



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

August 15, 2023

MEMORANDUM TO: Docket File 040-01341

THROUGH: Gregory G. Warnick, Chief
Decommissioning, ISFSI, and Operating Reactor Branch
Division of Radiological Safety and Security

FROM: Michael M. LaFranzo, Senior Health Physicist
Decommissioning, ISFSI, and Operating Reactor Branch
Division of Radiological Safety and Security

SUBJECT: OBSERVATIONAL SITE VISIT AT EDMONT DISPOSAL SITE

Stephanie Anderson Anderson, Stephanie signing on behalf of Warnick, Gregory on 08/15/23

On July 26, 2023, the U.S. Nuclear Regulatory Commission's (NRC) Region IV Office conducted an observational site visit at the U.S. Department of Energy's (DOE) Edgemont site in Fall River County, South Dakota. This site visit was conducted in accordance with Inspection Procedure 89060 "Department of Energy Observational Site Visits". The purpose of the site visit was to observe DOE's routine, annual inspection of the Edgemont disposal site. Enclosed to this memorandum is the NRC's trip report for this site visit.

In summary, DOE conducted the annual inspection in accordance with the requirements specified in the updated NRC-accepted Long-Term Surveillance Plan dated March 2008 (ADAMS Accession No. ML082050099). The disposal cell and surrounding area observed by the inspector appeared to be in acceptable condition. No significant regulatory issues or safety concerns were identified during the site visit.

Docket: 040-01341
License: General License Pursuant to 10 CFR 40.28

Enclosure:
NRC Trip Report

cc: Nicole Keller, UMTRCA Site Manager, DOE

CONTACT: Michael M. LaFranzo, DRSS/DIOR
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OBSERVATIONAL SITE VISIT AT EDGEMONT DISPOSAL SITE DATED – AUGUST 15, 2023.

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cc w/enclosure:

Nicole Keller <nicole.keller@lm.doe.gov>

OBSERVATIONAL SITE VISIT AT EDGEMONT SOUTH DAKOTA UMRCA TITLE II DISPOSAL SITE

ADAMS ACCESSION NUMBER: **ML23222A172**

➔ SUNSI Review By: MTJ4	ADAMS: ➔ Yes <input type="checkbox"/> No	<input type="checkbox"/> Sensitive ➔ Non-Sensitive	<input type="checkbox"/> Non-Publicly Available ➔ Publicly Available	Keyword NRC-002
OFFICE	DRSS/DIOR	C:DIOR	DRSS/DIOR	
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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 040-01341

License: General License Pursuant to 10 CFR 40.28

Report: 040-01341/2023-001

Licensee: U.S. Department of Energy

Facility: Edgemont Disposal Site

Location: Edgemont, South Dakota

Date: July 26, 2023

Inspectors: Michael M. LaFranzo
Senior Health Physicist
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Approved by: Gregory G. Warnick, Chief
Decommissioning, ISFSI, and Operating Reactor Branch
Division of Radiological Safety and Security

Attachment: Photographs Taken at the Edgemont Disposal Site

Enclosure

NRC Report

1 Background

Mines Development, Inc., a subsidiary of Susquehanna-Western, Inc., constructed and operated the Edgemont mill from 1956-1972. The mill was located adjacent to the town of Edgemont, South Dakota. The operation of the mill resulted in the production of about 2.3 million tons of tailings material.

In 1974, Tennessee Valley Authority (TVA) acquired the mill. However, TVA decided against using the mill to process uranium ore. The mill was decommissioned from 1986-1989. As part of decommissioning, the tailings material and mill debris were relocated to the Edgemont disposal site, a 360-acre property located about two miles south of the mill. In addition, radioactive vicinity property material was remediated from about 250 properties by the U.S. Department of Energy (DOE) and placed into the disposal cell. Approximately 4 million tons of tailings, contaminated soil, mill equipment, structural debris, and vicinity property material were placed into the disposal cell. The total radioactivity of the contaminated material placed in the disposal cell was estimated to be about 527 curies of radium-226.

The 100-acre Edgemont disposal cell is situated roughly in the middle of the 360-acre site property. The cell was constructed partially below grade and at the head of an ephemeral drainage pathway. A containment dam was constructed at the down-gradient face of the cell.

The base of the cell consists of a natural shale layer in lieu of a man-made liner. The walls were constructed with compacted clay, averaging 13 feet thick. The 9-foot thick cover consists of clay, fill, and topsoil material. The dam contains clay to minimize seepage and shale for stability. A series of drains (finger, chimney, and toe) were installed to route drainage away from the cell. In addition, a perimeter drainage system was installed to intercept and route surface water around the cell. A rip-rap rock erosion protection cover was installed on portions of the dam and drainage pathways. The remainder of the disposal cell was seeded with native grasses for erosion protection.

The Edgemont disposal cell is classified as a Title II site under the Uranium Mill Tailings Radiation Control Act of 1978. The DOE maintains long-term custody of the site under the U.S. Nuclear Regulatory Commission's (NRC's) general license requirements of 10 CFR 40.28. The Long-Term Surveillance Plan (LTSP) explains how DOE will fulfill the general license requirements specified in 10 CFR 40.28. The LTSP for the Edgemont disposal site was approved by the NRC on June 27, 1996, concurrently with the termination of NRC Materials License SUA-816 and turnover of the site to DOE. The NRC announced the turnover of the Edgemont disposal cell site from TVA to DOE, termination of the license, and approval of the LTSP in the *Federal Register* on July 5, 1996 (61 FR 35272).

2 Site Status

The disposal cell is situated on a layer of low-permeability shale that varies in thickness from 300 to 700 feet. The uppermost aquifer is below this shale layer. Due to the thickness of the shale layer and the depth of the aquifer, the local groundwater is not expected to be contaminated by radioactive material in the disposal cell. Thus, groundwater monitoring is not required at this site.

Site features include four corner boundary monuments, one site marker, one entrance warning sign, and two perimeter signs. The site perimeter is barbed-wire fenced. One primary and three secondary gates were installed for site access. The LTSP requires DOE to inspect the Edgemont disposal site at least once every calendar year. The DOE staff typically observe the status of site features during each annual inspection.

At the time of the site visit, the disposal cell and associated surface water diversion and drainage structures were noted to be in excellent conditions and functioning as designed. No significant evidence of erosion, settling, slumping, or rock degradation was identified. Site vegetation density was determined to be acceptable, with no evidence of over-grazing. Nothing was identified during the inspection that required follow up significant maintenance or repair. The DOE allows livestock to graze on the property. The DOE implemented a voluntary vegetation monitoring program in 2009, in part, to ensure that livestock does not over-graze the property.

3 Site Observations and Findings

The NRC inspectors observed that the disposal cell and surrounding diversion and drainage structures appeared to be in good condition. No erosion or slumping was observed on or around the cell. Thick vegetation and standing water was identified on the cell, but the standing water appeared to be the result of recent rains. At the time of the on-site visit, no livestock was observed on the property. No deep-rooted trees were observed on or immediately adjacent to the disposal cell.

The NRC inspectors conducted radiological surveys using a Thermo Scientific RadEye PRD survey meter (serial number 31893, calibrated to cesium-137 with a calibration due date of March 31, 2024). With a background of 3-5 microRoentgens per hour ($\mu\text{R/hr}$), as measured on the access road to the site, measurements across the property ranged from 3-10 $\mu\text{R/hr}$. The surveyed areas included drainage pathways downgradient from the disposal cell. The ambient gamma radiation measurements across the site were indistinguishable from background levels indicating that no residual radioactivity or naturally occurring radioactivity was identified on the surface of the site.

The NRC inspectors noted that during previous DOE inspections, minor erosions, small depressions and animal burrows were noted and were being monitored for potential impact to the disposal cell.

During the observational site visit, the NRC inspectors discussed with DOE representatives the status of livestock grazing within the site property. Section 3.6.1 of the LTSP states that fences were installed to prevent livestock grazing. However, DOE currently allows onsite grazing. The DOE implemented a voluntary vegetation monitoring program in 2009, in part, due to onsite grazing. At the time of the DOE site inspection, the onsite grasses appeared to be comparable with offsite properties, with no evidence of over-grazing. The NRC inspectors discussed with DOE staff the potential discrepancies between the wording of the LTSP and annual report, and DOE's desire to allow property reuse through onsite grazing. The DOE staff agreed to review the potential discrepancies and consider updating the LTSP as appropriate. It was also observed that a boundary sign was missing which the DOE staff noted and will be replacing as needed.

4 Conclusions

The DOE staff conducted the site inspection in accordance with the site-specific checklist, LTSP, and 10 CFR 40.28 requirements. The disposal cell and adjacent dam, drainage, and diversion structures appeared to be in excellent condition with no erosion, slumping, or large trees on the cell. The ambient gamma radiation levels across the site were indistinguishable from background levels. The NRC inspectors discussed with DOE staff the potential discrepancies between the LTSP, annual report, and as-found site conditions regarding livestock grazing. The DOE staff agreed to review and update the LTSP as appropriate.

5 Meeting Summary

The NRC inspectors participated in a pre-planning meeting with the DOE site manager and DOE representatives prior to the site inspection. During this meeting, the NRC and DOE representatives discussed topics such as site status, inspection plan, and potential physical hazards. The inspectors discussed the final site observations with DOE staff at the conclusion of the onsite visit.

6 Persons Contacted

Nicole Keller, DOE LM Site Manager
Jordan Cario, Lead Inspector RSI Contractor
Trisha Santonastaso, RSI Contractor
Justin Hugo, RSI Contractor
Mickey Guziak, RSI Contractor



Figure 1: Edgemont disposal site marker near entrance gate



Figure 2: Tailings embankment with rip-rap cover, southeast corner (looking west)



Figure 3: On top of south tailings embankment (looking north)



Figure 4: Below south tailings embankment (looking northeast)



Figure 5: South embankment rip-rap minor settlement



Figure 6: Example of Signage at the boundary of the Edgemont site