

Closure of the Tuba City Dump



9/3/2026 RTOC
10:15 – 11:00am

Today's Presentors

2

Dr. Carrie Nuva Joseph



Director, Department of Natural Resources
The Hopi Tribe

Rick Sakow



Manager, Hazardous Waste
and Chemicals Section
US EPA, Region 9



Agenda

1

Background Information

2

EPA and Solid Waste Regulations

3

Information about Tuba City Dump

4

Enforcement Order, Community and Tribal Involvement

5

Groundbreaking Ceremony and Ongoing Work

6

Resources for Landfills and Solid Waste

7

Questions & Discussion



Page

ARIZONA

Tuba
City

HOPI

***NAVAJO
NATION***

Window
Rock

Farmington

**NEW
MEXICO**

Albuquerque

Legacy Contamination

- The Rare Metals Corporation and El Paso Natural Gas processed roughly 800,000 tons of uranium ore on the Navajo Nation between 1956 to 1966.
- Windblown Tailings: Sandy radioactive waste spread across 250 extra acres northeast of the site via wind erosion.
- Surface Cleanup: The U.S. Department of Energy (DOE) moved tailings and debris into an on-site engineered disposal cell by 1990.
- DOE is lead on groundwater cleanup. DOE Fact Sheet: <https://www.energy.gov/sites/default/files/2022-07/TubaCityFactSheet.pdf>
- Elevated levels of uranium and strontium have been found in ground water near monitoring well MW-7 which may be the product of natural features in the area or may indicate the presence of radiological waste.



Fact Sheet



Tuba City, Arizona, Disposal Site An UMTRCA Title I site

This fact sheet provides information about the **Tuba City site**. This site is managed by the **U.S. Department of Energy Office of Legacy Management** under Title I of the **Uranium Mill Tailings Radiation Control Act of 1978**.

with the 40 CFR 192 regulatory standard. The U.S. Nuclear Regulatory Commission general license for UMTRCA Title I sites is established in 10 CFR 40.27. The Tuba City disposal cell was included under the general license in 1996.

Site Information and History

The Tuba City, Arizona, Disposal Site is within the Navajo Nation and close to the Hopi Reservation, approximately 5 miles east of Tuba City and 85 miles northeast of Flagstaff, Arizona. The Rare Metals Corporation and its successor, El Paso Natural Gas Company, operated a uranium mill at the site between 1956 and 1966. During its 10 years of operations, the Tuba City mill processed about 800,000 tons of uranium ore. The milling operations created low-level radioactive mill tailings, a predominantly sandy material. The tailings were conveyed in a slurry from the mill to evaporation ponds at the site. These ponds covered an area of 33.5 acres, and windblown tailings affected an additional 250 acres northeast of the mill site. The U.S. Department of Energy (DOE) began surface remedial action at the Tuba City site in 1988. All uranium mill tailings from the on-site piles, debris from demolished mill buildings, and windblown tailings were moved and stabilized in an engineered disposal cell on-site. DOE completed site cleanup in 1990.

Regulatory Setting

Congress passed the Uranium Mill Tailings Radiation Control Act (UMTRCA) in 1978 (Public Law 95-604), and DOE remediated 22 inactive uranium-ore processing sites under the Uranium Mill Tailings Remedial Action Project in accordance with standards promulgated by the U.S. Environmental Protection Agency in Title 40 Code of Federal Regulations (CFR), Part 192. Subpart B of 40 CFR 192 regulated cleanup of contaminated groundwater at the processing sites. The radioactive materials were covered in disposal cells for control of radon emissions in compliance

Disposal Site

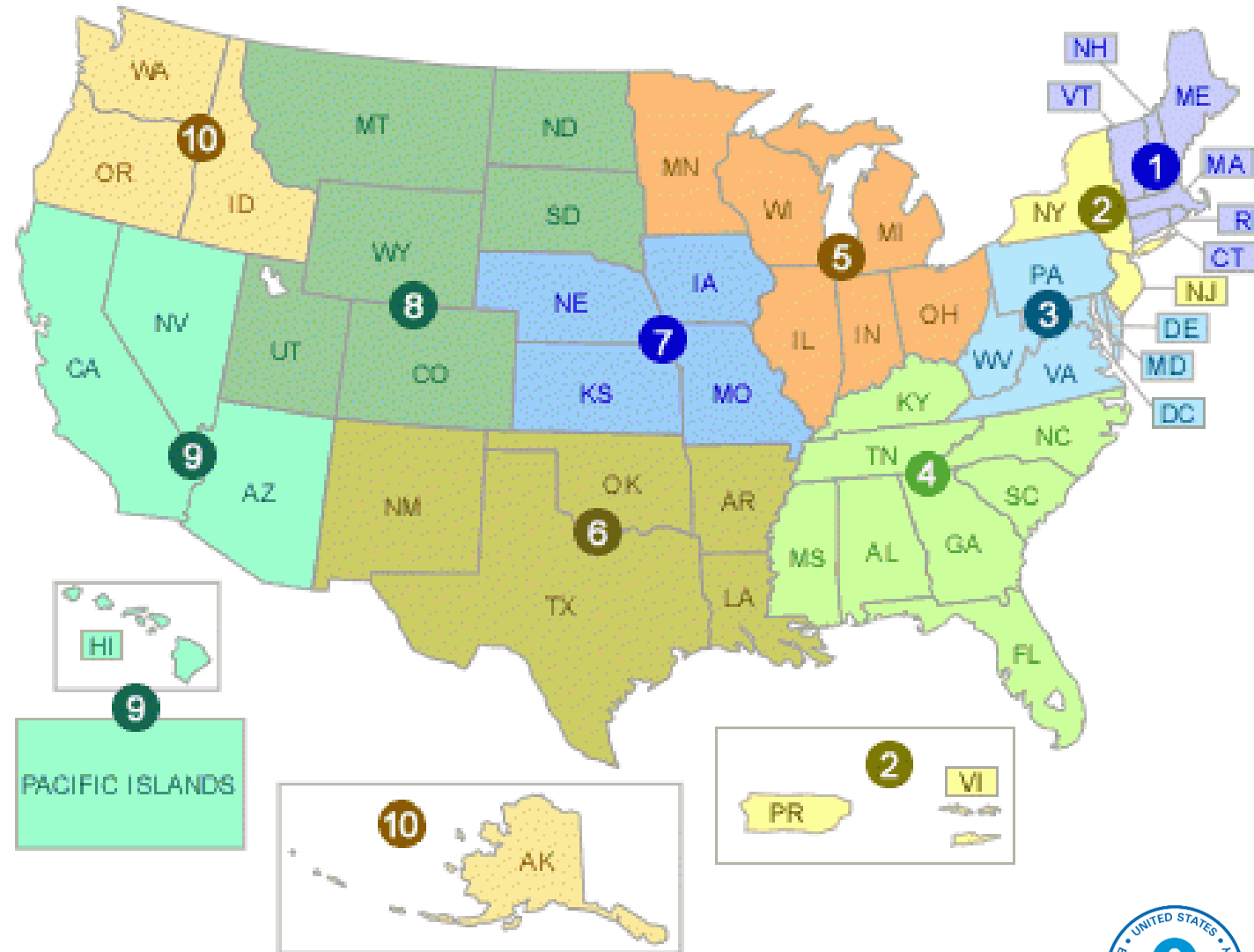
The disposal site is approximately 6,000 feet northwest of and 300 to 400 feet in elevation above Moenkopi Wash, an intermittent stream that drains to the southwest into the Little Colorado River. The disposal site lies at an elevation of approximately 5,100 feet above sea level on the middle of three alluvial terraces associated with ancestral flows in Moenkopi Wash. Thin surficial deposits of unconsolidated dune sand and alluvial gravels overlie the Navajo aquifer, which is the main aquifer near the Tuba City site and is regionally vast within sedimentary deposits comprising the Navajo Sandstone Formation. The saturated thickness of the aquifer near the disposal cell is about 500 feet, although within 2,000 feet south of the disposal cell the aquifer thins rapidly because of topography and regional groundwater discharge at Moenkopi Wash. Depth to groundwater ranges from about 60 to 75 feet below land surface.

Land near the site is used for grazing; adjacent land is used for dry and irrigated farming and residential purposes. There is no known domestic, industrial, or agricultural use of groundwater from the contaminated region of the aquifer. Nearby residences receive water from the Navajo Tribal Utility Authority; this water comes from a well completed in the bedrock aquifer approximately 1.5 miles northwest (hydraulically upgradient) of the site.

The nearest surface water flow is approximately 6,000 feet south of the site, where seeps are present along cliff bands that border Moenkopi Wash. Water from Moenkopi Wash is used for stock watering and agricultural diversions by the Navajo and Hopi residents near the site. Site characterization

What is the EPA?

- Federal government employees protecting community health and the environment.
- EPA's head office is located in Washington, DC, and there are 10 regional offices located across the country.
- EPA's Region 9 office is headquartered in San Francisco and our area covers CA, AZ, NV, HI, the Pacific Islands, and 148 Recognized Tribal Nations.



What is the Environmental Protection Agency (EPA) ?

EPA's mission: to protect human health and the environment.

Ensure **people** have clean air, land, and water.

Ensure compliance with federal laws that protect human health and the environment.

Interact with communities in meaningful ways to discuss and address environmental and public health concerns.





About Solid Waste



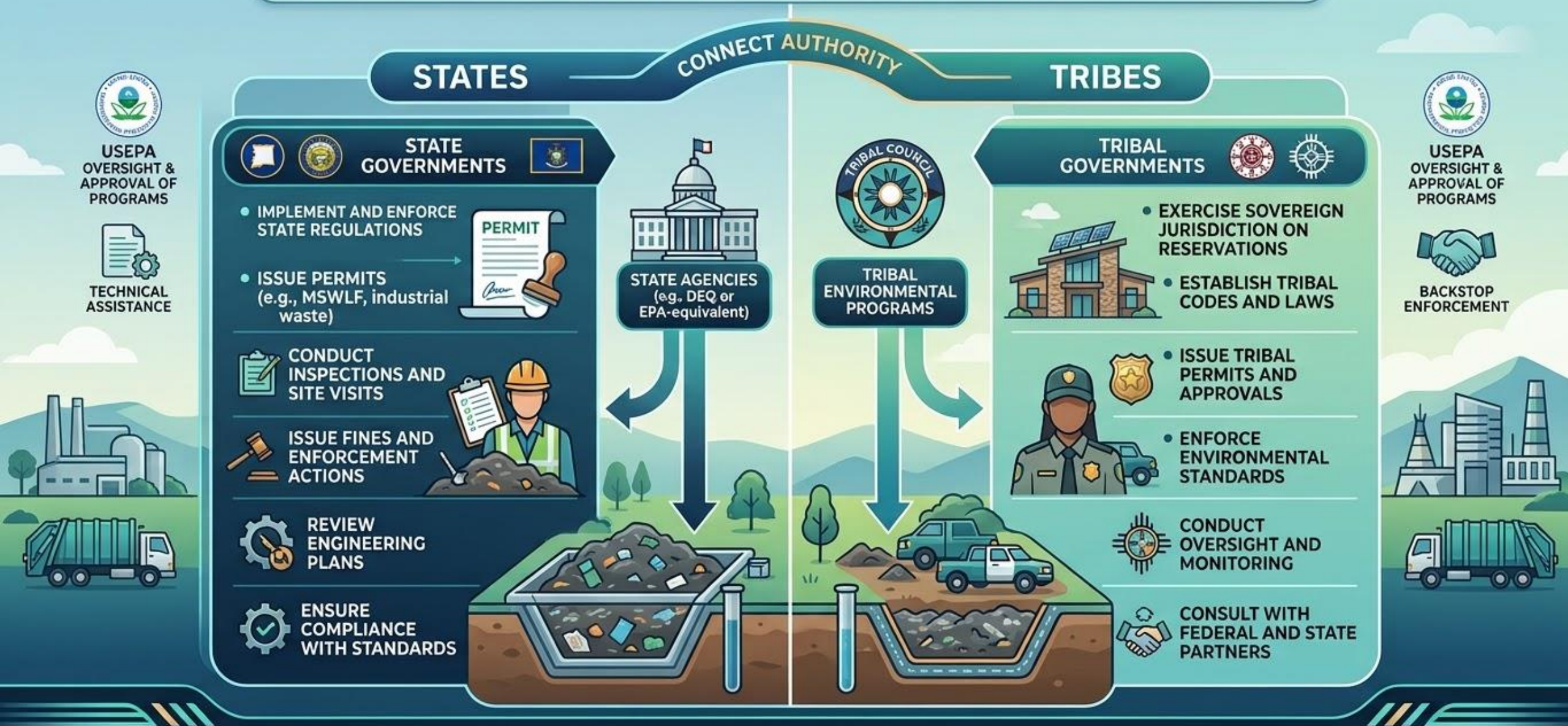
- EPA does not have general permitting authority for solid waste landfills. The main authority for regulating solid waste rests with states, tribes and local governments.

(RCRA Subtitle D — 42 U.S.C. § 6941 et seq.)

- Any landfill development (whether by the tribe or private owner/operators on tribal lands) must meet or exceed all federal requirements found in 40 CFR Part 258 - *Criteria For Municipal Solid Waste Landfills*. These regulations are prescriptive, self-implementing and apply directly to owners and operators of municipal solid waste landfills, unless the Tribe has established their own regulatory program to ensure the facility meets or exceeds the federal requirements.

'SOLID WASTE PERMITTING AND ENFORCEMENT AUTHORITY FOR LANDFILLS'

UNDERSTANDING REGULATORY FRAMEWORKS: STATE AND TRIBAL AUTHORITY



Landfill Permits & Requirements



State and Tribal Agencies: Primary issuers of Resource Conservation and Recovery Act (RCRA) Subtitle D permits.

EPA Approval: States and tribes must receive US Environmental Protection Agency (EPA) approval for their permit programs.

Federal Role: EPA does not issue Subtitle D permits directly; it enforces federal standards if a local program is unapproved.

Tribal Sovereignty: Tribes can apply for EPA approval to manage landfill permitting on reservation land.

- Municipal solid waste landfills must be permitted before they can operate.
- Important protections for the environment and community include Requirements:
 - **Groundwater monitoring,**
 - **Closure and post-closure care requirements,**
 - **Corrective Action provisions,**
 - **Financial Assurance.**

MUNICIPAL LANDFILL: COMPONENT FOR ENVIRONMENTAL PROTECTION

GROUNDWATER MONITORING



MONITORING WELL

SAMPLING POINT

WATER TABLE

AQUIFER



- Regular sampling & analysis of groundwater quality
- Detecting potential leachate leaks
- Ensuring safety of local water resources
- Compliance with regulations.

AIR EMISSIONS MONITORING

GAS COLLECTION SYSTEM

GAS TREATMENT/FLARE



STATIONARY AIR MONITOR
METHANE & VOC DETECTION

- Capturing landfill gas (Methane, CO₂)
- Controlling odors & greenhouse gas emissions
- Continuous monitoring of air quality
- Gas-to-energy conversion (optional).

LANDFILL GAS (METHANE)

FINAL COVER SYSTEM

DAILY COVER

WASTE LAYER

WASTE

COMPACTED SOIL LINER

GEOMEMBRANE LINER

GEOTEXTILE

LEACHATE COLLECTION SYSTEM

SUBGRADE

LANDFILL GAS (METHANE)

LANDFILL GAS WELL

LONG TERM CARE



CLOSED LANDFILL (VEGETATED)

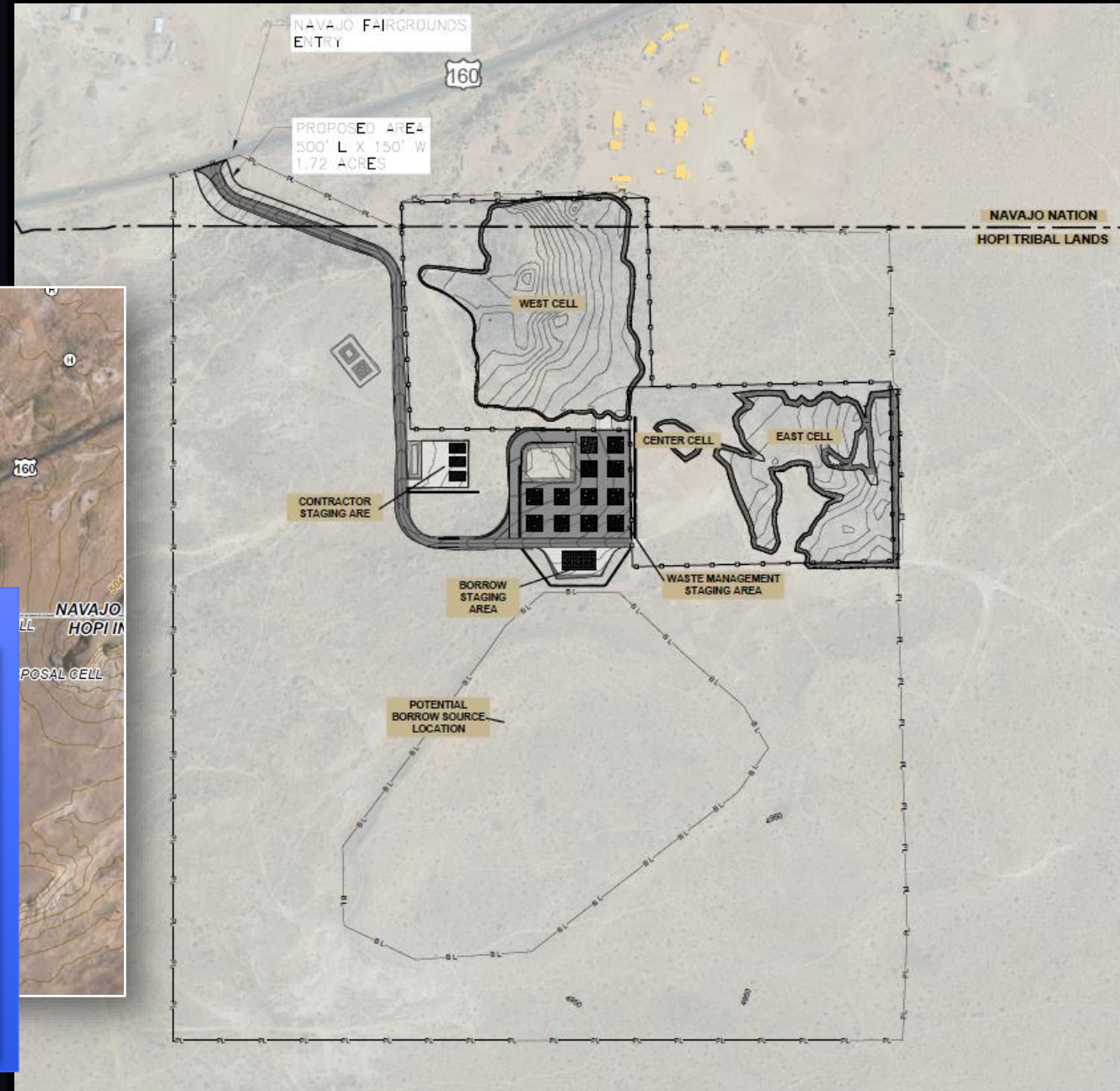
- Post-closure maintenance for 30+ years;
- Maintaining the final cover integrity;
 - Leachate & gas management;
 - Ground stability checks;
 - Long-term monitoring & reporting.



- RCRA was enacted in 1976. General landfill requirements went into effect in the 1980s. Municipal landfill requirements went into effect in 1993.
- The Tuba City Dump began operating decades before modern federal landfill permitting laws.



- 40 Acres: 95% on Hopi / 5% on Navajo
- Two Disposal Cells (330,000 cubic yards of waste)

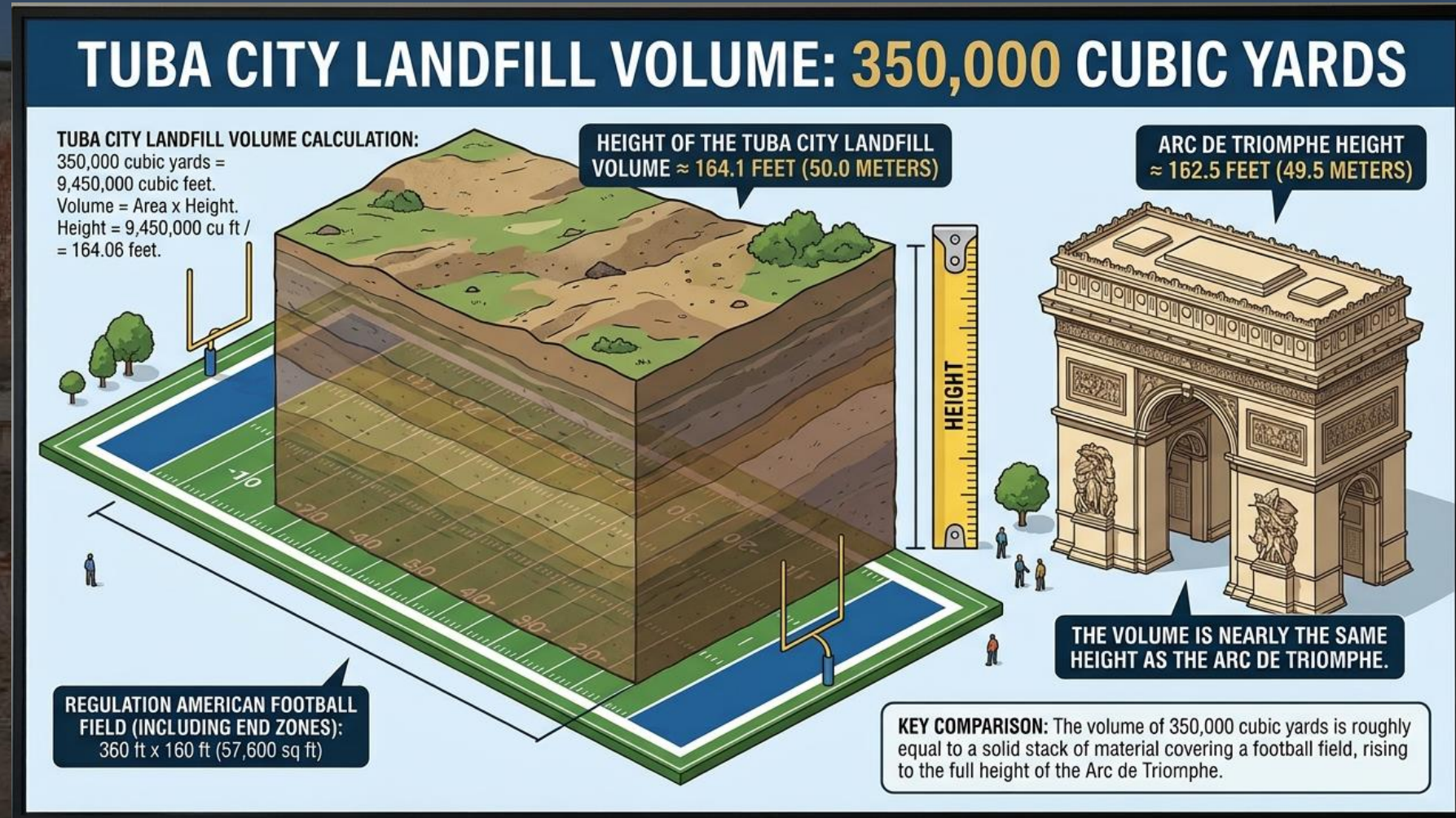


VISUAL TIMELINE: THE TUBA CITY DUMP (NAVAJO & HOPI LAND)



Approximately 300,000 – 350,000 cubic yards were disposed between the 1950s – 1997.

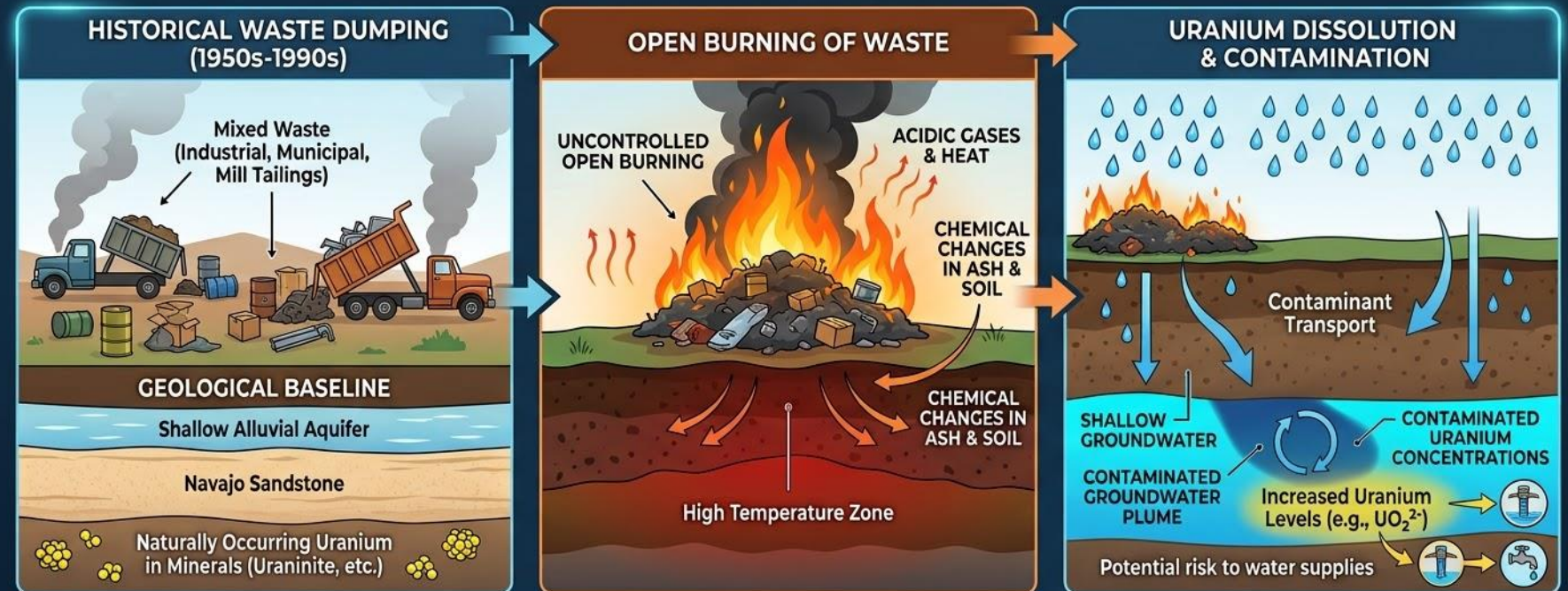
If each cubic yard were stacked together, the length would be 170 – 198 miles



- Wastes were burned in open trenches.
- Past environmental studies showed that the leachate caused naturally occurring uranium to dissolve into shallow groundwater.

IMPACT OF OPEN BURNING AT TUBA CITY DUMP: GROUNDWATER CONTAMINATION PATHWAY

HISTORICAL OPEN BURNING & URANIUM MOBILIZATION



KEY FINDINGS: Historical open burning practices significantly accelerated the movement of naturally occurring uranium into the shallow aquifer at Tuba City Dump.

EPA determined that this site is a solid waste dump, and EPA found that BIA had not complied with closure requirements, groundwater monitoring, and recordkeeping, and other requirements of RCRA.

In 1997, BIA stopped receiving waste at TCD.

BIA regraded some of it before placing a temporary soil cover and encircling the site with a fence.



Tuba City Dump site in 2024

A 2010 Administrative Order on Consent between the US EPA, U.S. Department of Interior, Bureau of Indian Affairs requiring a comprehensive investigation of the levels of uranium and other contaminants in the waste, soils and groundwater at the Tuba City Dump Site. Also, requires evaluation of the feasibility of a range of cleanup actions.



- RCRA Section 7003 Imminent and Substantial Endangerment is a powerful federal tool EPA uses to address serious threats from hazardous waste when people or the environment are at risk. When used in Indian Country, EPA coordinates closely with tribal governments.
- EPA typically uses 7003 when there is a credible, serious threat to health or the environment tied to the handling, storage, treatment, transportation, or disposal of waste, and when a person or entity can be identified that has contributed to the problem (past or present owner/operator, waste generator/arranger, or transporter).

Situations on tribal lands that have triggered or can trigger 7003:

- Landfills or waste pits with failing controls.
- Large tire piles that catch fire, producing thick smoke and contaminated runoff.
- Improper disposal of pesticides and agricultural chemicals.

RCRA 7003 Orders can require:

- Stop the facility's dangerous activity (e.g., halt dumping, burning, or leaking).
- Secure the site (fencing, signage, 24/7 security).
- Provide immediate protections (e.g., alternative drinking water, vapor ventilation, dust suppression).

Administrative Order on Consent

Some solid waste dumps are closed in place. However, for this site, Navajo and Hopi tribal representatives requested off-site disposal. In this AOC, BIA agreed to the off-site disposal.

BIA agreed to close the TCD by cleaning up the site and moving the waste contained in the TCD to landfills located off of Hopi Tribe and Navajo Nation lands.

BIA will use either Painted Desert Landfill near Joseph City or the Cinder Lake Landfill in or near Flagstaff as the primary disposal site. In addition, BIA may use secondary disposal sites, provided that they are permitted landfills and otherwise appropriate for such disposal.

ADMINISTRATIVE ORDER ON CONSENT (AOC)

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 9

IN THE MATTER OF: TUBA CITY DUMP Villages of Upper Moenkopi and Lower Moenkopi, Arizona Hopi Reservation and Tuba City, Arizona Navajo Nation United States Bureau of Indian Affairs, Department of Interior, RESPONDENT	ADMINISTRATIVE ORDER ON CONSENT for CLEANUP, CLOSURE, POST-CLOSURE MAINTENANCE and GROUNDWATER MONITORING U.S. EPA Region 9 Docket No. RCRA-09-2024-0017 Proceeding Under Section 7003 of the Resource Conservation and Recovery Act, 42 U.S.C. 6901, <i>et seq.</i> , as amended
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EPA consulted with tribal representatives on the draft AOC prior to signing.

BIA and EPA negotiated and signed an Administrative Order on Consent (AOC) with the Department of the Interior and the Bureau of Indian Affairs for the cleanup of TCD on 10/27/2023.

The AOC, including its initial workplan, went into effect on November 28, 2023.

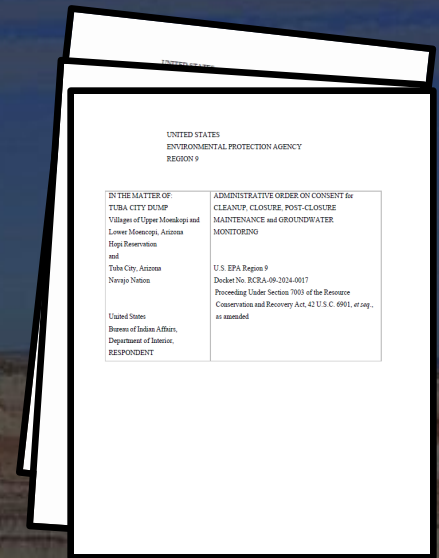
ADMINISTRATIVE ORDER ON CONSENT (AOC)

The AOC cited that BIA & DOI failed to comply with CFR 258 Requirements for:

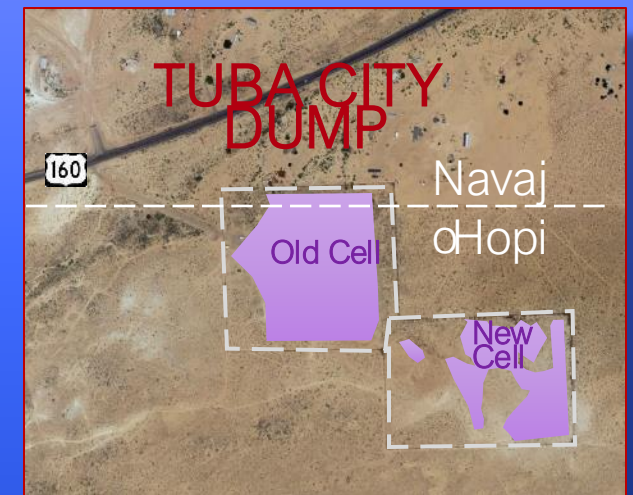
- Closure,
- Post-Closure Care,
- Corrective Action,
- Record Keeping Requirements.
- Ground Water Monitoring,
- Liner Requirements below the waste and above the waste.

BIA and DOI EPA consulted with tribal representatives on the draft AOC prior to signing.

Order required Groundwater Network and Monitoring Plan.



- The Hopi Tribe and Navajo Nation Cooperated in the development of all cleanup options in the feasibility study.
- Both Hopi and Navajo have expressed their desire for clean closure removing the Tuba City Dump wastes from tribal lands.
- Closure has permanence with limited future operation and maintenance.
- Closure does not impact other Hopi land.
- Closure restores site to unrestricted, beneficial use.



TUBA CITY DUMP PUBLIC MEETING

TUBA CITY DUMP SITE



WITH
THE HOPI TRIBE DNR,
NAVAJO NATION EPA,
BUREAU OF INDIAN AFFAIRS, &
U.S. ENVIRONMENTAL
PROTECTION AGENCY

Come hear updates on the Administrative
Order on Consent, How to Submit a Public
Comment & the Clean-up/Design Planning Project

MAY 28TH 2024, 6-9 PM MST

@Moenkopi Legacy Inn

MAY 29TH 2024, 9 AM-Noon MST

@Upper Moenkopi Community Center

MAY 29TH 2024, 4-7 PM MDT

@Tuba City Chapter House

REFRESHMENTS PROVIDED



Community Meetings about Tuba City Dump

U.S. Environmental Protection Agency • Region 9 • Pacific Southwest • May 2024

U.S. Environmental Protection Agency (EPA) is holding meetings to inform the public regarding an Administrative Order on Consent (an agreement) that has been signed by Region 9 EPA with BIA for the cleanup and closure of Tuba City Dump. These meetings will be held jointly with Bureau of Indian Affairs (BIA), Hopi Department of Natural Resources, and Navajo Nation EPA. The aim of the public meetings is to inform the public of the Administrative Order on Consent and listen to public feedback.

Public comments are encouraged and instructions on how to submit one can be found on the public notice website. The due date for public comments is **June 28, 2024**.

For more information, please contact:

Daniel Fernandez
Environmental Scientist
Fernandez.Daniel@epa.gov
(415) 972-3299

If you need other assistance, including assistance in a language other than English or if you are a person with disabilities who needs a reasonable accommodation, please reach out to Daniel Fernandez.

To learn more about the Administrative Order on Consent and how to submit a public comment, please visit:

epa.gov/az/tuba-city-dump-aoc



SCAN ME

EPA hosted three public workshops at Hopi and Navajo facilities in July 2024 during to solicit community concerns and input during the public comment period.

Summary of concerns from community:

Dust: Community members shared concerns about dust generated from the waste excavation and transportation.

Communication: Community requested more outreach and notification was given for the public meetings. Members asked that the project have a hotline phone number.

Past and current health impacts: Many community members living near the dump have died or are currently facing health problems.

Economics: Community members shared questions on how much the progress will cost. The costs are dependent on multiple factors, including the amount of funding that is granted by Congress each year and the disposal destinations.



Tuba City Dump Cleanup and Closure Community Meeting

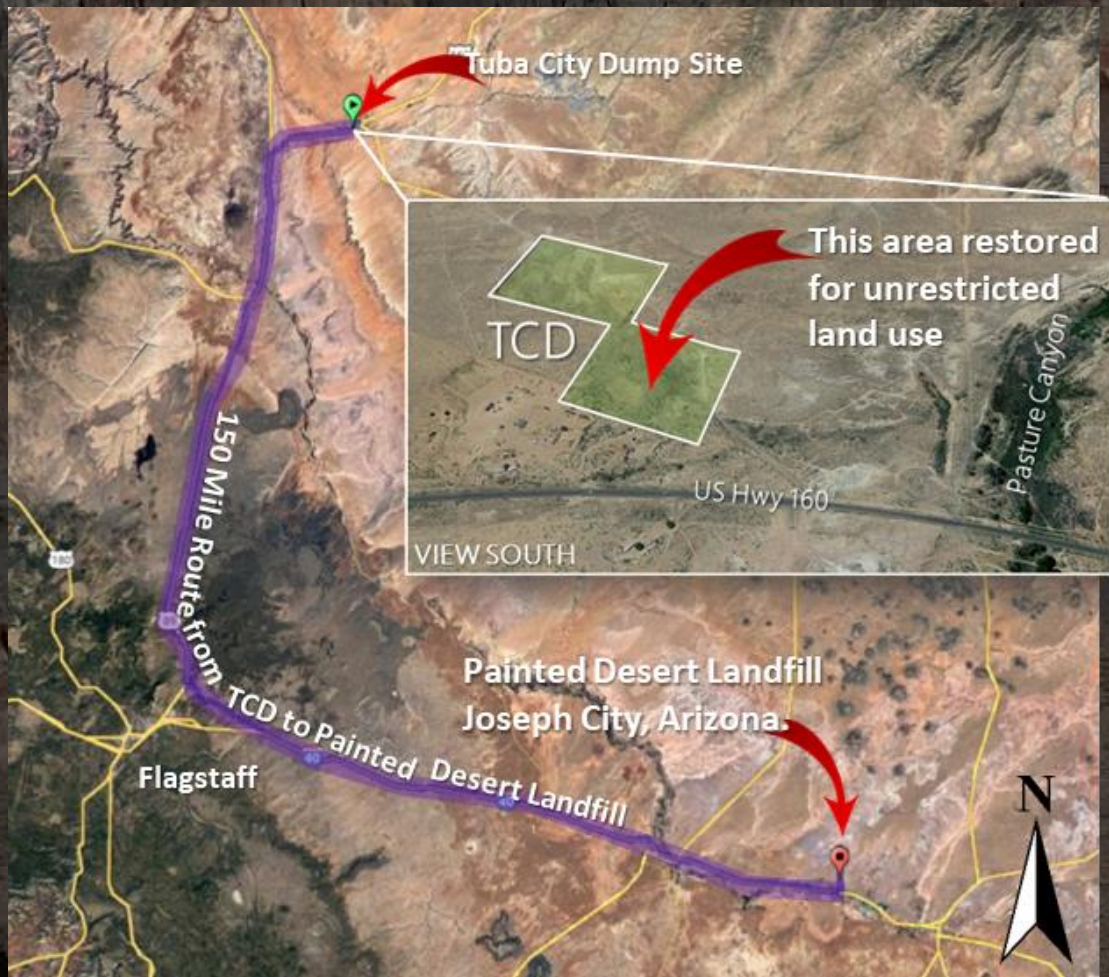
Environmental Protection Agency
Pacific Southwest - Region 9



Protecting Human Health
and the Environment



Cleanup Approach: Move TCD Wastes to Landfill Off Hopi and Navajo Lands



Description

Tuba City Dump wastes will be excavated and hauled to Painted Desert Landfill located in Joseph City, Arizona and/or Cinder Lake Landfill in Flagstaff, Arizona.

- Waste is excavated from both cells and moved to an existing permitted facility
- Resulting pits will be backfilled with clean soils to match existing grade
- Site area will be restored for unrestricted use

Project Budget and Timeline

2024 and 2025 Planned Work - \$10 million

- Construct Infrastructure
- Partial Removal of West Cell Waste

Current Cost Estimate = \$135 million

Current Cost Estimate Range = \$111 to \$150 million

Value engineering and cost savings should reduce cost estimates.



- 330,000 cubic yards are assumed to be transported to an approved landfill facility in Joseph City, Arizona located 147 miles away. Since the dump was created as trenches and since not all the soils and wastes will be transported to the approved facility in Joseph City, Arizona considerable savings in transportation costs and tipping fees are probable.
- The estimate provides for significant staffing and equipment levels which can be reduced.
- The estimate assumes a 6% inflation or escalation factor which should decrease.

Ongoing Work

The Hopi Tribe has a self determination contract (Public Law 93-638 Contract) with BIA to manage the construction contract. A Public Law 93-638 self-determination contract means the Tribe has chosen to manage and carry out certain programs or services itself, with federal funding and support, instead of having the federal government run them directly.

Hopi will carry out a routine monitoring program during the cleanup, including groundwater monitoring and site maintenance.

EPA will continue to work with BIA, Hopi Tribe, and Navajo Nation and will provide regulatory oversight.

Resident Protection Plan

- No temporary relocation plan
- Pre-construction resident surveys
- Paved roads to limit dust generation
- Monitoring measured at dump boundary includes Air quality for dust





Groundbreaking Ceremony

February 4, 2026

Groundbreaking Ceremony

February 4, 2026





Recent Updates



Ten asphalt-lined staging areas were created just south of the Western Agency Navajo Nation State Fair Site.

Access roads and staging areas were constructed.

Drainage conveyances and a leachate pond were created to collect liquids from the piles, which will be tested.

Western Navajo Nation Fairgrounds



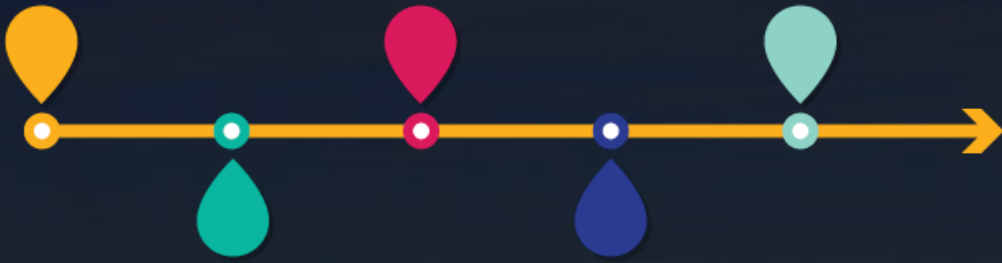
Wastes are slated to be transported to the Painted Desert Landfill, also known as the Pen-Rob Landfill, located in Joseph City, Arizona, operated by Waste Management.

The ongoing, multi-year remediation effort requires hauling this substantial waste mass off tribal lands, backfilling the excavated areas with clean soil, and instituting routine long-term groundwater monitoring to safeguard the local environment



Permits for Pen Rob / Painted Desert Landfill

- AZ Solid Waste Facility: 09001900.03
- AZ State Facility Waste ID: 300033
- EPA ID: AZR000508788
- Title V Air Quality Permit: 1000776



On 9/1/2026, the Bureau of Indian Affairs issued a Contracting Request for Proposals for the movement of the waste mass.

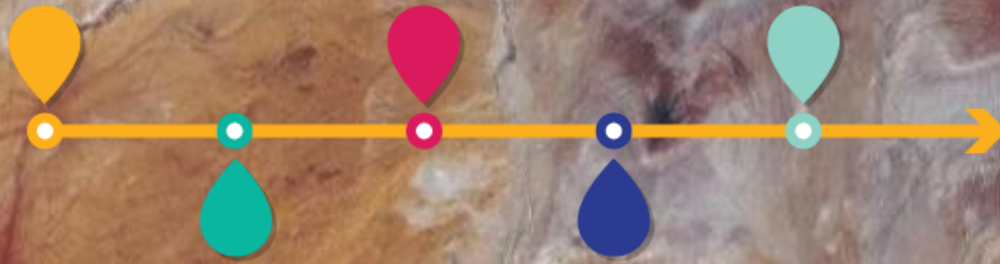
Proposals are due September 4, 2026, tomorrow.

BIA will award the contract after reviewing proposals.

The contractor must excavate a minimum of 70,000 loose cubic yards of solid waste from the Tuba City Dump and transport it to a RCRA Subtitle D compliant landfill.

The period of performance is one 12-month base year plus two optional 12-month years, with a minimum of 20,000 loose cubic yards or 24,000 tons per year.

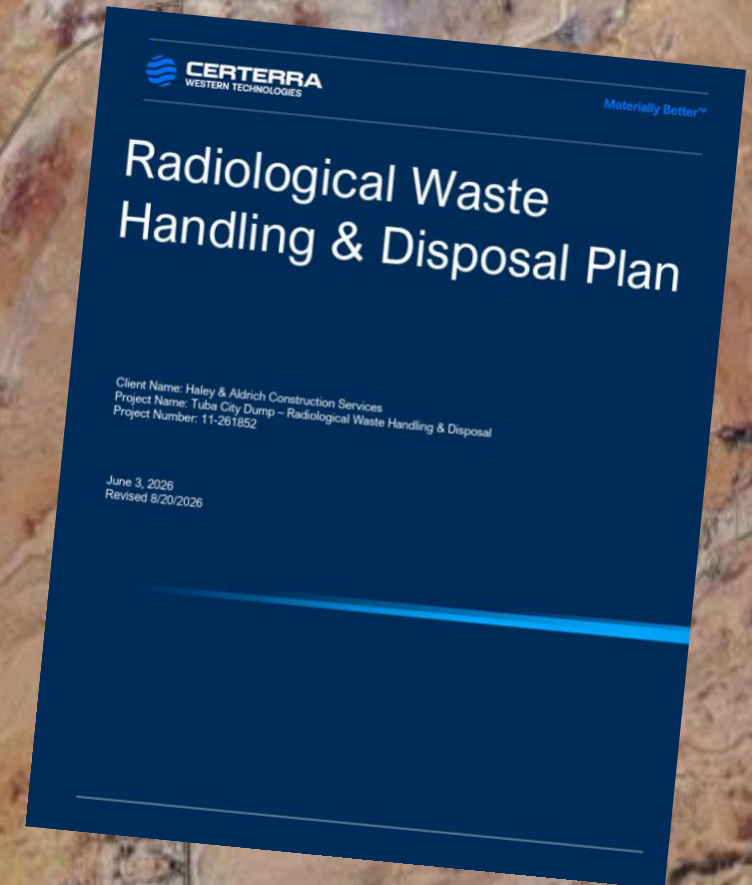
The contractor must perform radiological screening using calibrated Geiger counters and sodium iodide probes, conduct waste characterization and sampling per the Sampling and Analysis Plan, and operate a 4.7-acre staging area with up to eleven 1,000-cubic-yard stockpiles. Waste exceeding radiological thresholds will be segregated and submitted for additional isotopic analysis before disposal.

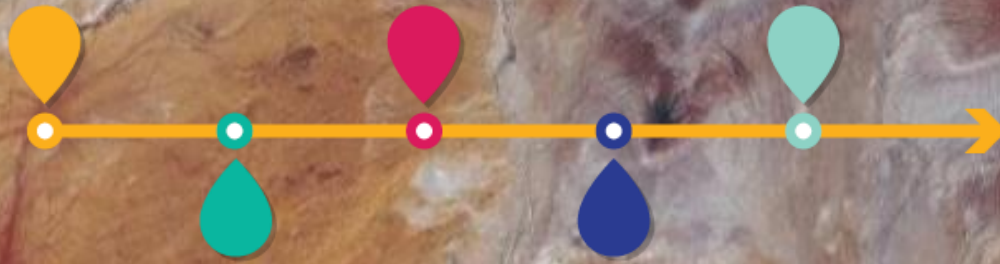


WM - Pen-Rob Landfill
(Painted Desert)

Elevated levels of uranium and strontium have been found in ground water near monitoring well MW-7 which may be the product of natural features in the area or may indicate the presence of radiological waste.

Haley & Aldrich Construction Services (Haley & Aldrich) has prepared a Radiological Waste Handling and Disposal Plan (Plan) to provide MSWLF facilities with a detailed description of the procedures used to screen excavated materials for potential radiological contamination and prevent radiologically impacted wastes from being transported to an MSWLF.





Excavated waste from the TCD will be screened to assure it is not hazardous and that it will meet the disposal criteria of the receiving landfill.

WM - Pen-Rob Landfill
(Painted Desert)

HALEY
ALDRICH

www.haleyaldrich.com

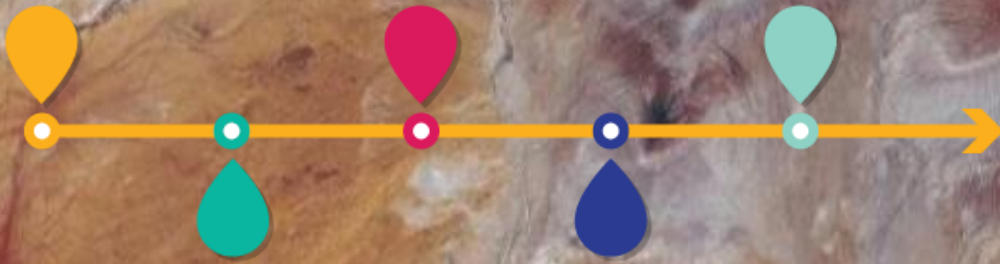
SAMPLING AND ANALYSIS PLAN
TUBA CITY DUMP (TCD) WASTE REMOVAL
TUBA CITY, ARIZONA

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by
Haley & Aldrich Construction Services, Inc.
Phoenix, Arizona

for
BUREAU OF INDIAN AFFAIRS
PHOENIX, ARIZONA

File No. 214098-000
July 2026

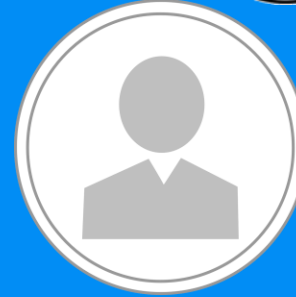


WM - Pen-Rob Landfill
(Painted Desert)

Initially, ten trucks will be making two trips to the facility per day or 280 to 400 loose cubic yards and up to 480 tons per day.

The number of trucks may increase to 20 trucks making two trips to the facility per day or 560 to 800 loose cubic yards and up to 960 tons per day.





Ronald Honyumtewa
Deputy Director
Natural Resources

Carla Honani
Finance Manager
Natural Resources

Macadio Namoki
Water Resources
Non-point Source
Coordinator



Michael D. Goodstein
Outside General
Counsel



Christopher Wolf, P.G.
Geochemist



Kory Holt, EI
Staff Engineer



Aaron Kiyaani
Field Technician

BUREAU OF INDIAN AFFAIRS CONTACTS

John F. Krause

Regional Environmental Scientist
Western Regional Office

Lyle Ben

Superintendent
Hopi Agency

Sonia D. Overholser

Attorney Advisor

EPA CONTACTS

John Katz

Manager, Zero Waste Section
Land, Chemicals, and Redevelopment Division
US EPA Region 9
(415) 972-3283
katz.john@epa.gov

Steve Wall

Permits Section
Land, Chemical and Redevelopment Division
U.S. EPA Region 9
(415) 972-3381
wall.steve@epa.gov

Jon Owens

Assistant Regional Counsel
Office of Regional Counsel
US EPA Region 9
(415) 972-3620
katz.john@epa.gov

Rick Sakow

Manager, Hazardous Waste and Chemicals Section
Enforcement and Compliance Assurance Division
US EPA Region 9
(415) 972-3495
sakow.rick@epa.gov



RESOURCES

EPA's **Illegal Dumping Prevention Guide** updated June 2025: www.epa.gov/system/files/documents/2025-08/epa_r5_illegal-dumping-prevention-guide_508.pdf

[EPA - Developing Tribal Waste Management Codes & Ordinances Webpage](#)

Past RTOC and Tribal conference sessions solid waste on solid wastec

Webinar Recording: [“Strengthening Tribal Sovereignty through Waste Management Codes and Ordinances”](#)

[Developing and Implementing Tribal Solid Waste Codes - PPT](#)

2022 conference: [Funding Resources for Tribal Solid Waste](#)

2022 conference: [Two Tribal Solid Waste Case Studies](#)

2023 conference: [From Trashed to Green: A Resighini Rancheria Solid Waste Clean-up Success Story](#)

2023 conference: [Composting and Beyond!](#)

2024 conference: [Years in the Making: Meeks Meadow Restoration Project](#)

2024 conference: [Time for some Trash Talk: GAP, Solid Waste Implementation, and Data Collection](#)

2024 conference: [Household Hazardous Waste Collection: Tribal Programs](#)

RTOC Summer 2025: [Salt River Code Compliance Accomplishments](#)

[Tribal Waste Journal: Developing and Implementing Codes and Ordinances on Tribal Lands](#)

DOJ Tribal MOU/MOA Sample Library: cops.usdoj.gov/tribal/policing/mou_moa_resource_library

BIA Indian Police Academy: www.bia.gov/bia/ojs/indian-police-academy

Questions &
Answers

&

Discussion

