8.0 Gunnison, Colorado, Disposal Site

8.1 Compliance Summary

The Gunnison, Colorado, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Disposal Site was inspected on June 11, 2014. The disposal cell and all associated surface water diversion and drainage structures were in excellent condition and functioning as designed. Six riprap test areas on the cell apron and diversion ditches were visually inspected; no rock degradation was noted when compared to 2012 photos. Inspectors identified no maintenance needs or cause for a follow-up inspection.

Cell performance groundwater monitoring is required every 5 years. No monitoring was conducted in 2014; the next monitoring event will occur in 2016.

8.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the site are specified in the *Long-Term Surveillance Plan for the Gunnison, Colorado, Disposal Site* (LTSP) (DOE/AL/62350-222, Rev. 2, U.S. Department of Energy [DOE], April 1997) and in procedures that DOE established to comply with the requirements of Title 10 *Code of Federal Regulations* Part 40.27 (10 CFR 40.27). Table 8-1 lists these requirements.

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

Requirement	Long-Term Surveillance Plan	This Report
Annual Inspection and Report	Section 3.0	Section 8.4
Follow-Up Inspections	Section 3.5	Section 8.5
Maintenance and Repairs	Section 5.0	Section 8.6
Groundwater Monitoring	Section 4.0	Section 8.7
Corrective Action	Section 6.0	Section 8.8

8.3 Institutional Controls

The 92-acre site (Figure 8-1) 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 site include federal ownership of the property and the following features that are inspected annually: site markers, survey and boundary monuments, perimeter warning signs, a site perimeter fence, and a locked gate at the site entrance.

8.4 Inspection Results

The site, southeast of Gunnison, Colorado, was inspected on June 11, 2014. The inspection was conducted by S. Campbell and R. Johnson of Stoller Newport News Nuclear, Inc. (SN3), a wholly owned subsidiary of Huntington Ingalls Industries, Inc. SN3 is the DOE Legacy Management Support contractor. D. Steckley (DOE Site Manager) and M. Cosby of the

Colorado Department of Public Health and Environment attended the inspection. T. Collens and E. Jackson from DOE Headquarters also attended the inspection.

The purposes of the inspection were to confirm the integrity of visible features at the site, to identify changes in conditions that might affect site integrity, and to determine the need, if any, for maintenance or additional inspections and monitoring.

8.4.1 Site Surveillance Features

Figure 8-1 shows the locations of site surveillance features. Inspection results and recommended maintenance activities associated with site surveillance features are included in the following subsections. Photographs to support specific observations are identified in the text and on Figure 8-1 by photograph location (PL) numbers.

8.4.1.1 Site Access, Entrance Gate, and Entrance Sign

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 a gravel road maintained by BLM and was in acceptable condition.

The entrance gate is a barbed-wire gate in the stock fence that surrounds the site. The entrance gate, located along the south portion of the perimeter fence, was secured by a padlock and chain to the adjoining post and was in good condition (PL-1).

An entrance sign is bolted to a perimeter fence post next to the entrance gate. The sign was in excellent condition.

8.4.1.2 Perimeter Fence and Perimeter Signs

A barbed-wire fence delineates the site; most of it is set along the property boundary. The fence was in good condition (PL-2). Two locked barbed-wire gates—one on the north fence line and the other on the east fence line—provide access to offsite monitoring wells. The gates were locked and in good condition.

Forty-five perimeter signs are bolted to the perimeter fence posts. Several perimeter signs have bullet holes but were legible. The other signs were in good condition.

8.4.1.3 Site Markers

The site has two granite site markers. Site markers SMK-1 (just inside the entrance gate; PL-3) and SMK-2 (on top of the disposal cell) were in excellent condition.

8.4.1.4 Survey Monuments and Boundary Monuments

The three combined survey/boundary monuments (SM-1/BM-1, SM-2/BM-2, and SM-3/BM-3) and eight additional boundary monuments (BM-4 through BM-11) were in excellent condition.

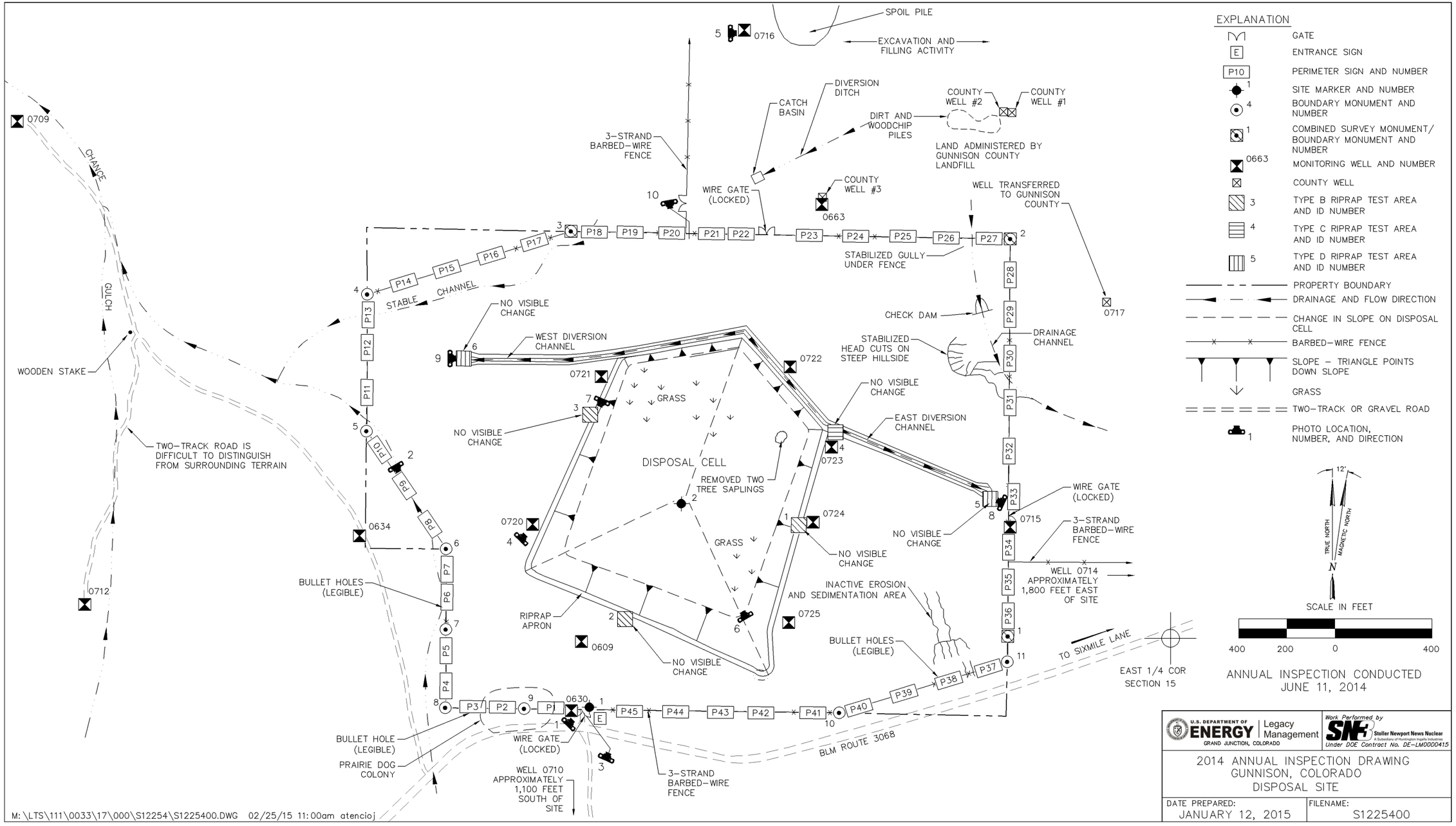

Figure 8-1. 2014 Annual Inspection Drawing for the Gunnison Disposal Site

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8.4.1.5 Monitoring Wells

Sixteen wells constitute the groundwater monitoring network for the site. The wells were secure and in excellent condition (PL-4). The Gunnison County landfill operators have placed concrete barriers to protect monitoring well 0716, which is located on landfill property, from landfill activities (PL-5). The edge of a spoil pile is approximately 30 feet from the barriers, and it appeared to be same size as observed during the previous inspection.

8.4.2 Inspection Areas

In accordance with the LTSP, the site is divided into four inspection areas to ensure a thorough and efficient inspection. The inspection areas are: (1) the top of the disposal cell; (2) the disposal cell side slopes, apron, and diversion channels; (3) the area between the disposal cell and the site boundary; and (4) the outlying area.

Within each area, the inspectors examined specific site-surveillance features. Inspectors also looked for evidence of erosion, settling, slumping, or other disturbances that might affect the site's integrity, protectiveness, or long-term performance.

8.4.2.1 Top of the Disposal Cell

The rock-covered top of the disposal cell was in excellent condition (PL-6). There was no evidence of erosion, settling, slumping, or rock degradation. Several isolated patches of grass are randomly distributed over the disposal cell cover; however, these shallow-rooted plants are not a cause for concern. Two small tree saplings were removed from the cover; no other deep-rooted plants were observed on the disposal cell.

8.4.2.2 Disposal Cell Side Slopes, Apron, and Diversion Channels

The riprap-covered side slopes, apron, and diversion channels were in good condition (PL-7 and PL-8). No evidence of slumping, settling, rock degradation, or encroachment of vegetation was observed.

The condition of the riprap in six monitoring test areas was visually inspected. The test areas, each approximately 1 square meter in area, are in critical flow path locations in the apron and diversion channels (PL-9). The corners of each monitoring plot are marked with orange paint; the corners were repainted during the inspection. The riprap in all of the test areas was in excellent condition. When the rocks were compared to the photos taken of them in 2012, there was no evidence that individual rocks had split or otherwise been degraded. Annual photographing and comparing of these test areas was performed through 2002 in accordance with the LTSP; after that, the LTSP requires the test areas to be photographed every 5 years through 2017. The next and final set of photos will be taken in 2017.

Precipitation runoff from the cell occasionally ponds in a low-lying area along the southeast corner of the cell. The riparian-type vegetation that has become established there indicates that the 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 there is below the elevation of the encapsulated tailings material. This location was dry at the time of the inspection.

8.4.2.3 Area Between the Disposal Cell and the Site Boundary

There are reclaimed and undisturbed areas between the disposal cell and the site perimeter. Both types of areas were in good condition (PL-10). No erosion concerns were observed. In general, reclaimed areas have good vegetation coverage, consisting mostly of grass. Shrubs and forbs are much less abundant and less diverse in reclaimed areas than they are in undisturbed areas.

8.4.2.4 Outlying Area

The area within 0.25 mile of the site boundary was observed from the site perimeter. Gunnison County owns the land that adjoins the site boundary to the north and east, and uses the land for a municipal landfill. The nearest landfill operations continue to be approximately 400 feet from the northeast corner of the DOE property boundary. Although landfill activities do not impact the site, future inspections will continue to monitor the level of activity occurring near the DOE property boundaries and site surveillance features (e.g., fences and monitoring wells). There were no other new activities in the immediate vicinity that would impact the site.

8.5 Follow-Up Inspections

DOE will conduct follow-up inspections if (1) an annual inspection or other site visit reveals a condition that must be reevaluated during a return to the site, or (2) a citizen or outside agency notifies DOE that conditions at the site are substantially changed. No need for a follow-up inspection was identified.

8.6 Maintenance and Repairs

No maintenance items were identified.

8.7 Groundwater Monitoring

DOE monitors groundwater at the site to demonstrate compliance with U.S. Environmental Protection Agency (EPA) 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 wells to monitor background groundwater quality, and eight wells for water level measurements (Table 8-2).

Table 8-2. Monitoring Wells at the Gunnison Disposal Site

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

The indicator analyte for cell performance at the site is uranium. This analyte was selected on the basis of its presence in tailings pore fluid, its relatively high mobility in groundwater, and its low concentration in upgradient (background) groundwater. The target concentration for uranium is 0.013 milligram per liter (mg/L). The basis for this value is the maximum observed concentration of uranium in background samples determined before long-term surveillance and maintenance activities began. The maximum concentration limit for uranium that EPA established in Table 1 to Subpart A of 40 CFR 192 is 0.044 mg/L.

In accordance with the LTSP, groundwater monitoring was required annually from 1998 through 2001 and every 5 years thereafter. The most recent sampling event was conducted in 2011, so monitoring was not required in 2014. The next sampling event will occur in 2016. To date, uranium concentrations in all wells have been substantially below the target concentration, indicating that the disposal cell continues to perform as an efficient containment system.

8.8 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 need for corrective action was identified.

8.9 Photographs

Photograph Location Number	Azimuth	Photograph Description
PL-1	45	Site entrance gate.
PL-2	150	Perimeter fence along west property boundary.
PL-3	25	Site marker SMK-1.
PL-4	45	Monitoring well 0720 near west side of disposal cell.
PL-5	90	Monitoring well 0716 near county landfill spoil pile.
PL-6	330	Top slope of disposal cell.
PL-7	205	West side slope and apron of disposal cell; Riprap Test Area No. 3 in foreground.
PL-8	295	East diversion channel.
PL-9	90	West diversion channel; Riprap Test Area No. 6 in foreground.
PL-10	170	Disposal cell and natural vegetation in an undisturbed area.

GUD 6/2014. PL-1. Site entrance gate.

GUD 6/2014. PL-2. Perimeter fence along west property boundary.

GUD 6/2014. PL-3. Site marker SMK-1.

GUD 6/2014. PL-4. Monitoring well 0720 near west side of disposal cell.

GUD 6/2014. PL-5. Monitoring well 0716 near county landfill spoil pile.

GUD 6/2014. PL-6. Top slope of disposal cell.

GUD 6/2014. PL-7. West side slope and apron of disposal cell; Riprap Test Area No. 3 in foreground.

GUD 6/2014. PL-8. East diversion channel.

GUD 6/2014. PL-9. West diversion channel; Riprap Test Area No. 6 in foreground.

GUD 6/2014. PL-10. Disposal cell and natural vegetation in an undisturbed area.