



# Green River, Utah, 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 Green River, Utah, between 1958 and 1961. The milling operations created process-related waste and tailings, a sandlike material containing radioactive materials and other contaminants. The U.S. Department of Energy (DOE) encapsulated the tailings in an engineered disposal cell in 1989.

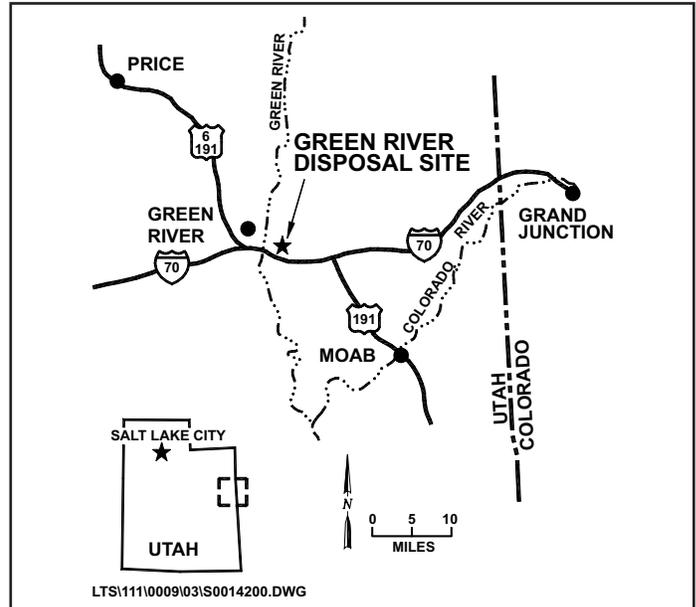
The U.S. Nuclear Regulatory Commission included the Green River Disposal Cell under general license in 1998. DOE is responsible, under the general license, for the long-term custody, monitoring, and maintenance of the site. The DOE Long-Term Surveillance and Maintenance (LTSM) Program at the DOE Grand Junction (Colorado) Office is responsible for the long-term safety and integrity of the disposal site.

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 cell through periodic monitoring, inspections, and maintenance; serves as a point of contact for stakeholders; and maintains an information repository at the Grand Junction Office for sites in the LTSM Program.

## Regulatory Setting

Congress passed the Uranium Mill Tailings Radiation Control Act in 1978 (Public Law 95-604) that specified remedial action for 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 material 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.

## Green River Disposal Site

This Green River Disposal Site is located in Grand County, Utah, approximately 1.5 miles southeast of the city of Green River. Much of the surrounding land, owned by the State of Utah, is leased to the White Sands Missile Base. Agriculture is the predominant land use in this sparsely populated area.

The original mill was constructed and operated by Union Carbide Corporation from 1958 to 1961. Uranium was extracted from sandstone ore, creating approximately 185,000 cubic yards of tailings and contaminated materials. The tailings were originally deposited on site in a 7-foot-thick pile covering 9 acres.

The State of Utah and the U.S. Nuclear Regulatory Commission concurred in DOE's decision to consolidate the tailings on site in an engineered disposal cell. Radioactive material from the original pile, from the demolished or decontaminated mill buildings, and from contaminated vicinity properties was consolidated into a U.S. Environmental Protection Agency-compliant disposal cell. Remedial action was completed in September 1989. The disposal cell contains 501,000 dry tons of

contaminated material with a total activity of 30 curies of radium-226.

The cell is situated on an old and elevated river terrace. Groundwater zones beneath the site are in unconsolidated alluvial deposits, coarse- and fine-grain members of the upper Cedar Mountain Formation (beneath the Dakota Sandstone), and the Buckhorn Member of the Cedar Mountain

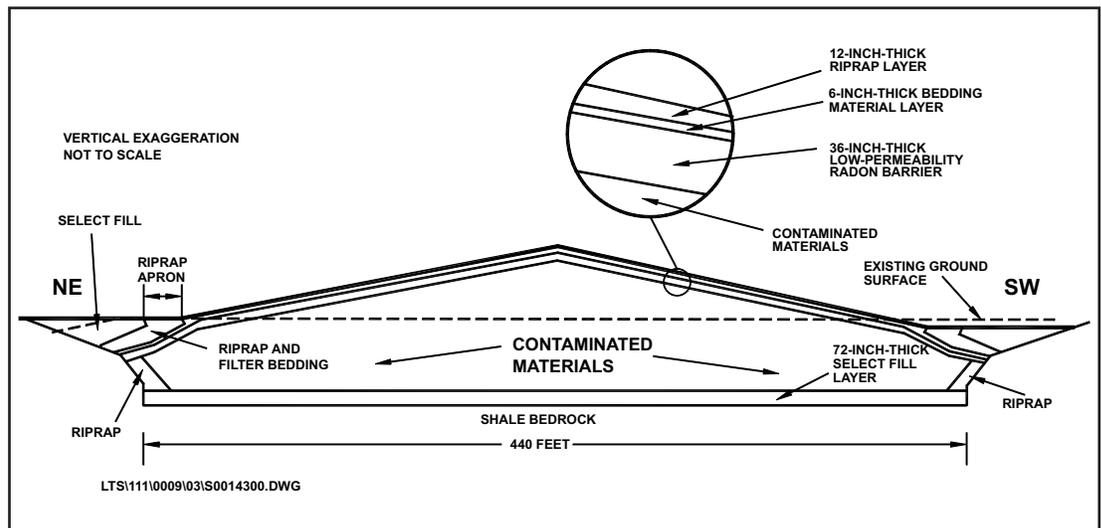
Formation. Groundwater contains naturally occurring contamination, including selenium, sulfate, and total dissolved solids, in concentrations that exceed drinking water standards. Uranium processing-related contaminants have been identified in the alluvium and in the upper Cedar Mountain Formation beneath the site; an upward hydraulic gradient prevents these contaminants from migrating into lower strata. Groundwater in these aquifers is designated Class III, which means it is unsuitable for agricultural or domestic use because of naturally occurring contamination and low yield.

## Cell Design

The cell measures 450 feet by 530 feet at the base, rises 41 feet above the surrounding land, and occupies 6 acres on the 21.5-acre site. A posted security fence surrounds the disposal cell.

The cell was excavated to bedrock and was lined with 6 feet of low-permeability soil. Most of the contaminated materials are below grade. A clay-rich soil layer placed over the contaminated materials extends to the edge of the cell below grade and serves as a low-permeability radon barrier. Above grade, the radon barrier is covered by a layer of rock (riprap) placed on granular bedding material. The cell design promotes rapid runoff of precipitation to minimize leachate. The walls around the edge of the disposal cell are lined with riprap and bedding material. A large riprap apron extends outward from the edge of the disposal cell for about 20 feet. Precipitation flows down the 20-percent side slopes into the surrounding rock apron.

The disposal cell was located and designed to prevent or minimize erosion from storm water. The cell is located 75 feet above the Brown's Wash floodplain. Existing



*Northeast-Southwest Cross Section of Green River Disposal Cell*

gullies were filled and regraded during cell construction, and all disturbed grass surrounding the disposal cell were reseeded with native vegetation.

## LTSM Program Activities

The LTSM Program manages the site according to a long-term surveillance plan (LTSP) prepared specifically for the Green River site. Under provisions of the LTSP, the LTSM Program (1) conducts annual inspections of this site to evaluate the condition of surface features, (2) performs site maintenance as necessary, and (3) monitors groundwater.

Under the provisions of the LTSP, the LTSM Program will monitor groundwater at the site at least through 2001 to demonstrate the effectiveness of the cell in isolating the encapsulated wastes from the local groundwater system. The disposal cell at Green River 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 Green River site will last indefinitely.

## Contacts

For more information about the LTSM Program or about the Green River Disposal Site, contact

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