



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION I
475 ALLENDALE ROAD, SUITE 102
KING OF PRUSSIA, PA 19406-1415

December 21, 2022

MEMORANDUM TO: Docket File WM-000042

THRU: Anthony Dimitriadis, Chief
Decommissioning, ISFSI, and Reactor Health
Physics Branch
Division of Radiological Safety and Security

FROM: Andrew Taverna, Health Physicist
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SUBJECT: NRC OBSERVATIONAL SITE VISIT AT THE BURRELL,
PENNSYLVANIA DISPOSAL SITE

On October 27, 2022, Region I U.S. Nuclear Regulatory Commission (NRC) inspectors conducted an observational site visit at the U.S. Department of Energy's (DOE) Burrell, Pennsylvania Disposal Site near Blairsville, Indiana County, Pennsylvania. This site visit was conducted in accordance with NRC guidance dated September 7, 2012. The purpose of the site visit was to observe DOE's routine annual inspection of the facility. The enclosure of this memorandum is the NRC's trip report for this observational site visit.

In summary, DOE representatives conducted the annual inspection in accordance with the guidance provided in the Long-Term Surveillance Plan dated April 2000. No significant regulatory issues or safety concerns were identified during the site visit.

Docket No.: WM-000042

Enclosure:
NRC Trip Report

cc w/encl:
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SUBJECT: NRC OBSERVATIONAL SITE VISIT AT THE BURRELL, PENNSYLVANIA DISPOSAL SITE DATED DECEMBER 21, 2022

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

MONITORING VISIT

Docket: WM-000042

Report: WM-000042/22-002

Licensee: U.S. Department of Energy

Facility: Burrell, Pennsylvania Disposal Site

Location: Blairsville, Pennsylvania

Date: October 27, 2022

Inspector: Andrew Taverna, Health Physicist
Decommissioning, ISFSI, and Reactor Health Physics Branch
Division of Radiological Safety and Security

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Approved by: Anthony Dimitriadis, Chief
Decommissioning, ISFSI, and Reactor Health Physics Branch
Division of Radiological Safety and Security

Attachment: Photographs Taken at the Burrell, Pennsylvania Disposal Site

REPORT DETAILS

1. Background

The licensing, custody, and long-term care requirements of residual radioactive material disposal sites closed under Title I of the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978, as amended, can be found in 10 CFR 40.27. The U.S. Department of Energy (DOE) is the general licensee for these sites and conducts the program for the long-term surveillance and maintenance program for each inactive uranium ore processing site under a Long-Term Surveillance Plan (LTSP) that has been accepted by the NRC. The LTSP provides instructions for institutional control of the site. These controls include deed restrictions, site markers, survey monuments, boundary markers, gates, fences, signs and environmental sampling and analysis. The physical features of the site are inspected once per year by DOE staff. The "Long-Term Surveillance Plan for the U.S. Department of Energy Burrell Vicinity Property Blairsville, Pennsylvania," last revised in April 2000, provides the guidance for DOE in fulfilling the general license requirements.

The Burrell, Pennsylvania Disposal Site is a former railroad landfill located approximately one mile east of the Borough of Blairsville, Indiana County, Pennsylvania. The site is bordered on the south by the Conemaugh River and to the north by Norfolk Southern railroad tracks. The surrounding land is sparsely populated. The site was operated as a railroad landfill from the late 1940s through the late 1960s. The site was believed to have been used for typical railroad wastes, such as ties, cinders, and excess coal. In 1956 and 1957, approximately 11,600 tons of radioactive mill tailings material was removed from the former uranium ore processing site at Canonsburg, Pennsylvania, and transported approximately 50 miles to the Burrell site to be used as fill.

In 1986, the Federal government acquired the Burrell site through condemnation proceedings. Because of the large volume of material and the distance to the Canonsburg site, the DOE consolidated and encapsulated the contaminated material in an onsite disposal cell, designed to minimize precipitation infiltration and control erosion. The cell was constructed by excavating the original fill material and consolidating this material with additional material that had been brought from the Canonsburg site. The disposal cell contains approximately 86,000 tons of material, containing four curies of radium-226 (Ra-226) and occupies approximately 4-5 acres of the 72-acre site. The disposal cell was closed in 1987.

The contaminated material in the cell is covered by a low-permeability layer of compacted clay, a bedding layer, and a protective rock layer. The clay layer is designed to prevent the escape of radon-222 gas (from the decay of the Ra-226) and infiltration of precipitation. The bedding layer allows water to drain down the sloped cell top and the rock cover protects the cell surface against erosion. The area surrounding the cell is graded to promote drainage away from the disposal cell and was vegetated with native species to further prevent erosion. A chain link fence with warning signs surrounds the property to prevent unauthorized access. Locked gates allow for the control of vehicle and pedestrian access. A site marker placed near the entrance of the site identifies the site and shows the date of closure and contents of the cell. Erosion control markers have been placed between the fence perimeter and the river. Contractors perform routine, periodic landscaping maintenance activities (primarily mowing, tree pruning along the

fence, and herbicide application for control of noxious weeds and invasive plants) during the year.

2. Site Status

The DOE conducted the last annual inspection of the Burrell, Pennsylvania Disposal Site in November 2021. The inspection concluded that with the exception of a few minor maintenance items, the disposal cell and all associated drainage diversion structures were in good condition and functioning as designed. No evidence of erosion or slope instability were observed on the disposal cell.

The DOE monitors groundwater quality in samples from eight monitoring wells and two seeps from the cell every five years. The last routine groundwater sampling was conducted in October 2018. Results indicated a potentially significant increase in molybdenum concentration in one of the downgradient wells, and the four downgradient wells were sampled again in 2020 to monitor for a persistent trend. The results of the 2020 data showed that molybdenum was significantly decreased in 2020, indicating that the trend was not persistent. Groundwater monitoring results show that the disposal cell continues to isolate the contaminated waste from the groundwater environment. The next routine sampling is scheduled for 2023.

3. Site Observations and Findings

DOE and its contractors prepared an inspection checklist to identify items to review during the inspection. The checklist included requirements for the inspectors to observe the disposal cell, site perimeter, outlying areas, vegetation, and various site-specific features. The inspection staff included the DOE site manager and two contractors. Inspection observers included two NRC representatives, two Pennsylvania Department of Environmental Protection (PADEP) representatives, and the site herbicide contractor. A U.S. Forest Service Forester was present to perform independent forest inventory and analysis surveys of sections of the site within the fence.

The DOE inspectors checked the disposal cell for evidence of erosion, settlement, slumping, displacement, and any other feature that would require maintenance or repair. The rock surfaces on the side slopes were found to be in good condition. The DOE contractors did not authorize any inspection of the rock surfaces at the top of cell due to the potential for slip and fall injuries. The seep near the north security fence identified during previous inspections was found to be wet but not flowing. The French drain along the base of the cell was inspected and no evidence of ponding was observed. No flow from the outlet of the French drain was observed by the inspectors.

At the time of the observational site visit, the property was enclosed by a chain link fence and locked gates. All gate locks were replaced during this inspection and new numbered keys given to the contractors for future access. Other institutional controls in place at the site included the site marker, perimeter warning signs, boundary monuments, and the erosion control markers. These institutional controls were found to be in place and in good condition, with minor exceptions. Some damage to a boundary marker was noted, and a perimeter sign was missing. Small trees were growing on the top and sides of the disposal cell; DOE is assessing how to manage the trees and is in discussion with NRC as part of the decision-making. No evidence of human intrusion was identified within the

restricted area. An empty hunting blind was discovered in the woods outside the security fence but within the DOE property boundary.

The NRC inspectors measured the ambient gamma exposure rate at several locations using a Ludlum Model 19 micro R meter (NRC No. 82698, calibrated 03/04/22). The background exposure rates ranged from 5-10 microRoentgens per hour ($\mu\text{R/hr}$). The exposure rates throughout the site were not significantly different from background, except for one upgradient (background) monitoring well where gamma exposure rates from the soil surrounding the well pad measured 30-35 $\mu\text{R/hr}$. No burrows, holes, or other degradation of the land surrounding the well was observed. The well pad and well cover stack did not exceed background. A PADEP representative plans to visit the site during the next vegetation maintenance in Spring 2023 to check exposure rates at the well. A previously identified hot spot near the railroad track was surveyed and the maximum exposure rate was 120 $\mu\text{R/hr}$. This spot was first identified by the PADEP in 2004 and is outside the DOE site boundary approximately one mile from the main road.

4. Conclusions

The NRC inspectors concluded that the DOE inspectors conducted the site inspection in accordance with the requirements specified in the LTSP dated April 2000. The disposal cell appeared to be structurally intact, and the cover was in good condition at the time of this visit. No threats to the integrity of the disposal cell were identified.

5. Meeting Summary

The NRC inspectors participated in a planning and coordination meeting with the DOE site manager and site contractors prior to commencing the site inspection. During this meeting, the participants discussed the site status, the inspection plan, potential hazards, and personal protective equipment. At the conclusion of the inspection, the DOE site manager and site contractors noted the site status and recorded minor maintenance needs.

6. Persons Contacted

K. Broberg, Site Lead, Navarro
T. Drake, Site Manager, DOE
B. Wulker, Ecologist, Navarro
C. Rajkovich, PADEP
B. Dowling, PADEP
J. Gould, USFS
T. Biller, LawnRx



Figure 1: Burrell Disposal Cell (looking southwest); image captured on October 27, 2022