honor Navajo Culture and Mother Earth

Comment (Navajo Culture): Several commenters stated that the US government should honor the Navajo culture and the Navajo respect and love for Mother Earth and incorporate Navajo cultural principles into the EE/CA and cleanup process.

Response: Wherever possible, USEPA considers Navajo culture and Navajo respect and love for Mother Earth into its community engagement and decision making. For example, USEPA worked with NNEPA for over 3 years to develop methods for incorporating Navajo lifeways into the risk assessment process. This results in more conservative risk management decisions at the Navajo Nation AUMs than at similar mines not located on the Navajo Nation. In addition, USEPA has agreed with the Navajo Nation government to change our consultation process for decision making to allow for two Navajo government input opportunities, one before a recommended alternative is selected and one after a recommended alternative is selected in the EE/CA and public comments are collected and reviewed. USEPA acknowledges the importance of incorporating Navajo Fundamental Law into cleanup actions wherever possible and practical. While many aspects of the CERCLA process are rigid and set in federal law and regulation, USEPA works to go beyond the minimum requirements to incorporate Navajo lifeways. To this end, USEPA has included Navajo Fundamental Law as a “To Be Considered” law for all media in the Section 32 and 33 Mines site cleanup (see ARARs attachment to this Action Memo).

III-3. Historic and Existing Health Impacts from Uranium Mining

Comment (Health Impacts from Uranium Mining): Many people stated that they had grandparents, parents and other relatives and neighbors with serious health problems as a result of uranium mining. They requested immediate medical care for the people suffering with breathing or other health problems. Some requested financial assistance or payment for the harm to their health. Can USEPA help applying for payments through the Radiation Exposure Compensation Act (RECA) program?

The NMELC, on behalf of the Red Water Pond Road community, stated that the EE/CA should have provided information on known impacts on the community from uranium mining to provide a more thorough and accurate comparison among the proposed alternatives. The comments summarized multiple technical articles and studies detailing known health impacts to the immediate community near the Quivira Mines site and other communities in uranium mining districts. Several people described their personal experiences of working in the confined spaces of the mines with no safety or health protection and the serious health effects such as lung transplants that they went through with no medical support from the government. Many people from the Red Water Pond Road community talked about living near the NECR and Quivira Mines sites and how that hurt their physical and mental health. Many of them have moved away from their land for the sake of their children and they and their children described how much they want all the waste removed so they can move back and get their traditional lives back. Several people described their relatives going to war as code talkers because it was an emergency. No one said let's wait or let's think some more, when an emergency happens, we have to act. The health effects to our people are an emergency and the government has to act like it's an emergency. While this comment is written to be specific to the Quivira Mines site, the health impacts associated with uranium mining are also applicable to the Section 32 and 33 Mines site.

Response: USEPA acknowledges the harmful health effects and the physical, emotional and mental impacts that communities have suffered from the legacy of uranium mining. The selected removal action addresses the source of potential risk to communities and the environment and is protective of public health and the environment.

Addressing the risks and the community impacts of the mine waste rock at the Quivira Mines and Section 32 and 33 Mines sites is critically important and a high priority for USEPA. At the same time, there are many complex issues that require discussions among multiple agencies and communities before USEPA makes a decision.

The risk assessment in the EE/CA summarizes many harmful health effects from uranium mining and potential exposure to mine waste rock, and these risks are the reason taking an action is warranted. USEPA also understands the importance of living on ancestral lands and being connected to the land. The selected removal action, Alternative 3, involves removing all the mine waste rock from the Casamero Lake community and will allow for unrestricted future use of the Site.

Part IV. Technical and Legal Comments from the Diné Uranium Remediation Advisory Commission (DURAC)

IV-1. ARARs and Other Legal Issues

Comment (ARARs): Comments from DURAC addressed several topics as summarized below:

1. Principles from Navajo Nation laws, including the Diné Natural Resources Protection Act (DNRPA), Navajo Nation CERCLA and the Fundamental Law of the Diné, along with several other laws or regulations, should be included in the ARARs for the Quivira Mines EE/CA.
2. The EE/CA does not show how all alternatives other than Alternative 4 will meet the DNRPA, Navajo Nation CERCLA and Fundamental Law of the Diné requirements for permanent protectiveness and harmony.
3. The EE/CA does address how ARARs for managing radon gas would be achieved under Alternative 3. The ARARs list must include the 2012 Navajo Nation Radioactive and Related Substances Equipment, Vehicles, Persons and Materials Transportation Act as an ARAR. In addition, the ARARs list must include the entire statement from the Navajo Nation in the Second Five Year Plan. Part of the statement concerned returning *leetso* to its natural balance with Mother Earth.
4. The Navajo Nation Bill of Rights requires "just compensation" for the loss of use of land, an issue not considered for Alternatives 1 and 2.

Response:

Item 1 - Principles from Navajo Nation Laws: USEPA recognizes Navajo sovereignty and understands the importance of Navajo laws, such as Navajo Nation CERCLA and the Fundamental Law of the Diné, to the Navajo people and government. To ensure a proper interpretation and implementation of Navajo laws and customs, USEPA developed the ARARs in coordination with the Navajo Nation Department of Justice and NNEPA. The final ARARs identify specific Navajo Nation laws and regulations that are ARARs and TBCs, and discuss other Navajo Nation laws, regulations, and guidances that are not considered ARARs or TBCs for the NTCRA at the Section 32 and 33 Mines site but may become applicable during implementation or future actions. The analysis included with the ARARs concerning Navajo Nation Fundamental Law and Navajo Nation CERCLA was approved by the Navajo Nation.

The Fundamental Law of the Diné is included in the ARARs table. The ARARs table references the 2022 NNEPA Guidance on the Uniform Application of Fundamental Law to AUM Cleanup Activities, which explains the principles of Fundamental Law and how they would be applied at the various stages of AUM cleanup. The ARARs table notes that Fundamental Law and the 2022 guidance will be TBCs to the extent that they do not conflict with U.S. CERCLA, the NCP, 40 CFR Part 300, or other federal requirements.

The NTCRA is being implemented by USEPA pursuant to authority under U.S. CERCLA and will adhere to the procedures and requirements outlined in the U.S. CERCLA statute and the implementing regulations. Navajo Nation CERCLA is not included as an ARAR or TBC for the NTCRA, but it is described in the ARARs attachment as potentially applicable if petroleum contamination is discovered at the Site during the NTCRA or during future actions. Petroleum is not addressed under U.S. CERCLA, but under Navajo Nation CERCLA Section 2104.Q, petroleum is included in the definition of hazardous substance. Based on site investigations thus far, petroleum contamination is not anticipated at this Site.

The DNRPA is not referenced in the ARARs attachment. USEPA understands the law to prohibit uranium mining and processing on Navajo Nation. The DNRPA defines uranium mining as, "the extraction of uranium or uranium ores by mechanical means including, but not limited to, surface mining, open pit mining or underground mining. Uranium mining shall not include extraction of uranium or uranium ores by solution mining." Although the law defines remediation, there are no substantive provisions

related to remediation. Since the NTCRA at the Section 32 and 33 Mines site will not involve uranium mining, this law was determined not to be applicable or relevant and appropriate to the cleanup action.

Item 2 – Permanent Protectiveness and Harmony: The Navajo Nation CERCLA requirements listed in the comments are the same as, or similar to, but not more stringent than the U.S. CERCLA requirements and consequently are not listed as ARARs. By meeting the requirements of U.S. CERCLA, the design for the selected alternative (Alternative 3) will also meet the requirements described in the comments concerning Navajo Nation CERCLA and the Fundamental Law of the Diné. As noted above, the DNRPA was determined not to be an ARAR or TBC for this NTCRA.

Alternative 3 will contribute to permanent protectiveness and harmony. The mine waste will be removed from the Site and disposed of off-site at the proposed Red Rocks Disposal Facility in a disposal cell specially designed to hold mine waste. The Section 32 and 33 Mines site will be reclaimed to restore balance and harmony in the Navajo communities near the Site after the complete removal of the mine waste rock. The mine waste will be disposed of at the Red Rocks Disposal Facility in a way that protects nearby communities and the environment. Alternative 3 will result in final closure with the goal of ensuring balance with the surrounding natural environment at the Site and the Red Rocks Disposal Facility.

Item 3 – Radon Gas, Transportation ARAR, and the Five-Year Plan: ARARs are for on-site actions and do not apply to off-site transport or disposal. Thus, the EE/CA included potential ARARs for radon flux for the on-site capping alternative, but not for the off-site disposal alternatives. Radon flux requirements at the proposed Red Rocks Disposal Facility will be regulated by the State of New Mexico and complied with by the facility operator.

The Navajo Nation Diné Radioactive Materials Transportation Act (RMTA) is not applicable to on-site activities; however, its requirements may apply to transportation on public roads on the Navajo Nation between the Site and the proposed Red Rocks Disposal Facility. As noted in the ARARs attachment, RMTA Section 1307 includes specific requirements that are not found in federal law, including advance notice of the transportation of radioactive and related substances, equipment, vehicles, persons, and materials over and across the Navajo Nation, as well as license fees, bonding requirements, route restrictions, and curfews. The RMTA is enforced by the Navajo Nation. While it is noted in the ARARs attachment, it is not designated as an ARAR or TBC for this action since it does not apply to on-site activities.

The Second Five-Year Plan is not included as an ARAR because it is not a promulgated cleanup standard, standard of control, or other substantive environmental protection requirement, criteria, or limitation.

Item 4 – Compensation for Loss of Use of Land: The Navajo Nation Bill of Rights is not an environmental protection requirement, criterion, or limitation and is thus not considered an ARAR. The selected alternative will not result in the loss of use of land because mine waste will be removed from the Section 32 and 33 Mines site and the Site will be cleaned up to levels allowing for unrestricted use.

Comment (Design Issues at Red Rocks Disposal Facility): DURAC submitted multiple comments with references to technical papers and advice on how to appropriately design a cover that could be durable for the length of time necessary to contain uranium mine waste rock. DURAC noted repeatedly that the EE/CA presented insufficient information concerning design and operation of the proposed Red Rocks

Disposal Facility and how it would meet legal requirements for radon flux, longevity, erosion resistance, water infiltration and other design considerations.

Separately, a video presented by USEPA at a public meeting and a presentation by the State of New Mexico provided example design concepts including a 90-foot-high pile with steep and long slopes that differ from the design concepts in the State of New Mexico "Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operation in New Mexico (2016)." The clay radon barrier shown in the presentation would soon become ineffective due to settling and desiccation cracking. The presentations apparently did not consider geologic information about the site available in the NM Bureau of Geology and Mineral Resources Open-File Geologic map for the quadrangle containing the proposed facility. The presentation by the State of New Mexico stated that there would be a requirement for financial assurance lasting 100 years. The NWNMRSWA thus knows that their long-term requirements expire after 100 years; however, the Navajo tribal members living near the repository expect their descendants will be on the land for many generations. The arid conditions at the site may not always support vegetation which would decrease the effectiveness of the ET cover. The EE/CA did not provide information on how water flow and related erosion would be controlled.

Response: USEPA appreciates the detailed information concerning ET cover design and will work with the NWNMRSWA and the State of New Mexico to ensure the design follows best engineering and geotechnical design methods and principles. USEPA acknowledges, as is typical of this stage, that the EE/CA purposefully did not contain details about the design and operation of the proposed Red Rocks Disposal Facility. Both the video and the PowerPoint presentation at the public meeting were conceptual in nature and do not represent an actual design or design requirements. If the video appeared to present a 90-foot pile, it was the result of animation distortion. The final pile will likely have gentler slopes and will not be 90 feet high.

The design of the repository will go through the full permitting process by the State of New Mexico and the final design will consider and account for the local geology and topography, meet the legal requirements for radon flux and other considerations, and incorporate appropriate engineering and geotechnical principles. The design will account for vegetation or lack thereof, representative of the local arid conditions. The slopes, gravel admixtures, swales, water run-on/off controls, and other features will be designed to properly control erosion considering the arid environment with sudden rainstorms. Factors such as probable maximum precipitation (PMP) and probable maximum flood (PMF) events will be incorporated into the calculations. The design will go through a separate public review process as part of the permitting process. The State of New Mexico groundwater protection permit will not have a duration and thus will exist in perpetuity. The permit will stipulate the timeframes and criteria for monitoring and maintaining the disposal facility.

Comment (Traffic): The EE/CA did not consider damages and repairs to roads, the impacts to traffic on local roads and impacts to traffic on the major transportation corridor on I-40. The comment suggests considering various road improvements and consulting with the U.S. Federal Highway Administration (FHWA) and the New Mexico Department of Transportation (DOT). While specific to the Quivira Mines site, the topic of traffic on roads is also applicable to the Section 32 and 33 Mines site.

Response: USEPA appreciates the suggestions and will likely consult with both the U.S. FWHA and New Mexico DOT during the design process and will consider whether any road improvements prior to the

action, or repairs after the action, are necessary. However, the action will add an estimated 100 trucks per day to the existing County Road 19 and Ranch Road, which is a noticeable but limited impact.

Comment (Ablation and Radon): The commenter disagrees with statements in the EE/CA that ablation treatment "would increase costs without significantly reducing risk." The commenter stated that ablation treatment would remove higher concentrations of Ra-226 and thus reduce the radon barrier thickness. Treatment could also reduce the size and location of a bio-barrier and thus reduce the costs of a bio-barrier. If principal threat waste (PTW) recovery will be a requirement for waste transportation or placement, then ablation will substantially eliminate that construction cost. The commenter stated the cover design to manage water storage and infiltration will not allow for proper management of radon flux with the arid conditions and resulting low soil moisture found in the region.

Response: USEPA agrees that treatment should always be evaluated as a first option and ablation may have some uses at Navajo Nation AUMs. Ablation was fully evaluated for the Quivira Mines and Section 32 and 33 Mines sites and USEPA determined that ablation requires extra handling of all waste through the treatment input and output, does not reduce the overall volume of waste requiring disposal, and creates a separate volume of highly concentrated waste requiring disposal at a facility such as Deer Trails or Waste Management Solutions (both over 500 miles away from the sites). These factors increase the short-term risk, increase the project construction duration, greatly increase the cost, and do not decrease the risk at the proposed Red Rocks Disposal Facility. While the overall concentrations of Ra-226 in the waste in the repository would be slightly lower, it would still contain concentrations that pose an unacceptable risk.

An ET cap, whether on-site or at a facility such as the proposed Red Rocks Disposal Facility, can be safely designed and implemented to meet radon flux standards. The soil gradation requirements and functional soil moisture levels are compatible for purposes of managing both radon flux standards and water and will be addressed in the design.

Concentrations of Ra-226 at the Quivira Mines and Section 32 and 33 Mine sites, and even in the material identified as PTW at the NECR site, are much lower than the mill waste regulated under the UMTCRA standards at mill sites and therefore the UMTCRA and Clean Air Act standards for radon flux would be readily achievable. The cover design, including radon attenuation, would be unchanged because the radon concentrations generated from the Ra-226 concentrations found in the mine waste rock at the Site would not drive the need for a thicker cover than needed post-treatment. The design is driven by moisture retention and release and erosion resistance with no future exposure of the mine waste rock, in addition to radon attenuation. Designs at similar sites have integrated radon attenuation with the cap without a separate radon barrier. A reduction in concentrations also would not affect a bio-barrier. A bio-barrier is either selected to prohibit burrowing or not selected.

Comment (Alternative 2): The descriptions of Alternative 2 do not provide information on how it would permanently minimize human exposure to the uranium waste by isolating the waste from erosion that would be protective for future generations. A new Alternative 2B should be added that provides an assurance of longevity and an accurate presentation of construction and long-term maintenance costs for capping on-site.

Response: The descriptions and cost estimates in the EE/CA for Alternative 2 provide accurate cost estimates (with an accuracy of 30% below and 50% above the actual cost) and describe the

responsibility for permanently maintaining the on-site repository. The EE/CA provided general goals, concepts, and basic design details. The exact details would be provided in the final design, if Alternative 2 were selected. USEPA is selecting Alternative 3, therefore the detailed designs for an on-site closure repository were not developed and are not provided.

Comment (Alternative 4): Alternative 4 is the only alternative which permanently removes uranium mine waste from the Navajo Nation and thus complies with the DNRPA requirement of "permanent closure of uranium mining and processing sites … for the purpose of eliminating or substantially reducing releases of radioactive and toxic substances to the air, land, and water … to prevent or substantially minimize human exposure to such substances now and for future generations."

Response: Alternatives 3 and 4 both remove mine waste from Navajo Nation. Alternatives 2 and 3 also meet the objectives quoted in the comment from the DNRPA to eliminate or substantially reduce releases of radioactive materials. Both Alternatives 2 and 3 would be constructed with durable covers and maintained to eliminate exposure to the mine waste rock. Alternative 3 provides a better overall balance of the U.S. CERCLA criteria than Alternative 4.

Comment (Comprehensive Approach and Lack of Transparency): An additional aspect of a comment regarding the permanence of Alternative 4 asked for a comprehensive approach to all mines rather than individual EE/CAs. It also claimed that financial evaluations are not true and transparent for off-Navajo disposal. The comment also claimed that comments at other public meetings have made it clear that communities have a consensus for complete removal of mine waste away from the Navajo Nation to achieve balance and harmony.

Response: USEPA, NNEPA and other offices of the Navajo Nation are working comprehensively on the more than 500 AUMs on Navajo Nation. Each mine or group of mines to be addressed through CERCLA's NTCRA process will go through the EE/CA process. The range of cleanup alternatives is limited, and each EE/CA includes the alternatives appropriate for the specific site considering the waste present and the site-specific conditions and considerations. The EE/CA process under CERCLA requires that USEPA consider community input for each NTCRA taken. The cost estimates for disposal at Deer Trails or similar disposal facilities are accurate for the purposes of an EE/CA and transparent and would not change by evaluating more sites together in a comprehensive action.

USEPA disagrees that there is a consensus on communities' opinions regarding how to address mine waste rock. Rather, many community commenters at the public meetings have stated the mine waste rock is from Navajo land and must remain on Navajo land to maintain harmony and balance. Others have said that mine waste should be removed from Navajo land, but there is no consensus on how to interpret or apply the concepts from Diné Fundamental Law. Many community members have stated a preference for avoiding having years of truck transport through their communities as would be required with off-Navajo disposal. USEPA has presented to and listened to comments from over 30 Navajo Chapters and the input from community members is diverse and USEPA has not heard community consensus around a single option.

Comment (ìishjání ádooniíl): The commenter expressed concern that recent Chapter meetings and presentations for the EE/CAs did not provide a forum for ìishjání ádooniíl (making things clear) and the Navajo practice of "talking things out." Perhaps some future opportunity will be established that implements "making things clear" and "talking things out" for both Diné and English speakers.

Response: USEPA appreciates the concerns for honoring the Navajo traditions for clear communication and will work with its Navajo partners to improve future communication. With this Navajo tradition of "talking things out" in mind, USEPA has been meeting with each community for years throughout the entire investigation and the EE/CA process. USEPA has met with the Casamero Lake community to discuss the Section 32 and 33 Mines sites over the last four years. The formal and legally required public meetings for the EE/CAs are just one step in a long process of engaging with community members, Chapters and various Navajo Nation government officials. The community and NNEPA have been, and continue to be, partners in the cleanup process every step of the way.

D. ACRONYMS

ARAR	Applicable or relevant and appropriate requirement
AUM	Abandoned uranium mine
bgs	Below ground surface
BIA	Bureau of Indian Affairs
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIC	Community Involvement Coordinator
CIP	Community Involvement Plan
DURAC	Diné Uranium Remediation Advisory Commission
EE/CA	Engineering Evaluation and Cost Analysis
ET	Evapotranspiration
NECR	Northeast Church Rock
NNEPA	Navajo Nation Environmental Protection Agency
NTCRA	Non-time-critical removal action
NTUA	Navajo Tribal Utility Authority
NRC	Nuclear Regulatory Commission
NWNMRSWA	Northwest New Mexico Regional Solid Waste Authority
PRP	Potentially responsible party
PTW	Principal threat waste
RECA	Radiation Exposure Compensation Act
TBC	To be considered
UMTRCA	Uranium Mill Tailings Radiation Control Act
USEPA	U.S. Environmental Protection Agency