LMS/BAA/48990

Bayo Canyon Aggregate Area, Los Alamos, New Mexico, Site Visit

August 2024

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Contents

Abbreviations

BCAA	Bayo Canyon Aggregate Area
DOE	U.S. Department of Energy
FUSRAP	Formerly Utilized Sites Remedial Action Program
IA	Interim Action
JSA	job safety analysis
LANL	Los Alamos National Laboratory
LM	Office of Legacy Management
LMS	Legacy Management Support
NMED	New Mexico Environment Department
POD	plan of the day
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SWMU	solid-waste management unit
TA	Technical Area

1.0 Introduction

A team representing the U.S. Department of Energy (DOE) Office of Legacy Management (LM) and its Legacy Management Support (LMS) contractor visited the Bayo Canyon Aggregate Area (BCAA), New Mexico, Site near Los Alamos on August 6, 2024. The purpose of the visit was twofold. First, the team conducted an infield observation of the three interpretive signs installed by Los Alamos County in fall 2023. Second, the team conducted a site tour of the Formerly Utilized Sites Remedial Action Program (FUSRAP) Bayo Canyon, New Mexico, Site remediated area.

The LM and LMS participants for the site visit were as follows:

- Mr. Andrew Keim, LM site manager
- Ms. Michelle Franke, LM site manager
- Mrs. Miquette Gerber, LMS program manager
- Ms. Michele Miller, LMS site lead

This report summarizes the visit and condition assessment of the FUSRAP assets that were observed during the site walkdown. Although there was a missing site marker, no potential long-term stewardship adverse impacts were observed based on information gathered from the site visit. Last, no new site risks were identified during the August 2024 site visit.

2.0 Site Summary

This section includes a summary of the BCAA site history and notations of site condition observations.

2.1 BCAA Site Brief History

The BCAA site, consisting of approximately 350 acres, was used as a weapons-firing test site from 1943 to 1961. The site at that time was known as Technical Area (TA)-10. Structures were constructed to test assemblies that contained conventional high explosives, including some components made from depleted or natural uranium. The principal structures associated with the area at that time were a radiochemistry laboratory, an assembly building, inspection buildings, a personnel building, structures at two detonation-control complexes, and adjacent firing pads. The TA-10 area also included various ancillary facilities associated with waste disposal, particularly for the radiochemistry laboratory. Associated facilities included (1) sewage lines, manholes, septic tanks, and seepage pits for sanitary and radioactive liquid waste; and (2) disposal pits for solid radioactive waste (Mayfield et al. 1979). The site was remediated in 1957 and again from 1960 through 1963. Most of the buildings were burned in place, and the ash and debris were removed and disposed of at the main disposal area for the Los Alamos complex. More than 550 dump-truck loads of contaminated waste was excavated and removed. The excavations were backfilled, and the site was regraded (Mayfield et al. 1979). After those remediation efforts, the site was transferred via a quitclaim deed to Los Alamos County in 1967.

A Comprehensive Environmental Assessment and Response Program field survey was conducted around the firing sites, in an area now known as Consolidated Unit 10-001(a)-99, that identified the presence of metal cable and small pieces of shrapnel. The shrapnel consisted of aluminum and steel with small amounts of lead, wood, and other shot residue (DOE 1986). During the survey, six survey monuments and associated guard posts were installed in an area that roughly encompasses the old liquid waste disposal complex, the radiochemistry laboratory, and the area of the waste disposal pit. The monuments are marked "buried radioactive material; no excavation prior to 2142 AD; see county records" (DOE 1986).

In 1993, geomorphic mapping identified various types of radioactively contaminated shrapnel in the TA-10 area (Drake and Inoué 1993). These results prompted an Interim Action (IA) to remove shrapnel from Bayo Canyon (LANL 1997). Shrapnel removal began in September 1994 and was completed by January 1995. More than 19,000 pieces of shrapnel were collected during the surface shrapnel removal operation. A total of 458 pieces (2.4%) were found to emit radioactivity levels that exceeded local background levels.

In 1994, surface and subsurface sampling was conducted in accordance with a Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI), to determine if residual RCRA chemicals—particularly barium, beryllium, or lead—existed in surficial deposits near the firing pads (i.e., at solid-waste management units [SWMUs] 10-001[a]–[d]) and to confirm no human health or ecological risks were associated with the radiological constituents identified in previous investigations (LANL 1995). The objective of the RFI was "to characterize the nature, concentration, and lateral and vertical extent of potential subsurface contamination related to historic activities at the site" (LANL 1996a; LANL 1996b). Radionuclides were retained as contaminants of potential concern at SWMUs 10-003(a)–(o), 10-007, and 10-002(b), and an IA was recommended to remove chamisa plants containing elevated levels of strontium-90 (LANL 1996a; LANL 1996b). To control access to the area, a fenced exclusion zone was constructed and the area was posted as a radiation control area. Stormwater control measures, including silt fences and straw waddles, were put in place along the northern and eastern parts of the site to capture runoff. Straw bales were placed along the edge of a channel that emerges from a culvert along the western part of the site to prevent run-on (LANL 1997). After a final inspection on July 5, 2001, the Los Alamos National Laboratory's (LANL) Water Quality and Hydrology Group determined the area was stabilized and no further inspections were necessary (Veenis 2005).

On March 1, 2005, LANL, the DOE Office of Environmental Management, and the New Mexico Environment Department (NMED) entered into an Order of Consent to remediate LANL (25,600 acres), which includes the BCAA site (NMED 2005). In 2007, an RFI was conducted (1) to address specific requirements for the Bayo Canyon site contained in the Section IV.C.5.c, "Technical Area 10 Investigation," in the Order of Consent; and (2) to complete the characterization of the site as specified in the approved Bayo Canyon Aggregate Area Investigation Work Plan (LANL 2005).

On January 31, 2017, NMED issued a Certificate of Completion for the BCAA site since all areas were determined to meet applicable standards and could be released for recreational or residential use. Today, the BCAA site, owned by Los Alamos County, is open to the public for recreational activities such as hiking, mountain biking, and horseback riding.

2.2 BCAA Site Observations

As with every LMS project visit, a job safety analysis (JSA) and a plan of the day (POD) were prepared in advance. Participants were briefed on the safety requirements in the JSA in advance of the site visit. Following the site visit pre-tour discussion, all participants signed the JSA to acknowledge their understanding of the potential hazards at the site. Similarly, the POD was discussed, and then participants acknowledged their understanding of activities planned for the visit.

The BCAA site contains approximately 350 acres of a parklike forest setting that is open to the public for recreational use. The BCAA site provides ample recreational venues for bike riding, walking on trails, and horseback riding. The FUSRAP Bayo Canyon site is in the central portion of the BCAA site and was one of the focus areas to be observed during this visit. The LM team inspected this 1.5-acre LM site and surrounding area, and the following observations were made:

- There are numerous signs posted throughout the Bayo Canyon site, including along the road at the entrance to this dawn-to-dusk public park. Los Alamos County, as the property owner, continues to do an excellent job maintaining the hundreds of acres for public use (Photo 1).
- A new addition near the FUSRAP area were the three LM designed and fabricated interpretive signs that were installed by Los Alamos County in fall 2023. These signs, donated to Los Alamos County, convey the site history, the cleanup, and the recreation use of the Bayo Canyon site (Photo 2).

Photo 1. View of Bayo Canyon Site Recreation Area

Photo 2. LM and LMS Staff Visiting the Site and Signage

- Overall, the six sets of three bollards and six markers installed in 1982 were found to be in good condition. Two bollards were observed to have bulges on one side but remain intact and protective (Photo 3). However, site marker 1/monument A was missing by assumed theft (Photo 4 and Photo 5). LM will continue to monitor the stability of the bollards, and replacement of the missing marker will be planned as a Bayo Canyon FUSRAP site activities in fiscal year 2025. No maintenance action is required at this time.

Photo 3. Example of Bollard Bulge

Photo 4. Location of Missing Site Marker #1/Monument A (Center of Bollards)

Photo 5. Example of Missing Site Marker

There are no new issues identified that could affect the long-term stewardship of the Bayo Canyon site.

On the basis of the August 2024 site visit, there were no new risks observed that warranted new inputs in the life-cycle baseline risk register for the Bayo Canyon site.

3.0 References

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