

# **R9 Tronox Navajo Area Uranium Mines (NAUMs) & Quivira Mine Site FY2022 FINANCIAL REPORT\***

*\*EPA's prior Tronox Financial Accounting Reports, covering FY2015 through FY2021, reported on expenditures and remaining balances for Tronox Bankruptcy Settlement funds to address the 54 NAUMs and the Quivira Mine Site. Following the 2022 allocation of the Tronox Settlement Funds between EPA Regions 6 and 9, as described on page 4 of this Report, Region 9 is providing a separate financial accounting for FY2022, covering only the 35 Tronox Mine Sites on the Navajo Nation.*



U.S. Environmental Protection Agency

December 2023

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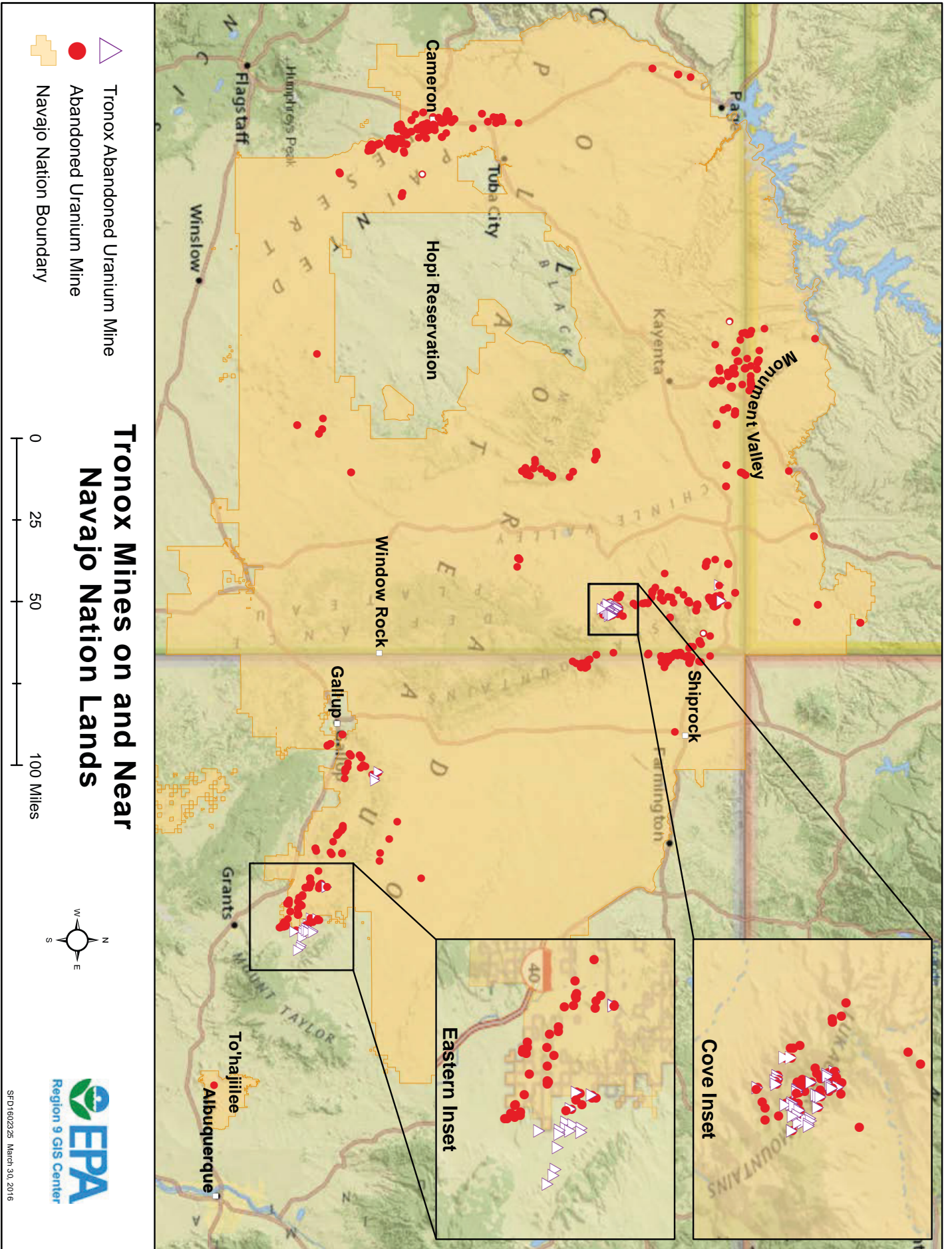
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### Common Acronyms used In Report

AUM	Abandoned Uranium Mines
BIA/BIE	Bureau of Indian Affairs/Bureau of Indian Education
CIC	Community Involvement Coordinator (US EPA)
EE/CA	Engineering Evaluation/Cost Analysis
GSA	Geographic Sub-Area
LMMD	Lukachukai Mountain Mining District
NAMLRD	Navajo Abandoned Mine Land Reclamation Department
NAUM	Navajo Area Uranium Mines
NNEPA	Navajo Nation Environmental Protection Agency
RPM	Remedial Project Manager
RSE	Removal Site Evaluation
TCRA	Time Critical Removal Action
US EPA	United States Environmental Protection Agency

Front Cover: Sun shining through the rain during the Ablation Treatability Study and Demonstration.



# 1.0

## Tronox Settlement Background

### Background

On January 21, 2015, the Tronox settlement agreement, resolving fraudulent conveyance claims against Kerr-McGee Corporation and related subsidiaries of Anadarko Petroleum Corporation, went into effect. Pursuant to the settlement agreement, Anadarko paid \$5.15 billion plus interest to a litigation trust.

#### **As a Result of the Tronox Settlement:**

- US EPA received a distribution of 20% (~\$917 million) for the cleanup of 54 uranium mines that were operated, and subsequently abandoned, by Kerr-McGee in and near the Navajo Nation territory;
- US EPA also received a distribution of ~\$92 million for the cleanup of Quivira Mine Site; and
- Navajo Nation received a distribution of ~\$45 million in connection with the Shiprock Uranium Mill Site.

US EPA Tronox funds are available to support activities related to the assessment and cleanup of the 55 Tronox settlement mines and contamination caused by the mines. Examples of these activities include:

- Informing and involving the community about cleanup activities
- Investigating hazardous substances levels in water, soil, sediment, and indoor air
- Implementing land use controls such as fences and signs to warn people about dangerous areas
- Protecting cultural and biological resources in the mine areas
- Constructing access roads to the mines for cleanup operations

From the late 1940s to the 1980s, Kerr-McGee Corporation mined more than seven million tons of uranium ore on or near the Navajo Nation. Fifty-five mines are being addressed, 35 in Region 9, on the Navajo Nation and 20 in Region 6, outside the Navajo Nation in New Mexico. The Region 9 mines are located in the Casamero Lake, Cove, Coyote Canyon, Lukachukai, Pinedale, Standing Rock, and Tse Tah areas.



 US EPA RPM Kenyon Larsen overlooking old ore loading structure around the Cisco Mine in July 2022 during the sampling event for the LMMD NPL listing.

## 2.0 US EPA Tronox Settlement

The approximately \$1 billion that US EPA received for the cleanup at Quivira and the 54 Tronox Navajo Area Uranium Mines (NAUM) has been deposited into US EPA Superfund Special Accounts. Consistent with Section 122(b)(3) of CERCLA, the Agency established these special accounts to receive funds, as provided for in the Tronox Settlement Agreements which became final in 2011 and 2015. Special accounts are site-specific, interest-bearing sub-accounts housed within US EPA's Hazardous Substances Superfund (Superfund Trust Fund). Charges to a special account must be consistent with the terms of the settlement pursuant to which the funds are received.

In response to a US EPA Office of Inspector General report, Region 6 and Region 9 identified several corrective measures to complete prioritization and resource allocation for the Tronox NAUM sites, one of which was the development of an allocation

strategy. The strategy was presented to senior US EPA management, stakeholder representatives (Navajo Nation EPA, Navajo Nation DOJ, New Mexico Environment Department, and New Mexico Mining and Minerals Department) for discussion and input, followed by a comment period in which US EPA provided responses. US EPA also initiated government-to-government consultation with the Navajo Nation Office of President and Vice President. On March 22, 2022, the unspent Tronox funds at that time (approximately \$925 million) were allocated between the two lead US EPA Regions - \$620 million to Region 9's 34 sites and \$305 million to Region 6's 20 sites. While previous financial reports contained information regarding funds spent at both Region 6 and Region 9 sites, this report provides specific information regarding funds spent at Region 9 sites only. The following table provides the status of Tronox special account funds in Regions 6 and 9.

<b>Tronox Funds for NAUM and Quivira Mine Sites*</b>				
	<b>US EPA Region 6 NAUM Sites</b>	<b>US EPA Region 9 NAUM Sites</b>	<b>US EPA Region 9 Quivira Mine</b>	<b>Totals</b>
<b>Total Funds Collected</b>	\$318.4M	\$600.0M	\$91.5M	\$1,009.9M
<b>Net Interest Earned</b>	\$3.0M**	\$83.0M	\$8.3M	\$94.2M
<b>Funds Remaining for Expenditure</b>	\$310.0M	\$641.5M	\$90.6M	\$1,042.1M

\*Throughout this document, numbers may not add due to rounding.

\*\*The net interest earned for US EPA Region 6 funds is relatively small because, prior to March 22, 2022, most of the Tronox funds resided in Region 9 accounts.

**Figures in the Following Pages encompass Federal Fiscal Year 2011 through FY2022.**

## US EPA Tronox Settlement Financial Expenditure Breakout

To prioritize response actions and approve funding for individual projects, US EPA memorializes an annual “Approval and Annual Funding Projections for Implementation of Tronox Settlement Memo.” Once projects are approved, a special account name/number is assigned for that project to track expenditures. Table 2.1 on page 7 summarizes approved Tronox projects to be undertaken by Region 9 by special account name, budget, expenditures, and balance. These expenditures are further broken out into the following expenditure categories.

**Payroll:** US EPA costs associated with assessment and cleanup of the mine/mine areas including US EPA field staff, administrative, technical support, legal, contracting and management.

**Travel:** Travel cost associated with the management, assessment, and cleanup of the mine/mine areas specified in the Tronox Settlement.

**Contracts:** Contracting costs associated with the assessment and cleanup of the mine/mine areas specified in the Tronox Settlement.

**Expenses:** Expense costs for equipment, property, supplies, and materials associated with the assessment and cleanup of the mine/mine areas specified in the Tronox Settlement.

**Grants:** Grants associated with the management, assessment and cleanup of the mine/mine areas specified in the Tronox Settlement.

**Interagency Agreements:** US EPA has entered into interagency technical services agreements with US Army Corps of Engineers and US Geological Survey to support work on mine/mine areas specified in the Tronox Settlement.

Table 2.2 on page 8 is a graphical representation of Tronox Expenditures by Category.



 US EPA RPMs conducting site walks in the Lukachukai Mountains in October 2022.

## Accounting Line Active Project Names/Descriptions

Names	Descriptions
US EPA Region 9	
<b>Tronox NAUM Sections 32 and 33</b>	A joint project between Region 6 and 9 to assess the Sections 32/33 Tronox mines in the Smith Lake sub-district in the Casamero Lake area to complete an RSE and EE/CA.
<b>Tronox Abandoned Uranium Mines on the Navajo Nation (2011-2015)</b>	Tronox NAUM activities (2011 – 2015) prior to the 2015 settlement included quarterly meetings with Navajo Nation EPA; settlement implementation planning, accounting and contracting strategy; community involvement; Tronox portal development, Northern Agency ASPECT data collection, and grants.
<b>Tronox NAUM Cove Transfer Station</b>	Construction activities to mitigate surface erosion at the former transfer station located in the Cove Chapter of the Navajo Nation, in eastern Arizona.
<b>Tronox NAUM Mesa I Mine</b>	Mesa Mine I Preliminary Site Assessment has been conducted to determine risk to human health and the environment. An RSE was conducted in FY2018.
<b>Tronox NAUM</b>	Activities included quarterly meetings with Navajo Nation; settlement records review; settlement implementation planning; Navajo Nation Mines Portal Database; Northern Agency ASPECT Gamma survey; Annual Quarterly reports; Tronox Northern Agency RSEs; Tronox Northern Agency EE/CAs; Cove Mesa V Main Access Road Improvement/Design; Cove Mine Access Assessment; Northern Agency Cultural Resources Survey; community involvement; and Navajo Nation grants.
<b>Tronox NAUM Cove Sitewide Conceptual Model and Data Gaps</b>	Assimilate information from previous studies and actions of the site; research, gather and analyze other existing data and documents that could be used to develop the conceptual site model; break the site out into investigation areas based on known information; provide pictorial representations of the site; depict exposure pathways and receptors; provide recommendations for paths forward for each of the investigation areas; and, suggest general areas for data gap investigations.
<b>Tronox Quivira Mines</b>	Activities at the Quivira Mines include: the Engineering Evaluation/Cost Analysis; and discussing the removal options with Navajo Nation, community members, and other stakeholders.
<b>Tronox NAUM Cove Area Air Study</b>	Activities include sampling station construction, site restoration, and funding a year-long grant to allow Navajo Nation EPA staff to retrieve field samples.
<b>Tronox NAUM Mesa II Mine</b>	Activities include a time critical removal action (TCRA), sampling support and EE/CA. The TCRA was to repair the erosion of the burial cell and reestablish a functional drainage channel to avoid further erosion of the burial cell. Air monitoring and soil screening was conducted during the removal action to provide sampling support and ensure that work practices and dust suppression methods used during the TCRA prevented the off-site migration of dust with radionuclides.
<b>Tronox NAUM Mesa V Mine</b>	Activities at the Mesa V Mine include the EE/CA, and a removal action at the Mesa V Haul Shaft and a radon study, discussing the removal options with Navajo Nation, community members, and other stakeholders.



## Table 2.1: Tronox Region 9 Approved Projects, Budgets, and Expenditures

The chart below represents Budgets and Actual (paid) Expenditures. Each project has Unliquidated Obligations (ULOs)\* associated with proposed activities (financial commitments to grants and contracts). For the purposes of this report, ULOs are combined into the Remaining Balance calculation.

Special Account Names	Total Budget	Total Expenditures	Remaining Balance
<b>US EPA Region 9</b>			
Abandoned Uranium Mines on the Navajo Nation	\$3.2M	\$3.2M	\$0.0M
Tronox Quivira Mines (formerly NE Churchrock Quivira)**	\$99.8M	\$9.2M	\$90.6M
Cove Transfer Station - Tronox	\$5.3M	\$3.6M	\$1.7M
Mesa I Mines - Tronox	\$9.4K	\$9.4K	\$0.0K
Section 32 AUM Site - Tronox	\$2.1M	\$1.7M	\$450.5K
Section 33 AUM Site - Tronox	\$1.1M	\$97.8K	\$998.5K
Tronox NAUM Cove Wash Regional Assessment	\$4.2M	\$3.3M	\$883.4K
Tronox Navajo Area Uranium Mines	\$661.2M	\$24.9M	\$636.3M
Tronox NAUM Cove Sitewide Conceptual Model and Data Gaps	\$2.1M	\$1.8M	\$340.7K
Tronox NAUM Mesa II	\$2.0M	\$1.6M	\$351.9K
Tronox NAUM Mesa V	\$452.9K	\$355.8K	\$97.1K
Tronox NAUM San Mateo Creek Basin	\$9.2K	\$8.6K	\$0.6K
Tronox NAUM Cove Mesa I Mines	\$349.3K	\$251.5K	\$97.8K
Tronox NAUM Cove Mesa III Mines	\$58.2K	\$41.9K	\$16.3K
Tronox NAUM Cove Mesa IV Mines	\$232.8K	\$167.7K	\$65.2K
Tronox NAUM Cove Mesa VI Mines	\$58.7K	\$42.4K	\$16.3K
Tronox NAUM Brodie I Mine	\$58.2K	\$41.9K	\$16.3K
Tronox NAUM Block K Mine	\$58.2K	\$41.9K	\$16.3K
Tronox NAUM Step Mesa	\$116.4K	\$83.8K	\$32.6K
Tronox NAUM Flag Mesa	\$232.8K	\$167.7K	\$65.2K
Tronox NAUM Knife Edge	\$58.2K	\$41.9K	\$16.3K
<b>Total All Region 9 Special Accounts</b>	<b>\$782.8M</b>	<b>\$50.7M</b>	<b>\$732.1M</b>

\*Reports generated by US EPA's CBOR (Compass Business Objects Reporting) system. The information above is for informational purposes only. Special Account Summaries provide final cost figures.

\*\*Funds utilized for Quivira only.

## Table 2.2: Tronox Region 9 Approved Expenditures

An overview of the approved projects and activities associated with these expenditures is located in Section 3.

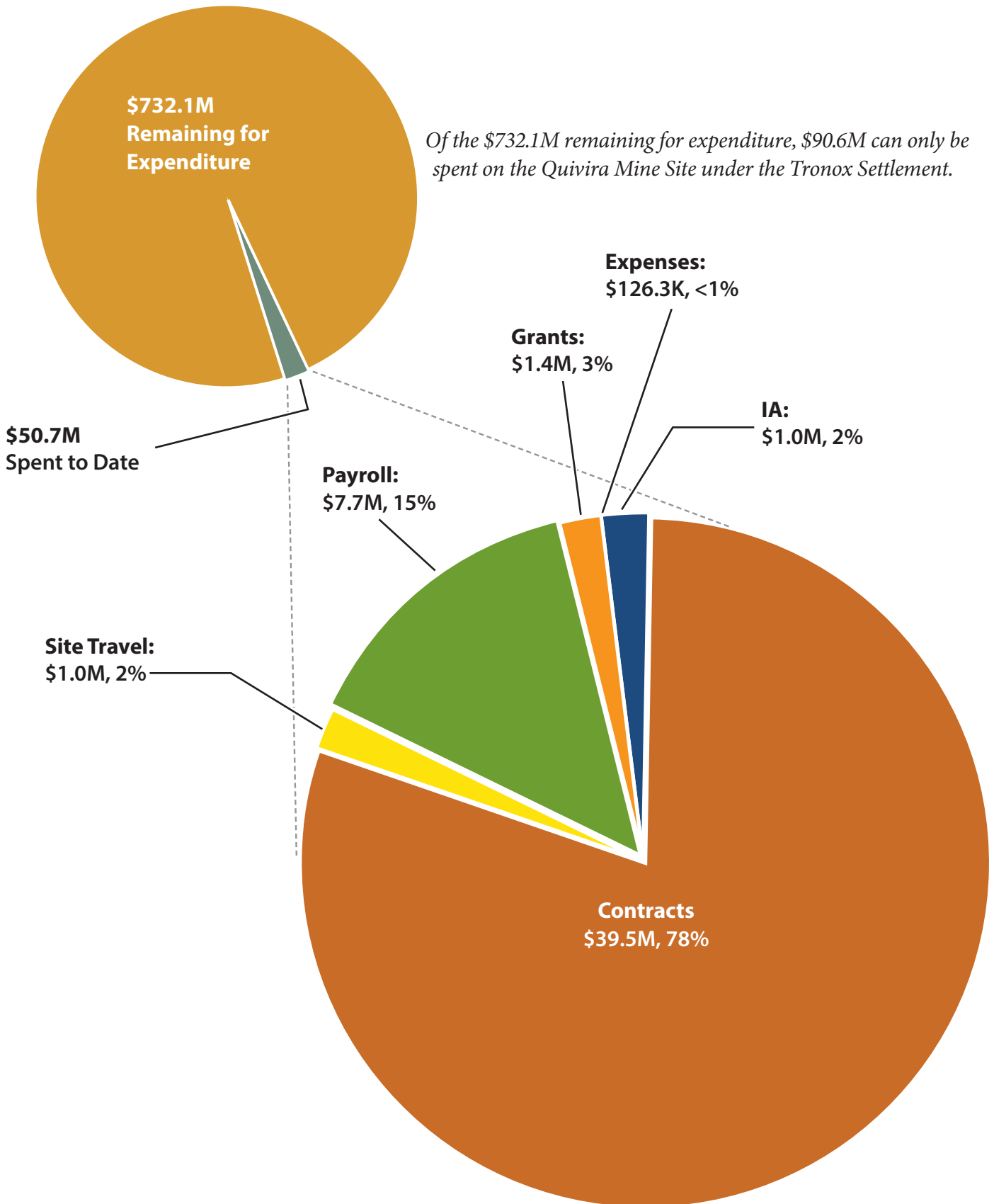
### Special Account Summary\*

Special Account Names	Contracts	IA	Expenses	Grants	Payroll	Site Travel	Total Spent
<b>US EPA Region 9</b>							
Abandoned Uranium Mines on the Navajo Nation	\$1.8M	--	\$6.0K	\$115.5K	\$1.2M	\$114.9K	\$3.2M
Tronox Quivira Mines (formerly NE Churchrock Quivira)	\$8.0M	\$191.9K	\$3.6K	\$74.9K	\$863.0K	\$129.4K	\$9.2M
Cove Transfer Station - Tronox	\$3.5M	--	\$0.1K	\$3.0K	\$78.0K	\$33.1K	\$3.6M
Mesa I Mines - Tronox	--	--	--	--	\$7.4K	\$2.0K	\$9.4K
Section 32 AUM Site - Tronox	\$1.5M	--	\$0.2K	\$13.7K	\$99.8K	\$9.1K	\$1.7M
Section 33 AUM Site - Tronox	\$96.2K	--	--	--	\$0.6K	\$1.1K	\$97.8K
Tronox NAUM Cove Wash Regional Assessment	\$2.0M	--	\$3.3K	\$486.0K	\$705.9K	\$123.2K	\$3.3M
Tronox NAUM	\$19.3M	\$247.6K	\$112.8K	\$139.4K	\$4.5M	\$555.7K	\$24.9M
Tronox NAUM Cove Sitewide Conceptual Model and Data Gaps	\$620.2K	\$599.8K	--	\$418.5K	\$124.9K	\$19.4K	\$1.8M
Tronox NAUM Mesa II	\$1.6M	--	--	--	\$41.9K	\$15.6K	\$1.6M
Tronox NAUM Mesa V	\$209.6K	--	\$0.3K	\$110.8K	\$35.2K	--	\$355.8K
Tronox NAUM San Mateo Creek Basin	--	--	--	--	\$8.6K	--	\$8.6K
Tronox NAUM Cove Mesa I Mines	\$251.5K	--	--	--	--	--	\$251.5K
Tronox NAUM Cove Mesa III Mines	\$41.9K	--	--	--	--	--	\$41.9K
Tronox NAUM Cove Mesa IV Mines	\$167.7K	--	--	--	--	--	\$167.7K
Tronox NAUM Cove Mesa VI Mines	\$41.9K	--	--	--	\$0.5K	--	\$42.4K
Tronox NAUM Brodie I Mine	\$41.9K	--	--	--	--	--	\$41.9K
Tronox NAUM Block K Mine	\$41.9K	--	--	--	--	--	\$41.9K
Tronox NAUM Step Mesa	\$83.8K	--	--	--	--	--	\$83.8K
Tronox NAUM Flag Mesa	\$167.7K	--	--	--	--	--	\$167.7K
Tronox NAUM Knife Edge	\$41.9K	--	--	--	--	--	\$41.9K
<b>Total</b>	<b>\$39.5M</b>	<b>\$1.0M</b>	<b>\$126.3K</b>	<b>\$1.4M</b>	<b>\$7.7M</b>	<b>\$1.0M</b>	<b>\$50.7M</b>

\*US EPA reporting reflects expenditures (invoices paid) and no longer includes unliquidated obligations or commitments to projects. Projects with no expenditures are not reported on this table. Discrepancies may be noted between Tables 2.1 and 2.2 due to rounding. Discrepancies between this report and US EPA's Special Account Summary packages may be due to the posting date of invoices paid. Indirect Costs are not displayed above.

# Tronox Region 9 Total Disbursed Breakout by Cost Category

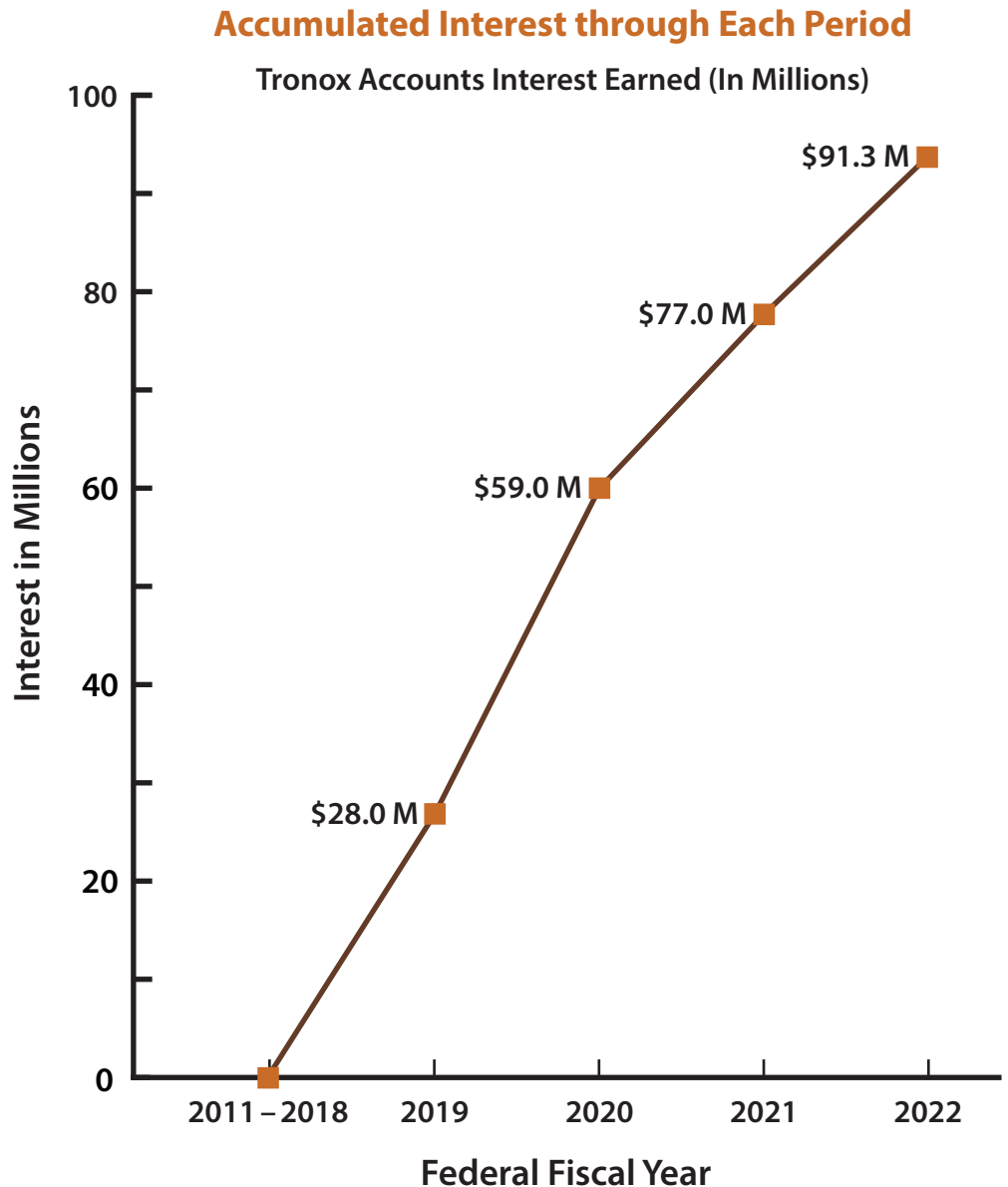
Total Settlement Expenditures by Category \$ in Millions



## Interest Earned on Tronox Region 9 Special Accounts

Special accounts are funded entirely with money received from PRPs. US EPA retains money received through settlements with potentially responsible parties (PRPs) in these site-specific accounts to conduct planned future cleanup work at the site based on the terms of the settlement agreement.

Fiscal Year	Rate
2022	0.10%
2021	0.10%
2020	2.22%
2019	1.75%
2018	0.87%
2017	0.70%
2016	0.67%
2015	0.75%
2014	0.81%
2013	0.78%
2012	0.74%
2011	0.69%



## Special Accounts Management

Special accounts for the Tronox NAUMs are managed and used consistent with national special account policy and guidance. Information about national special account policy, guidance, and management can be found on EPA's Superfund Special Accounts webpage at <https://www.epa.gov/enforcement/superfund-special-accounts>.

Funds maintained in the Hazardous Substance Superfund Trust Fund are invested by the Treasury in U.S. Market Based Securities. Treasury's Bureau of Fiscal Services uses the yield to maturity effective at the time of purchase of these securities to calculate the Superfund Interest Rate each fiscal year. Interest is accrued and available in each account based on the account's available balance. Interest accrued is kept in the special account on which it is earned.

## Contracting Vehicles

Since the Tronox settlement in 2011, US EPA has been utilizing new and existing contracts to conduct cleanup activities, which allowed the Agency to expeditiously achieve our goal of protecting human health and the environment on the Navajo Nation. These contracts include:

- **Arrow Indian Contractors:** A Navajo-owned Small Business 8a company was awarded a \$4 million dollar contract to perform a time critical removal action of contaminated soils near ventilation shafts and repair a bridge at the Quivira Mine.
- **START Contract:** Superfund Technical Assessment and Response Team – provides scientific/technical support for assessing chemical, biological, and radiological contamination as well as site assessment and remedial support activities.
- **ERRS Contract:** Emergency and Rapid Response Services – provides management, field personnel, and equipment resources to execute decontamination and demolition and removal services.
- **RAC:** Remedial Action Contract – provides remedial response, enforcement oversight, non-time critical removal activities, engineering support, and assessment services.
- **TASC Contract:** Technical Assistance Services for Communities – to help communities better understand the science, regulations and policies of environmental issues.
- **RAES Contract:** The Response, Assessment and Evaluation Services \$85 million capacity contract was awarded on October 11, 2017 to Tetra Tech, and the scope of work includes site assessment of the abandoned uranium mines.
- **AMRCS:** The Abandoned Mine Response and Construction Services (AMRCS) contract(s) was awarded February 11, 2021 for cleanup efforts at more than 50 abandoned uranium mine sites in and around the Navajo Nation, for up to \$220 million over the next five years. In addition to the funds from the Tronox settlement, US EPA and Navajo Nation have secured funding agreements, through enforcement agreements and other legal settlements, for the assessment and cleanup of approximately 200 abandoned uranium mine sites on the Navajo Nation. The Contracts were awarded to Red Rock Remediation Joint Venture, Environmental Quality Management Inc. and Arrowhead Contracting Inc. Each company will develop training programs for Navajo individuals and businesses to promote professional growth in areas related to the AMRCS contract. Workforce training may cover radiological contamination, health and safety, construction and road building. In addition, the contracts require the selectees to provide quarterly reports to the EPA, Navajo Nation, and the public on cleanup progress, training, and Navajo job and business opportunities.
- **Clawson Excavating:** a Navajo-Woman owned/ Small Business Priority 1 Company was awarded a \$1M contract to complete mine access and road upgrades for the approximately 34 site mine in the Cove Chapter.



 US EPA RPM Jesse Kass taking a sample from the Camp Mine area in July 2022 during a sampling event for the LMMD NPL listing.

US EPA Region 9's contracts direct that best efforts shall be used to give Native American organizations and Native American-owned economic enterprises the opportunity to participate in subcontract awards. RAES specifically acknowledges the Navajo employment goals and reports progress in reporting on those goals.

## Approved Grant Expenditures

US EPA provides grant funding to agencies in support of community interests and to fund partner agencies' activities that support the assessment and cleanup of Tronox NAUMs. Funding has been provided to the Navajo Nation, the State of New Mexico and Diné College. The purposes and levels of the funding are outlined below.

**Navajo Nation EPA** Over \$5.0M has been provided to support technical review of remediation plans and final cleanup options, community involvement activities including coordination for community meetings, distribution of information, and collecting environmental samples.

**Navajo Nation Abandoned Mines Lands Dept.** \$2.1M has been provided for on-site construction activities and technical review of proposed remediation strategies.

**Diné College** Funding in the amount \$809,000 supported studies of uranium effects on livestock and the Cove watershed. As part of these studies, Diné summer interns collected data and helped investigate potential mine impacts in the larger Cove Watershed. This grant ended in July 22, 2022.



**USEPA, NNEPA, NNAML and Tetra Tech conducting a site walk at Mesa V in May 2022.**



**Mesa II in May 2022, four years after a time critical removal action was conducted on site in 2018 by US EPA.**

## 3.0 Tronox Mine Site Expenditures

### COVID-19 Impact on Tronox Activities & 2021 – 2029 Ten – Year Plan

Much of the planned activities for Fiscal Year (FY) 2022 were suspended due to the international pandemic. Like many communities, the Navajo Nation went on shelter in place status in mid-March 2020 (via Navajo Department of Health Public Health Emergency No. 2020 – 001

— Limit Mass Gatherings and Gatherings Due to COVID-19. US EPA also halted field efforts except in cases of urgent or emergency activities (i.e., wildfires, hurricanes or chemical releases). This continued to delay most planned community and technical meetings as well as planned field efforts.

## REGION 9

### **Supplemental Investigations**

In May 2022, US EPA restarted field work with a site reconnaissance effort to orient new RPMs to the mine sites, discuss site challenges, and plan future work. Areas of focus were the Cove Transfer Station site for a final removal action and Mesa I for further site characterization and removal action planning.

In July 2022, US EPA conducted site characterization work at three abandoned uranium mines in the Cove area of the Navajo Nation. The information collected will be incorporated into an update to the Engineering Evaluation/Cost Analyses (EE/CAs) for the sites and support planning for Time Critical Removal Actions (TCRAs).

### **Time Critical Removal Action at the Cove Transfer Station**

The Tronox Team is planning a TCRA at the Cove Transfer Station (CTS), which includes both areas at CTS 1 and CTS 2. This action includes excavating soil at CTS 1 and transporting the soil to CTS 2. There, clean soil will be separated from contaminated soils, using gamma radiation- and XRF-based soil sorting technology. The soil above cleanup limits will be disposed of at Deer Trail landfill near Denver, Colorado, while the soil below clean up limits will be

used for beneficial reuse in the Cove area. This action is planned to start in the summer 2023.

### **Ablation Treatability Study and Demonstration**

On August 31, 2022 US EPA and Navajo Nation EPA (NNEPA) hosted a field demonstration of High Pressure Slurry Ablation (HPSA) as part of a Treatability Study of Uranium Mine Waste at the Cove Transfer Station and two other abandoned uranium mine sites on the Navajo Nation. The demonstration was conducted in the morning for community members, where roughly 20 attended and an afternoon demonstration was held for industry personnel, where 30 people attended. Those in attendance included representatives from Congresswomen Teresa Fernández's office and U.S. Representative Thomas O'Halleran's office and Rick Nez, chair of the Resources and Development Committee of the 24th Navajo Nation Council. HPSA is a promising uranium mine waste treatment technology developed by Disa Technologies, Inc. that involves using a high energy collision process to strip uranium contamination from sand grains without the use of chemical additives. The results of the field technology testing will be evaluated and documented in a final treatability study report to be issued in early 2024.

## **US EPA Senior Leadership Site Tour**

On May 11, 2022, Region 9 Administration toured Tronox Navajo Abandoned Uranium Mine Sites within the Lukachukai Mountains. US EPA RPMs and CICs provided background and updates at the Mesa 5 Complex AUM sites for Region 9 RA Martha Guzman, EPA Office of Land and Emergency Management Deputy Carlton Waterhouse, and new Superfund Executive Director Michael Montgomery and Assistant Director Will Duncan. RPM Jesse Kass led the site visit to Mesa 5 Complex to show the difficult terrain and arduous location of existing uranium mine waste. Navajo Abandoned Mine Lands (NAML) Senior Engineers Melvin Yazzie, Gilbert Dayzie and Ernie Greyeyes who designed and managed the reclamation work on many of the AUMs across the Navajo Nation in the early 2000 gave detailed information on working with various land types in complex locations.

## **Cove Air Study**

The Cove Air Study was restarted, and sampling began on May 11, 2021, and continued until January 25, 2022. The air study took a brief pause due to equipment issues but was restarted on March 15, 2022. The air study concluded in June 2022 and the final Cove Air Study first quarter analytical report was submitted on September 16, 2022. A final report summarizing the full study, including data from August 10, 2021, through January 25, 2022, and March 22, 2022, through June 21, 2022, will be finalized in 2023.



 Ambient Air Monitoring Equipment





**US EPA Regional Administrator Martha Guzman speaking to the Cove Chapter community in May 2022 about EPA's commitment to cleaning the uranium mines in Navajo Nation.**

### **Cove Day School**

On November 10, 2021, US EPA and NNEPA's Navajo Air & Toxic Program presented the interior radiological scan and radon test results to the Cove Day School board members, the school administrator, and the Cove Chapter Officials. RPMs Jesse Kass and Krista Brown explained the scan method and equipment used. Eugenia Quintana from the NNEPA described the radon tests and results. CIC Elsa Johnson scheduled this meeting to assist the school officials and Bureau of Indian Education (BIE) with their plans to re-open the school for the students and faculty.

On November 17, 2021, US EPA and NNEPA provided the Cove Day School radiological gamma scan results to Navajo Tribal Council Health Education and Human Services Committee. US EPA emailed the Interior Cove Day School Radiological Assessment Report to the HEHS Committee Members, BIA, BIA Facility Management, BIE, Navajo EPA, and Navajo Air & Toxic Program.

On January 4, 2022, US EPA emailed the finalized Cove Day School Radiological Scan Results Factsheet to Navajo Tribal Council HEHS Committee Members,

Cove Day School Administrator, Cove Day School Board, BIA, BIA Facilities Management, BIE, Navajo EPA, Navajo Air & Toxic Program. The factsheet informs the community, school faculty and agencies that based on the US EPA findings from radiation scan inside the school buildings, the interior of the school is safe for use by students and faculty. The measurements of radiation from non-mining related materials are below UA EPA-recommended action levels.

On May 5, 2022, US EPA held the first community meeting since the pandemic started. RPMs Jesse Kass, Krista Brown, Danielle Huang, and CIC Elsa Johnson presented on upcoming field activities, tentative 2023-2024 plans and removal action plans with soil sorting and soil ablation pilot studies.

### **Section 32/22**

USEPA prepared a draft Engineering Evaluation and Cost Analysis (EE/CA) in July 2022, including a new alternative for disposal at Red Rock Landfill, a revised risk assessment, and adding simplified risk assessment text to the EE/CA along with estimated potential

**Note:** In January 2022, EPA's sampling findings were shared with the Cove Residents. Based on the findings from radiation scanning inside school facility structures, the interior of the Cove Day School is safe for use by students and faculty. The measurements of radiation from non-mining related materials are below USEPA-recommended action levels.

impacts for each alternative. The EE/CA includes three alternatives including both on-site consolidation and capping and off-site disposal.

US EPA will complete a supplemental investigation to augment the previous RSE and improve the quality of understanding the nature and extent of TENORM at the Section 32 and 33 Mines in the Fall of 2022. Field activities will include site reconnaissance, background studies in each geology present at the site, gamma-radium correlation study, gamma survey, surface and drainage sampling to refine lateral extent of contamination and support risk assessment, engineering evaluation, biological survey, and geotechnical investigation of waste. Data collected will be used to conduct an updated risk assessment, refine the removal action extent, and determine a much more accurate and defensible background level. Primary results of the data gap investigation are a background study for two geologic units, and a gamma-radium correlation study to use gamma data to cleanup low-level Ra-226 and associated metals within TENORM areas to a definitive level for any time critical (or long term) removal actions.

### **Quivira**

US EPA prepared a draft Engineering Evaluation and Cost Analysis (EE/CA) in July 2022, including a new alternative for disposal at Red Rock Landfill and an updated risk assessment. US EPA conducted supplemental investigations to support refining TENORM extent, updating risk assessment, modeling of ET cap effectiveness, and designing removal actions at Quivira Mine. US EPA conducted cleanout of eroded materials from culverts and detention basins and repaired roads as part of ongoing site maintenance activities. US EPA also evaluated alternative disposal options, including a disposal facility on other Federal, state, and private lands. US EPA continues to work with the state of New Mexico in support for a potential future disposal facility on private lands near Thoreau, New Mexico.



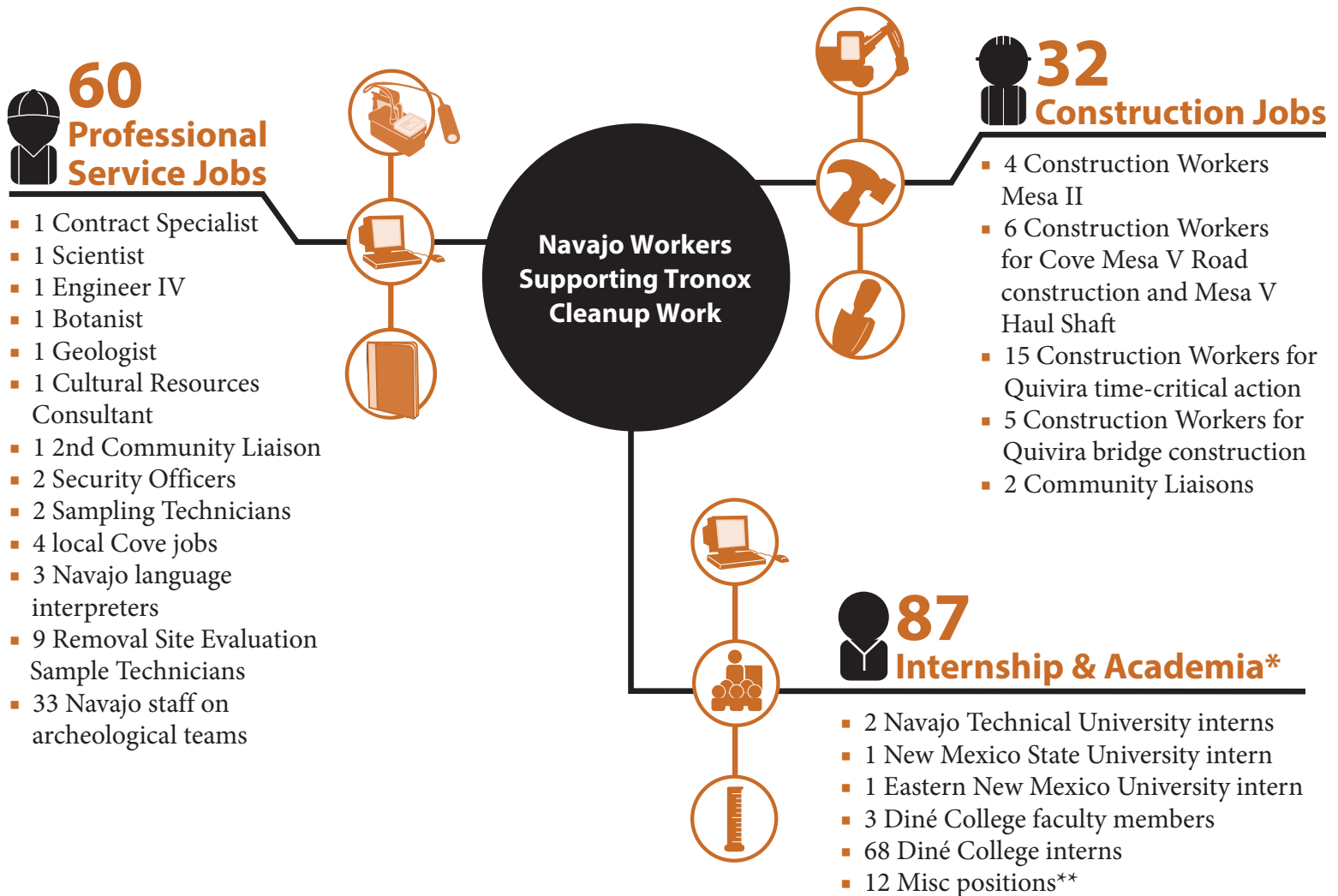
 Health and safety meeting before field work on Lukachukai Mountain.

# 4.0

## FY2022 Navajo Workforce Development

Cleaning up abandoned uranium mines on the Navajo Nation creates jobs for Navajo workers and provides opportunities for Navajo businesses. The work is project specific and usually of a short duration. Some positions may be part-time, seasonal and/or limited to a specific project. These opportunities will increase as cleanup work at the mines accelerates. The following provides a summary of workers that have supported Tronox Mine Cleanup work:

### Tronox: Cumulative Total Summary Types of Jobs Created FY14 to Present



\*FY2022 total updated to correct calculation for FY 2014 – 2022



 **May 2022 Contractor site walk at Cove Transfer Station 1**



 **August 2022 Field demonstration of High Pressure Slurry Ablation (HPSA) as part of a Treatability Study of Uranium Mine Waste at the Cove Transfer Station**



 View point from Nakai Chee Begay Mine area during the September 2022 sampling event for the LMMD NPL listing.

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