



# Tuba City, Arizona, Disposal Site

## Long-Term Surveillance and Maintenance Program



U.S. Department of Energy  
Grand Junction Office

# FACT SHEET

The Grand Junction Office has provided cost-effective and efficient stewardship for more than 10 years

## Overview

Uranium ore was processed near Tuba City, Arizona, between 1956 and 1966. The milling operations created process-related waste and tailings, a sandlike waste product containing radioactive materials and other contaminants. The U.S. Department of Energy (DOE) encapsulated the tailings in an engineered disposal cell in 1990.

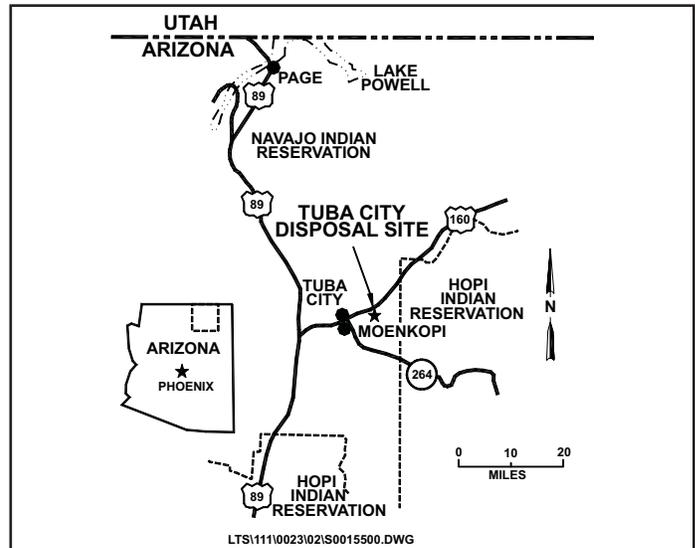
The U.S. Nuclear Regulatory Commission included the Tuba City Disposal Cell under general license in 1996. DOE is responsible, under the general license, for the long-term custody, monitoring, and maintenance of the site. The DOE Long-Term Surveillance and Maintenance (LTSM) Program at the DOE Grand Junction (Colorado) Office is responsible for the long-term safety and integrity of the disposal site. Because the site is on Navajo Nation land, the Navajo Nation retains title to the land and the tailings.

In 1988, DOE established the LTSM Program to provide stewardship of disposal cells that contain low-level radioactive material after completion of environmental restoration activities. The mission of the LTSM Program is to ensure that the disposal cells continue to prevent release of contaminated materials to the environment. These materials will remain potentially hazardous for thousands of years. As long as the cells function as designed, risks to human health and the environment are negligible.

The LTSM Program maintains the safety and integrity of the disposal cells through periodic monitoring, inspections, and maintenance; serves as a point of contact for stakeholders; and maintains an information repository at the DOE Grand Junction Office for sites administered by the LTSM Program.

## Regulatory Setting

Congress passed the Uranium Mill Tailings Radiation Control Act in 1978 (Public Law 95-604) that specified 24 inactive millsites where uranium was produced for the Federal Government. DOE remediated these sites under the Uranium Mill Tailings Remedial Action Project and encapsulated the radioactive materials in U.S. Nuclear Regulatory Commission-approved disposal cells. Cleanup standards were promulgated by the



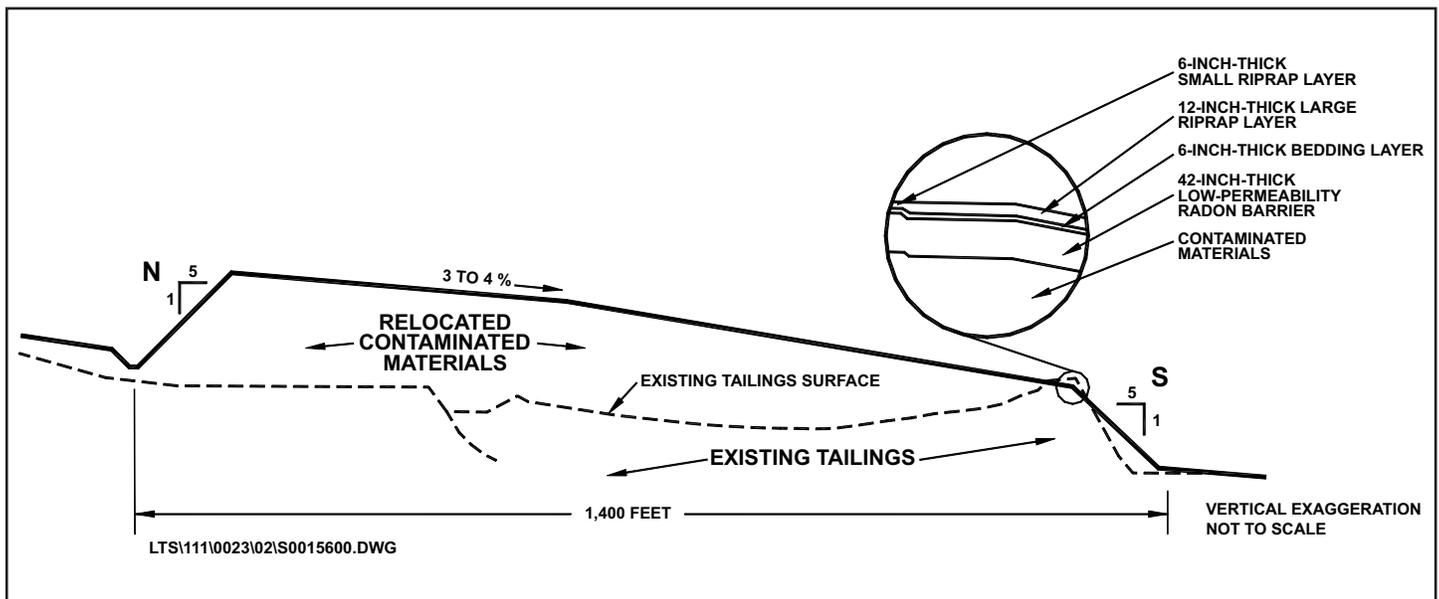
U.S. Environmental Protection Agency in Title 40 *Code of Federal Regulations* (CFR) Part 192. The U.S. Nuclear Regulatory Commission license was issued in accordance with 10 CFR 40.

## Tuba City Disposal Site

The Tuba City Disposal Site is located approximately 6 miles east of Tuba City on the Navajo Nation in Coconino County, Arizona. The predominant land use in the area is grazing; the region is sparsely populated.

The Rare Metals Corporation and its successor, El Paso Natural Gas Company, operated a mill at the Tuba City site intermittently between 1956 and 1966. Uranium was extracted from sandstone ore, creating approximately 800,000 tons of tailings and other contaminated materials. These wastes were deposited in piles at the processing site. Windblown contamination affected 250 acres northeast of the millsite.

The Navajo Nation and the U.S. Nuclear Regulatory Commission concurred in DOE's decision to encapsulate tailings on site in a U.S. Environmental Protection Agency-compliant disposal cell. Remedial action at the Tuba City site began in 1988 and was completed in December 1990. All the radioactive material from the original piles, windblown and waterborne contamination, and debris from demolished mill structures was encapsulated in the disposal cell located



North-South Cross Section of Tuba City Disposal Cell

over the existing tailings piles. The disposal cell contains 2,250,00 dry tons of contaminated material, with a total activity of 940 curies of radium-226.

The cell is situated on a broad terrace covered by alluvial and eolian deposits and underlain by Navajo Sandstone. The terrace slopes to the south toward two lower terraces and, finally, Moenkopi Wash. Groundwater flows toward Moenkopi Wash. Milling activities at the site contaminated the local groundwater in excess of U.S. Environmental Protection Agency standards. Although it is currently not used, the groundwater in this system is a potential water resource.

To improve water quality and to protect the groundwater resource, DOE is conducting a groundwater restoration project at the Tuba City site.

## Cell Design

The roughly triangular disposal cell measures 1,940 feet by 1,585 feet at the base and occupies an area of 50 acres on the 145-acre site. The cell rises 44 feet above the surrounding land. An interceptor ditch was constructed on the up-slope side of the cell. A woven wire fence with locked gates surrounds the cell, and the site perimeter is marked with warning signs and permanent monuments.

A low-permeability radon barrier, consisting of clayey soil, was placed over the contaminated materials to prevent precipitation from percolating through the contaminated materials and into the underlying soils and to reduce radon emissions. The radon barrier is covered by granular bedding material to promote rapid runoff of precipitation and minimize leachate. The top and side slopes of the disposal cell are covered with rock

(riprap) for erosion protection. The riprap used on the cell top and the north, east, and northwest side slopes has a median diameter of 1.7 inches, while the riprap on the south and southwest side slopes has a median diameter of 4.4 inches. Runoff water flows down the 25-percent side slopes into the surrounding rock apron.

The cell location and design were selected to minimize the potential for erosion from wind or storm water runoff. Surrounding disturbed areas were regraded and reseeded with native species.

## LTSM Program Activities

The LTSM Program manages the site according to a long-term surveillance plan (LTSP) prepared specifically for the Tuba City site. Under provisions of the LTSP, the LTSM Program conducts annual inspections of this site to evaluate the condition of surface features and performs site maintenance as necessary.

The disposal cell at Tuba City is designed and constructed to last for 200 to 1,000 years. However, the general license has no expiration date, and DOE understands that its responsibility for the safety and integrity of the Tuba City site will last indefinitely.

## Contacts

For more information about the LTSM Program or about the Tuba City Disposal Site, contact

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or visit the Internet site at

<http://www.gjo.doe.gov/programs/ltsm>