

## 8.0 Gunnison, Colorado, Disposal Site

### 8.1 Compliance Summary

The Gunnison, Colorado, Disposal Site, inspected on May 21, 2007, is in excellent condition. One perimeter sign was missing and will be replaced in 2008. Six riprap test areas on the cell apron and diversion ditches were visually inspected and photographed; no apparent rock degradation was noted when compared to previous photos. Significant rainfall caused minor rill erosion at two new locations on site; all areas of erosion appear to be stable. 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
Groundwater Monitoring	Section 4.1	Section 8.3.4
Corrective Action	Section 6.0	Section 8.3.5

**Institutional Controls**—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 locked gates on the site perimeter.

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.

Inspectors found no evidence that these institutional controls were ineffective or violated.

### 8.3 Compliance Review

#### 8.3.1 Annual Inspection and Report

The site, located southeast of Gunnison, Colorado, was inspected on May 21, 2007. 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 is 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, is in good condition.

The entrance sign, located at the south entrance gate, is in good condition. Forty-five perimeter signs are bolted to the perimeter fence posts. Perimeter sign P11 is missing and will be replaced in 2008. Several other perimeter signs have bullet damage but are legible. The remaining signs are in excellent condition.

A 3-strand barbed-wire fence delineates the site perimeter. Two locked 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 broken at perimeter sign P38 was repaired; 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**—Sixteen wells comprise the groundwater-monitoring network at the disposal site. Six of the wells are for monitoring cell performance, two for monitoring background groundwater quality, and eight for water level measurements. The 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. There was no evidence of erosion, settling, slumping, or rock degradation. Several isolated patches of grass were observed on the disposal cell cover; however, these shallow-rooted plants do not impact the performance of the cover. Many small indentations were present on the cell cover. The indentations, with dimensions up to 4 inches across and up to 4 inches deep, appear to have been caused by pronghorn antelope. None of the indentations penetrate into the bedding layer under the rock cover and are not a cause for concern.

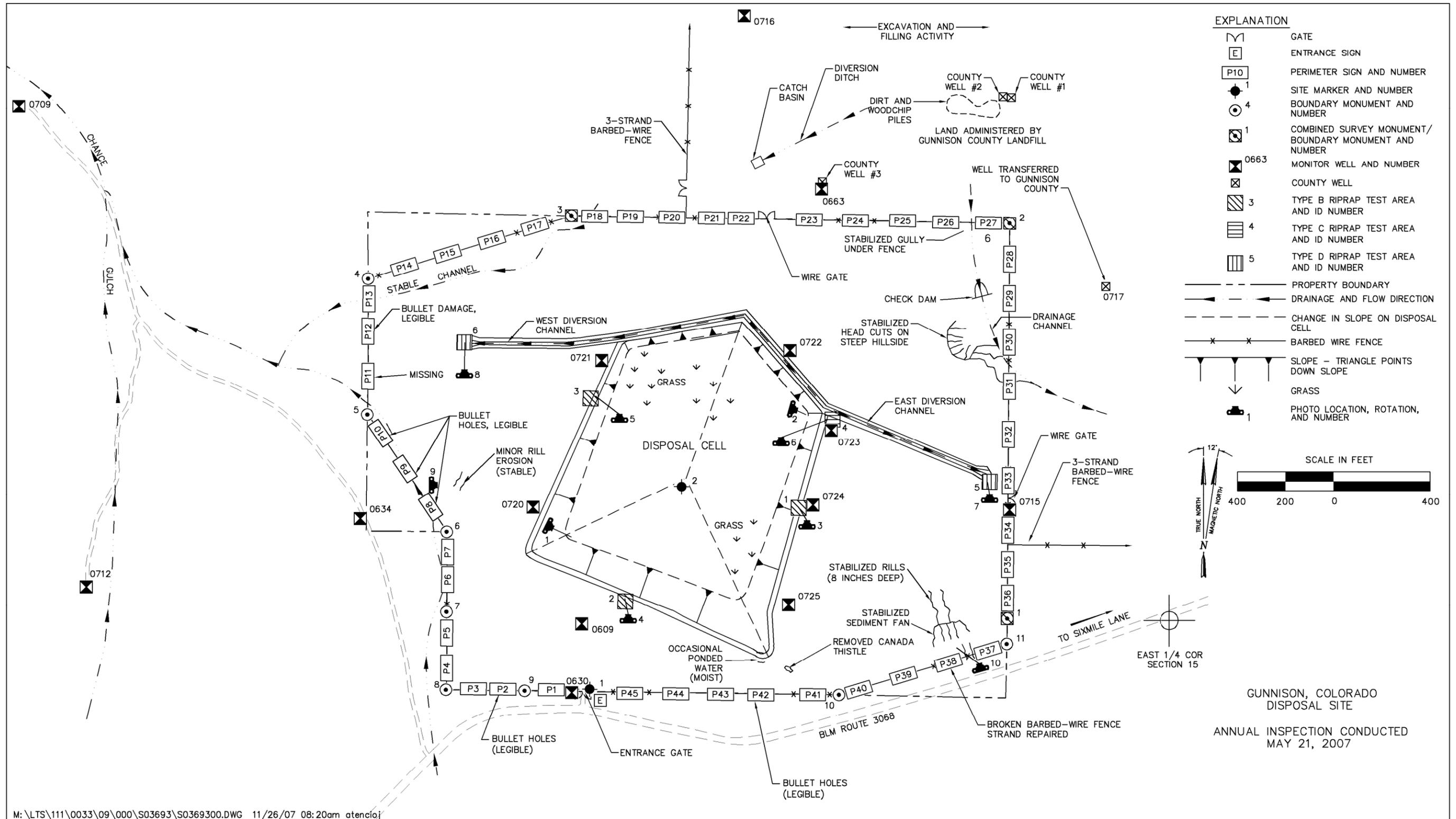


Figure 8-1. 2007 Annual Compliance Drawing for the Gunnison, Colorado, Disposal Site

**Side Slopes, Apron, and Diversion Ditches**—The riprap-covered side slopes, apron, and diversion ditches were in excellent condition (PL-1 and PL-2). No evidence of slumping, settling, or significant encroachment of vegetation was observed.

At the southeast corner of the cell apron, water shed by the cell occasionally ponds in a low-lying area along the edge of the riprap. The riparian-type vegetation that has become 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 accumulates in this area is below the elevation of the tailings. The soil in this area was moist at the time of the inspection.

8A The condition of the riprap in six monitoring plots was inspected. Each monitoring plot, approximately 1 square meter in area, is in a “critical flow path” location in the apron and diversion channels. The corners of each monitoring plot, marked with orange paint, were re-sprayed during the inspection. In accordance with the LTSP, annual photographs were taken of these monitoring plots through 2002 and compared. After 2002, the monitoring plots are required to be photographed every 5 years until 2017. The monitoring plots were photographed in 2007 (PL-3 through PL-8) and compared with previous photographs. The rock is in excellent condition; no degradation of the rock quality was evident. The next photo documentation event will be in 2012.

**Area Between the Disposal Cell and the Site Boundary**—Reclaimed and undisturbed areas occur between the disposal cell and the site perimeter. These 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.

Several locations in areas of steep topography had been susceptible to erosion in the past. A significant rainfall event since the last inspection caused minor rill erosion at two locations near the perimeter of the site, but the areas appear to be stable at this time with new vegetation beginning to establish in the rills (PL-9 and PL-10). All other areas of erosion previously observed also appeared to be stable. All locations will continue to be monitored for signs of renewed erosion and any other indications of slope instability.

Canada thistle had established at an abandoned monitor well location near the southeast corner of the disposal cell. This area has been sprayed with herbicide several times in the past, which has nearly eliminated the noxious weed. However, four small plants were found at the same location during the inspection and subsequently were removed with a shovel. Noxious weeds will continue to be monitored and controlled on site.

**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 monitor well MW-0717 to the county in 2001. Gates installed in the county fence for access to the wells remain unlocked.

Landfill operations are within approximately 400 feet of the northeast corner of the DOE property boundary. A diversion ditch and catch basin were constructed on landfill property north of the site. This feature is in place to control runoff and sediment transport on landfill property.

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 site surveillance features (e.g., fences and monitor wells).

### 8.3.2 Follow-up or Contingency Inspections

DOE will conduct follow-up inspections if (1) a condition is identified during the annual inspection or other site visit that requires a return to the site to evaluate the condition, or (2) DOE is notified by a citizen or outside agency that conditions at the site are substantially changed.

No follow-up or contingency inspections were required in 2007.

### 8.3.3 Routine Maintenance and Repairs

In 2007, DOE removed Canada thistle, a listed noxious weed and repaired a broken strand in the barbed-wire perimeter fence.

### 8.3.4 Groundwater Monitoring

DOE monitors groundwater at the Gunnison, Colorado Disposal Site to demonstrate compliance with U.S. Environmental Protection Agency groundwater protection standards in 40 CFR 192.03 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 monitor cell performance, two background wells, and eight wells for water level measurements (Table 8–2). Groundwater was sampled and water levels were measured annually from 1998 through 2001. After the 2001 sampling event, the monitoring frequency changed to once every 5 years. Monitoring last occurred in 2006. The indicator analyte for cell performance is uranium. Uranium concentrations at monitoring locations have not exceeded background levels, indicating that the disposal cell is performing as designed. No groundwater sampling or measurements were required in 2007; the next sampling and measurement event is scheduled for 2011.

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

<b>Compliance and Background Wells</b>	<b>Water Level Wells</b>
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 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 2007.

### 8.3.6 Photographs

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

<b>Photo Location Number</b>	<b>Azimuth</b>	<b>Description</b>
PL–1	110	View along the disposal cell top and south side slope.
PL–2	105	East drainage channel.
PL–3	NA	Riprap Test Area No. 1 (Type B riprap) on the cell's east apron.
PL–4	NA	Riprap Test Area No. 2 (Type B riprap) on the cell's south apron.
PL–5	NA	Riprap Test Area No. 3 (Type B riprap) on the cell's west apron.
PL–6	NA	Riprap Test Area No. 4 (Type C riprap) in the east diversion channel.
PL–7	NA	Riprap Test Area No. 5 (Type D riprap) at the east diversion channel outlet.
PL–8	NA	Riprap Test Area No. 6 (Type D riprap) at the west diversion channel outlet.
PL–9	90	Recent erosion near the western edge of the site.
PL–10	345	Recent erosion in the southeast corner of the site.



*GUN 5/2007. PL-1. View along the disposal cell top and south side slope.*



*GUN 5/2007. PL-2. East drainage channel.*



*GUN 5/2007. PL-3. Riprap Test Area No. 1 (Type B riprap) on the cell's east apron.*



*GUN 5/2007. PL-4. Riprap Test Area No. 2 (Type B riprap) on the cell's south apron.*



*GUN 5/2007. PL-5. Riprap Test Area No. 3 (Type B riprap) on the cell's west apron.*



*GUN 5/2007. PL-6. Riprap Test Area No. 4 (Type C riprap) in the east diversion channel.*



*GUN 5/2007. PL-7. Riprap Test Area No. 5 (Type D riprap) at the east diversion channel outlet.*



*GUN 5/2007. PL-8. Riprap Test Area No. 6 (Type D riprap) at the west diversion channel outlet.*



*GUN 5/2007. PL-9. Recent erosion near the western edge of the site.*



*GUN 5/2007. PL-10. Recent erosion in the southeast corner of the site.*