

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 (site) was inspected on July 13, 2021. Two, small depressions were observed on the riprap-armored containment dam side slope and will continue to be monitored during the annual site inspection. No changes were observed in the disposal cell drainage features. The grazing licensee will remove the unmaintained interior fence; however, the fence was present during the time of the inspection. Inspectors identified no other 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 U.S. Department of Energy (DOE) Office of Legacy Management (LM) Long-Term Surveillance Plan (LTSP) (DOE 1996) and in accordance with procedures established to comply with the requirements of 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 U.S. Nuclear Regulatory Commission general license (10 CFR 40.28) in 1996. DOE is the licensee and, in accordance with the requirements for UMTRCA Title II sites, 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 13, 2021. The inspection was conducted by D. Traub and J. Cario of the Legacy Management Support (LMS) contractor. C. Boger (LM site manager) 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 additional 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 and LMS site lead met with the grazing licensee during the inspection to discuss any issues or concerns the licensee might have. As presented in Section 2.4.1.2, the grazing licensee will remove the unmaintained interior fence from the site. No other concerns were identified by the grazing licensee.

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. Site features that are present but not required by the LTSP to be inspected are shown in italic font. Observations from previous inspections that are currently monitored are shown in blue type, and new observations identified during the 2021 annual inspection are shown in red type. 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 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 missing and was subsequently replaced by the grazing licensee. 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, and (3) the southeast corner of the site. All gates were closed 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. Two perimeter signs are attached to the perimeter fence (PL-1). No maintenance needs were identified.

The grazing licensee monitors site security and maintains the perimeter fence. The licensee proposed removing the unmaintained interior fence that was installed to prevent grazing during vegetation establishment following closure of the disposal cell (PL-2). The LM site manager concurred with this proposal, as this fence is no longer required. The fence will be removed by the grazing licensee.

2.4.1.3 Site Marker

One granite site marker is present just inside the entrance gate (PL-3). No maintenance needs were identified.

2.4.1.4 Boundary Monuments

Boundary monuments are present at each of the property's four corners. All boundary monuments were inspected, and no maintenance needs were identified.

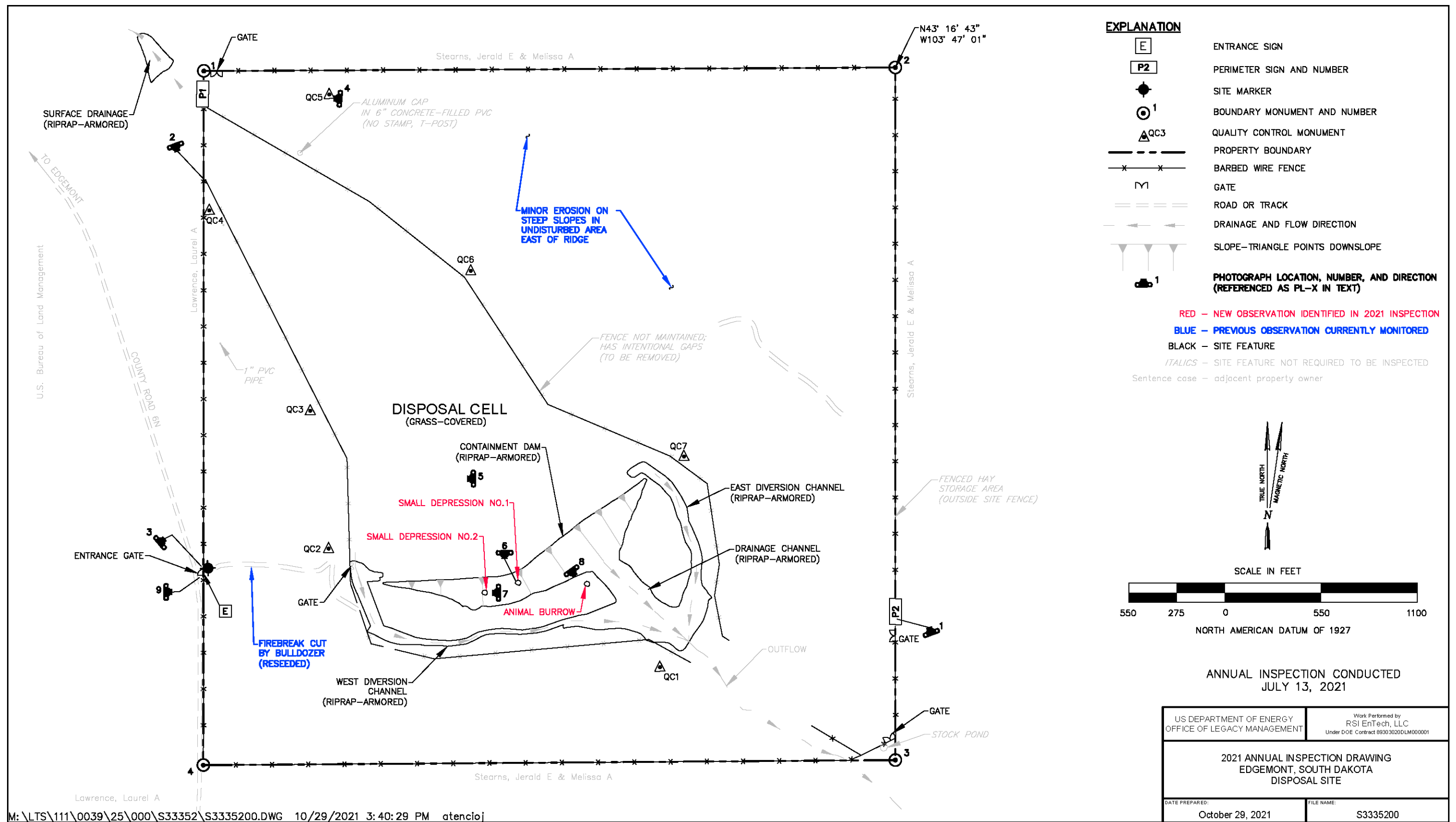


Figure 2-1. 2021 Annual Inspection Drawing for the Edgemont, South Dakota, Disposal Site

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2.4.1.5 Aerial Survey Quality Control Monuments

Seven aerial survey quality control monuments, installed in 2019, were inspected during the 2021 annual inspection (PL-4). No maintenance needs were identified.

A baseline aerial survey was conducted August 8–10, 2021. The purpose of the survey was to establish updated site topography for comparison with future aerial surveys to better understand and quantify changes to the site, including monitoring the depressions observed on the containment dam side slope.

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 the site’s conformance with LTSP requirements.

2.4.2.1 Cover of the Disposal Cell

The grass-covered disposal cell, completed in 1989, occupies 100 acres (PL-5). 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, the steepest man-made slope onsite, is armored with riprap. Two small depressions, approximately 2 feet in diameter, were observed on the containment dam (PL-6; PL-7). Since this was the first time these depressions were observed, inspectors documented the location of the depressions with a GPS unit and inspected the areas around the depressions to look for evidence of sediment mobilization or other process that would explain the formation of the depressions. No evidence of sediment deposition, human intervention, or other modifying process was observed. The depressions do not threaten the integrity or performance of the disposal cell, and monitoring of the depressions will continue during annual inspections and subsequent aerial surveys. Grasses and annual weeds were growing in the riprap in several places. These plants do not threaten the stability or function of the containment dam.

The diversion and drainage channels are covered with grass on their upslope portions (gentle swales on each side of the disposal cell) and armored with riprap on their downslope portions and on steep slopes. Sparse vegetation is present in the riprap, which helps to stabilize these areas and does not impair the function of the channels. Wetland vegetation is present at the base of the drainage channel outflow. No maintenance needs were identified.

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. An animal burrow was observed adjacent to the riprap-armored drainage channel but does not impact the functionality of the channel (PL-8). 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. Some minor erosional features are present 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

The grazing licensee will remove the unmaintained interior fence. A new entrance sign was mailed to the grazing licensee and installed (PL-9). 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 as a result 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. Noxious weed treatment was conducted September 30, 2021. 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	340	Perimeter Sign P2
PL-2	160	View Along Western Fence Line
PL-3	50	Granite Site Marker
PL-4	275	Quality Control Monument QC-5
PL-5	270	Vegetated Disposal Cell Top Slope
PL-6	180	Small Depression #1 on Disposal Cell Side Slope
PL-7	270	Small Depression #2 on Disposal Cell Side Slope
PL-8	145	Animal Burrow Adjacent to Toe of Armored Disposal Cell Side Slope
PL-9	90	Entrance Sign



PL-1. Perimeter Sign P2



PL-2. View Along Western Fence Line



PL-3. Granite Site Marker



PL-4. Quality Control Monument QC-5



PL-5. Vegetated Disposal Cell Top Slope



PL-6. Small Depression #1 on Disposal Cell Side Slope



PL-7. Small Depression #2 on Disposal Cell Side Slope



PL-8. Animal Burrow Adjacent to Toe of Armored Disposal Cell Side Slope



PL-9. Entrance Sign