

8.0 Gunnison, Colorado, Disposal Site

8.1 Compliance Summary

The Gunnison Disposal Site, inspected on June 21, 2005, was in excellent condition. Six perimeter sign and the entrance sign were missing and bullets had damaged several others. All former erosion areas were stable. Areas reseeded in 2004 along the former Chance Gulch haul road require further monitoring, and therefore, the BLM right-of-way permit is still active. Revegetation of reseeded areas on Tenderfoot Mountain haul road is completed (determined to meet BLM Wildlife Mitigation Plan criteria for closure). No cause for a follow-up or contingency inspection was identified.

8.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the Gunnison, Colorado, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I disposal site are specified in the *Long-Term Surveillance Plan [LTSP] for the Gunnison, Colorado, Disposal Site* (DOE/AL/62350-222, Rev. 2, U.S. Department of Energy [DOE], Albuquerque Operations Office, April 1997) and in procedures established by DOE to comply with requirements of Title 10 *Code of Federal Regulations* Part 40.27 (10 CFR 40.27). These requirements are listed in Table 8-1.

Table 8-1. License Requirements for the Gunnison, Colorado, Disposal Site

Requirement	Long-Term Surveillance Plan	This Report
Annual Inspection and Report	Section 3.1	Section 8.3.1
Follow-up or Contingency Inspections	Section 3.5	Section 8.3.2
Routine Maintenance and Repairs	Section 5.0	Section 8.3.3
Ground Water Monitoring	Section 4.1	Section 8.3.4
Corrective Action	Section 6.0	Section 8.3.5

Institutional Controls—The 92-acre disposal site is owned by the United States of America and was accepted under the U.S. Nuclear Regulatory Commission general license (10 CFR 40.27) in 1997. DOE is the licensee and, in accordance with the requirements for UMTRCA Title I sites, is responsible for the custody and long-term care of the site. Institutional controls at the disposal site, as defined by DOE Policy 454.1, consist of federal ownership of the property, a site perimeter fence, warning/no trespassing signs placed along the property boundary, and a locked gate at the entrance to the site. The site is surrounded by BLM owned land. The surrounding land is used primarily for livestock grazing and wildlife habitat.

8.3 Compliance Review

8.3.1 Annual Inspection and Report

The site, located southeast of Gunnison, Colorado, was inspected on June 21, 2005. Results of the inspection are described below. Features and photograph locations (PLs) mentioned in this report are shown on Figure 8-1. Numbers in the left margin of this report refer to items summarized in the Executive Summary table.

8.3.1.1 Specific Site Surveillance Features

Access Road, Entrance Gate, Signs, and Fence— Access to the site is off Gunnison County Road 42 onto U.S. Bureau of Land Management (BLM) Road 3068 to the site entrance gate. The road to the site is an all-weather gravel road maintained by the BLM and was in good condition. The entrance gate is a simple barbed-wire gate in the stock fence that surrounds the site. The gate, secured by a padlock and chain to the adjoining post, was in good condition.

8A An entrance sign and 45 perimeter signs are attached to the posts of the perimeter fence. The entrance sign, found missing at the time of the inspection, was replaced. Perimeter signs P3, P4, P36, P40, P43, and P45 were also missing and replaced. Several other perimeter signs have gunshot damage but all were legible except P44 which was replaced (P-1). Perimeter sign P37 is bent and has cracked paint, but was still legible. The other perimeter signs were in excellent condition.

A 3-strand barbed-wire fence delineates the site perimeter. Two barbed-wire gates—one on the north fence line, the other on the east fence line—provide monitor well access. The top strand of wire was broken at perimeter sign P38 and was repaired; otherwise, the fence and gates are in excellent condition.

Site Markers, Survey Monuments, and Boundary Monuments—The two site markers, three combination survey/boundary monuments, and eight boundary monuments were in excellent condition.

Monitor Wells—The ground water monitoring network at the Gunnison disposal site consists of 16 wells. Identification numbers were repainted the two of the wells. All monitor wells were secure and in excellent condition.

8.3.1.2 Transects

To ensure a thorough and efficient inspection, the site was divided into four areas referred to as transects: (1) the riprap-covered disposal cell; (2) the riprap-covered side slopes, apron, and diversion ditches; (3) the area between the disposal cell and the site boundary; and (4) the outlying area. Transect four included an inspection of several reseeded areas on reclaimed former haul roads.

The area inside each transect was inspected by walking a series of traverses. Within each transect, the inspectors examined specific site surveillance features, drainage structures, vegetation, and other features. Inspectors also looked for evidence of settlement, erosion, or other modifying processes that might affect site integrity or the long-term performance of the site.

Top of Disposal Cell—The top of the disposal cell was in excellent condition (PL-2). There was no evidence of erosion, settling, or slumping. Several isolated patches of grass were observed on the disposal cell cover; however, these plants do not impact the performance of the cover.

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Side Slopes, Apron, and Diversion Ditches—The riprap-covered side slopes, apron, and diversion ditches were in excellent condition (PL-3). No evidence of slumping, settling, or significant encroachment of vegetation was observed.

At the southeast corner of the cell apron, water draining from the cell occasionally ponds in a low-lying area along the edge of the riprap. The riparian-type vegetation that has established indicates this area retains moisture much of the time. Water collection in this area does not pose a problem because the cell is designed to drain to the southeast, and any water that ponds is below the elevation of the tailings. This area was dry at the time of the inspection (PL-4).

The condition of the riprap in six monitoring plots was visually inspected. Each monitoring plot, roughly 1 square meter in area, is in a “critical flow path” location in the apron and diversion channels. Corners of each monitoring plot are marked with orange paint. A couple of rocks were found to have split in each of two of the monitoring plots in the apron (Numbers 1 and 2) but, overall, the rock is in excellent condition. As outlined in the LTSP, annual photographing and comparing of these monitoring plots occurred through the 2002 inspection, and the monitoring plots will be photographed every 5 years until 2017. The monitoring plots will be photographed again in 2007.

Area Between the Disposal Cell and the Site Boundary—Reclaimed and undisturbed areas occur between the disposal cell and the site perimeter. Areas disturbed during cell construction were regraded and then reclaimed by planting a seed mix. At the time of the 2005 inspection, the seeded areas were in excellent condition. Reclaimed areas had good coverage of vegetation, mostly grass. However, shrub and forb abundance and diversity is much less in reclaimed areas than in undisturbed areas.

During the 2005 inspection, four areas of the site containing erosional features were investigated: rills in the southeast corner, north of perimeter sign P38; gullied areas in the northeast; a drainage channel in the northwest; and rills on a steep west-facing slope on the west side.

- In the southeast erosional area, several 8-inch-deep rills had formed in the steeper portion of the slope, and a fan-like accumulation of eroded sediments had formed just below the rills. The area was found to be in stable condition. Vegetation is well established on the steeper portions of the eroded slopes. No recent erosion was evident.
- In the northeast portion of the property, a series of deep gullies and headcuts had formed at a natural slope break in the terrain. No new erosion was noted, and the gullies continue to stabilize with the successful establishment of sagebrush and various grasses. No evidence of new erosion or sediment transport off site was observed at the drainage channel between perimeter signs P30 and P31.
- In the northwest portion of the property, a drainage channel tributary to Chance Gulch was investigated. This area continues to be stable and in good condition.
- On the west side of the property, rills had been noted on the steep west-facing slope during previous inspections. Surface rock fragments and vegetation have stabilized the slope.

Although these areas currently are stable and none of them encroach on the cell or diversion ditches, the steep topography makes them susceptible to erosion. Monitoring will continue for signs of increased erosion or any other indications of slope instability.

Vandalism at the site continues. Several perimeter signs were missing and others had been damaged since the 2004 inspection.

Outlying Area—Gunnison County owns the land that adjoins the disposal site boundary to the north and east, and uses the land for a municipal landfill. In 2001, the county installed several fences and monitor wells in these areas. The monitor wells are identified as County Wells 1, 2, and 3 on Figure 8–1. DOE transferred former monitor well MW–0717 to the county in 2001. The county installed unlocked wire gates to allow DOE access to their monitor wells.

Landfill operations have encroached to within approximately 400 feet of the northeast corner of the DOE property boundary (PL–3). A check dam was constructed on landfill property west of the disposal site, apparently to control sediment transport. Although landfill activities do not appear to pose a threat to the disposal site, DOE will continue to monitor the level of activity occurring near the site property boundaries and its outlying monitor wells.

This transect also includes several reseeded areas on the reclaimed former Chance Gulch and Tenderfoot Mountain haul roads, which are approximately 1.5 and 2.25 miles west of the disposal cell, respectively.

The Chance Gulch haul road was established during cell construction to access a borrow area. The restored area is within critical habitat of the Gunnison sage grouse. A BLM right-of-way permit and a Wildlife Mitigation Plan establish criteria for successful revegetation for this road. The BLM Wildlife Mitigation Plan requires the establishment of forbs (e.g., alfalfa, buckwheat, vetch, and wild flowers) to improve habitat for sage grouse and pronghorn antelope. DOE has been working to revegetate the road through a period of extended drought to meet BLM restoration criteria and close permits.

Although restoration has been successful along most of the reclaimed road, several isolated areas along the Chance Gulch haul road were reseeded in October 2000 to meet BLM’s vegetation success criteria for species diversity. Additional areas were reseeded and mulched in fall 2004 to promote species diversity. A DOE representative met with Bureau of Land Management (BLM) staff to inspect the restored areas on June 20, 2005. BLM concluded the restored areas do not yet satisfy permit closure criteria. Weed control activities and inspections will be conducted for one more year in 2006.

8B The former Tenderfoot Mountain haul road extends from the disposal cell westward to the former processing site. The BLM right-of-way permit required successful revegetation of this haul road, also. The vegetative cover within the reseeded areas on Tenderfoot Mountain haul road was determined to meet BLM Wildlife Mitigation Plan criteria. No further action is required of DOE at this location.

8.3.2 Follow-up or Contingency Inspections

No follow-up or contingency inspections were required in 2005.

8.3.3 Routine Maintenance and Repairs

In 2005, DOE replaced the entrance sign and several perimeter signs, a broken strand on a section of the perimeter fence was repaired, and identification numbers were repainted on two monitor wells.

8.3.4 Ground Water Monitoring

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DOE monitors ground water at the Gunnison disposal site to demonstrate compliance with U.S. Environmental Protection Agency ground water protection standards in 40 CFR 192, and to demonstrate that the disposal cell is performing as designed. The monitoring network consists of 16 wells, including six point-of-compliance wells to determine cell performance, two background wells, and eight wells for water level measurements (Table 8–2). Ground water was sampled and water levels were measured annually from 1998 through 2001; samples and measurements will be collected once every 5 years thereafter. No ground water sampling or measurements were required in 2005; the next sampling and measurement event is scheduled for 2006. The indicator analyte for cell performance is uranium. Analytical results obtained thus far have been consistent with concentrations of uranium at background levels, indicating that the disposal cell is performing as designed.

Table 8–2. Active Monitor Wells at the Gunnison, Colorado, Disposal Site

Compliance and Background Wells	Water Level Wells
MW-0720 (compliance)	MW-0630
MW-0721 (compliance)	MW-0634
MW-0722 (compliance)	MW-0663
MW-0723 (compliance)	MW-0709
MW-0724 (compliance)	MW-0710
MW-0725 (compliance)	MW-0712
MW-0609 (background)	MW-0714
MW-0716 (background)	MW-0715

8.3.5 Corrective Action

Corrective action is action taken to correct out-of-compliance or hazardous conditions that create a potential health and safety problem or that may affect the integrity of the disposal cell or compliance with 40 CFR 192.

No corrective action was required in 2005.

8.3.6 Photographs

Table 8–3. Photographs Taken at the Gunnison, Colorado, Disposal Site

Photograph Location Number	Azimuth	Description of Photograph
PL–1	NA	Perimeter sign P44 showing gunshot damage.
PL–2	315	Top slope of the disposal cell.
PL–3	60	East side slope and diversion channel, county landfill in background.
PL–4	260	Southeast toe of the cell showing high water mark from ponded water.



GUN 6/2005. PL-1. Perimeter sign P44 showing gunshot damage.



GUN 6/2005. PL-2. Top slope of the disposal cell.



GUN 6/2005. PL-3. East side slope and diversion channel, county landfill in background.



GUN 6/2005. PL-4. Southeast toe of the cell showing high water mark from ponded water.