2.0 Edgemont, South Dakota, Disposal Site

2.1 Compliance Summary

The Edgemont, South Dakota, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title II Disposal Site was inspected on July 26, 2023. No changes were observed in the disposal cell cover. In addition to the two previously identified depressions, a small new depression feature was noted on the riprap-armored containment dam. Inspectors identified no maintenance needs or cause for a follow-up inspection. Groundwater monitoring is not required at the site.

2.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the site are specified in the site-specific Long-Term Surveillance Plan (DOE 1996) (LTSP) in accordance with procedures established to comply with the requirements of the U.S. Nuclear Regulatory Commission (NRC) general license at Title 10 *Code of Federal Regulations* Section 40.28 (10 CFR 40.28). Table 2-1 lists these requirements.

Table 2-1. License Requirements for the Edgemont, South Dakota, Disposal Site

Requirement	LTSP	This Report	10 CFR 40.28
Annual Inspection and Report	Sections 3.3 and 3.4	Section 2.4	(b)(3)
Follow-Up Inspections	Section 3.5	Section 2.5	(b)(4)
Routine Maintenance and Emergency Measures	Section 3.6	Section 2.6	(b)(5)
Environmental Monitoring	Section 3.7	Section 2.7	(b)(3)

2.3 Institutional Controls

The 360-acre site, identified by the property boundary shown in Figure 2-1, is owned by the United States and was accepted under the NRC general license in 1996. The U.S. Department of Energy (DOE) is the licensee and, in accordance with the requirements for UMTRCA Title II sites, the Office of Legacy Management (LM) is responsible for the custody and long-term care of the site. Institutional controls (ICs) at the site include federal ownership of the property, administrative controls, and the following physical ICs that are inspected annually: the disposal cell, entrance gate and sign, perimeter fence and signs, site marker, and boundary monuments.

2.4 Inspection Results

The site, approximately 2 miles south of Edgemont, South Dakota, was inspected on July 26, 2023. The inspection was conducted by J. Cario and T. Santonastaso of the Legacy Management Support (LMS) contractor. J. Hugo (LMS) participated in the inspection to evaluate the depression features that were observed on the containment dam in 2021. M. Guziak (LMS) and N. Keller (LM site manager), as well as T. Johnson and M. LaFranzo (NRC), attended the inspection. The purposes of the inspection were to confirm the integrity of visible features at the site, identify changes in conditions that might affect conformance with the LTSP, and evaluate whether maintenance or follow-up inspection and monitoring are needed.

A grazing license granted by LM allows a local rancher to graze his cattle on the site. The LM site manager met with the grazing licensee during the inspection to discuss any issues or concerns the licensee might have. The grazing licensee did not identify any concerns.

2.4.1 Site Surveillance Features

Figure 2-1 shows the locations of site features, including site surveillance features and inspection areas, in black and gray font. Some site features that are present but not required to be inspected are shown in italic font. Observations from previous inspections that are currently monitored are shown in blue, and new observations identified during the 2023 annual inspection are shown in red. Inspection results and recommended maintenance activities associated with site surveillance features are described in the following subsections. Photographs to support specific observations are noted in the text and in Figure 2-1 by photograph location (PL) numbers. The photographs and photograph log are presented in Section 2.9.

2.4.1.1 Site Access and Entrance Gate

Access to the site is from Fall River County Road 6N. The entrance sign, which is mounted on a steel post set in concrete, was in good condition (PL-1). The tubular metal entrance gate was secured by a locked chain and was intact. The perimeter fence features three additional wire gates at the following locations: (1) the northwest corner of the property, (2) approximately 700 feet north of the southeast corner (PL-2), and (3) the southeast corner of the site. All gates were closed, locked, and intact. No maintenance needs were identified.

2.4.1.2 Perimeter Fence and Signs

A four-strand barbed-wire fence encloses the site, truncating at the southeast corner to allow livestock access to a preexisting stock pond. There are two perimeter signs. Perimeter sign P1 attached at the northwest corner of the perimeter fence was missing and perimeter sign P2 (PL-3) is attached to the perimeter fence on the east side. By the 2024 inspection, perimeter sign P1 will be reattached to the perimeter fence.

The grazing licensee monitors site security and maintains the perimeter fence. An erosional feature is present along the northwest side of the fence but is not compromising the fence. No maintenance needs were identified.

The licensee proposed removing the unmaintained interior fence that was installed to prevent grazing during vegetation establishment following closure of the disposal cell. The LM site manager concurred with this proposal. The fence will be removed by the grazing licensee at a later date.

2.4.1.3 Site Marker

The granite site marker is inside the entrance gate (PL-4). No maintenance needs were identified during the inspection.

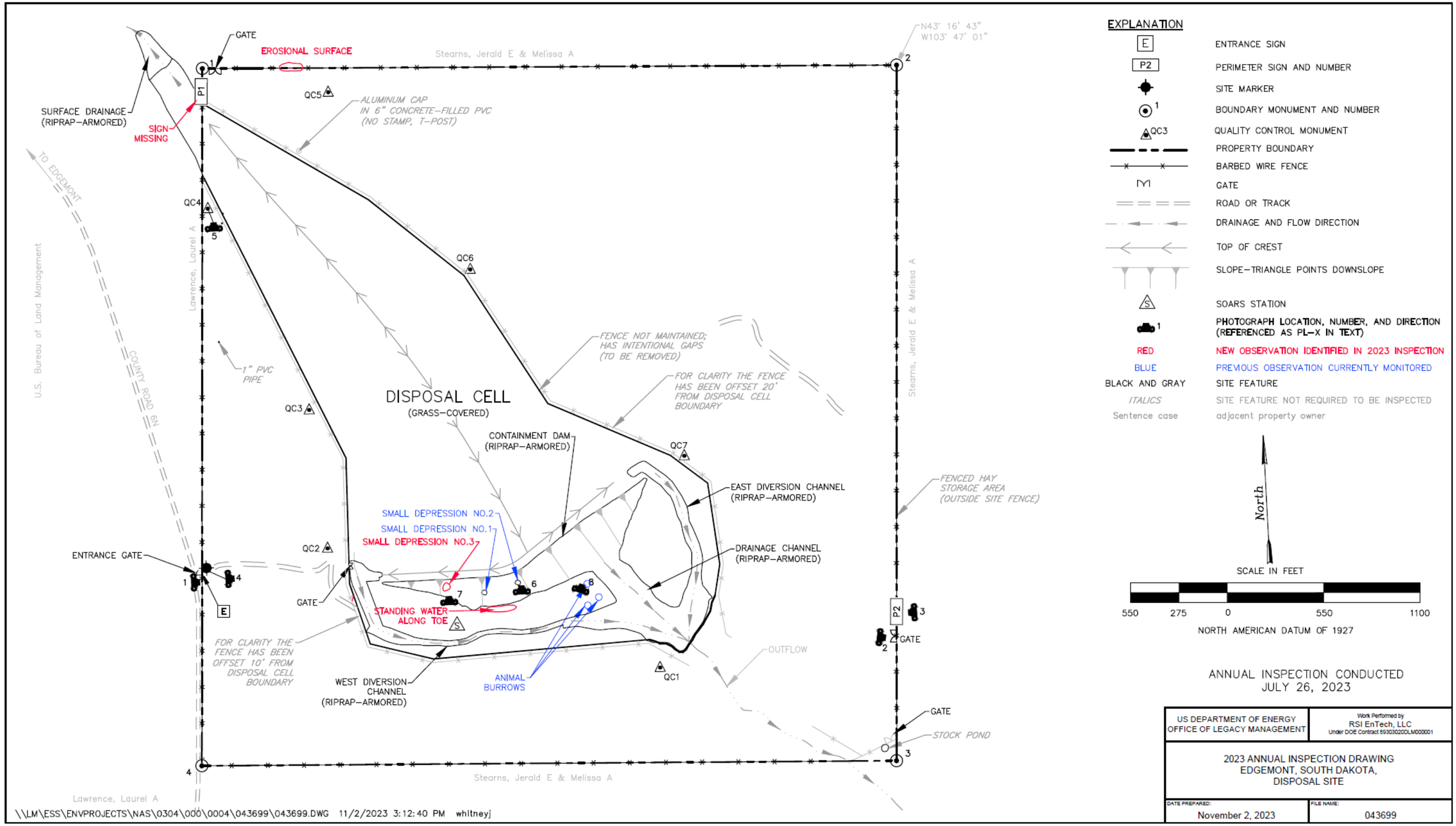

Figure 2-1. 2023 Annual Inspection Drawing for the Edgemont, South Dakota, Disposal Site

2.4.1.4 Boundary Monuments

There are four boundary monuments, one at each corner of the site. The stock pond was observed to be encroaching BM-3 at the time of inspection. Saturated soils could eventually displace the boundary monument. No maintenance needs were identified.

2.4.1.5 Aerial Survey Quality Control Monuments

LM installed seven aerial survey quality control monuments in 2019 and conducted a baseline aerial survey in 2021. The quality control monuments were inspected during the 2023 annual inspection (PL-5). No maintenance needs were identified.

2.4.2 Inspection Areas

In accordance with the LTSP, the site is divided into three inspection areas (referred to as "transects" in the LTSP) to ensure a thorough and efficient inspection. The inspection areas are (1) the cover of the disposal cell; (2) the containment dam and diversion channels; and (3) the site perimeter, outlying areas, and balance of the site. Inspectors examined specific site surveillance features within each area and looked for evidence of erosion, settling, slumping, or other modifying processes that might affect conformance with LTSP requirements.

2.4.2.1 Cover of the Disposal Cell

The grass-covered disposal cell, completed in 1989, occupies 100 acres. No signs of erosion, settling, or other modifying processes were found that could affect its integrity. No maintenance needs were identified.

2.4.2.2 Containment Dam and Diversion Channels

The face of the containment dam is armored with riprap. Two small depressions were observed on the containment dam during the 2021 annual inspection and measured during the 2023 inspection. Small Depression No. 1 measures approximately 25-inches long, 30-inches wide, and 17-inches deep. Small Depression No. 2 (PL-6) measures approximately 48-inches long 37-inches wide, and 9.5-inches deep. No changes to the two depressions were identified since their discovery. A new depression, Small Depression No. 3, was identified during the 2023 inspection and was measured to be about 32-inches long, 24-inches wide, and 1-foot deep (PL-7). No evidence of sediment deposition, human intervention, or other modifying processes were observed near these depressions. The three depressions do not threaten the integrity or performance of the disposal cell; however, monitoring of the depressions will continue during annual inspections and subsequent surveys. There was standing water at the toe of the containment dam consistent with the above-average water year. Grasses and annual weeds were growing in the riprap in several places. The presence of plants and standing water do not threaten the stability or function of the containment dam.

The diversion and drainage channels are covered with grass on the upslope portions and armored with riprap on the downslope portions and on steep slopes. Sparse vegetation in the riprap helps to stabilize these areas and does not impair the function of the channels. Wetland vegetation is at the base of the drainage channel outflow. No maintenance needs were identified.

In August 2023, a remote telemetry meteorological station, also known as a System Operation and Analysis at Remote Sites (SOARS) station, was installed near the containment dam to monitor local weather conditions at the site and view conditions using a web camera.

2.4.2.3 Site Perimeter, Outlying Areas, and Balance of the Site

The site is surrounded by private land used primarily for grazing and wildlife habitat. The area approximately 0.25 mile beyond the site boundary—including a surface drainage area just outside the northwest corner of the property that is riprap armored to prevent headward erosion onto the site—was visually observed for erosion, changes in land use, or other phenomena that might affect the long-term integrity of the site. No such changes were identified.

The balance of the site consists of undisturbed areas covered with native shrubs, grasses, and forbs and formerly disturbed areas covered primarily with seeded grasses and annual weeds. Three animal burrows have been observed on the southwestern side of the drainage channel between the riprap-armored containment dam and the west diversion channel. During the 2023 inspection, the burrows were overgrown with vegetation, indicating use has been minimal or nonexistent. The animal burrows are not impacting the functionality of the disposal cell or drainage features (PL-8). Some minor erosional features are on steep slopes in an area isolated from the disposal cell; these features were stable. No maintenance needs were identified.

2.5 Follow-Up Inspections

LM 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) LM is notified by a citizen or outside agency that conditions at the site are substantially changed. No need for a follow-up inspection was identified.

2.6 Routine Maintenance and Emergency Measures

Noxious weeds were treated in September 2022. No other maintenance needs were identified.

Emergency measures are corrective actions that LM will take in response to unusual damage or disruption that threatens or compromises site health and safety, security, integrity, or compliance with 40 CFR 192. No emergency measures were identified.

2.7 Environmental Monitoring

In accordance with the LTSP, groundwater monitoring is not required at this site because a 300–700-foot-thick layer of competent shale bedrock lies between the encapsulated tailings and the uppermost confined aquifer. Additionally, clay liners were constructed to isolate the tailings from the shallower, unconfined, perched groundwater that is present because of local precipitation. There is no evidence of any direct hydraulic connection between the perched groundwater and the underlying confined bedrock aquifer.

An annual visual inspection of vegetation conditions required by the LTSP was conducted during the annual inspection. No additional vegetation management is required; however, LM conducts periodic rangeland health assessments as a best management practice to measure ecological health at the site. No cattle were grazing on the site during the inspection.

2.8 References

10 CFR 40.28. U.S. Nuclear Regulatory Commission, "General License for Custody and Long-Term Care of Uranium or Thorium Byproduct Materials Disposal Sites," *Code of Federal Regulations.*

40 CFR 192. U.S. Environmental Protection Agency, "Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings," *Code of Federal Regulations.*

DOE (U.S. Department of Energy), 1996. *Long-Term Surveillance Plan for the DOE Tennessee Valley Authority (UMTRCA Title II) Disposal Site, Edgemont, South Dakota,* NRC Docket File No. 040-01341, June.

2.9 Photographs

Photograph Location Number	Azimuth	Photograph Description
PL-1	90	Entrance Sign
PL-2	100	Southeastern Side Perimeter Fence Gate
PL-3	270	Perimeter Sign P2
PL-4	90	Site Marker
PL-5	—	Quality Control Monument QC-4
PL-6	—	Small Depression No. 2: Depth Measurement
PL-7	—	Small Depression No. 3: New
PL-8	20	Animal Burrow

Note:
— = Photograph taken vertically from above.

PL-1. Entrance Sign

PL-2. Southeastern Side Perimeter Fence Gate

PL-3. Perimeter Sign P2

PL-4. Site Marker

PL-5. Quality Control Monument QC-4

PL-6. Small Depression No. 2: Depth Measurement

PL-7. Small Depression No. 3: New

PL-8. Animal Burrow