Los Alamos National Laboratory

Overview

The EM Los Alamos Field Office (EM-LA) is dedicated to the cleanup of legacy contamination of radioactive and chemical materials and waste resulting from operations during the Manhattan Project and Cold War eras at LANL in New Mexico. EM-LA's cleanup scope includes legacy waste remediation and disposition, soil and groundwater remediation, and deactivation and decommissioning of excess buildings and facilities. Newly generated waste (waste post-1999) at LANL is the responsibility of NNSA.

Of the more than 2,100 contaminated areas originally identified for remediation at LANL, more than half (approximately 1,100) have been cleaned and closed, ranging from small spill sites with a few cubic feet of contaminated soil to large landfills encompassing several acres. There are two legacy groundwater contamination plumes that are being characterized and managed by EM-LA using subsurface control techniques. One plume contains hexavalent chromium and is being managed by a pump-and-treat system on an interim basis while a final remedy is under development. The second plume has chemical constituents related to early explosives work and is undergoing characterization to determine potential remediation alternatives.

Approximately 400,000 cubic meters of legacy hazardous and radioactive waste is located at LANL. Most of this waste is buried in 26 material disposal areas (MDAs) dispersed throughout LANL. Eight of these MDAs have been closed. There are approximately 3,500 cubic meters of legacy TRU waste stored at Technical Area 54, MDA G destined for disposal at WIPP. The waste is stored in a configuration that is protective of the environment, workers, and the public.

In the first half of 2020, small amounts of legacy material with very low levels of contamination were discovered in land that had been previously conveyed to Los Alamos County. Subsequent excavation of the area, known as the Middle DP Road Site, unearthed small amounts of legacy material that was subsequently removed with no impact on the environment or to the community. EM-LA will conduct additional screening on the site in 2021.

An environmental professional installs a compost sock to control migration of storm water from a historical LANL Site in Pajarito Canyon.

As part of its ongoing commitment to transparency and to maintaining a dialog with local communities and Pueblos on legacy cleanup, EM-LA frequently participates in public discussions on its mission at stakeholder-led events, such as Northern New Mexico Citizens' Advisory Board meetings, Los Alamos County Council meetings, and Regional Coalition of LANL Communities meetings. EM-LA also hosts monthly Technical Working Group meetings with stakeholders and quarterly Environmental Management Cleanup Forums, both of which focus on ongoing cleanup activities and future cleanup priorities.

Calendar Year 2020 Accomplishments

- **Remediated/repackaged 67 cubic meters of TRU waste for final disposal**
- **Completed the investigation, remediation, and restoration of soil under the Known Cleanup Sites Campaign to meet commitments to the State of New Mexico**
- **Disposed of 342 cubic meters of LLW and MLLW, exceeding the goal of 325 cubic meters**
- **Remediated 1,487 cubic meters of contaminated soil and debris**
- **Performed initial investigation and remediation of the Middle DP Road Site**

Planned Cleanup Scope 2021–2031

Over the coming decade, DOE will focus on addressing the groundwater contamination plumes, processing TRU waste stored aboveground, and retrieving below-ground TRU waste for off-site disposal. DOE will also work to complete disposition of LANL TRU waste currently in storage at the Waste Control Specialists (WCS) commercial disposal site in Texas. Depending on the disposition approach needed, DOE hopes to ship the TRU waste containers stored at WCS to WIPP in the near term. However, testing and analysis of the drum contents is ongoing and DOE's ability to ship is largely dependent upon the outcome of those analyses.

Characterization of the Middle DP Road Site will continue in 2021 with final remediation expected in 2022, depending on the results of the screening effort.

Legacy cleanup at LANL is organized into 18 campaigns. Work is ongoing in 11 campaigns, while three campaigns have been completed. Site investigations will continue and, where required, contaminated soil will be removed from the site and transported for off-site disposal with sampling to confirm compliant cleanup. In 2022, a final remedy for the hexavalent chromium plume is expected to be identified and proposed for regulatory approval, while the Chromium Plume Interim Measure will continue operation. In 2023, the final remedy for the Royal Demolition Explosives groundwater plume will similarly be proposed for regulatory approval.

Beginning in 2024, deactivation and decommissioning of Building 257, industrial waste lines, and DP West slabs in Technical Area 21 (TA-21) will be performed. This will be followed by the investigation and remediation of the TA-21 Solid Waste Management Units and Areas of Concern (AOC). Aggregate area campaigns, including the Southern External Boundary,

An EM TRU waste shipment from the Radioassay and Nondestructive Testing facility at LANL departs for WIPP.

Pajarito Watershed, and Upper Watershed, will be completed in succession, finishing in 2026, and will involve the removal of a variety of materials. The latter part of the decade will see considerable focus on completing the closure of disposal areas.

Over the coming decade, work at TA-54 will center on processing and disposition to off-site disposal facilities of aboveground waste inventories and retrieval, processing, and disposition of below-ground waste placed in long-term storage configurations. Inventory reduction is essential to allow demolition of structures within MDA G and will allow permanent closure of MDA L and MDA G. Waste treatment process lines, necessary to meet off-site disposal facility requirements, are currently active, but will be modified to address the range of materials requiring treatment. Retrieval processes will be developed for below-ground legacy waste, as necessary, to exhume waste containers of various sizes and content. Some waste items will require size reduction to facilitate packaging for transport.

Key Regulatory Milestones 2021–2031

The 2016 Consent Order between DOE and the New Mexico Environment Department (NMED) establishes an annual process by which both agencies jointly determine cleanup activities. Cleanup campaigns in the 2016 Consent Order are organized using a risk-based approach to grouping, prioritizing, and completing corrective action activities. Campaign activities may be subject to two types of deadlines: milestones within the current fiscal year, which are enforceable, and targets in the subsequent two fiscal years, which are not enforceable. DOE and NMED establish approximately 10 to 20 Consent Order milestones annually.

A stormwater sampling station in Pueblo Canyon is inspected by an environmental professional.

Post-2031 Cleanup Scope

Activities associated with the deactivation and decommissioning of TA-54 structures and subsequent closure of MDA G and MDA L are expected to extend beyond 2031. In addition, remote-handled TRU waste buried in 33 shafts at TA-54 MDA G is slated for exhumation and disposal at WIPP. This work will require additional facility infrastructure to ensure the waste is safely excavated and processed to enable shipment to WIPP.