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

May 31, 2013

MEMORANDUM TO: Docket File WM-00086

THROUGH: D. Blair Spitzberg, Ph.D., Chief ***/RA/***
Fuels Safety and Decommissioning Branch
Division of Nuclear Materials Safety

FROM: Robert J. Evans, CHP, PE, Senior Health Physicist ***/RA/***
Fuels Safety and Decommissioning Branch
Division of Nuclear Materials Safety

SUBJECT: NRC OBSERVATIONAL SITE VISIT AT THE SLICK ROCK, COLORADO DISPOSAL SITE

On May 14, 2013, a U.S. Nuclear Regulatory Commission (NRC) Region IV inspector conducted an observational site visit at the U.S. Department of Energy's (DOE) Slick Rock Disposal Site in San Miguel County, Colorado. This site visit was conducted in accordance with NRC guidance dated September 7, 2012 (ML12213A418). The purpose of the site visit was to observe DOE's routine, annual inspection of the facility. Enclosed to 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 May 1998. No significant regulatory issues or safety concerns were identified during the site visit.

CONTACT: Robert J. Evans, RSFB
817-200-1234

Docket No. WM-00086

Enclosure:
NRC Trip Report

cc w/encl: Jason Nguyen, Site Manager
U.S. Department of Energy
Office of Legacy Management
2597 Legacy Way
Grand Junction, CO 81503

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Draft: S:\DNMS\!RSFS\RJE\Slick Rock Disposal Site Visit 2013.docx
Final: R:_DNMS\!2013\Slick Rock Disposal Site Visit 2013.docx ML

ADAMS: ☐No ■ Yes	■ SUNSI Review Complete	Reviewer Initials: RJE
	■ Publicly Available	■ Non-Sensitive
	☐ Non-publicly Available	☐ Sensitive

RIV:DNMS/RSFS	C:RSFS		
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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	WM-00086
Report:	WM-00086/13-001
Licensee:	U.S. Department of Energy
Facility:	Slick Rock Disposal Site
Location:	San Miguel County, Colorado
Date:	May 14, 2013
Inspector:	Robert J. Evans, CHP, PE, Senior Health Physicist Fuels Safety and Decommissioning Branch
Approved by:	D. Blair Spitzberg, Ph.D., Chief Fuels Safety and Decommissioning Branch Division of Nuclear Materials Safety
Attachment:	Photographs Taken at the Slick Rock Disposal Site

Enclosure

NRC Trip Report

1 Background

The Slick Rock Disposal Cell, also known as the Burro Canyon Disposal Cell, was constructed for disposal of wastes from two former mills located on the Dolores River near Slick Rock, Colorado. The North Continent mill operated from 1931 until the early 1960s, while the Union Carbide mill operated from 1957-1961.

In 1995-1996, the U.S. Department of Energy (DOE) relocated uranium mill tailings and residual radioactive material from the two sites and placed them in the Slick Rock Disposal Cell. Approximately 134,300 cubic yards of material was relocated from the North Continent mill site, and approximately 671,000 cubic yards of material was relocated from the Union Carbide mill site.

The DOE completed the construction of the disposal cell in December 1996. The cell is approximately 630 feet by 900 feet at the base, and the cell occupies an area of approximately 12 acres. The cell is situated on a 62-acre site that is managed by DOE. The cell contains approximately 1.1 million dry tons of tailings and waste material.

The cell was constructed at an angle into the ground surface. The depth of the cell ranges from 7-20 feet below ground surface. The material was placed into the excavated area and covered with a radon barrier, frost protection layer, bedding layer, and erosion protection layer. The top of the cell is approximately 50-feet above ground surface. A rip-rap apron surrounds the perimeter of the disposal cell for erosion protection and to channel rainwater away from the cell. The disturbed areas around the cell were regraded and seeded with native grasses. A retention pond was constructed downgradient of the cell, for collection of rainwater.

The DOE submitted the “Long-term Surveillance Plan for the Burro Canyon Disposal Cell” to the NRC in 1998. The long-term surveillance plan (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 LTSP does not require groundwater monitoring at this site because the uppermost aquifer is not a current or potential source of drinking water based on the low yield of the uppermost aquifer. The DOE maintains institutional control of the site under the provisions of 10 CFR 40.27.

The LTSP previously provided instructions for DOE to conduct water level monitoring for an interim period of time. The DOE monitored the water level within the cell using standpipes. By letter dated June 29, 2001, DOE requested NRC approval to terminate water level monitoring. The NRC approved DOE’s request in February 2002. The standpipes have since been filled with bentonite, but the standpipes continue to remain in place at the disposal cell.

2 Site Status

The last annual DOE inspection of the Slick Rock Disposal Site was conducted in May 2012. The inspection concluded that the rock cover, side slopes, trench, and apron of the disposal cell were in excellent condition. No evidence of settling, slumping, or erosion was seen on any of the rock-covered surfaces. Rills were observed within the

site boundary but off the disposal cell. The most significant rills and erosional features were observed in the area between the disposal cell and the retention pond. The DOE staff concluded that none of the rills or other erosional features posed a hazard to the disposal cell. In summary, the DOE staff did not identify any significant maintenance or contingency items during the 2012 inspection.

3 Site Observations and Findings

To conduct the site inspection, 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 inspectors were accompanied by a representative from the State of Colorado.

The DOE inspectors checked the disposal cell for evidence of erosion, settlement, slumping, displacement, and any other feature that required maintenance or repair. The rock surfaces on the cover and side slopes were found to be in excellent condition. The DOE inspectors identified one low area in the southwestern apron. This low area was characterized as 40-50 feet long, 2-3 feet wide, and several inches deep. The DOE staff noted this low area on the site map and planned to observe the status of this area over time.

The rills and erosion gullies observed during the 2012 inspection were still visible. The DOE staff concluded that the erosion had not changed significantly since the previous inspection. In summary, the DOE staff did not consider the off-cell erosion to be significant, and the erosion had no observable impact on the disposal cell itself. The DOE staff did not believe that repairs were necessary at this time, but the DOE staff will continue to monitor site erosion during future inspections.

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 six boundary monuments, three survey monuments, two site markers, and 32 perimeter warning signs. These institutional controls were found to be in place and in good condition, with minor exceptions. The fence wires appeared to be damaged in certain locations due to wildlife crossing the fences. 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. 015525, calibration due date of 05/14/13). The background exposure rates ranged from 9-11 microRoentgens per hour (μR/hr). The exposure rates on top of the disposal cell ranged from 8-10 μR/hr, and the exposure rates around the disposal cell ranged from 8-11 μR/hr. No residual radioactive contamination or naturally occurring radioactivity was identified at the disposal cell.

4 Conclusions

The NRC inspector concluded that the DOE inspectors conducted the site inspection in accordance with the requirements specified in the LTSP dated May 1998. The disposal cell appeared to be structurally intact, and the cover was in excellent 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

M. Cosby, Environmental Protection Specialist, State of Colorado
M. Kautsky, Site Manager, DOE
J. Nguyen, Site Manager, DOE
L. Sheader, Ecologist, S. M. Stoller Corp.
D. Traub, Geologist/Project Manager, S. M. Stoller Corp.

Figure 1: Site marker SMK-2 located at crest of the Slick Rock Disposal Cell


Figure 2: Dividing line in erosion protection layer between top and side slopes


Figure 3: Retention pond located south of disposal cell (looking south)


Figure 4: Minor erosion at northeastern corner of retention pond (looking south)