



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

July 26, 2018

MEMORANDUM TO: Docket File WM-00066

THROUGH: Janine F. Katanic, PhD, CHP, Chief /RA by *RSBrowder Acting for/*
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

FROM: Linda M. Gersey, Health Physicist /RA/
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

SUBJECT: NRC OBSERVATIONAL SITE VISIT AT THE NATURITA, COLORADO
DISPOSAL SITE

On June 19, 2018, the U.S. Nuclear Regulatory Commission (NRC), Region IV Office, conducted an observational site visit at the U.S. Department of Energy's (DOE) Naturita Disposal Site in Montrose County, Colorado. This observational site visit was conducted in accordance with the NRC's guidance dated September 7, 2012 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML12213A418). The purpose of the observational site visit was to observe the DOE representatives conducting the annual inspection of the Naturita site in accordance with the instructions provided in the NRC-accepted Long-Term Surveillance Plan (LTSP) dated July 1999 (available online at <http://www.lm.doe.gov/Naturita/Disposal/Documents.aspx>). Enclosed to this memorandum is the NRC's report for this observational site visit.

In summary, the DOE representatives conducted the annual inspection in accordance with the guidance provided in the LTSP. No significant regulatory issues or safety concerns were identified during the site visit.

Docket: WM-00066

Enclosure:
NRC Trip Report WM-00066/2018-001

cc w/encl:
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**U.S. NUCLEAR REGULATORY COMMISSION
REGION IV**

Docket: WM-00066

Report: WM-00066/2018-001

Licensee: U.S. Department of Energy

Facility: Naturita Disposal Site

Location: Montrose County, Colorado

Date: June 19, 2018

Inspector: Linda M. Gersey, Health Physicist
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Approved by: Janine F. Katanic, PhD, CHP, Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Enclosure

NRC Observational Site Visit

1 Background

The Naturita Disposal Cell, also known as the Upper Burbank Disposal Cell, was constructed for disposal of wastes from a former vanadium and uranium mill situated in Naturita, Colorado. The disposal cell is located approximately 13 miles north of Naturita, Colorado.

In 1996-1997, the U.S. Department of Energy (DOE) removed approximately 800,000 cubic yards of contaminated soil and debris from the Naturita mill site and transferred the material to the Naturita Disposal Cell. The disposal cell is located in a former rock quarry that was used by Umetco Minerals to produce rip-rap material for its Title II disposal cells. Umetco Minerals placed raffinate crystals from the former Uravan mill in the lower portion of the disposal cell, and DOE placed waste material from the Naturita processing site in the upper portion of the cell. The DOE placed only soils and waste debris into the disposal cell and not uranium mill tailings.

The DOE completed the construction of the disposal cell in 1998. The cell is approximately 650 feet by 700 feet at the base, and occupies an area of approximately 10 acres. The cell is situated on a 27-acre site that is managed by DOE. The cell contains approximately 972,000 dry tons of waste material.

The DOE submitted the “Long-term Surveillance Plan for the Upper Burbank Disposal Cell” to the NRC in July 1999. The NRC reviewed and accepted the long-term surveillance plan (LTSP) by letter dated August 25, 1999 (ADAMS Accession No. ML092960255). The DOE maintains institutional control of the site under the provisions of Title 10 of the *Code of Federal Regulations* (CFR) 40.27.

The LTSP provides instructions for institutional control of the site. These controls include deed restrictions, site markers, survey monuments, boundary markers, gates, fences, and signs. The physical features of the site are inspected once per year by DOE staff.

The DOE conducted the last annual inspection of the Naturita Disposal Site on June 27, 2017, as documented in its “2017 Annual Site Inspection and Monitoring Report for Uranium Mill Tailings Radiation Control Act Title I Disposal sites” (available online at <https://www.lm.doe.gov/Naturita/Disposal/Documents.aspx>). The DOE inspection concluded that no changes were observed on the disposal cell or in the associated drainage features. DOE inspectors identified several routine maintenance needs but found no cause for a follow-up inspection. In summary, no significant maintenance or contingency items were identified during the 2017 inspection.

The previous NRC observational site visit to the Naturita Disposal Site occurred in May 2013 (ADAMS Accession No. ML13156A480). The inspector concluded that the DOE conducted the site inspection in accordance with the requirements specified in the LTSP and that the disposal cell appeared to be structurally intact.

2 Site Status

The site consists of a disposal cell located within a fenced boundary. The cell is bounded on three sides by sandstone bedrock and on the fourth side by a low-permeability embankment. The cover consists of a radon barrier, frost-protection layer, bedding layer, and rip-rap erosion-protection layer. A rip-rap apron surrounds the perimeter of the disposal cell for erosion protection and to channel rainwater away from the cell. A rock-lined interceptor trench is located to the northwest of the cell to divert surface flow around and away from the cell. Disturbed areas around the cell were regraded and seeded with native grasses.

By letter dated October 31, 2013 (ADAMS Accession No. ML13316B561), the DOE notified the NRC that the groundwater monitoring program at the Naturita Disposal Site should be discontinued. The DOE provided data to show that there was no leakage from the disposal cell that impacted the upper aquifer; thus, groundwater monitoring was no longer needed. The NRC responded to the DOE in letter dated April 15, 2014 (ADAMS Accession No. ML13333A806) and agreed that ground monitoring could be discontinued. In the April 2014 correspondence, the NRC requested that the DOE update the LTSP to remove the groundwater monitoring program. By letter dated February 2, 2018 (ADAMS Accession No. ML18037A720) DOE submitted the updated LTSP to the NRC for concurrence. This revision is currently being reviewed by NRC staff.

3 Site Observations and Findings

To conduct the site inspection, the DOE and its contractors created an inspection checklist. 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. The contractors had experience in project management, ecology, and geology. The DOE representatives were accompanied by a representative from the State of Colorado.

The DOE representatives checked the disposal cell for evidence of erosion, settlement, slumping, displacement, and any other feature that would require maintenance or repair. The DOE concluded that the rock surfaces on the top and side slopes were found to be in stable condition. Some sandstone rocks being used as rip-rap appeared to be degrading more rapidly than other rocks, although these sandstone rocks were only a small fraction of the overall rock surface volume. Sediment and vegetation were identified in the interceptor trench, but this sediment and vegetation did not appear to impact the ability of the trench to perform its intended function. Some minor rills and other signs of erosion were observed in the area up-gradient of the interceptor trench, but the size of the rills and erosion appeared consistent with the 2017 observations.

At the time of the observational site visit, the property was enclosed by a barbed-wire stock fence and locked gates. Other institutional controls in place at the site included 14 boundary monuments, 3 survey monuments, 2 site markers, and 25 perimeter warning signs. These institutional controls were found to be in place and in good condition, with minor exceptions. The fence wires were damaged in certain locations due to wildlife activity. No deep-rooted vegetation was identified on the top or side slopes of the cell. No evidence of human intrusion was identified within the restricted area.

The NRC inspector measured the ambient gamma exposure rates using a Ludlum Model 19 microRoentgen meter calibrated to radium-226 (NRC No. 015530, calibration due date of July 25, 2018). The background exposure rate was approximately 15 microRoentgens per hour ($\mu\text{R/hr}$). The exposure rates on top of the disposal cell ranged from 10-15 $\mu\text{R/hr}$, and the exposure rates around the disposal cell ranged from 14-250 $\mu\text{R/hr}$. The highest exposure rates were measured near abandoned uranium mine shafts located northwest of the disposal cell. No residual radioactive contamination or naturally occurring radioactivity was identified within the footprint of the disposal cell.

4 Conclusions

The NRC inspector concluded that the DOE representatives conducted the site inspection in accordance with LTSP and 10 CFR 40.27 requirements. The condition of the site was nearly identical to the condition that was reported during the previous year's DOE inspection, as documented in its 2017 annual site inspection and monitoring report. The disposal cell appeared to be structurally intact, and the cover was in stable condition. No threats to the integrity of the disposal cell were identified.

5 Meeting Summary

The NRC inspector participated in planning meetings with the DOE site manager and site contractor prior to the site inspection. During this meeting, the participants discussed topics such as site status, inspection plan, and potential hazards.

6 Persons Contacted

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A. Kuhlman, Site Lead, Navarro Research and Engineering, Inc.
M. Cosby, Colorado Department of Public Health and the Environment

NRC OBSERVATIONAL SITE VISIT AT THE NATURITA, COLRADO DISPOSAL SITE, DATED
 JULY 26, 2018

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ADAMS ACCESSION NUMBER ML18194A933

<input checked="" type="checkbox"/> SUNSI Review By: LMG	ADAMS <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available	<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive	Keyword: NRC-002
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