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Date: July 10, 2025

Mr. JohnDavid Nance, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6313

Subject: Part B Permit Application for Renewal of the Los Alamos National Laboratory Hazardous Waste Facility Permit, EPA ID #NM0890010515

Dear Mr. Nance:

This letter transmits the most recent version of the renewal application for the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit to the New Mexico Environment Department-Hazardous Waste Bureau (NMED-HWB) on behalf of the U.S. Department of Energy (DOE). In accordance with the 2010 LANL Hazardous Waste Facility Permit, the Permittees are authorized to manage, store, and treat hazardous waste at LANL. The Permittees consist of DOE and its field offices, the National Nuclear Security Administration, Los Alamos Field Office (NA-LA) and the Environmental Management, Los Alamos Field Office (EM-LA), together with Triad National Security, LLC (Triad) and Newport News Nuclear BWXT-Los Alamos, LLC (N3B). Per Permit Section 1.6.5, *Permit Re-Application*, the Permittees submitted a complete application for a new permit in June 2020. The submittal of the Part B permit application conformed to the requirements in Title 40 of the Code of Federal Regulations (CFR) § 270.51 for continuation of a permit if a timely application is submitted. Enclosure 1, Part B Permit Application for Renewal of the Los Alamos National Laboratory Hazardous Waste Facility Permit, Revision 1.0, provides updates based upon current permit status.

This application addresses the required general and specific Part B information in 40 CFR §§ 270.14 through 270.28 for the Permittees to obtain NMED approval to continue to treat and store hazardous waste in specified hazardous waste management units under the current Permit. The Permittees do not propose modifying any permitted units. However, the Permittees propose certain minor changes to the current Permit conditions, text and attachments described in the application. Changes associated with two previously submitted Class 3 permit modification requests have been incorporated for completeness.

The first Class 3 permit modification request included within the renewal application was submitted in 2017 in accordance with the Settlement Agreement reached in U.S. v. Curry, DC NM Case No. 10-01251. The application also retains the corrective action complete (CAC) petition, a Class 3 permit modification request. The NMED-HWB's May 12, 2025, correspondence construed removal of this permit modification request. However, to comport with requirements for submitting a complete and accurate application, DOE submits this application that retains the CAC permit modification request. DOE originally submitted the CAC permit modification request to the NMED-HWB on September 30, 2021.

The NMED-HWB determined the CAC permit modification request to be administratively complete, and it is now a component of the renewal application. The NMED-HWB has had ample opportunity to complete its review, and it is appropriate to move these Solid Waste Management Units/Areas of Concern from requiring corrective action to corrective action complete. Moreover, per 20.4.2.207 New Mexico Administrative Code (NMAC), the NMED-HWB was to have completed this review within 270 days. That time has long since elapsed—it elapsed June 27, 2022 (over 1,100 days ago)—and the Secretary of NMED did not grant an extension of time for good cause in accordance with 20.4.2.201.B(1) NMAC. In addition, after the NMED-HWB did not meet this review date, the NMED-HWB also did not provide the requisite written notice per 20.4.2.201.B(6) NMAC.

Lastly, DOE and Triad also seek incorporation of three interim status treatment units into the Permit that were previously submitted as Class 3 permit modification requests.

The required Part A permit application, including the required information described in 40 CFR § 270.13, will be submitted under a separate cover letter and enclosure.

The Part B application, included as Enclosure 1, consists of three volumes that do not contain sensitive information and are approved for unlimited release to the public. Information submitted as part of Enclosure 2 is provided in a separate envelope marked Unclassified Controlled Nuclear Information (UCNI) as defined by the Atomic Energy Act, Section 148 and 10 CFR §1017. The envelope includes information that is characterized as UCNI as well as other controlled unclassified information (CUI) formerly included within Permit Attachment D, *Contingency Plan*. This information is submitted as confidential information in compliance with 40 CFR § 270.12 requirements and is for NMED's use only and must be managed and stored appropriately. If there are any questions as to what type of arrangements are required for management of UCNI information, please contact the Permittees.

Three hard copies and one electronic copy (omitting the UCNI information) of the application will be provided to the NMED-HWB. The hard copies include the full Part B application along with proposed text changes. The electronic copy, which will only be provided to the NMED-HWB, contains a reproduction of the hard copy in portable document format (pdf) along with word processing files, modeling files, analytical data sets, and other information utilized to prepare the application.

If you have questions or comments for Triad concerning this submittal, please contact Robert A. Gallegos (NA-LA) at (208) 569-0377 or Luciana Vigil-Holterman (Triad) at (505) 665-3435.

If you have questions or comments for N3B concerning this submittal, please contact Brian Harcek (EM-LA) at (505) 692-4261 or Christian Maupin (N3B) at (505) 695-4281.

Sincerely,

THEODORE WYKA
Digitally signed by THEODORE WYKA
Date: 2025.07.10 16:39:53 -06'00'

Theodore A. Wyka
Manager
U.S. Department of Energy
National Nuclear Security Administration
Los Alamos Field Office

Sincerely,

JESSICA KUNKLE
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Date: 2025.07.09 12:36:57 -06'00'

Jessica M. Kunkle
Manager
U.S. Department of Energy
Environmental Management
Los Alamos Field Office

Enclosures: 1) Part B Permit Application for Renewal of the Los Alamos National Laboratory Hazardous Waste Facility Permit, Revision 1.0, EPA ID #NM0890010515 (Volumes 1, 2, & 3)

2) Unclassified Controlled Nuclear Information for the 2025 Los Alamos National Laboratory Part A and Part B Permit Applications LA-CP-25-20083 (submitted to NMED only under a separate cover)

copy w/enclosures:

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Enclosure 1

Part B Permit Application for Renewal of the Los Alamos National Laboratory Hazardous Waste Facility Permit, Revision 1.0

Volume 1

EPA ID# NM0890010515

Includes:

Compiled comments and responses, Revised Part B Application, and Appendices 1-3

Prepared by:

Los Alamos National Laboratory
Environmental Protection and Compliance Division
Los Alamos, New Mexico 87545

Compiled and Revised Responses to March 2021, January 2022, and August 2022 Administratively Incomplete Comments Part A and General Part B of the Los Alamos National Laboratory Hazardous Waste Facility Permit Renewal Application

Introduction

This document represents a compilation of comments from the New Mexico Environment Department-Hazardous Waste Bureau (NMED-HWB), and responses from the U.S. Department of Energy (DOE), Triad National Security, LLC (Triad), and Newport Nuclear BWXT-Los Alamos, LLC (N3B) collectively, the Permittees. The comments and responses concern the administratively incomplete determination by the NMED-HWB on the Los Alamos National Laboratory Hazardous Waste Facility Permit (Permit) Renewal Application.

The Los Alamos National Laboratory (Laboratory or LANL) is a Federally Funded Research and Development Center (FFRDC) and National Security Laboratory that executes work across numerous missions, including national security, science, and energy. LANL is managed and operated by Triad under contract with the DOE National Nuclear Security Administration (NNSA), and Triad executes these national security, science, and energy missions. The terms LANL or Laboratory and Triad are synonymous in most circumstances. The hazardous waste management units (HWMU) that Triad operates in association with its Laboratory management and operation activities are clearly defined in the Permit and Permit Renewal Application, are deemed DOE-Triad units, and these HWMUs are permitted for Triad operations. At the LANL site, and off the LANL site in the surrounding area, N3B, under contract with the DOE Office of Environmental Management (EM), executes EM's legacy environmental remediation mission. The HWMUs that N3B operates in association with its legacy environmental remediation activities are clearly defined in the Permit and the Permit Renewal Application, are deemed the DOE-N3B units, and are permitted for N3B operations. The Permit defines the Facility as the "Los Alamos National Laboratory site" (LANL site), which is more than, and distinct from, the Laboratory or LANL. The LANL site is where the execution by separate entities of multiple and varied missions, including Triad's national security, science, and energy missions, and the legacy environmental remediation mission of others, occurs. Although DOE, Triad, and N3B are collectively co-Permittees, the responsibility for each mission's execution and any liabilities associated with a mission's operations attach to the separate co-Permittees.

The Permittees received formal communication from the NMED-HWB in March 2021 and January 2022, and additional follow-up comments to be addressed were sent via e-mail in August 2022. In a letter dated March 28, 2023, the Permittees outlined the proposed path forward for the Permit Renewal Application. The NMED-HWB responded in a letter dated November 15, 2024, requesting that Permittees submit a revised Permit Renewal Application within 180 days. An additional extension of 60 days was granted by the NMED-HWB on May 12, 2025.

This document reproduces the comments received from the NMED-HWB and provides the Permittees' responses to those comments as provided in the initial response or as a new response (for those comments received in August 2022 or November 2024). These responses are intended to convey information that addresses the NMED-HWB's comments or communicates where requested information can be found in the Permit Renewal Application. The responses also convey information concerning the Laboratory's thermal treatment operations, which are a focus of the NMED-HWB's comments.

Supplement Information Related to the Permitting of the Open Burning and Open Detonation Units

LANL performs mission-critical specialized explosives research, development, testing, evaluation, and post-manufacture (RDT&E) work. The Laboratory generates limited and discrete quantities of specialized explosives waste in performing this mission-critical work. Specialized explosives waste is unique, heterogenous, highly energetic, potentially unstable, and possesses properties, morphologies, or characteristics that are difficult to

discern and can be unpredictable.

The Laboratory's three thermal treatment units (one burning and two detonation units) safely and compliantly treat this specialized explosive waste in a manner that is protective of human health and the environment. Site studies confirm no environmental impact from the Laboratory's thermal treatment operations. The Laboratory implements technology and processes at the open burning treatment unit that results in highly controlled thermal treatment operations that are an alternative to standard open burning practices. These controls include high temperatures (over 1500 ^{o}F within 4 minutes), safe and complete combustion of explosives, and operational controls that ensure safe treatment of waste that protects human health and the environment. Each thermal treatment unit is designed to completely combust or consume the waste material. There is currently no safe, available, and environmentally more protective alternative treatment technology for the Laboratory's specialized explosives waste.

To address NMED's concerns and comments associated with the permitting of the thermal treatment units, the Permittees conducted an exhaustive Alternatives Analysis, provided as Supplement 4-1 within this application. Triad evaluated all currently available alternative treatment technologies and objectively reviewed each for suitability based on safety, environmental impact, secondary waste production, combustion efficiency. Based upon the extensive review conducted by Triad, it was determined that there currently exists no better treatment technology for Triad's explosive waste than those afforded by open burning and open detonation. Triad is committed to its continued evaluation of alternative treatment technologies in anticipation of industry improvements in thermal treatment.

Comment Responses

NMED-HWB Comment (March 2021)

General Part A

1. 40 CFR 270.14(c)(4), Extent of Groundwater Contamination Plume:

A description of any plume of contamination that has entered the ground water from a regulated unit at the time that the application was submitted that:

(i) Delineates the extent of the plume on the topographic map required under 270.14(b)(19) of this section;

(ii) Identifies the concentration of each appendix IX, of part 264 of this chapter, constituent throughout the plume or identifies the maximum concentrations of each appendix IX constituentin the plume.

The United States Department of Energy (DOE), Newport Nuclear-BWXT (N3B), and Triad National Security, LLC. (Triad), collectively the Permittees, have not provided maps depicting the extent of the existing ground water plumes at the LANL Facility (Facility, as defined in 40 CFR 260.10) in accordance with the above requirements. Maps 2 and 3 show National Pollution Discharge Elimination System (NPDES) site locations and other groundwater monitoring wells, however, these maps do not provide contaminant plume boundaries. Include maps depicting extent of plumes and maximum concentration of contaminants on a topographic map as required by 40 CFR 270.14(b)(19).

Permittees Response (June 2021)

There is no evidence of groundwater contamination associated with the regulated units at LANL; therefore, a map of groundwater contamination plumes is not included within the Permit and was not

included within the Permit Renewal Application. As described in Permit Renewal Application Section 2.16, *Groundwater Monitoring*, groundwater at LANL is monitored under the 2016 Consent Order by the LANL Interim Facility-Wide Groundwater Monitoring Plan. There are no changes proposed to Permit Section 11.3.1, *Groundwater Monitoring* presented in the Permit Renewal Application Section 2.16. All known groundwater plumes are from SWMUs/AOCs, and are addressed under the Consent Order. As a courtesy, the most recent published plume maps for chromium and RDX are attached to this response (Attachment 2). These plume maps have already been provided in the *Quarterly Report for the Discharge of Treated Groundwater to the Regional Aquifer under Discharge Permit 1835, Calendar Year 2020 Quarter 4,* submitted to NMED-HWB February 26, 2021, and *Investigation Report for Royal Demolition Explosive in Deep Groundwater*, submitted to NMED-HWB on August 29, 2019, located in the N3B electronic reading room, https://ext.em-la.doe.gov/eprr/readingroom.aspx?room=2. It should be noted that concentration/plume maps will change based upon data results.

Permittee Response (July 2025)

The most recent published plume maps for chromium and RDX that were included in the June 2021 response are described in text within Section 2.16 of the Permit Renewal Application. The maps are included as Figures 2-4 and 2-5 in this Permit Renewal Application.

NMED-HWB Comment (March 2021)

2. 40 CFR 270.14 (b)(11), Facility Location:

Facility location information:

(i) In order to determine the applicability of the seismic standard (40 CFR 264.18(a)) the owner or operator of a new facility must identify the political jurisdiction (e.g., county, township, or electiondistrict) in which the facility is proposed to be located.

(ii) If the facility is proposed to be located in an area listed in appendix VI of part 264, the owner oroperator shall demonstrate compliance with the seismic standard.

Los Alamos National Laboratory is located in the Los Alamos County, which is an area listed in Appendix VI of 40 CFR 264, therefore, the Permittees must provide geologic data which demonstrates compliance with the seismic standard (see 40 CFR 270.14 (b)(11) for more information). The Permittees must provide seismic information for the three (3) waste treatment units proposed to be included in the permit (i.e., Technical Area (TA) 16-388, 36-8, and 39-6).

The Permittees have stated that these units are not newly built, however, these units have existed and operated only as interim status units. For NMED to consider these units to be included in the permit the Permittees must demonstrate that these units meet all requirements of the permitted units, including compliance with the seismic standard.

Permittees Response (June 2021)

Attachment 3 includes maps and seismic location information for the proposed open burning and open detonation units at TA-16-388, TA-36-8, and TA-39-6. Text reflecting the addition of the seismic location information is added to the Permit Renewal Application Section 2.10.1, *Seismic Standard* in Attachment 4 of this response. Although the seismic investigation included in Attachment 3 demonstrates that there has been no direct evidence observed for Holocene faulting within the required radius of the facility, it is noted within the seismic report that field reconnaissance may be required to confirm the determination, as field activities are delayed due to COVID 19 safety restrictions.

NMED Response (January 2022)

NMED notes that the Permittees do not have sufficient information to evaluate if the lineaments within the Pajarito fault system (PFS) have been active within the Holocene. NMED notes that near TA-16-388, the lineaments associated with the PFS, have had at least one earthquake on the Eastern edge of TA-16, that have not been investigated within the 3,000-foot boundary of TA-16-388. NMED notes that the lineaments at 36-8 and 39-6 have not been investigated for faults. The Permittees must perform a geologic investigation of lineaments within the 3,000-foot boundary and provide a revised Attachment 3 with the results of the investigation. NMED understands that this will require some time for the Permittees to plan and implement these investigations; please provide an estimated schedule of when this will be completed. The results of the investigation will be reviewed by NMED through the technical review process.

Permittee Response (May 2022)

The NMED-HWB's January 2022, comment requested that the Permittees (1) perform a geologic investigation of lineaments with the 3,000-foot boundary of TA-16-388 and (2) revise the seismic locations standards evaluation to present the results of the geologic investigation of the lineaments. In response to the NMED's comment, the Permittees completed the requested geologic investigation by field reconnaissance on April 19, 2022, at Technical Areas 16, 36, and 39. As a result of the investigation, the Permittees created and have included herein Attachment 2 of this Second Response Document, *Revision 1: Seismic Location Standards Evaluation for Three Open Burning / Open Detonation Locations under Consideration for Permitting under the Resource Conservation and Recovery Act at Los Alamos National Laboratory: Technical Areas 16, 36, and 39*. The investigation determined that there are no faults within 200 feet of the TA-16-388, TA-36-8, or TA-39-6. Faults present between 200 and 3,000 feet at all three sites do not contain sufficient young geologic material to determine whether those faults have had Holocene activity. Geologic materials present at the sites are much older than the Holocene time period, and as such, the determination of Holocene fault activity would be difficult to impossible to achieve through further field investigations. Additionally, the positions of TA-36 and TA-39 several miles east of the Pajarito fault system further reduce the likelihood that faults with Holocene seismic surface rupture are present at either of those two locations.

Permittee Response (July 2025)

Discussion regarding Revision 1: *Seismic Location Standards Evaluation for Three Open Burning/Open Detonation Locations under Consideration for Permitting under the Resource Conservation and Recovery Act at Los Alamos National Laboratory: Technical Areas 16, 36, and 39* report is included in Section 2.10.1 of the Permit Renewal Application. The revised report is included as Supplement 4-16 within Appendix 4 of the Permit Renewal Application. It should also be noted that the units in question are not used to store waste, and waste is only staged just prior to treatment events, negating any impact to any waste should any unlikely seismic event occur.

NMED-HWB Comment (March 2021)

Part B-Volume 1

3. Section 2.7.5, Preventing Undue Exposure of Personnel, page 2-7:

The information provided by the Permittees is not adequate because it does not address modifications required for the proposed thermal treatment units (open burn and open detonation (OB/OD)) to

prevent undue exposure to personnel. The Permittees must revise this section to include additional information about the Permittees' plan to prevent undue exposure to personnel during treatment activities at the proposed OB and OD units. Additionally, the Permittees have not provided copies of the DOE Standard referenced in this section, *Industrial Hygiene Practices,* DOE-STD-6005-2001. This section must be revised to include information about steps that would be taken to prevent personnel exposure.

Permittees Response (June 2021)

The revised Section 2.7.5, *Preventing Undue Exposure of Personnel*, includes the steps that are taken to prevent personnel exposure at all of the proposed permitted units and incorporates reference to where more detailed information is available for open detonation and open burning units. Attachment 4 of this response contains the revised section with red editing marks to highlight proposed changes to the section. The reference to the DOE Standard has been removed as it was inadvertently included in the Permit Renewal Application and is superseded by the requirements outlined in Title 10, Code of Federal Regulations, Part 851, *Worker Safety and Health Program*. There are no planned changes to the safety program at LANL or changes necessary to the Permit (other than those already proposed to Permit Attachment A) to incorporate the interim status units into the Permit as they fall under the same safety program as the other currently permitted hazardous waste management units.

Permittee Response (July 2025)

The Permittees revisions to Section 2.7.5, *Preventing Undue Exposure of Personnel*, address the steps taken and the safety program at LANL to prevent undue exposure of personnel.

NMED-HWB Comment (March 2021)

4. Section 2.7.6, Preventing Releases to the Atmosphere, page 2-7:

The information provided is not adequate because it does not address modifications required for the proposed thermal treatment units (open burn and open detonation (OB/OD)) to prevent releases to the atmosphere. The Permittees must revise this section to include additional information about how releases to the atmosphere will be prevented or mitigated at the three new thermal treatment units, and how releases will be monitored and how would the Permittees communicate this information to NMED and the public.

Permittees Response (June 2021)

Section 2.7.6, *Preventing Releases to the Atmosphere*, is revised (in Attachment 4) to include references to the sections where these considerations are documented for the proposed open detonation and open burning treatment units. The requested information is specifically addressed in the Permit Renewal Application Sections 4.7.6, *Preventing Releases to the Atmosphere* and 5.7.6, *Preventing Releases to the Atmosphere*.

Unexpected releases or operational upsets will be reported to the NMED-HWB and the public utilizing the reporting requirements in Permit Section 1.9.12, *24 Hour and Subsequent Reporting*, or Permit Section 1.9.13, *Written Reporting of a Non-threatening Release*, as appropriate. All monitoring reports will be provided to NMED-HWB and the public via official submittals and entry into the LANL Public Reading Rooms. Additionally, any monitoring that may be required after an unplanned release will be conducted as outlined in Section D.7, *Unplanned Nonsudden Releases.*

NMED Response (January 2022):

The Permittees have provided cross-references but have not addressed how releases from OB/OD units will be measured, and how those releases will be communicated to the public other than contingency plan implementation communications to NMED (Attachment D) or general emergency response services.

Please provide the detailed information required by this comment.

Permittee Response (May 2022):

The NMED-HWB's January 2022 comment requested that the Permittees address how releases from the OB/OD Units will be measured. In response, the Permittees revised Sections 2.7.6, 4.7.6, and 5.7.6 of the Permit Renewal Application (Attachment 3 of this Second Response Document) to provide additional information regarding the impact from the three interim status (1 OB and 2 OD) Units to the air. The proposed permit conditions in Permit Sections 5.3.2 and 6.3.3 (in Attachment 4 of this Second Response Document) are designed to prevent releases during waste treatment events. Additionally, Permit Renewal Application Section 2.7.6, *Preventing Releases to the Atmosphere* (Attachment 3 of this Second Response Document), includes a description of the overall ambient air monitoring network at LANL, called AIRNET.

AIRNET air monitoring stations are located at varying distances from the Units onsite, at the Laboratory boundaries, and downwind of LANL that monitor the air quality and provide air monitoring data for protection of human health and the environment. As of May 2022, the Permittees operate 46 total AIRNET stations in various locations, divided as follows:

- 30 stations on LANL perimeter with Los Alamos townsites;
- 2 Stations onsite near Pajarito Road;
- 8 stations near TA-54 Area G, mostly along the northern boundary with the San Ildefonso Pueblo near areas that the Pueblo identifies as culturally important;
- 3 stations on nearby Pueblos;
- 1 station in Española;
- 1 station in El Rancho (Pojoaque area); and
- 1 station in Santa Fe.

The Permittees also regularly review the need for additional stations or stations in different locations and make upgrades to AIRNET accordingly.

The AIRNET stations constantly monitor air quality and report the monitoring data to a public database. Ambient air monitoring is the systematic, long-term assessment of pollutant levels by measuring the quantity and types of certain pollutants in the surrounding outdoor air. AIRNET stations monitor 24 hours a day, 365 days of the year. Particulates are collected on a filter and then analyzed every 2 weeks for identification of analytes and assessment of the potential impact on the public. Data collected by the AIRNET monitoring stations are publicly available and can be located at www.intellusnm.com. AIRNET gives LANL and the public a comprehensive understanding of air quality within LANL's boundaries; in the Los Alamos townsite; in neighboring Pueblos; and downwind in Española, the Pojoaque area, and Santa Fe. For more than a decade, monitoring reports have confirmed that the Laboratory is releasing no air emissions higher than regulations and our Title V Air Permit allow.

The Permittees have additionally revised Attachment 3 of this Second Response Document to describe

the small size of the units and the operational history of these units, which evidences more than 40 continuous years of safely operating these units with all due considerations for human health, safety, and the environment. Furthermore, the Permittees have undertaken concerted efforts to minimize waste creation; have self-imposed waste treatment limits at both the OB and OD units; and have self-imposed critical safety measures before, during, and after each operation of the units, including the following:

- prohibiting operation of the units under certain lightning, wind, and other weather conditions;
- groundwater and surface water monitoring;
- strictly enforcing worker safety measures at, near, and around these units;
- controlling access to the units; and
- limiting OD and OB operations to only once in a 24-hour period.

Additionally, these Units do comply and will continue to fully comply with the provisions of 40 CFR § 264, 40 CFR § 264.601, and 40 CFR § 270.14 by proper operation of the Units in compliance with the terms of a RCRA permit issued by the NMED-HWB.

Supplement 4-3, *Screening Level Air Modeling Analysis and Risk Evaluation for Open Detonation Operations*, of this Permit Renewal Application, includes the full air-modeling evaluation conducted for OD treatment operations at LANL. Air-dispersion modeling predicts the maximum ground-level contaminant concentrations predicted to occur downwind from the treatment operations. Conservative parameters were used as inputs, and results indicate that the maximum ground-level contaminant concentrations for each detonation site occur on LANL property adjacent to the Units and do not carry further, *i.e.*, do not disperse or "kick out." Data discussed in Permit Application Section 5.16.3, *Protection of Atmosphere*, and included in Permit Application Supplement 4-12, *Screening Level Air Modeling Analysis and Risk Evaluation for Open Burning Operations at Los Alamos National Laboratory*, which likewise uses extremely conservative inputs, also demonstrate that estimated emissions from OB will not exceed regulatory levels established to protect human health, safety, and the environment.

In 2010 and 2011, the Permittees conducted air sampling at each of the OD Units to determine if dioxins, furans, or metals could be detected in the air after an OD treatment event. These sampling efforts and the analytical results are detailed in Permit Application Supplement 4-4, *Air Sampling at Open Detonation Units*, of Appendix 4 of this Permit Renewal Application. No dioxins or furan compounds were detected within any of the samples collected. Comparisons of metals detected within the samples were below acute inhalation-exposure screening levels. Air monitoring data collected in 2011, during treatment events at the OB unit are included as Permit Application Supplement 4-13, *Air Sampling at Open Burning Treatment Unit*, of this Permit Renewal Application. Each sample was collected downwind of the TA-16-388 Flash Pad at 25 feet and 75 feet. Samples collected from five treatment events were analyzed for metals and dioxins/furans. The analysis results were then compared with acute air-inhalation exposure concentration screening levels, where screening levels could be identified. The data comparisons indicate that the operations monitored did not exceed any appropriate state or federal levels specified for the analytes monitored.

The NMED-HWB comment additionally requested information on how releases from the Units will be communicated to the public. In the unlikely event that a release from the Units does occur that is a threat to human health or the environment, the Permittees propose permit conditions within Permit Parts 5 and 6 (Attachment 4 of this Second Response Document) that outline emergency notifications. The Permittees propose to provide the following notifications:

- to the NMED-HWB by telephone within 24-hours of an unexpected event that results in the Permittees calling emergency services;
- unexpected events that are not a threat the human health or the environment will be reported to the NMED-HWB and the public in accordance to Permit Section 1.9.13; and
- any unexpected release of waste to the environment that may endanger human health or the environment will be reported as required by Permit Sections 1.9.12 and 1.9.12.2.

  In response to NMED's comment, the Permittees propose these revisions to Permit Parts 5 and 6, in Permit Sections 5.4 and 6.4 (Attachment 4 of this Second Response Document). Attachment 5 of this Second Response Document includes updated proposed changes to Permit Application Supplement 1-4 Permittees' *Proposed Changes to Attachment D, Contingency Plan*, reflecting these notifications. These permit conditions have been proposed for Permit Sections 5.3 and 6.3 and Permit Attachment Section D.4.1.4 for the OD and OB treatment Units, respectively. These proposed permit conditions are intended to provide direction at the time of incidents that may result in exceedances and the potential for acute exposure rather than chronic exposure at these Units, as well as provide a pathway for communication regarding these situations.

NMED Comment (August 2022):

The Permittees must clearly state the criteria that will trigger public notification (e.g., detection or exceedance of acute or chronic air-inhalation exposure concentration screening levels). The revised application must also include the timeframes for public notification, in Permit Parts 1-11. Sections 5.4, and 6.4.

Permittee Response (July 2025)

The Laboratory safely and compliantly treats its specialized explosives waste at three thermal treatment units. The Laboratory implements technology and processes at these thermal treatment units that results in highly controlled treatment operations. The thermal treatment operations are safe, efficient, produce no secondary waste stream, and effectively produce no byproducts, residuals, or emissions. Each thermal treatment completely combusts or consumes the waste material.

As there is currently not a mechanism to detect an exceedance of acute or chronic air-inhalation exposure screening levels, and NMED-HWB guidance only provides screening levels for soil, tap water, indoor air, and vapor intrusion; it is not possible for the Permittees to have a public notification triggered in this manner. However, the Permittees have proposed to notify the NMED-HWB in the situations as outlined in the May 2022 response. Notice to the public will occur as follows:

- When NMED-HWB is notified by telephone of an unexpected event, implementation of the Contingency Plan, or any noncompliance that may endanger human health or the environment, the public will be informed of the event by e-mail to persons on the notification list in accordance with Permit Section 1.13 when a five-day written report is submitted to the NMED-HWB.
- When the NMED-HWB is notified of unexpected events that are not a threat the human health or the environment in accordance with Permit Section 1.9.13, the public will be notified by publication to the Permittees' information repository in accordance with Permit Section 1.10.

It should also be noted that Permit Application Supplement 4-13, *Air Sampling at Open Burning Treatment Unit*, has been renumbered to Supplement 4-12 and updated to include air sampling activities conducted in 2022.

NMED-HWB Comment (March 2021)

5. Section 2.10.1 Seismic Standard, page 2-11:

See NMED Determination #2.

Permittees Response (June 2021)

Please see response to #2.

NMED-HWB Comment (March 2021)

6. Section 2.10.3, page 2-12:

See NMED Determination #1.

Permittees Response (June 2021)

Please see response to #1.

NMED-HWB Comment (March 2021)

7. Section 2, Figure 2-3 Wind Roses (Day and Night), page 2-24:

The Permittees have not provided adequate information regarding the wind roses referenced in Sections 4, 5, and Supplements 4-3 through 4-9, -12, and -13. It is unclear when the data used to generate these wind roses was collected, and how many total days of data are compiled in the figure (e.g., a single year of data, or the average of five years of data). The Permittees must revise this Application to provide additional details on what year or years are represented by the day and night wind roses. Wind roses appear to have been calculated based on data from meteorological stations distant from the proposed OB/OD units. Please provide a rationale explaining why these monitoring locations are representative of conditions at the proposed OB/OD units.

Permittees Response (June 2021)

Permit Renewal Application Figure 2-3 is revised (in Attachment 4) to include the year and total days that the wind roses were based upon. These wind roses were drafted based on winds from all 365 days of 2018. In general, wind roses from different years are almost identical in terms of the distribution of wind directions, indicating that wind patterns are constant when averaged over a year. As detailed in the Los Alamos Climatology 2016 Update (http://permalink.lanl.gov/object/tr?what=info:lanl-repo/eprr/ESHID-602502), there are four meteorology towers on the mesa tops at LANL at TA-6, TA-49, TA-53, and TA-54. The TA-53 location was not included in the Permit Renewal Application figures because it was deemed to be too far from any of the hazardous waste management units within the Permit or units in interim status. The other three meteorology towers are included in the Permit Renewal Application because they are the closest towers to the permitted and interim status hazardous waste management units. The distance for the TA-6 tower to the interim status units is: TA-36-8, ~4.26 miles; TA-39-6, ~5.5 miles; and TA-16-388, ~1.4 miles. The distance from the TA-49 tower to the interim status units is: TA-36-8, ~1.13 miles; TA-39-6, ~2 miles; and TA-16-388, ~3 miles. For completeness and

comparison, the day and night 5-year averaged wind roses for 2016 through 2020 are included as Attachment 5 of this response. The 5-year wind rose data further illustrate that the wind rose information for each of the towers demonstrate very little difference with the exception of the 2018 window roses that show slightly more intense winds over the single year average compared to the 5-year average.

Permittee Response (July 2025)

The updates to the year and total days that the wind roses were based upon are included in Permit Renewal Application Figure 2-3.

NMED-HWB Comment (March 2021)

8. Section 3 Specific Unit Information Requirements, page 3-1:

The Permittees have failed to include two units which are permitted to treat by neutralization and the proposed OB/OD units in this section. Revise this section to include additional subsections listing neutralization treatment units and thermal treatment units.

Permittees Response (June 2021)

Permit Renewal Application Section 3.3, *Treatment in Containers,* included within Attachment 4 of this response is revised to include the updated name of the section and the locations of the two neutralization units: "TA-54, Area G, Pad 9, Dome 231 Perma-Con" and “TA-54, Area G, Pad 1, Building 412.” Permit Renewal Application Sections 4.0 and 5.0 and subsections include the specific information requirements for open detonation units and the open burning unit, respectively.

Further, information is provided in Section 1.1, *Permit Application Overview*, where there is a discussion of the overall layout of the Permit Renewal Application. This section directs the reviewer to facility-wide, as well as site-specific unit information that is found within the Permit Renewal Application. This section refers to Section 3.0, *Specific Unit Information Requirements*, where the subsections describe the location of specific information requirements for each of the units that are included within the current Permit. The information requirements are broken down by unit type (e.g., container storage unit, stabilization in containers, etc.,) and identify the locations of that unit type.

Permittee Response (July 2025)

Updates to Section 3.3 within the Permit Renewal Application include all storage areas where treatment in containers occurs. Additionally, the most recent version of Permit Parts 1-11 has been utilized to create the redline included as Supplement 1-1; therefore, all currently approved activities are included/incorporated.

NMED-HWB Comment (March 2021)

9. Supplement 1-1, Redline Permit Parts 1-11, Table of Contents, page 5:

The revised table of contents is missing subsections; Permit Parts 5 and 6.

Permittees Response (June 2021)

The revised table of contents is included in Attachment 6 of this response document.

Permittee Response (July 2025)

The revised table of contents is included in Supplement 1-1.

NMED-HWB Comment (March 2021)

10. Supplement 1-1, Redline Permit Parts 1-11, Section 5.1, page 99:

a. Supplement Permittees Statement: The Permittees shall conduct OD operations in accordance with this Permit Part, Attachment A (Technical Area Unit Descriptions), 40 CFR 265, Subpart P, 40 CFR§§ 268.7(b) and 40 CFR Part 270, which are incorporated by reference.

NMED Comment: The Permittees' reference to 40 CFR 265, Subpart P is incorrect since the Permittees are proposing to permit these units and not retain them as interim status units. However, NMED notes that 40 CFR 264 Subpart X does not have the same specificity as 40 CFR 265 Subpart P. Please revise this section to include a reference to 40 CFR 264 Subpart X Miscellaneous Units, 40 CFR 264 Subpart BB Air Emissions Standards for Equipment Leaks, as well as to other air quality permits relevant to the Permitted Unit.

Permittees Response (June 2021)

A reference to 40 CFR 264, Subpart X, Miscellaneous Units, is included in the revised text in Attachment 6 the Permit Renewal Application Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11*, revised Section 5.1, *Management of Open Detonation Units*.

A reference to 40 CFR 264, Subpart BB, *Air Emissions Standards for Equipment Leaks*, is not added because the section is not applicable to the open detonation treatment operations located at LANL. 40 CFR 264.1050, *Applicability,* requires that there be equipment that "contains or contacts hazardous waste with organic concentrations of at least 10 percent by weight"; there is no equipment utilized in the operations that meet that definition. No pumps, compressors, pressure relief devices, sampling connection systems, valves, or lines are utilized in supplying hazardous waste to the units or holding waste at the units.

Additionally, the Permittees did not revise the application to include reference to other air quality permits because there are no relevant air quality permits for these units to add. Both open burning and open detonation activities at LANL fall well below the insignificant activity thresholds for Title V permitting under the New Mexico Administrative Code for Air Quality Operating Permits (20.2.70 NMAC). In Section 20.2.70.7.Q for Definitions, "insignificant activity" thresholds means those activities which have been listed by the department and approved by the administrator as insignificant on the basis of size, emissions or production rate. The determination of insignificant activities for operating permits is based on the descriptions and methodology outlined in the List of Insignificant Activities provided by NMED- Air Quality Bureau for the Operating Permit Program dated March 24, 2005. Specifically open burning and open detonation determinations for emissions were evaluated based on Subsection D.6 of 20.2.70.300 NMAC (1.a and 1.b) as described in the NMED List of Insignificant Activities.

Permittee Response (July 2025)

The revised text is included in Permit Renewal Application Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11*, revised Section 5.1, *Management of Open Detonation Units*.

NMED-HWB Comment (March 2021)

10. Supplement 1-1, Redline Permit Parts 1-11, Section 5.1, page 99:

b. The information is missing from this section regarding waste which is prohibited from treatment at the OD units. The 2002 EPA Region 3 *Draft Final Open Burning/Open Detonation Permitting Guideline*s Section 2.2.5 recommends prohibiting thermal treatment of biologic or chemical warfare weaponry, depleted uranium, and small arms ammunition up to 50 calibers. Include the information on wastes that will be prohibited from treatment at the OD units.

Permittees Response (June 2021)

The Permittees added a Section addressing prohibited wastes to the suggested changes to Permit Part 5, *Treatment by Open Detonation*, included in Attachment 6 of this response. The prohibited wastes section includes wastes that do not meet the definition of waste explosives per 40 CFR §265.382, *Open burning; waste explosives*, materials containing beryllium, materials containing perchlorate-based propellants or explosives, and polychlorinated biphenyls (PCBs). Additionally, the Permittees removed reference any waste stream descriptions that are not consistent with the waste explosives definition from the suggested changes in Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan,* included as Attachment 7 of this response. The waste streams removed were "small arms ammunition" and "black powder and gun powder."

NMED Response (January 2022):

The Permittees are proposing to only treat waste that meets the definition of reactive (D003). The Permittees have stated that the OB/OD units will not treat waste that contains Be, Perchlorates, or PCBs. However, the Permittees have not addressed NMED's concerns based on Open Burning/Open Detonation Permitting Guidelines Section 2.2.5 which recommends explicitly prohibiting the thermal treatment of biologic or chemical warfare weaponry, depleted uranium, and small arms ammunition up to 50 calibers. Permittees must revise this section to explicitly state that the thermal treatment of biologic or chemical warfare weaponry, depleted uranium, and small arms ammunition up to 50 calibers will be prohibited.

The Permittees must also provide information on how prohibited waste will be evaluated and prevented from treatment at OB/OD units.

Permittee Response (May 2022):

The NMED-HWB's January 2022, comment requests that the Permittees address prohibition of thermal treatment of biologic or chemical warfare weaponry, depleted uranium, and small arms ammunition up to .50 caliber. In response to the NMED-HWB's January 2022 comments, the Permittees revised Permit Sections 5.2 and 6.2 (Attachment 4 of this Second Response Document), which include the proposed permit conditions that prohibit treatment of waste that contains radiological components, biologic or chemical warfare weaponry, or small arms ammunition up to .50 calibers. The Permittees proposed these conditions for Permit Sections 5.2 and 6.2 for the OD units and OB unit, respectively.

In its January 2022 comments, the NMED-HWB also requested information regarding how prohibited waste will be evaluated and prevented from treatment at the units. LANL characterizes all waste streams that are treated at the OD and OB Units. In fact, all waste streams generated at LANL are characterized before any treatment. These waste streams are documented in writings called "waste stream profiles," which undergo a rigorous review process by the relevant subject matter experts (SMEs) to ensure that the waste that is generated may be accepted by a particular facility for treatment and then ultimately offsite disposal. For the waste to be treated at a given facility, an approved waste stream profile must be on file. If a given waste does not have an active, SME-approved waste stream profile on file, then a given waste cannot be treated at the respective facility(ies).

The process of generating, reviewing, and approving a waste stream profile includes the following:

- a certification by the generator that the characterization is complete,
- a review by hazardous waste management SMEs, and
- a review by an environmental professional that the waste meets waste acceptance criteria.

The final check occurs when the waste is picked up from the storage/accumulation area, and a visual inspection of the waste is conducted to ensure that the waste picked up is consistent with the waste described in the waste stream profile. This process is outlined in Sections 4.2 and 5.2 of the Permit Renewal Application (Attachment 3 of this Second Response Document).

LANL has also included herein the pre- and post-treatment checklist in the proposed revisions to Attachment E, *Inspection Plan*. Attachment E includes a checklist (Form E-4, *Pre- and Post-Treatment Checklist for Detonation or TA-16-388 Flash Pad Treatment Operations*) that contains an item that mandates that the firing site leader will ensure that a current and approved waste stream profile is associated with the waste(s) being treated during the thermal treatment event and that the required operational restrictions are in place. The proposed revisions to Permit Attachment E are included as Attachment 5 of this Second Response Document. Changes have been made to Attachment Section E.9.3, Open Burning/Open Detonation Treatment, and Form E-4 is included.

Lastly, Attachment 7 of this Second Response Document includes updated proposed changes to

Permit Attachment C, *Waste Analysis Plan*, because additional references to "depleted uranium" were found that were not included in the last Response Document and are removed from the Attachment to complete the changes requested by the NMED-HWB, and an additional review was conducted to ensure that all proposed revisions are consistent with changes to the application made by the Permittees and requested by the NMED-HWB.

Permittee Response (July 2025)
Pre- and post- treatment checklists are included in Attachment E, Section E.4.3, Open Burning/Open Detonation Treatment Inspection, and Form E-2, Pre- and Post- Checklist for Detonation or TA-16-388 Flash Pad Treatment Operations in the Permit (Attachment 4 of this Second Response Document).

NMED-HWB Comment (March 2021)

11. Supplement 1-1, Redline Permit Parts 1-11, Section 5.2.3.2 Weather Conditions, page 100:
The Permittees have proposed to use red flag conditions to determine when OD operations will not be performed, but have not provided the information on what constitutes red flag conditions for the units. The Permittees must revise this section to include details on weather conditions (e.g., precipitation, wind speed) under which detonation operations will be prohibited.

Permittees Response (June 2021)
The Permittees revised Permit Renewal Application Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11*, Permit Section 5.2.3.2, *Weather Conditions*, to include weather conditions under which treatment activities are prohibited. The list includes when lightning is detected within a six mile radius of the open detonation units, icy roads (for transport), winds greater than 20 miles per hour, and during precipitation events. Additionally, all treatment operations are prohibited during "Red Flag conditions" that indicate warm temperatures, very low humidity, and winds above 10 miles per hour specifically in accordance with the guidelines outlined in the "LANL Fire Danger Matrix": https://www.lanl.gov/resources/emergency/fire-danger-matrix.php. This condition provides that

treatment operations are prohibited when the fire danger is in the "Extreme" category and winds are in excess of 10 miles per hour. However, since these conditions are more subjective and cannot be rephrased to be an enforceable permit condition, it has been removed from the weather conditions restrictions in the suggested changes for Permit Parts 5 and 6 (Attachment 6) of this response document.

NMED Response (January 2022)
The Permittees' response to this comment indicated that red flag conditions are based on wind speeds greater than 10 mph during dry conditions. However, the text in Section 5.2.3.2 (page 102) only restricts OB/OD activities when winds are greater than 20 mph. The Permittees must revise this Section to be consistent and also address dry condition restrictions.

Permittee Response (May 2022)
In response to the NMED-HWB's January 2022 comment, the Permittees revised Permit Parts 5 and 6 (Attachment 4 of this Second Response Document) to include proposed conditions for Permit Sections 5.3.2.2 and 6.3.3 for the OB and OD units, respectively, that impose dry condition-operational restrictions. The section now states that restrictions for treatment may not occur any time winds are greater than 20 miles per hour and if winds are greater than 10 miles per hour in drier weather conditions, such as in the spring and summer seasons when the fire danger rating is deemed to be Very High or Extreme. The LANL Weather Machine compiles temperature, wind, barometric pressure, relative humidity, data collected by LANL meteorological towers, and other pertinent National Weather Service forecast information and is used to inform treatment restrictions. Additional clarification regarding the information that the LANL Weather Machine provides was added to Sections 4.12.1.3.3 and 5.12.7.4 of the Permit Renewal Application (Attachment 3 of this Second Response Document).

Permittee Response (July 2025)
The Permittees revised Permit Parts 5 and 6 (within Supplement 1-1) to include proposed conditions for Permit Sections 5.3.2.2 and 6.3.3 for the OB and OD units, respectively, that impose dry condition-operational restrictions. The section now states that restrictions for treatment may not occur any time winds are greater than 20 miles per hour and if winds are greater than 10 miles per hour in drier weather conditions, such as in the spring and summer seasons when the fire danger rating is deemed to be Very High or Extreme. The LANL Weather Machine compiles temperature, wind, barometric pressure, relative humidity, data collected by LANL meteorological towers, and other pertinent National Weather Service forecast information and is used to inform treatment restrictions. Additional clarification regarding the information that the LANL Weather Machine provides was added to Sections 4.12.2.3.3 and 5.12.7.4 of the Permit Renewal Application.

NMED-HWB Comment (March 2021)

12. Supplement 1-1, Permit Parts 1-11, Permit Part 6.4 Alternative Assessment, page 107:
The Permittees have proposed submitting an alternative treatment assessment report for the permitted OB units to NMED by no later than 8 years after the effective date of the OB permit, but have not provided a similar deadline in Permit Part 5 for the proposed permitted OD units. Please provide a rationale for this frequency and propose a similar deadline for the OD unit.

Permittees Response (June 2021)
The Permittees have removed the proposed language in Permit Part 6.4 from the revised Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11*, (Attachment 6), because the proposal to submit an alternatives assessment report was left in the redline language as an oversight and should not have

been included as a proposed change. The intention of the Permittees was to include the assessment in the application. Permit Renewal Application, Supplement 4-1, *Assessment of Alternatives for Open Detonation and Open Burning Activities,* presents the Permittees' assessment of alternative technologies as referenced by #12. An updated version of this assessment is included as Attachment 8 of this response.

NMED Response (January 2022):
For clarity, NMED is directing the Permittees to retain the deadline for alternative treatment assessment report for the permitted OB in Permit Part 6 and provide a similar deadline for the OD units in Permit Part 5.

Permittee Response (May 2022):
To fulfill the NMED-HWB's request, the Permittees proposed revisions to Permit Parts 5 and 6 (Attachment 4 of this Second Response Document) that include permit conditions in Permit Sections 5.6 and 6.7 that require the Permittees to develop a report that assesses alternative technologies to OD and OB before the sixth anniversary of the permit effective date.

Permittee Response (July 2025)
The most recent assessment of alternatives is included as Supplement 4-1.

NMED-HWB Comment (March 2021)

13. Supplement 1-4, Permit Attachment D, Section 2, page D-16:
Permittees must revise Permit Attachment D, Section 2 to indicate how spills or off-site contamination from OB/OD operations will be monitored and reported to NMED and communicated to the public to prevent harm to human health or the environment as required by 40 CFR 270.32(b).

Permittees Response (June 2021)
Any spill or release of hazardous waste at the open detonation or open burning treatment units will be reported in the same manner as a spill or release at the current permitted units utilizing the reporting requirements at Permit Section 1.9.12, *24 Hour and Subsequent Reporting*, or Permit Section 1.9.13, *Written Reporting of a Non-threatening Release*, as appropriate. As outlined in Section D.4.2, *Decontamination Verification,* any spills or releases at the units will be decontaminated or removed. Additionally, any monitoring that may be required after an unplanned release will be conducted as outlined in Section D.7, *Unplanned Nonsudden Releases*. Permit Attachment D, *Contingency Plan*, outlines actions that will be taken in the event of an emergency or release of hazardous waste to prevent harm to human health or the environment and has not been modified. Attachment D, Section D.2, *Emergency Equipment and Communications,* includes information regarding the equipment that may be used by the Permittees in case of an emergency.

NMED Response (January 2022):
Since this is a different treatment activity from stabilization or neutralization, NMED expects that additional spill/release response measures would be implemented by the Permittees for OB/OD units. This section must be revised to include additional details specific to the OB/OD units and how spills or off-site contamination from OB/OD operations will be monitored and reported to NMED and communicated to the public to prevent harm to human health or the environment as required by 40 CFR 270.32(b).

Permittee Response (May 2022):
The Permittees have operated these three interim status units compliantly for more than 40 years in

accordance with applications that have included emergency preparedness and response activities appropriate for all hazardous waste activities conducted at the Laboratory.

Regarding the OB Unit, waste is generally treated in a tray-like structure that contains the waste and prevents it from spilling or releasing into the environment. A secondary concrete containment pad surrounds the tray-like structure to further prevent waste from spilling or releasing to the environment. To prevent the waste from blowing, spreading, or releasing to the environment, a variety of different objects are used. At the OB Unit, two containments—a primary tray and a secondary pad—prevent the waste from spilling or releasing in addition to screened metal containment placed around the waste. These containment structures are provided in addition to the other measures outlined in the Permittees' response to NMED-HWB's Comment #4 to prevent spills or releases to the environment. Because of the nature of the waste the OD Units treat, the OD Units cannot have such tray-like and secondary containment structures in place; therefore, other measures identified in the Permittees' response to NMED-HWB's Comment #4 assist in preventing such spills or releases to the environment. Such measures include avoiding waste treatment under certain wind and other weather conditions; groundwater monitoring; surface water monitoring; and air quality monitoring so that, in the event of any type of release (which has not occurred in the 40+ years of operating these Units), the response will be timely and adequate.

Attachment 5 of this Second Response Document includes updated proposed changes to Permit Application Supplement 1-4 Permittees' Proposed Changes to Attachment D, Contingency Plan, reflecting notification requirements and emergency communication requirements. These permit conditions have been proposed for Permit Sections 5.3 and 6.3 and Permit Attachment Section D.4.1.4 for the OD and OB treatment units, respectively. These proposed permit conditions are intended to provide direction at the time of incidents regarding spill/release response measures and communications that will be implemented for the OB and OD units.

Permittee Response (July 2025)

In addition to the containment structures noted in the response above, the nature of the Laboratory's thermal treatment operations is instructive. The thermal treatment operations are designed to prevent potential air emissions and groundwater contamination. The Laboratory implements specifically designed technology and processes at the thermal treatment units that result in highly controlled thermal treatment operations. The Flash Pad uses propane enhanced controlled burning that, by design, achieves complete combustion of the waste material. The detonation units are designed to achieve complete consumption of the waste material. The thermal treatment operations produce no secondary hazardous waste stream, no measurable smoke, and effectively no byproducts, residuals, or emissions.

Supplement 1-4 includes Permittees' Proposed Changes to Attachment D, Contingency Plan, reflecting notification requirements and emergency communication requirements. These permit conditions have been proposed for Permit Sections 5.3 and 6.3 (within Supplement 1-1) and Permit Attachment D, Section D.4.1.4 for the OD and OB treatment units, respectively. These proposed permit conditions are intended to provide direction at the time of incidents regarding spill/release response measures and communications that will be implemented for the thermal treatment units.

NMED-HWB Comment (March 2021)

14. Supplement 1-5, Permit Attachment E.4.1, page E-10:

The Permittees must include details on how the Facility will notify the fire department, or emergency

medical responders, one day prior to performing treatment at the OD unit. NMED notes that other RCRA permitted OD units also require documentation (e.g., pre-treatment inspection check list) that OD/high explosive (HE) personnel contacted a meteorology team to get a predicted forecast for the day of the planned event prior to conducting operations.

Permittees Response (June 2021)
Additions to the Permittees revised descriptions of how treatment activities are conducted at the units, are included in Section 4.12.2, *Operating Requirements*, for open detonation units, and include specifics regarding the notifications and access to meteorological data before and during these activities, as requested. These sections also provide the precautions, restrictions, notifications, and clearance activities conducted under interim status at each of the units. Attachment 4 includes a redline version of the additional information in the Permit Renewal Application text. No changes were made to Permit Attachment E, *Inspection Plan*, that outlines the inspections conducted at each of the hazardous waste management units to meet the general inspection requirements outlined in 40 CFR §264.15 and to ensure that communication and equipment for use in case of an emergency are in working order. Inspections conducted on the day of treatment are included in the changes proposed to incorporate the open detonation units, and include requirements to inspect the area in and around the units on the day of treatment events to ensure that there is no deterioration or vegetation in the area that could catch fire.

The Permittees follow a robust proceduralized and documented process for each treatment that involves a detailed hazard analysis for each treatment activity to be conducted as well as review by a safety review committee prior to treatment activities. A specific pre-treatment checklist (other than then inspection record form) is not currently used to conduct open detonation operations. The procedures for conducting treatment are outlined in the Operating Requirement sections for each unit type. Prior to the day of treatment, as part of the pre-treatment protocol, the composition of each treatment is reviewed for a hazard analysis that is then presented to a safety committee with representation from various safety groups (including Access Control and the Emergency Operations Support Center) to ensure that all required notifications and analysis of the treatment to take place have been made prior to performing each treatment at the open detonation units. This safety review committee conducts a thorough review during planning for any explosives work conducted on the firing range, including waste treatment detonations. The committee is tasked with assessment of the potential risk of the activity and the effects of weather, temperature, and dryness conditions. The Permittees welcome the opportunity to discuss specific technical requirements associated with pre-treatment activities and to discuss the development of any additional actions that the NMED-HWB recommends be documented prior to conducting treatment activities at the open detonation units.

NMED Response (January 2022):
The Permittees have made changes to Attachment E which addresses the need for required documentation in the pre-treatment Inspection Checklist that high explosive (HE) personnel contacted a meteorology team to get a predicted forecast for the day of the planned event prior to conducting operations documented. The Permittees must revise Attachment E and include these procedures provided in the Response, in the pre- and post-inspection checklist in Attachment E.

Permittee Response (May 2022):
The NMED-HWB's January 2022, comment requires that Attachment E be revised and include the procedures from the proposed language in the Operating Requirements sections of the Permit separated into a pre- and post-treatment checklist.

The Permittees developed a pre- and post-treatment checklist, which is now included in the proposed revisions to Attachment E, *Inspection Plan*. The checklist expressly includes a pre-treatment requirement

that the firing site leader ensure that a current and approved waste stream profile is associated with the waste(s) being treated at the Unit before any treatment is initiated. Additional checklist requirements include a pre-treatment assessment of operating conditions and restrictions outlined for the treatment activities, including weather restrictions; and a post-treatment inspection for any potential residues in/around the area after treatment concludes. The proposed revisions to Permit Attachment E are included as Attachment 6 of this Second Response Document. Please see the response to NMED-HWB Comment 4 for more information about changes made to the Permit Renewal Application regarding the waste characterization activities and operational restrictions for these Units.

NMED Comment (August 2022):
The Permittees must revise the pre-inspection form listed in Attachment E to provide information on the waste characterization which demonstrates that the waste is D001 and/or D003. The form must identify and document the primary chemical or chemicals being treated; or the inspection form must reference the specific number of the waste profile form which has that information.

If waste characterization provided on the waste profile form does not clearly demonstrate D001 and/or D003 hazards, the Permittees may supplement the waste profile form with documentation that the waste does not meet the Department of Transportation (DOT) shipping requirements due to the presence of the specific chemical known to exhibit an ignitable and/or detonation hazard.

The Permittees must provide both a pre-treatment checklist and a separate post-treatment inspection checklist which must be updated following thermal treatment. The post-treatment inspection checklist must be revised to include:

- descriptions of the thermal treatment event,
- duration of treatment,
- if a plume is present during treatment, the opacity of that plume,
- documentation verifying the success of treatment (e.g., sampling of residuals),
- an if there was a need for a re-burn event(s).

Permittee Response (July 2025)

The Permittees maintain that it is not prudent for an inspection associated with 40 CFR 264.15 to overlap with the other requirements for keeping an operational facility operating record. Descriptions, durations, and overall waste stream requirements are kept as part of the treatment records for the units. At the request of the NMED, although not required, the Permittees have generated a pre- and post- treatment checklist that includes additional documentation of operational restrictions/precautions already in place at the thermal treatment units. The revised pre- and post- treatment checklists are included as Form E-2 in Supplement 1-5.

NMED-HWB Comment (March 2021)

15. Supplement 3-1, Closure Plans, G.2, G.3 and G.28:

The closure plans for the proposed thermal treatment units do not account for the limited available documentation of RCRA hazardous waste treatment activities during the units operational history, specifically prior to 1980, when the units became interim status units. The closure plans must be modified to address the limited knowledge of waste treated at these units prior to 1980. Since the Permittees have not been able to provide documentation of waste treatment activities for that timeframe, the proposed analytical suite must be expanded to

account for lack of this knowledge.

Permittees Response (June 2021)
The Permittees proposed analytical suites within each of the unit closure plans are based on all known past activities at the units (treatment or otherwise) and have been presented within previously approved drafts of closure plans included within the current Permit. The constituents proposed include high explosives and associated compounds, toxic metals, semi-volatile organic compounds, volatile organic compounds, as well as other constituents of concern like perchlorate, dioxins/furan congeners (open burning unit), and kerosene (open burning unit). The Permittees welcome the opportunity to discuss technical issues regarding the potential addition of analytical suites for site closure.

NMED Response (January 2022):
The Permittees have not included additional analytical suites to the closure plans for the OB and OD Units and have not adequately addressed NMED's concern. To address the limited available knowledge and documentation of RCRA hazardous waste management practices prior to 1980, the constituents of potential concern (COPCs) must be revised to include the following text and COPCs and with updated sampling methods as applicable.

This Sampling and Analysis Plan (SAP) is designed to verify decontamination of surfaces, equipment, and materials; and determine whether a release of hazardous constituents to any environmental media has occurred. The SAP shall include:

a. Target analyte list (TAL) metal analysis for 24 analytes using Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) Methods 6010B, 6020 (inductively coupled plasma - mass spectrometry), and 7471A;
b. Dioxins/Furans analysis using EPA Method 8290A;
c. High explosives analysis for 20 target compounds using EPA Method 8330B or 8321A with a modification to add explosive compounds generated specifically at LANL listed in Tables 2 and 4 of the Closure Plan;
d. Analysis for SVOCs using EPA Method 8270C;
e. Analysis for VOCs using EPA Method 8260B;
f. Perchlorate anion (ClO,) by EPA Method 6850 or 6860;
g. DRO and GRO by EPA Method 8015B; and
h. Nitrates by EPA Method 9056A

Table 1. Hazardous Waste Constituents of Concern at Treatment Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
High explosives and associated compounds	D003	HMX, RDX, TNT, PETN, TATB, Tetryl, and mixtures of explosives including; ANFO, Composition B, Cyclotol, IMX- 101, PBX 9404, PBX 9407, PBX 9501, PBX 9502, X0233, X0533, XTX 8003, XTX 8004, LX-02, LX-07, LX-10, and LX-14
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver

Category	EPA Hazardous Waste Numbers	Specific Constituents
Semi- volatile Organic Compounds	D030, D036, F004	2,4-Dinitrotoluene, Nitrobenzene
Other constituents of concern		Dioxins/Furans, Perchlorate, PFAS, kerosene, and depleted uranium

[a] Based on the Unit operating record 1980–2012.
PETN = pentaerythrioltetranitrate (2,2-bis[(nitroxy)methyl)-1,3-propanediol dinitrate)
HMX = cyclotetramethylenetetranitramine (octahydro, 1,3,5,7-tetranitro, 1,3,5,7-tetrazocine)
RDX = cyclonite (cyclo-1,3,5-trimethylene-2,4,6-trinitramine) TNT= 2,4,6-trinitrotoluene
TATB = 1,3,5-triamino-2,4,6-trinitrobenzene

Permittee Response (May 2022):
The NMED-HWB's January 2022, comment requires that the Permittees include additional analytical suites to the closure plans for the OB and OD Units to address the limited available knowledge and documentation of RCRA hazardous waste management practices before 1980. The NMED-HWB provided a list of the COPCs and required updated sampling methods, as applicable. The Permittees updated the proposed closure plans in Permit Attachment G-2 and G-3 to include the constituents requested by the NMED-HWB. Attachment 8, *Revised Supplement 3-1 Permittees' Proposed Changes to Attachments G.1 through G.30, Closure Plans* of this Second Response Document includes redline for the updated proposed closure plans.

Permittee Response (July 2025)
Revised closure plans G.2, G.3, and G.28 are included in Supplement 3-1. It should be noted that operations at the TA-16 Flash Pad begin in 1998, and the full operational history of the unit is known. Additionally, it is not likely that kerosene or gasoline would have been used as accelerant at the open detonation sites.

NMED-HWB Comment (March 2021)

Part B-Volume 2

General Comments-Supplement 4:

16. The Permittees state that waste is determined to be HE waste but have not provided documentation on how this waste determination was made, and what test or criteria were used by waste personnel to make this determination. In particular NMED is interested in the methods used, or will be used, to determine if HE contamination exists on combustible and non-combustible debris.

Permittees Response (June 2021)
The waste determinations including testing and criteria for explosives and explosives-contaminated waste streams are included in the Permittees proposed changes to Permit Attachment C, *Waste Analysis Plan*, as referenced Section 4.2, *Waste Characterization and Acceptance*, and Section 5.2, *Waste Characterization and Acceptance*, within the Part B Application, Volume 1 of the Permit Renewal Application. Specific information regarding waste characterization for explosives waste streams is included in the proposed changes to Section C.3.1.4, *Characterization of Waste to be Treated by Open Burning and Open Detonation*, of the Waste Analysis Plan. No changes are made to the Permit Renewal Application to address this comment; however, the Permittees have removed proposed change to

Permit Attachment C to address any prohibited wastes as required by NMED-HWB Determination 10b. The content within Appendix 4, *Open Detonation and Open Burning Information*, and the supplements provided in this appendix should not be reviewed without the context provided in Section 4.0, *Open Detonation Treatment* and Section 5.0, *Open Burning Treatment,* within Volume 1 of the Part B Application. The main sections within the Permit Renewal Application provide the intent of the technical information within Appendix 4 and the supplemental information provided.

Permittee Response (July 2025)
Changes discussed above are included within Sections 4.2 and 5.2 of the Permit Renewal Application and redline changes to the Waste Analysis Plan are included within Supplement 1-3. Regulations do not specify a particular test method for reactivity of explosives waste or explosives-contaminated waste; the determination of whether a waste is reactive is made based on the properties of the chemicals known or suspected to be in the waste. Wastes that contain concentrated explosives are characterized by both process knowledge and/or other acceptable knowledge (Section C.3.1.1).

NMED-HWB Comment (March 2021)

17. Supplement 4-1 Assessment of Alternatives for OD and OB Activities:

a. The Permittees have not evaluated the OB/OD technology and the alternative technologies for impacts to human health and the environment nor the clean-up costs associated with each technology.

Permittees Response (June 2021)
An assessment of the impacts to human health and the environment, as well as clean-up cost considerations associated with the technologies, are added to Permit Renewal Application, Supplement 4-1, *Assessment of Alternatives for Open Detonation and Open Burning Activities* (Attachment 8). The assessment and justification report includes a systemic evaluation of the available alternative treatment technologies, and, as discussed in Supplement 4-1, the conclusion is that the proposed permitted units are the most appropriate treatment technologies for treatment of wastes based on the LANL operational and mission requirements. For clarification, evaluation criteria within Supplement 4-1 are adjusted to comparatively address human health and the environment, as well as relative costs to the extent practicable. In particular, Section 6.3 *Focused Evaluation of Potential Alternative Technologies* for alternative technologies which were initially screened, is modified to incorporate subject considerations as summarized in Table 6-3. Specific environmental performance considerations at the open detonation units and the open burning unit are located in Section 4.16, *Environmental Performance Standards*, and 5.16, *Environmental Performance Standards*, of Volume 1 of the Part B Application. These sections, along with the subsections and the supplements provided as part of Appendix 4 of the Permit Renewal Application, discuss the potential impact to human health and then environment through impact to groundwater, surface water, air, and soil pathways. Clean-up cost estimates for the units are not included in the application because LANL is a federally-owned facility and is exempt from the financial assurance requirements of 40 CFR Subpart H. However, general considerations are included within the assessment in Supplement 4-1.

NMED Response (January 2022):
The Permittees must modify Table 6-2 to include the benefits and drawbacks with regards to impacts on human health and the environment and cleanup costs, specific *to* each listed treatment option to facilitate comparisons of the treatment options. Currently, the table includes references to general discussions of impacts and cleanup costs that do not adequately address the issues raised in the original

comment.

Permittee Response (May 2022):
The Permittee made revisions to Supplement 4-1, *Assessment of Alternatives for Open Detonation and Open Burning Activities* (Alternatives Analysis), in response to the NMED-HWB's comment. The Permittees reorganized and enhanced the Alternatives Analysis to assist readers in understanding the mission-critical nature of the Permittees' OB and OD Units. The enhanced Alternatives Analysis identifies the increased environmental and human health impacts and safety risks associated with each assessed technology when compared with the existing OB and OD Units. Identification of these factors, along with the environmental impacts and clean-up cost estimates, as requested by the NMED-HWB, and other enhancements, will facilitate a more comprehensive and insightful comparison of the assessed treatment technologies. The Permittees believe that the reorganized and enhanced Alternatives Analysis will aid the NMED-HWB in a more rapid and efficient review of the Permittees' overall Application. Because of the reorganization of the supplement, the information NMED-HWB's comment request is located in Table 8-2, *Comparison of Alternative Technologies for Opening Burning/Open Detonation Waste Treatment*.

Additional language associated with the compliance history of the units has also been included in the Permit Renewal Application, Sections 4.2 and 5.2 (Attachment 3 of this Second Response Document).

NMED Comment (August 2022)
NMED has reviewed the Alternatives Analysis, the Permittees have not provided the rationale for the percent applicability determinations provided in Table 8-2 in the Revised Alternative Assessment. Under the column title "Limitations" the Permittees state that the confined burns are limited by the size of the explosives but do not specify the size of explosives the Permittees are planning to treat, nor the size of confined burn unit being evaluated. In the EPA Alternative Technology Assessment Report, there are examples of confined burn units which can be built to accommodate different sized waste streams, in some cases up to 11,000 lbs. per burn event, which is much greater than the maximum proposed (1,000 per event) at the OB or OD sites at LANL.

Permittee Response (July 2025):
The Permittees have revised Supplement 4-1, *Assessment of Alternatives for Open Detonation and Open Burning Activities (Alternatives Analysis)*. As detailed in Revised Supplement 4-1, 2024 Alternative Technology (Alt Tech) Evaluation, there is no safe, available, and environmentally more protective alternative treatment technology for the Laboratory's specialized explosives waste. Simply because an alternative technology could, theoretically, accommodate the *size* of a particular waste stream *does not mean* it is a safe, available, and environmentally more protective alternative treatment technology.

LANL performs mission-critical RDT&E work. The Laboratory generates limited and discrete quantities of specialized explosives waste in performing this mission-critical work. Specialized explosives waste is unique, heterogenous, highly energetic, potentially unstable, and possesses properties, morphologies, or characteristics that are difficult to discern and can be unpredictable.[1] It poses deflagration transition to detonation risks. LANL RDT&E work involves intentionally damaging or insulting high explosives with impact, electrical discharge, chemical stimuli, or high temperature. Intentionally damaging or insulting high explosives may change their morphology or expected behavior, which may increase the sensitivity and alter other characteristics of the explosive's material. While the characteristics of an explosive's

[1] Specialized explosives waste has the potential to detonate and his characteristic for reactivity (D003 waste). While the specialized explosives waste has the potential to detonate and is characteristic for reactivity, how, when, and under what conditions the specialized explosives waste will detonate can be unpredictable, which is the basis for its unique safety risks and the challenges associated with application of alternative treatment technologies.

material may be understood prior to damage or insult, once the material has been subjected to insult, it may not be possible to reliably predict the behavior of that material. LANL research and development work also involves the development of new explosives, possessing unique formulations, physical properties, or characteristics.

The explosives materials developed at the Laboratory are often Polymer Bonded eXplosives (PBX) that are specifically formulated to meet requirements such as energy output (metal pushing ability), structural integrity, machinability, and thermal stability, as well as improved application-specific safety considerations. The development, fabrication, and testing of PBXs are the primary feeders of the LANL explosives waste streams. By design, and due to their application in nuclear weapons systems, these specific PBX explosives are highly energetic and cannot be treated safely in confined environments due to the potential for transition from deflagration to detonation if heated and confined.

NMED-HWB Comment (March 2021)

17. Supplement 4-1 Assessment of Alternatives for OD and OB Activities:
b. Table 1-2 provides quantities of explosives treated at TA 36-8 and TA 39-6 OD Units from 2012-2020 by waste stream. The Permittees must separate waste volumes from the two different OD units, into two different tables. It is unclear from the table the volumes of waste that have been historically treated at each unit.

Permittees Response (June 2021)
The tables below provide waste treatment volumes by unit from 2011 through 2020. Information on estimated treatment volumes over the life of the unit is located within the proposed closure plan for each unit.

Open Detonation Treatment Activities at TA-36-8 (Minie) by Year in Pounds

	Excess explosives	Explosives contaminated debris	Detonators, initiators, and mild detonating fuses	Shaped charges and test assemblies	Projectiles and munitions larger than 50 caliber	Pressing molds	Small caliber ammunition	Black powder or gunpowder	Total
2011	1025	0	0	0	0	0	0	0	1025
2012	206	12	0	0	0	0	0	0	218
2013	274	0	0	0	0	0	0	20	294
2014	5	2	0	0	0	0	0	0	6
2015	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0

Open Detonation Treatment Activities at TA-39-6 (Point 6) by Year in Pounds

	Excess explosives	Explosives contaminated debris	Detonators, initiators, and mild detonating fuses	Shaped charges and test assemblies	Projectiles and munitions larger than 50 caliber	Pressing molds	Small caliber ammunition	Black powder or gunpowder	Total
2011	523	0	0	0	0	0	0	0	523
2012	168	0	0	0	0	0	0	0	168
2013	82	0	0	0	0	0	0	0	82
2014	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0

NMED Response (January 2022):

Based on the information provided by the Permittees, two additional issues regarding the quantities of explosives treated at TA-36-8 and TA 39-6 were identified. First, the total pounds listed for 2014 is incorrect in the table entitled Open Detonation Treatment Activities at TA-36-8 (Minie) by Year in Pounds. The Permittees should review this information and correct any errors.

Secondly, the tables provided in the Permittees' response were not incorporated into Attachment 8, Revised Supplement 4-1, Assessment of Alternatives for Open Detonation and Open Burning Activities.

The Permittees should revise Attachment 8 to include the tables provided in the facility response.

Permittee Response (May 2022):
The NMED-HWB's January 2022, comment identified inaccuracies in the quantities of explosives presented in the Treatment Activities by Pounds tables for the OD Units provided in the Permittees' June 2021 response. Corrected tables are now incorporated into the Permit Renewal Application, Supplement 4-1, *Assessment of Alternatives for Open Burn and Open Detonation Units* (Attachment 9).

Permittee Response (July 2025):
Corrected tables are incorporated into the Permit Renewal Application, Supplement 4-1, *Assessment of Alternatives for Open Burn and Open Detonation Units*.

NMED-HWB Comment (March 2021)

18. Supplement 4-2:

The Permittees have not provided sufficient information on surface water and groundwater sampling data. To facilitate the review, the data must include the date the samples were collected at each location and provide the frequency of exceedances above the regulatory limits. Revise the table accordingly.

Permittees Response (June 2021)

A raw data from intellusnm.com containing the data summarized in the tables included in Supplement 4-2 has been provided as part of the electronic copy of this response. No specific sampling and analytical data associated with surface water is included in the Permit Renewal Application. However, surface

water is specifically described in Section 4.18.2.1.1, *Hydrologic Assessment and Surface Water Flow*. Summary of surface water protection can be found in Section 4.18.2, *Protection of Surface Water/Wetlands/Soil Surface,* its subsections, and Section 4.18.1, *Protection of Groundwater/Vadose Zone,* and subsections include information of groundwater in the area and monitoring and protection of groundwater by the Permittees. These sections are presented to demonstrate compliance with the environmental performance standards for surface water and groundwater protection. Sections 4.18.1 and 4.18.2 provide context for the technical information within Supplement 4-2, *Open Detonation Unit Groundwater Monitoring and Surface Drainage Information*, the sections and should be reviewed together, as the sections together may address NMED's concerns.

NMED Response (January 2022):
NMED clarifies that this comment is not requesting raw data on surface and groundwater sampling. NMED's is commenting that tables in Supplement 4-2, Open Detonation Unit Groundwater Monitoring and Surface Drainage Information, must be revised to include the date the samples were taken at each location and the frequency of exceedances above regulatory limits at each location. NMED clarifies that the Permittees must provide the complete data table as an Excel file in a CD attachment. The Permittees must revise Table 4.1-1, to include a column with the number of exceedances, and a column indicating the date the maximum was detected.

Permittee Response (May 2022):
Tables 4.2-1 and 4.2-2 in the *Revised Supplement 4-2, Open Detonation Unit Groundwater Monitoring and Surface Drainage Information* (Attachment 10), have been updated to include the dates of each regulatory limit exceedance. The associated electronic data are included on the compact disc (CD) included with this Second Response Document.

Permittee Response (July 2025):
Supplement 4-2, *Open Detonation Unit Groundwater Monitoring and Surface Drainage Information*, includes the dates of each regulatory limit exceedance.

NMED-HWB Comment (March 2021)

19. Supplement 4-4:

a. The Permittees have not provided standard sampling information with this submittal, such as field notes, chain of custody, and copies of the third-party laboratory analysis which is typically provided with data, please review Permit Part 11.10.2.14, Documentation of Field Activities for the requirements.
b. The Permittees have not provided adequate descriptions of sampling procedures and have instead referenced internal standard operating procedures. The Permittees have not provided copies of those procedures, in accordance with Permit Part 11.10.2.9, Sample Handling, and Permit Parts 11.10.3.3, Blanks, Field duplicates, Reporting Limits and Holding Times. It is unclear if the samples were collected in accordance with EPA SW-846 methods. The sampling procedures must be revised to provide more detail to demonstrate that sample were collected in accordance with current EPA SW-846 methods.
c. The Permittees statement "Data were collected following the standard data collection procedures" does not provide adequate description of data collection methods or quality controls utilized by the Permittee or analytical laboratory as described in Permit Part 11.10.3.
d. The Permittees conclusion section does not describe the detected analyte concentrations, nor

does it make comparisons to background values, and EPA Region 6 air quality standards. At a minimum the Permittees must provide a summary of the sampled results, gaussian comparisons within the data including 95% upper tolerance limit (UTL), the maximum values detected, and compare those results to current EPA screening level values. The Permittees have not provided adequate information to demonstrate that the air releases from OD sites do not pose a threat tohuman health or the environment, please see Permit Part 11.10.4, Site Specific Human Health Risk; 11.5, Site Specific Ecological Risk Assessment Methods; and 11.6 Determination of Background guidance on for general information on reporting requirements to NMED. NMED notes that this information from the sampling event does not appear to be included in Supplements 4-7 and 4-8, OD Unit 36 and 39, Human Health and Ecological Risk Assessment.

Permittees Response (June 2021)

In response to the technical information requested, the Permittees provide the following information:

a. With respect to documentation of field activities, in Supplement 4-4 the Permittees have summarized and described the collection of the samples, shipment of the samples, and the third-party analyses of those samples. Copies of available documentation (chains of custody with field notes and analytical data packages) are provided as part of the electronic copy of this response to aid in the technical review of this supplemental information.
b. Although procedures were not provided to the NMED-HWB for review, the processes for sample handling are described within the summary report, as is the collection of blanks and field duplicates. The samples were not collected in accordance with SW-846 methods, as the media sampled was not waste. The air sampling procedures described within the summary indicate adherence to the U.S. Environmental Protection Agency (EPA) TO-9A method and described the process for dioxin and furan sample collection in detail and the standard operating procedure referenced in the summary report was utilized for all high volume air samples collected at the time.
c. As stated in the response to Item #19a., the descriptions in the summary report include the data collection methods and quality controls utilized in the process of sampling. Additionally, the specific third-party analytical laboratories are named within the summary report to aid with identifying the integrity of the chemical analysis. Lastly, the Excel files included within the electronic copy of the Permit Renewal Application include information on the adherence to quality control and quality assurance requirements during chemical analyses.
d. The analytical data generated for this project and detailed within the summary report were directly compared to acute air inhalation exposure concentrations from the 2005 *EPA Human Health Hazard Risk Assessment Protocol for Hazardous Waste Combustion Facilities,* or the acute inhalation screening levels within the 1999 *Air Toxics Hot Spots Program Risk Assessment Guidelines Part I The Determination of Acute Reference Exposure Levels for Airborne Toxicants*, drafted by the Office of Environmental Health Hazard Assessment of the California Environmental Protection Agency. These references provide the most applicable comparison levels for the short-term air impacts to the immediate area around the proposed hazardous waste management units. The air modeling report, Supplement 4-3, *Screening Level Air Modeling Analysis and Risk Evaluation for Open Detonation Operations*, more completely provides a discussion of the potential overall impact to air quality that may be caused by open detonation treatment activities. The air sampling summary report was not drafted with the intention of providing risk assessment, but as stated in Permit Renewal Application Section 4.18.3, *Protection of Atmosphere*, “the Permittees conducted air sampling at each of the open detonation units to determine if dioxins, furans, or metals could be detected in the air after an

open detonation treatment event." Risk assessments associated with constituent soil level concentrations are included as Supplements 4-7, *Open Detonation Unit at Technical Area 36 Human Health and Ecological Risk-Screening Assessments*; 4-8, *Open Detonation Unit at Technical Area 39 Human Health and Ecological Risk-Screening Assessments*; and 4-9, *Revision of 2011 Open Detonation Risk Assessment*.

Permit Renewal Application Section 4.18.3, *Protection of Atmosphere,* provides context for the sampling and analysis information included within Supplement 4-4, *Air Sampling at Open Detonation Units*, and the information should be reviewed together. The supplement was drafted as part of the permit application process and not as a proposed environmental investigation, corrective action, or sampling or monitoring to be conducted under the LANL Hazardous Waste Facility Permit. Therefore, review and approval by the NMED-HWB was not sought, and Permit Section, 11.10, *Methods and Procedures*, was not implemented as part of the drafting of this document in 2011. As input to the application process, the Permittees utilized best available air sampling technology to test if parameters of concern could be measured in the air to provide additional data to the air modeling. The method for air emissions estimation is recommended by EPA guidance. The information is provided as background information only, because the air modeling assessment provides the information necessary for compliance.

NMED Response (January 2022):
The Permittees have provided information that adequately addresses the issue and concerns raised in the original comment. The facility response provided for original comment 19d in Enclosure 1 clarifies the purpose of the air sampling event and comparative analysis described in Supplement 4-4 of the Part B permit application. In addition, the response distinguishes between the information in Supplement 4-4 and the analyses described in Supplement 4-3, Screening Level Air Modeling Analysis and Risk Evaluation for Open Detonation Operations.

Permittee Response (May 2022):
This comment is acknowledged as being complete, with no further changes to the Permit Renewal Application necessary.

Permittee Response (July 2025)
Supplement 4-4 and Supplement 4-3 include the information addressing the issue and concern raised in the original comment. Please note that the title of Supplement 4-3 has changed to *Hybrid Air Modeling Analysis and Ecological and Health Risk Assessment for Open Burning and Open Detonation Operations at Los Alamos National Laboratory*.

NMED-HWB Comment (March 2021)

20. **Supplement 4-*5***

a. ***Laboratory Analysis and Reporting*** **pages 1 and 2:**
Polychlorinated biphenyls (PCBs) were not included in the analytical suites for the samples collected at TA 36-8. However, PCBs were detected in soil as noted in the 2011 sampling report and PCBs were detected in three of the five whole body field mice samples collected from TA 36. The Permittees must provide additional information to address the following issues:

i. A discussion justifying why PCBs were not included for sample analyses, when PCB were detected in mice at TA 36.
ii. A discussion addressing the lack of current PCB data, and whether this constitutes a data gap and must evaluate whether additional sampling is needed.

iii. Please also see NMEDs comments on Supplement 4-7: at a minimum, the historic PCB soil data should be included in the current risk assessment.

Permittees Response (June 2021)

In response to the technical issues above, the Permittees provide the following information:

a. PCB soil data was collected in 2010 and 2011, because the soil monitoring conducted at that time was designed to be a baseline data set to begin an assumed soil monitoring program at each of the detonation units. Assessment of these data is included in Supplement 4-9, *Revision of 2011 Open Detonation Risk Assessment,* and a copy of the raw data set is included with the electronic copy of this response. Constituents chosen for the 2018 sampling effort were based on the likelihood that current operational activities may contribute to deposition of the constituents. PCB waste is not treated or used in association with the current operational activities at either of the units; therefore, PCBs should not be added to the soil surface since initial detection. Because of these reasons, the lack of 2018 PCB data should not be considered a data gap. At the time of closure of the units, PCBs should be evaluated based on the sites historic use. Please see the Permittees' response to #22 for information regarding the drafting or reorganization of the three open detonation risk assessments within the Permit Renewal Application.

NMED Response (January 2022):

The Permittees have provided information that partially addresses the issues raised in the original comment. The Permittees have discussed why soil was not sampled for PCBs in 2018. The response further states that PCB waste is not currently treated or used at the open detonation (OD) units. The Permittees also state that a copy of the 2010 and 2011 PCB data set was included in the electronic response to original comment 20a. As of the date of this letter, the electronic data furnished by the Permittees has not been submitted.

Permittee Response (May 2022):

LANL has included an electronic copy of the analytical data for the 2010 and 2011 soil sample collections on the CD included with this Second Response Document.

Permittee Response (July 2025)

An electronic copy of the analytical data for all soil sample collection activities are on the CD included with the Permit Renewal Application.

NMED-HWB Comment (March 2021)

20. **Supplement 4-*5***

b. Laboratory Analysis and Reporting **page 3:**

Soil samples were inadvertently analyzed for plutonium instead of isotopic uranium. The report states that previous sampling included uranium (U-234, U-235/236, and U238) and that the 2011 risk assessment addressed uranium. However, the current risk assessment does not include the uranium data.

The Permittees must provide additional information to address the following issues:

i. The Permittees have not included a complete list of constituents of potential concern (COPCs) analysis, at a minimum, the uranium data provided in 2011 sampling report should be used in the current risk assessment. It is noted for TA 36-

8 that all three isotopes of uranium were detected above background levels and were retained as COPCs in the 2013 risk assessment.

ii. The Permittees must provide a discussion on whether any depleted uranium has been treated since the sampling was conducted in 2010. If any depleted uranium has been treated at TA 36-8, then the historical data likely underestimate potential concentrations and sampling must be conducted to fill this data gap. Previously the Permittees have treated depleted uranium at TA 36-8 and must clarify whether this has occurred since the last soil sampling event in 2010.

Permittees Response (June 2021)

In response to the technical issues above, the Permittees provide the following information:

b. The Permittees have not treated explosives-contaminated depleted uranium waste since the last soil sampling event in 2010. In 2011, Permittees determined appropriate constituents based on all historic activities at the unit. The units are used for treatment of high explosives and high-explosives contaminated wastes, however, both units are primarily used for non-treatment-related testing and other operational detonations. Therefore, uranium will be included in soil sampling and monitoring at the sites. The Permittees would like to emphasize that plutonium is not considered a constituent of potential concern at either of the open detonation treatment units, and was not detected in any of the samples analyzed for plutonium. It was mistakenly requested for analysis through a typographical error on the chain of custody documentation.

Permit Renewal Application Section 4.18.2.2, *Soil Surface Monitoring*, provides context for the soil analytical results presented in Supplement 4-5, *Soil Sampling Results Summary Report for the Open Detonation Unit at Technical Area (TA) 36-8*, and Supplement 4-6, *Soil Sampling Results Summary Report for the Open Detonation Unit at Technical Area (TA) 39-6*, and the information should be reviewed together for a complete overview of the soil sampling.

NMED Response (January 2022):

The Permittees have provided information that partially addresses the issues raised in the original comment. In the facility response, the Permittees have discussed why soil was not sampled for PCBs in 2018. The response further states that PCB waste is not currently treated or used at the open detonation (OD) units. The Permittees also state that a copy of the 2010 and 2011 PCB data set was included in the electronic response to original comment 20a. As of the date of this letter, the electronic data furnished by the Permittees has not been submitted. Attachment 1, Crosswalk of Changes to the Part A and General Part B of the Resource Conservation and Recovery Act (RCRA) Permit Renewal Application Los Alamos National Laboratory, notes that no changes were made to Supplement 4-5 in response to original comment 20a. However, the Permittees have provided changes to the Part B permit application in response to the original comment. Attachment 6, Revised Supplement 1-1, Permittees' Proposed Changes to Permit Parts 1-11; Section 5.2, *Waste Streams to be Treated at the Open Detonation Units,* states that the Permittees will not treat PCBs by open detonation. However, the discussion does not identify any controls and/or procedures in place to ensure PCBs are not treated at the OD units.

The Permittees must provide documentation justifying the elimination of PCBs from the 2018 soil sampling event to Supplement 4-5. In addition, Attachment 6, Section 5.2, should be revised to include a discussion of the controls and/or procedures in place to ensure that PCBs are not treated at the OD units.

Permittee Response (May 2022):
As stated in the Permittees' response to comment 20a, electronic analytical data for the 2010 and 2011 soil sample collections (including PCBs) are included by CD herein with this Second Response Document.
The NMED-HWB's January 2022 comments requested that the Permittees provide documentation to eliminate PCBs from the soil sampling in revised attachments. Justification for elimination of PCBs from the 2018 soil sample collection events presented in the Permittees' June 2021 response to Comment 20a (above) is included in the *Revised Supplement 4-5, Soil Sampling Results Summary Report for the Open Detonation Unit at Technical Area (TA) 36-8* (Attachment 11 of this Second Response Document), and *Revised Supplement 4-6, Soil Sampling Results Summary Report for the Open Detonation Unit at Technical Area (TA) 39-6* (Attachment 12 of this Second Response Document).
Specifically, the Permittees' have both controls and procedures in place to ensure that PCBs are not treated by OD, as more fully described in the Permittees' response to NMED-HWB Comment 10b regarding waste characterization practices and the addition of a check for an approved waste stream profile in the pre- and post-treatment checklist. The waste stream profile development process includes a determination regarding the presence of PCBs in a waste stream, and waste streams that contain PCBs are prohibited from treatment by OB or OD.

Permittee Response (July 2025)
Justification for elimination of PCBs from the 2018 soil sample collection events is included in the revised Supplement 4-5, *Soil Sampling Results Summary Report for the Open Detonation Unit at Technical Area (TA) 36-8*.

NMED-HWB Comment (March 2021)

21. Appendix 4: Supplement 4-6 Soil Sampling Results Summary Report for the OD Unit at TA 39-6

a. *Laboratory Analysis and Reporting* pages 1 and 2:
PCBS were not included in the analytical suites for the samples collected at TA 39-6. However, PCBs were detected (minimally) in soil as noted in the 2011 sampling report.
The Permittees must provide additional information to address the following issues are noted by NMED:

i. A discussion why PCBs were not included for sample analyses.
ii. A discussion whether lack of current PCB data constitutes a data gap and must evaluate whether additional sampling is needed.
iii. Please also see also comments on Supplement 4-8: at a minimum, the historic PCB soil data should be included in the current risk assessment.

Permittees Response (June 2021)
Please see response to #20 with regards to the lack of 2018 PCB data. Please see the Permittees' response to #22 for information in regards to the drafting or reorganization of risk assessments within the Permit Renewal Application.

NMED Response (January 2022):
The facility response to original comment # 21 submitted by the Permittees is acknowledged. However, issues remain with the Permittees' response to original comment# 20a. Once the Permittees adequately address those remaining issues, the issue identified in original comment # 21 will also be resolved.

Permittee Response (May 2022):
Please see Permittees' response to NMED-HWB Comment 20a.

NMED-HWB Comment (March 2021)

22. Appendix 4: Supplement 4-7 Open Detonation Unit at Technical Area 36 Human Health and Ecological Risk-Screening Assessments

a. *Executive Summary* page ii:
The risk assessment does not address the potential for contaminants in soil to migrate to groundwater (refer to Section 4 of the New Mexico Environment Department Soil Screening Guidance (NMED SSG). As noted in Table 4.2-1 of Supplement 4-2, several constituents have been detected in groundwater at levels above action levels. Revise the assessment to address the potential leaching of contaminants from the vadose zone to groundwater and correlate detections in soil to groundwater results.

b. Section 2.2.1 *Sampling and Analysis Data* page 2:
PCBs were not included in the analytical suites for the samples collected at TA-36-8. However, PCBs were detected in soil as noted in the 2011 sampling report and PCBs were detected in three of the five whole body field mice samples collected from TA 36. Address this potential data gap. At a minimum, revise the report to include the historic PCB soil data in the current risk assessment.

Permittees Response (June 2021)
The Permittees provide the following to address the technical issues above:

a. The potential for the open detonation units to impact groundwater in the area and monitoring and protection of groundwater by the Permittees are presented in the Permit Renewal Application to demonstrate compliance with the environmental performance standards for groundwater protection within Section 4.18.1, *Protection of Groundwater/Vadose Zone* and relevant subsections. Information included within Supplement 4-2, *Open Detonation Unit Groundwater Monitoring and Surface Drainage Information*, should be reviewed with the context provided by Section 4.18.1 of the Permit Renewal Application.
b. Please see response to #20 for information addressing PCBs within the soil at the open detonation units.

It should be noted that the Permit Renewal Application includes three open detonation risk assessments for completeness to the administrative record. Supplement 4-7, *Open Detonation Unit at Technical Area 36 Human Health and Ecological Risk-Screening Assessments*; Supplement 4-8, *Open Detonation Unit at Technical Area 39 Human Health and Ecological Risk-Screening Assessments*; and Supplement 4-9, *Revision of 2011 Open Detonation Risk Assessment*, were all included to provide an overall assessment of all the open detonation units and the respective associated risks at the units, and to summarize the soil monitoring that has occurred at the units to date. Permit Renewal Application Section 4.18.2.2, *Soil Surface Monitoring,* provides context for the risk assessments and soil monitoring activities conducted at each of the sites and the information should be reviewed together for an overall assessment at the open detonation units. Supplements 4-7 and 4-8 provide the current monitoring (and associated risk) at each of the open detonation units. Additionally, because the NMED-HWB had previously provided comments to the 2011 version of Supplement 4-9 (*Notice of Disapproval Permit Modification Request Open Detonation Units at Technical Areas 36 and 39 Attachments E and G*, HWB-LANL-11-052), the Permittees determined that a revised version of the risk assessment was appropriate and necessary for the completeness of administrative record.

NMED Response (January 2022):
The Permittees have provided information in the response that does not address the issue raised in original comment # 22a. In the response, the Permittees reference Attachment 4, Section 4.18.1, Protection of Groundwater/Vadose Zone. The referenced discussion provides information on hydrogeology and groundwater monitoring. No information on the soil-to-groundwater exposure pathway and its potential to impact the OD units were found in the referenced material. Examination of Supplement 4-7 (and Supplement 4-8) indicates that no discussion of the soil-to-groundwater pathway is provided. The potential for soil contaminants to reach groundwater and lead to possible exposures must be addressed to ensure the conceptual site model for each OD unit reflects consideration of all potential exposure pathways and inclusion or exclusion of a pathway is based on defensible lines of evidence. The Permittees must revise Supplement 4-7 (and Supplement 4-8) to address the potential for contaminants from the vadose zone to migrate to groundwater at the OD units. The discussion should correlate detections in the soil to groundwater sampling results. NMED recommendations on the type of information to be considered in determining if the soil-to-groundwater pathway is complete or incomplete at the OD units are provided in the last paragraph of Section 4.9, Summary of the Migration to Groundwater Pathway SL-SSLs, of the NMED SSG.

Permittee Response (May 2022):
The NMED-HWB's January 2022 comment notes that the Permittees' risk assessments for the OD Units did not include assessments of the soil-to-groundwater exposure pathway and its potential to impact the interim status units. Soil-to-groundwater discussions and evaluations pursuant to the guidance provided in the NMED Risk Assessment Guidance for Site Investigations and Remediation are included in the following attachments to this Second Response Document:

- Attachment 13 – Revised Supplement 4-7, Open Detonation Unit at Technical Area 36 Human Health and Ecological Risk Screening Assessments; and
- Attachment 14 – Revised Supplement 4-8, Open Detonation Unit at Technical Area 39 Human Health and Ecological Risk Screening Assessments.

  Additional revisions to the risk assessments include other revisions and now the assessments align with guidance provided by the NMED-HWB. Language regarding these risk assessments generally appears in 4.18.2.2, *Soil Surface Monitoring*, in Attachment 3 of this Second Response Document.

NMED Response (January 2022):
The facility response to original comment # 22b submitted by the Permittees is acknowledged. However, issues remain with the Permittees' response to original comment # 20a. Once the Permittees adequately address those remaining issues, the issue identified in original comment # 22b will also be resolved.

Permittee Response (May 2022):
Please see Permittees' response to NMED-HWB Comment 20a.

NMED-HWB Comment (November 2024)
The NMED-HWB notes that "EPA released a proposed rule in the Revisions to Standards for the Open Burning/Open Detonation of Waste Explosives (Federal Register Number 2024-05088, Docket ID No. EPA-HQ-OLEM-2021-0397) on March 20, 2024, which amended the regulations for the open burning and open detonation (OB/OD) of waste explosives. EPA has identified safe alternatives that are potentially applicable for treatment of some waste streams. The proposed rule describes procedures to evaluate and implement alternative treatment technologies, including a new subpart that establishes technical standards for OB/OD units."

Permittee Response (July 2025)
The OB/OD of hazardous waste is generally prohibited, but *existing* regulations provide an exemption for waste explosives. Specifically, 40 C.F.R. § 265.382 provides that the "[o]pen burning or open detonation of hazardous waste is prohibited except for the open burning and detonation of waste explosives." Under this exemption, OB/OD treatment of waste explosives may occur, but it must occur "in a manner that does not threaten human health or the environment."

Under the exemption, LANL thermally treats[2] at three thermal treatment units specialized explosives waste compliantly and in a manner that does not threaten human health or the environment. The Laboratory implements specifically designed technology and processes at the thermal treatment units that result in highly controlled thermal treatment operations. The Laboratory's thermal treatment operations are highly regulated, including by DOE's technical standards for explosives safety.[3] The thermal treatment operations are safe, efficient, produce no secondary hazardous waste stream, effectively produce no byproducts, residuals, or emissions, and are protective of human health and the environment. As detailed in Revised Supplement 4-1, *2024 Alternative Technology (Alt Tech) Evaluation*,[4] there is no safe, available, and environmentally more protective alternative treatment technology for the Laboratory's specialized explosives waste.

The Laboratory conducts thermal treatment at the Flash Pad located at Technical Area (TA) 16-388 (Flash Pad), the OD unit at TA-36-8 (Minie Site), and the OD unit at TA-39-6 (Point 6). The Laboratory's thermal treatment units treat limited and discrete quantities of specialized explosives waste. The Laboratory generates specialized explosives waste to fulfill its research, development, testing, evaluation, post-manufacture, and national security missions. Specialized explosives waste is unique, heterogenous, highly energetic, potentially unstable, and possesses properties, morphologies, or characteristics that are difficult to discern and can be unpredictable. The thermal treatment units do not treat other types of wastes, such as large-scale munitions. The thermal treatment units are geographically isolated, access restricted, and are not continuously operated. The thermal treatment units are designed to enhance safety and to protect human health and the environment.

The Flash Pad is designed and operated to achieve the complete combustion of explosives waste materials without measurable or modeled toxic byproducts.

[2] To facilitate compliance and to ensure its thermal treatment operations are protective of human health and the environment, LANL has *presumed* that its thermal treatment operations constitute open burning (OB) and/or open detonation (OD). However, LANL's thermal treatment operations are designed to maintain adequate temperature for efficient combustion (or consumption); provide sufficient residence time to achieve complete combustion (or consumption); and produce no measurable or modeled toxic byproducts and prevent air emissions and constituent migration. LANL reserves the right to maintain that its thermal treatment operations are not encompassed within the definitions of open burning or open detonation and/or that its thermal treatment operations are, themselves, alternative treatment technologies to OB/OD.
[3] *See e.g.* DOE Technical Standard Explosives Safety (DOE-STD-1212-2019) (Nov. 2019).
[4] 40 C.F.R. § 265.382 does not require an alternatives assessment for those entities, like Permittees, treating waste explosives having the potential to detonate. Nevertheless, the Laboratory continually works to identify, evaluate, and document whether safe and environmentally protective alternative technologies are available to treat the Laboratory's specialized explosives waste.



Figure 1: Los Alamos National Laboratory engineered Flash Pad

The Flash Pad uses propane enhanced controlled burning that, by design, achieves complete combustion and prevents potential air emissions and constituent migration to groundwater (*e.g.,* advanced liner, secondary containment, and storm water controls). Analyses show that the temperatures attained at the Flash Pad exceed 1500°F within 60 seconds of the start of the burn, and temperatures above 1500°F (>2000°F routinely) are maintained continuously for the duration of the burn (typically 60 minutes). These temperatures result in the complete decomposition of the explosives waste stream and byproducts, including dioxins and furan congeners, which are destroyed at temperatures above 1400°F. The specialized explosives waste is fully treated in the Flash Pad, which provides the right-sized treatment unit for the Laboratory's specialized explosives waste.

Similarly, the Laboratory's detonation units have been designed to achieve complete consumption of the waste material and to prevent potential air emissions and groundwater contamination.

The detonation units produce no secondary waste or hazardous waste stream. PBX explosives fully detonate leaving little or no residual constituents when initiated with correct shock inputs. When performing a detonation treatment of specialized explosives waste, the high explosive is configured in such a manner to ensure shock transmission from an in-contact initiation system. Such a system involves a detonator and a new pristine high explosive that is applied to the specialized explosives waste. Controlled initiation ensures complete consumption of the waste material.

Site studies confirm no environmental impact from the Laboratory's thermal treatment operations. The Laboratory performs environmental monitoring specific to each of its thermal treatment units. Small mammal and avian studies at LANL's thermal treatment units show little to no adverse environmental impact. Risk assessment calculations support the conclusion that there is no adverse risk or affects to human health or the environment from the thermal treatment operations. Soil samples and risk assessments show that neither residents proximate to LANL, nor workers at LANL, are at risk due to exposure to soils at the site, and that even onsite impacts to plants and animals (ecological receptors)

near LANL's thermal treatment units are unlikely. Air modeling for LANL's thermal treatment units, using conservative parameters, indicates that no air screening levels are exceeded for both acute and chronic scenarios. Air monitoring during thermal treatment events at and around the thermal treatment units demonstrates that dioxin and furan compounds are not present at detectable levels and that metals detections are below acute inhalation-exposure screening levels. Institutional monitoring is conducted at the Laboratory for storm, surface, and ground water and air. Results of all site monitoring indicate that there is no adverse effect to human health or the environment due to operation of the thermal treatment units. There is no safe, available, and environmentally more protective alternative treatment technology for the Laboratory's specialized explosives waste.

NMED-HWB acknowledges that EPA's proposed rule is "a *proposed* rule." It is subject to revision or withdrawal. If and until the proposed rule is final and effective, it does not regulate OB/OD operations and its application, if at all, to the Laboratory and its thermal treatment units is unknown.[5] The Laboratory, however, has extensively reviewed the proposed rule, and respectfully directs NMED-HWB to *Comments from Triad National Security, LLC, Managing and Operating Contractor of the Los Alamos National Laboratory, on Proposed Rule: Revisions to Standards for the Open Burning/Open Detonation of Waste Explosives, 89 Fed. Reg. 19952 (March 20, 2024), Docket ID No. EPA-HQ-OLEM-2021-0397; RIN 2050-AH24* for an analysis of the proposed rule. [https://permalink.lanl.gov/object/tr?what=info:lanl-repo/eprr/ESHID-603887 and https://permalink.lanl.gov/object/tr?what=info:lanl-repo/eprr/ESHID-603888]

Additional comments were submitted to the EPA in March 2025 as *Supplemental Comments from Triad National Security, LLC, Managing and Operating Contractor of the Los Alamos National Laboratory, on Proposed Rule: Revisions to Standards for the Open Burning/Open Detonation of Waste Explosives, 89 Fed. Reg. 19952 (March 20, 2024), Docket ID No. EPAHQ-OLEM-2021-0397; RIN 2050-AH24*. [https://permalink.lanl.gov/object/tr?what=info:lanl-repo/eprr/ESHID-603889]

The Laboratory has also extensively analyzed whether there are safe alternative technologies available to treat the Laboratory's specialized explosives waste. As detailed in Revised Supplement 4-1, *2024 Alternative Technology (Alt Tech) Evaluation*,[6] there is *no* safe, available, and environmentally more protective alternative treatment technology for the Laboratory's specialized explosives waste.

[5] *See e.g. Chrysler Corp. v. Brown*, 441 U.S. 281, 313 (1979) (noting "[c]ertainly regulations subject to the [Administrative Procedure Act] cannot be afforded the 'force and effect of law' if not promulgated pursuant to the statutory procedural minimum found in that Act").

[6] 40 C.F.R. § 265.382 does not require an alternatives assessment for those entities, like Permittees, treating waste explosives having the potential to detonate. Nevertheless, the Laboratory continually works to identify, evaluate, and document whether safe and environmentally protective alternative technologies are available to treat the Laboratory's specialized explosives waste.

Part B Permit Application for Renewal of the Los Alamos National Laboratory Hazardous Waste Facility Permit, Revision 1.0

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Supplement 4-8	Open Detonation Unit at Technical Area 39 Human Health and Ecological Risk-Screening Assessments
Supplement 4-9	Revision of 2011 Open Detonation Risk Assessment
Supplement 4-10	Predicting and Controlling Noise from Detonation Activities
Supplement 4-11	Open Burning Unit Groundwater Monitoring and Surface Drainage Information

APPENDIX OR SUPPLEMENT	NAME
Supplement 4-12	Air Sampling at Open Burning Treatment Unit
Supplement 4-13	Thermal Measurements at the TA-16-388 Flash Pad
Supplement 4-14	2018 Soil Sampling Results Summary Report for the Open Burning Unit at Technical Area (TA) 16-388 Flash Pad
Supplement 4-15	Technical Area 16 - Open Burn/Open Detonation (OB/OD) Area - Technical Area 16-388 Flash Pad Human Health and Ecological Risk Screening Assessments
Supplement 4-16	Revision 1: Seismic Location Standards Evaluation for Three Open Burning/Open Detonation Locations under Consideration for Permitting under the Resource Conservation and Recovery Act at Los Alamos National Laboratory: Technical Areas 16, 36, and 39

1.0 INTRODUCTION

A research and defense institution located on the Pajarito Plateau, U.S. Department of Energy (DOE) National Nuclear Security Administration's (DOE/NNSA) Los Alamos National Laboratory (LANL) occupies an area of approximately 40 square miles in in northern New Mexico, largely within the incorporated County of Los Alamos and, in part, Santa Fe County. LANL is a design laboratory responsible for the safety and reliability of the nuclear explosives package in nuclear weapons, among other science and energy missions and is a Federally Funded Research and Development Center (FFRDC). LANL possesses unique capabilities in neutron scattering, enhanced surveillance, radiography, and plutonium science and engineering. Since October 2018, LANL has been managed and operated by Triad National Security, LLC, under a unique form of Management and Operating (M&O) contract with the DOE/NNSA. The LANL site, which is more than LANL, is where the collective execution by separate entities of distinct missions occurs, including LANL's national security, science, energy missions and the environmental remediation mission of others. At the LANL site, and also off the LANL site in the surrounding area, Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under contract with the DOE Office of Environmental Management (DOE-EM), executes legacy environmental remediation work.

The LANL site is the Facility under the Hazardous Waste Facility Permit with U.S. Environmental Protection Agency (EPA) Identification Number NM0890010515 (hereafter referred to as the 2010 Permit). The 2010 Permit was issued by the New Mexico Environment Department (NMED), with an effective date of December 30, 2010, to the DOE and Los Alamos National Security, LLC (LANS). LANS was the entity that managed and operated the LANL site and that executed both the LANL missions and the legacy remediation mission of DOE-EM until 2018. In 2018 two significant operational shifts occurred, including that: (1) the legacy remediation mission work was transferred from LANS to N3B, descoping legacy remediation from LANL; and (2) Triad assumed the role of M&O contractor for LANL. Since 2018, Triad and N3B have operated different permitted units (also known as "hazardous waste management units" or HWMUs) at the Facility. DOE is an owner and operator under the 2010 Permit, Triad and N3B are operators under the 2010 Permit, and DOE, Triad, and N3B are collectively "the Permittees" under the 2010 Permit.

This Permit Renewal Application is submitted to meet the requirements of the New Mexico Hazardous Waste Act and New Mexico Hazardous Waste Management Regulations (HWMR) at New Mexico Administrative Code (NMAC) 20.4.1, *Hazardous Waste Management*. The New Mexico HWMR at NMAC 20.4.1.500 and 20.4.1.900 adopt federal regulations, respectively, at 40 CFR part 264 and 40 CFR part 270, and they are identified in this Permit Renewal Application by the applicable federal citation. Pursuant to these requirements, permitted hazardous waste management facilities must submit a Permit Renewal Application that addresses the general and specific part B information requirements at 40 CFR part 264 and 40 CFR part 270 as needed to continue hazardous waste management operations under a Hazardous Waste Facility Permit.

Pursuant to NMAC 20.4.1 and Permit Condition 1.6.5, *Duty to Reapply*, the term of the Permit is ten years from the date of issuance:

> *If the Permittees intend to continue an activity regulated by this Permit after the expiration date of this Permit, the Permittees shall submit a complete application for a new permit at least 180*

days before the expiration date of this Permit unless permission for a later date has been granted by the Department in compliance with 40 CFR 270.10(h) and 270.30(b).

The Permit was effective on December 30, 2010; therefore, the Permittees' application for permit renewal was due on or before July 1, 2020. This Permit Renewal Application, dated July 2025, revises the original Permit Renewal Application submitted on June 29, 2020.

In this Permit Renewal Application, the Permittees seek authorization to continue to treat and store hazardous and radioactive mixed waste (hereinafter known as "hazardous waste") in permitted hazardous waste management units (HWMUs) authorized by the Permit. As described in Permit Condition 1.2, DOE-Triad and DOE-N3B manage and operate different permitted HWMUs. As managers of separate programs at the LANL site, Triad and N3B are solely responsible for operating their respective units and do not share responsibilities for these units. Under the Permit, DOE-Triad manages and operates 5 container storage units, 10 container storage/treatment units, one tank storage unit, and one stabilization treatment unit. Under the Permit, DOE-N3B manages and operates 1 container storage unit and 9 container storage/treatment units.

Provided concurrently with this Permit Renewal Application, is the *Los Alamos National Laboratory General Part A Permit Application, Revision 11.0* (LANL 2025), which includes the information required by 40 CFR § 270.13, *Contents of part A of the permit application*. In addition, the Permit Renewal Application addresses the general part B information requirements of 40 CFR § 270.14, *Contents of part B: General requirements,* and specific information requirements of 40 CFR § 270.15, *Specific part B information requirements for containers;* 40 CFR § 270.16, *Specific part B information requirements for tank systems*; and 40 CFR § 270.23, *Specific part B information requirements for miscellaneous units*.

The Permittees do not propose to modify any of the currently permitted hazardous waste management units. However, DOE-Triad seeks approval to permit one interim status open burning unit and two interim status open detonation units. These interim status hazardous waste management units conduct treatment processes to remove the characteristic of reactivity for waste explosives and explosive-contaminated waste. To facilitate review, this Permit Renewal Application addresses these interim status units separately under Section 4, *Open Detonation Treatment*, and Section 5, *Open Burning Treatment*.

In summary, the Permittees seek approval for the following new/revised changes below:

1) Obtain permitted authorization to treat waste explosives at one interim status open burning unit and two interim status open detonation units.
2) Simplify and streamline permit text to improve clarity by removing redundant and inconsistent text.
3) Update and clarify reporting requirements and adjust due dates to better accommodate for federal and state holidays and administrative requirements necessary after reports and notifications are delivered to the NMED - Hazardous Waste Bureau (HWB).
4) Update information and organization changes to facilitate implementation, remove redundant information, and simplify and streamline text in Permit Attachment A, *Technical Area Unit Descriptions;* Permit Attachment C, *Waste Analysis Plan*; Permit Attachment D, *Contingency Plan*; Permit Attachment E, *Inspection Plan;* and Permit Attachment F, *Personnel Training Plan*.
5) Update information and streamline figures in Permit Attachment D, *Contingency Plan,* and Permit Attachment N, *Figures.*

6) Propose changes to Permit text and Attachment G, *Closure Plans,* and Attachment J, *Hazardous Waste Management Units*, as a result of the settlement in *U.S. v. Curry*, DC NM Case No. 10-01251.
7) Update information in Attachment J, *Hazardous Waste Management Units,* to remove "Interim Status Unit" from the open burning and open detonation unit designations, as well as remove for clarity dated references to unit names that are no longer valid and create consistent references to the current unit descriptions.
8) Remove detail that does not support a Permit requirement or is not required by the New Mexico Hazardous Waste Regulations; and
9) Minor non substantive Permit text changes that would qualify as a Class 1 (e.g., typographical errors, editorial, and technical edits).

The Permit Renewal Application includes proposed changes to the text of the current Permit and Permit Attachments in redline/strikeout format, to clearly identify all the proposed changes. A table with a summary of these changes with supporting justification is included as Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit.* The summary table outlines proposed changes represented in the redline/strikeout version of the Permit and Permit Attachments within Supplements 1-1 through 1-9. The Permit Renewal Application includes all material that is being revised from the 2010 Permit. Portions of the 2010 Permit not being changed are not being resubmitted, as they are in the NMED's administrative record for the current Permit. The renewal application indicates which sections of the 2010 Permit have been revised and included with this submittal or have not been revised and are not included.

The version of the Permit used to create the renewal application is the latest version the NMED posted on its website, dated April 2025. Revision 1.0 incorporates information provided as a result of formal communication from the NMED-HWB in March 2021 and January 2022, and additional follow-up comments to be addressed were sent via e-mail in August 2022. Responses to the formal communications were submitted to the NMED-HWB on July 21, 2021 (LANL 2021a) and May 25, 2022 (LANL 2022). Permittees responses to the NMED-HWB comments are summarized in the introductory portion of this renewal application, prior to beginning the Part B portion of the Permit Renewal Application.

1.1 Permit Application Overview

The Permit Renewal Application is organized as follows and includes the following required information:

- Section 1 contains an overview of the renewal application, the pre-application public meeting that satisfies the requirements of 40 CFR §124.31, and Table 1-1, *Regulatory Crosswalk*, which is intended to assist the reviewer in locating relevant information in the Permit Renewal Application.
- Section 2 contains the general part B information requirements under 40 CFR §§270.14(b)(1) through (b)(20), as well as the requirements for groundwater under 40 CFR §270.14(c) and solid waste management units (SWMUs) at 40 CFR §270.14(d).
- Section 3 contains the required specific part B information requirements for permitted units, including 25 container storage units, one storage tank, and one treatment (stabilization) unit under 40 CFR §§270.15, 270.16 and 270.23. In addition, this section addresses treatment of

hazardous waste (via macroencapsulation or stabilization within containers) at 18 units that are primarily utilized for storage as described below.

- Section 4 contains the general and specific information requirements at 40 CFR §270.14 and 40 CFR §270.23 necessary for the NMED to review treatment of hazardous waste at two open-detonation units.
- Section 5 contains all the general and specific information requirements at 40 CFR §270.14 and 40 CFR §270.23 necessary for the NMED to review and approve the treatment of hazardous waste at one open burning unit.
- Section 6 contains the necessary information for the NMED to review proposed changes to the Permit text and Permit Attachments by the Permittees.
- Section 7 includes references to the documents referred to throughout the Permit Renewal Application.
- Section 8 provides the certification required by 40 CFR §270.11.

1.2 Pre-Application Public Meeting

In accordance with 40 CFR §124.31, a pre-application public information meeting to obtain input on the 2020 Permit Renewal Application was held on December 4, 2019, at Cities of Gold Hotel & Casino Conference Center Tribal Room in Santa Fe, New Mexico. Evidence of completion of the required forms of public notice, per 40 CFR §124.31(d), are documented in Appendix 2, *Evidence of Public Notice, Summary of Comments, and Public Comment Response for Public Information Meeting on Los Alamos National Laboratory Permit Renewal Application* and summarized as follows:

- Public notice of the pre-application meeting was provided at least 30 days prior to the meeting.
- The Permittees provided public notice in the following forms:
    - The Notice of Public Meeting was published in the following newspapers:
        - *Rio Grande SUN*, October 31, 2019;
        - *Santa Fe New Mexican*, November 1, 2019;
        - *Los Alamos Monitor*, November 3, 2019;
        - *Journal North*, November 3–9, 2019; and
        - *Taos News*, October 31–November 6, 2019.
    - A "Notice of Pre-Submittal Public Meeting" sign was posted outside Los Alamos National Laboratory's Communications and Community Partnerships building.
    - A broadcast media announcement was run on KRSN AM 1490, beginning November 4, 2019, and ending on November 25, 2019.
    - Proof of the newspaper notices will be submitted to the NMED as Appendix 2 in the Permit Renewal Application.
    - Additionally, notice of the public meeting was sent to the following state and local governments via the NMED-maintained LANL facility mailing list:
        - City of Espanola; Los Alamos County; NM Dept. of Game & Fish; NMED; NMED - DOE Oversight Bureau; NMED – HWB; NMED/Solid Waste Bureau; Pueblo of Tesuque, Environment Dept.; Rio Arriba Board of Cty. Commissioners; and San Juan Pueblo/Office of Envir. Affairs.
        - The Governors of the Pueblos of Cochiti, Isleta, Jemez, Kewa, Laguna, Picuris, Pojoaque, Sandia, San Felipe, San Ildefonso, San Juan, Santa Ana, Santa Clara, Santo Domingo, Taos, and Zuni.

- The required notice also included the following:
    - The date, time, and location of the meeting.
    - A statement of what would be discussed at the public meeting and the purpose of the meeting.
    - A statement to notify the contact listed on the notice, at least 72 hours before the meeting, if special assistance was needed to participate in the meeting.
    - The notice included an address, telephone number, and electronic mail (e-mail) to contact with any questions.

Evidence of completion of 40 CFR §124.31(c) is documented in Appendix 2 and summarized as follows:

- A summary of the December 4, 2019, public meeting was compiled, along with a list of the attendees.
- Comments received during the December 4, 2019, public meeting were compiled and later responded to.

Although a single public meeting was held, the Permittee's continued to encourage comments from members of the public and received two additional comments after the meeting via e-mail. Comments received on December 9, 2019, and January 21, 2020, as well as responses to those comments are included within Appendix 2.

Table 1-1

Regulatory Crosswalk

Regulatory Citation(s) (40 CFR)	Description of Requirement	Location in this Document
270.13(a)	Activities conducted by applicant that require a permit under RCRA	General Part A
270.13(b)	Name, mailing address, and location of facility	General Part A
270.13(c)	NAICS codes for a facility	General Part A
270.13(d)	Operator's name, address, telephone number	General Part A
270.13(e)	Owner's name, address, telephone number	General Part A
270.13(f)	Whether the facility is located on Indian Lands	General Part A
270.13(g)	New or existing facility	General Part A
270.13(h)	Drawings and photographs	General Part A
270.13(i)	Description and design capacity of processes for treating, storing, and disposing of hazardous waste	General Part A
270.13(j)	Specific wastes to be treated, stored, or disposed	General Part A
270.13(k)	All permits or construction approvals received or applied for	General Part A
270.13(l)	Topographic maps	General Part A
270.13(m)	Description of the nature of the business	General Part A
270.13(n)	Hazardous waste debris categories and contaminant categories	General Part A
270.14(b)(1)	General facility description	Section 2.1
270.14(b)(2)	Chemical and physical analyses	Section 2.2 and Appendix 1, Supplement 1-3
270.14(b)(3)	Waste Analysis Plan	Section 2.2 and Appendix 1, Supplement 1-3
264.13(a-b)	Development and implementation of Waste Analysis Plan	Section 2.2 and Appendix 1, Supplement 1-3
264.13(c)	Off-site waste analysis requirements	Section 2.2 and Appendix 1, Supplement 1-3
270.14(b)(4)	Security procedures and equipment	Section 2.3
264.14	Security	Section 2.3
270.14(b)(5)	General inspection requirements	Section 2.4 and Appendix 1, Supplement 1-5
264.15	General inspection requirements	Section 2.4 and Appendix 1, Supplement 1-5

Table 1-1

Regulatory Crosswalk (continued)

Regulatory Citation(s) (40 CFR)	Description of Requirement	Location in this Document
264.174	Container inspections	Sections 2.4, and Appendix 1, Supplement 1-5
264.193(i)	Tank inspections	Section 2.4 and Appendix 1, Supplement 1-5
264.195	Overfill control inspections	Section 2.4 and Appendix 1, Supplement 1-5
264.226	Surface impoundments monitoring and inspection	Not applicable
264.254	Waste pile monitoring and inspection	Not applicable
264.273	Land treatment design and operating requirements	Not applicable
264.303	Landfill monitoring and inspection	Not applicable
264.602	Miscellaneous unit inspection	Sections 2.4, 4.4, 5.4, 5.14, and Appendix 1, Supplement 1-5
264.1033	Closed-vent systems and control device standards	Appendix 1, Supplement 1-5
264.1052	Equipment leak air-emission standards	Section 2.4 and Appendix 1, Supplement 1-5
264.1053	Compressor standards	Not applicable
264.1058	Standards for pumps, valves, pressure relief devices, flanges, and connections	Appendix 1, Supplement 1-5
264.1083	Subpart CC waste determination procedures	Section 2.2 and Appendix 1, Supplement 1-3
264.1084	Subpart CC inspection and monitoring requirements - Tank air-emission standards	Section 2.4 and Appendix 1, Supplement 1-5
264.1085	Subpart CC inspection and monitoring requirements - Surface impoundment standards	Not applicable
264.1086	Subpart CC inspection and monitoring requirements - Container standards	Section 2.4 and Appendix 1, Supplement 1-5
264.1088	Subpart CC inspection and monitoring requirements - Closed vent systems and control devices	Not applicable
270.14(b)(6)	Request for waiver from preparedness and prevention requirements of 264 Subpart C	Section 2.5
270.14(b)(7)	Contingency Plan requirements under 264 Subpart D	Section 2.6 and Appendix 1, Supplement 1-4
264, Subpart D	Contingency Plan and emergency procedures	Section 2.6 and Appendix 1, Supplement 1-4

Table 1-1

Regulatory Crosswalk (continued)

Regulatory Citation(s) (40 CFR)	Description of Requirement	Location in this Document
264.227	Surface impoundment emergency repairs; contingency plans	Not applicable
264.200	Air-emissions standards for tanks	Section 2.6 and Appendix 1, Supplement 1-4
270.14(b)(8)	Preparedness and prevention	Section 2.7
264, Subpart C	Preparedness and prevention - applicability, design and operation; required equipment, testing and maintenance of equipment; access to communications or alarm systems; required aisle space; and arrangements with local authorities	Section 2.7
264.33	Testing and maintenance of equipment	Section 2.7.4
270.14(b)(8)(i)	Prevention of hazards in unloading operations (ramps and special forklifts)	Section 2.7.1
270.14(b)(8)(ii)	Runoff prevention with berms, trenches, and dikes	Sections 2.7.2, 4.7.2, and 5.7.2
270.14(b)(8)(iii)	Prevention of contamination of water supplies	Section 2.7.3
270.14(b)(8)(iv)	Mitigation effects of equipment failure and power outages	Sections 2.7.4, 4.7.4 and 5.7.4
270.14(b)(8)(v)	Prevention of undue exposure of personnel by use of personal protective equipment	Sections 2.7.5, 4.7.5, and 5.7.5
270.14(b)(8)(vi)	Prevention of release to the atmosphere	Sections 2.7.6, 4.7.6, and 5.7.6
270.14(b)(9)	Prevention of accidental ignition or reaction	Sections 2.8, 4.8, and 5.8
264.17	General requirements for ignitable, reactive, or incompatible wastes	Sections 2.8, 4.8, and 5.15
270.14(b)(10)	Traffic pattern, volume, and controls	Sections 2.9, 4.9 and 5.9
	Identification of turn lanes	Sections 2.9, 4.9 and 5.9
	Identification of traffic/stacking lanes	Sections 2.9, 4.9 and 5.9
	Description of road surface	Sections 2.9, 4.9 and 5.9
	Description of road load-bearing capacity	Sections 2.9, 4.9 and 5.9
	Identification of type and number of traffic controls	Sections 2.9, 4.9 and 5.9
270.14(b)(11)	Facility/unit location information	Section 2.10
264.18	Location standards	Section 2.10
270.14(b)(11)(i)	Seismic standard applicability [264.18(a)]	Section 2.10.1, Attachment 4-16

Table 1-1

Regulatory Crosswalk (continued)

Regulatory Citation(s) (40 CFR)	Description of Requirement	Location in this Document
270.14(b)(11)(ii)	Seismic standard requirements	Section 2.10.1, Attachment 4-16
270.14(b)(11)(ii)(A)(1-4)	No fault within 3,000 feet (ft.), with displacement in Holocene time	Section 2.10.1, Attachment 4-16
270.14(b)(11)(ii)(B)	If faults which have displacement in Holocene time are present within 3,000 ft., no faults pass within 200 ft. of portions of the facility where treatment, storage, or disposal will be conducted	Section 2.10.1, Attachment 4-16
270.14(b)(11)(iii)	100-year floodplain standard	Section 2.10.2
270.14(b)(11)(iv)	If facility is within 100-year floodplain	Section 2.10.2
270.14(b)(11)(iv)(A-C)	Engineering analyses of hydrostatic forces expected in a 100-year flood	Section 2.10.2
270.14(b)(11)(v)	Plan to show how the facility will be brought into compliance with 264.18(b)	Not applicable
270.14(b)(12)	Personnel training program	Section 2.11 and Appendix 1, Supplement 1-6
264.16	Personnel training	Section 2.11 and Appendix 1, Supplement 1-6
270.14(b)(13)	Closure and post-closure plans	Section 2.12 and Appendix 3, Supplement 3-1, Attachments G.1-G.31 of the 2010 Permit
264.112	Amendment of Closure Plan	Section 2.12 and Appendix 3, Supplement 3-1, Attachments G.1-G.31 of the 2010 Permit
264.118	Post-closure plan; amendment of plan	Not applicable
264.178	Closure/containers	Section 2.12 and Appendix 3, Supplement 3-1, Attachments G.1-G.31 of the 2010 Permit
264.197	Closure/tanks	Section 2.12 and Appendix 3, Supplement 3-1, Attachments G.1-G.31 of the 2010 Permit
264.228	Closure/post-closure/surface impoundments	Not applicable
264.258	Closure/post-closure/waste piles	Not applicable
264.280	Closure/post-closure/land treatment	Not applicable
264.310	Closure/post-closure/landfills	Not applicable

Table 1-1

Regulatory Crosswalk (continued)

Regulatory Citation(s) (40 CFR)	Description of Requirement	Location in this Document
264.351	Closure/incinerators	Not applicable
264.601	Miscellaneous unit closure	Sections 2.12, 4.11, and 5.11
264.603	Post-closure care	Section 2.12 and Appendix 3, Supplement 3-1, Attachments G.2, G.3, and G.28
270.14(b)(14)	Post-closure notices (264.119)	Not applicable
270.14(b)(15)	Closure cost estimate (264.142)	Section 2.14
	Financial assurance (264.143)	Section 2.14
270.14(b)(16)	Post-closure cost estimate (264.144)	Section 2.14
	Post-closure care financial assurance (264.145)	Section 2.14
270.14(b)(17)	Liability insurance (264.147)	Section 2.14
270.14(b)(18)	Proof of financial coverage (264.149-150)	Section 2.14
270.14(b)(19)	Topographic map requirements	Section 2.10.3 and General Part A
270.14(b)(19)(i)	Map scale and date	Section 2.10.3 and General Part A
270.14(b)(19)(ii)	100-year floodplain	Section 2.10.3 and General Part A
270.14(b)(19)(iii)	Surface waters	Section 2.10.3 and General Part A
270.14(b)(19)(iv)	Land use	Section 2.10.3 and General Part A
270.14(b)(19)(v)	Wind rose	Section 2.10.3 and General Part A
270.14(b)(19)(vi)	Map orientation	Section 2.10.3 and General Part A
270.14(b)(19)(vii)	Legal boundaries	Section 2.10.3 and General Part A
270.14(b)(19)(viii)	Access controls	Section 2.10.3 and General Part A
270.14(b)(19)(ix)	Wells	Section 2.10.3 and General Part A
270.14(b)(19)(x)	Buildings, treatment, storage, and disposal operations	Section 2.10.3 and General Part A

Table 1-1

Regulatory Crosswalk (continued)

Regulatory Citation(s) (40 CFR)	Description of Requirement	Location in this Document
	Run-on/runoff control systems	Sections 2.10.3, 4.18.2, and 5.16.2
	Storm sewer systems	Section 2.10.3 and General Part A
	Sanitary sewer systems	Section 2.10.3 and General Part A
	Process sewer systems	Section 2.10.3 and General Part A
	Loading/unloading areas	Section 2.10.3 and General Part A
	Fire control facilities	Section 2.10.3
270.14(b)(19)(xi)	Drainage barriers	General Part A
270.14(b)(19)(xii)	Location of operational units	Section 2.10.3 and General Part A
270.14(b)(20)	Other federal laws	Section 2.15
270.3(a)	Wild and Scenic Rivers Act	Section 2.15
270.3(b)	National Historic Preservation Act	Section 2.15
270.3(c)	Endangered Species Act	Section 2.15
270.3(d)	Coastal Zone Management	Section 2.15
270.3(e)	Fish and Wildlife Coordination Act	Section 2.15
270.3(f)	Executive Orders	Section 2.15
270.14(b)(21)	Notice of extension approval for land disposal facilities	Not applicable
270.14(b)(22)	Summary of pre-application meeting	Section 1.2 and Appendix 2
270.14(c)(1-8)	Groundwater monitoring requirements	Section 2.16
270.14(d)	SWMU	Section 2.17
270.14(d)(1)(i)	Location of SWMUs on topographic map	Section 2.17
270.14(d)(1)(ii)	Types of SWMUs	Section 2.17
270.14(d)(1)(iii)	Dimensions and descriptions of SWMUs	Section 2.17
270.14(d)(1)(iv)	Dates of operation	Section 2.17
270.14(d)(1)(v)	Waste types managed at SWMU	Section 2.17
270.14(d)(2)	Information on releases from SWMUs	Section 2.17
264.101	Corrective action for SWMUs	Section 2.17
270.15	Containers	Section 3.1

Table 1-1

Regulatory Crosswalk (continued)

Regulatory Citation(s) (40 CFR)	Description of Requirement	Location in this Document
270.15(a)	Description of containment system	Section 3.1
270.15(b)	Storage areas holding wastes that do not contain free liquids	Section 3.1
264.171	Condition of containers	Section 3.1
264.172	Compatibility of waste with containers	Section 3.1
264.173	Management of containers	Section 3.1
264.175(a-c)	Containment	Section 3.1
270.15(c)	Requirements for ignitable, reactive, and incompatible wastes	Section 2.8 and General Part A
270.15(d)	Requirements for incompatible wastes	Section 2.8
264.176	15-meter storage buffer for ignitable or reactive wastes	Section 2.8
264.177(a)	Incompatible wastes in containers	Section 2.8
264.177(b)	Incompatible wastes in containers	Section 2.8
264.177 (c)	Incompatible wastes separation or segregation	Section 2.8
264.17 (b)	Prevention of reactions	Section 2.8
264.17(c)	Documentation of precautions for ignitable, reactive, or incompatible waste	Section 2.8
270.15(e)	Information on air-emission control equipment	2010 Permit Section 2.4 & Appendix 1, Supplement 1-5
270.27	Air-emission controls for containers	2010 Permit Section 2.4 & Appendix 1, Supplement 1-5
270.16	Tank systems	Section 3.2
270.16(a)	Written assessment of tank, structural integrity, and suitability submitted by an independent, certified, registered professional engineer	Section 3.2 and Permit Part 4
270.16(b)	Dimensions and capacity of each tank	Section 3.2
270.16(c)	Feed system description	Section 3.2
270.16(d)	Piping diagram	Section 3.2
270.16(e)	External corrosion protection description	Section 3.2
270.16(f)	New tank installation	Section 3.2
270.16(g)	Detailed description of secondary containment	Section 3.2
270.16(h)	Request for variance	Not applicable

Table 1-1

Regulatory Crosswalk (continued)

Regulatory Citation(s) (40 CFR)	Description of Requirement	Location in this Document
270.16(i)	Description of procedures and controls to prevent spills and overflows	Section 3.2
270.16(j)	Description of procedures for ignitable, reactive, or incompatible wastes	Section 3.2
270.16(k)	Information on air-emission control equipment	Sections 3.2
270.17	Surface impoundments	Not applicable
270.18	Waste piles	Not applicable
270.19	Incinerators	Not applicable
270.20	Land treatment facilities	Not applicable
270.21	Landfills	Not applicable
270.22	Boilers and industrial facilities	Not applicable
270.23(a)	Description of miscellaneous unit	Sections 3.2, 4.1, and 5.1
270.23(b)	Compliance with environmental performance standards at 264.601	Sections 3.2, 4.18, and 5.16
270.23(c)	Potential pathways of exposure of humans or environmental receptors	Sections 3.2, 4.18, and 5.16
270.23(d)	Effectiveness of treatment	Sections 4.13 and 5.13
270.23(e)	Additional information necessary for evaluation of compliance with environmental performance standards of 264.601	Sections 3.2, 4.18, and 5.16
264.601(a)	Prevention of release of contaminants to groundwater	Sections 3.2, 4.18.1, and 5.16.1
264.601(a)(1)	Volume and characteristics of waste-considering potential for migration through containing structures	Sections 3.2, 4.18, and 5.13
264.601(a)(2)	Hydrologic/geologic characteristics	Sections 3.2, 4.18, and 5.16
264.601(a)(3)	Quality of groundwater, including other sources of contamination and their cumulative impact on groundwater	Sections 3.2, 4.18, and 5.16
264.601(a)(4)	Quantity and direction of groundwater flow	Sections 3.2, 4.18, and 5.16
264.601(a)(5)	Proximity to and withdrawal rates of potential groundwater users	Sections 3.2, 4.18, and 5.16
264.601(a)(6)	Regional patterns of land use	Sections 3.2, 4.18, and 5.16
264.601(a)(7)	Potential for deposition and migration of waste constituents	Sections 3.2, 4.18, and 5.16

Table 1-1

Regulatory Crosswalk (continued)

Regulatory Citation(s) (40 CFR)	Description of Requirement	Location in this Document
264.601(a)(8)	Potential for health risks caused by human exposure to waste constituents	Sections 3.2, 4.18, and 5.16
264.601(a)(9)	Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents	Sections 3.2, 4.18, and 5.16
264.601(b)	Prevention of release of contaminants to surface water	Sections 3.2, 4.18, and 5.16
264.601(b)(1)	Volume and characteristics of the waste	Sections 4.2, 5.2, and Appendix 1, Supplement 1-3
264.601(b)(2)	Effectiveness and reliability of containment, confinement, and collection systems and structures	Sections 3.2, 4.18, and 5.16
264.601(b)(3)	Hydrologic characteristics of the unit and local area	Sections 3.2, 4.18, and 5.16
264.601(b)(4)	Regional precipitation patterns	Sections 3.2, 4.18, and 5.16
264.601(b)(5)	Quantity, quality, and direction of groundwater flow	Sections 3.2, 4.18, and 5.16
264.601(b)(6)	Proximity of the unit to surface water	Sections 3.2, 4.18, and 5.16
264.601(b)(7)	Current and potential uses of nearby surface waters and water quality standards for those waters	Sections 3.2, 4.18, and 5.16
264.601(b)(8)	Quality of surface waters and soils, including other sources of contamination and their cumulative impact on surface waters and soils	Sections 3.2, 4.18, and 5.16
264.601(b)(9)	Regional patterns of land use	Section 2.1
264.601(b)(10)	Potential for health risks caused by human exposure to waste constituents	Sections 3.2, 4.18, and 5.16
264.601(b)(11)	Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents	Sections 3.2, 4.18, and 5.16
264.601(c)	Prevention of release of contaminants to air	Sections 3.2, 4.18, and 5.16
264.601(c)(1)	Volume and characteristics of waste, including its potential for emission	Sections 3.2, 4.18, and 5.16
264.601(c)(2)	Effectiveness and reliability of systems/structures to reduce/prevent emissions of hazardous constituents to the air	Sections 3.2, 4.18, and 5.16
264.601(c)(3)	Operating characteristics of the unit	Sections 4.12 and 5.12
264.601(c)(4)	Characteristics of the unit and the surrounding area	Sections 3.2, 4.18, and 5.16

Table 1-1

Regulatory Crosswalk (continued)

Regulatory Citation(s) (40 CFR)	Description of Requirement	Location in this Document
264.601(c)(5)	Existing quality of the air, including other sources of contaminants and their cumulative impact on the air	Sections 3.2, 4.18, and 5.16
264.601(c)(6)	Potential health risks caused by human exposure to waste constituents	Sections 3.2, 4.18, and 5.16
264.601(c)(7)	Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents	Sections 3.2, 4.18, and 5.16
265.370	Other thermal treatment	Sections 4.12, 4.12.1, and 5.12
265.373	Thermal treatment general operating requirements	Sections 4.12.2 and 5.12.7
265.375	Thermal treatment waste analysis	Sections 4.2, 5.2, and Appendix 1, Supplement 1-3
265.377	Thermal treatment monitoring and inspections	Section 5.12.2 and Appendix 1, Supplement 1-5
265.381	Thermal treatment unit closure	Section 2.12 and Appendix 3, Supplement 3-1
265.382	Open burning; waste explosives	Sections 4.2, 4.16, 5.2, and 5.12.2
270.24	Process vents	Not applicable
270.25	Equipment for compliance with part 264, subpart BB requirements	Not applicable
270.26	Drip pads	Not applicable
270.28	Post-closure permits	Not applicable
264.75	Biennial report	2010 Permit Section 2.12.5
264.76	Unmanifested waste report	2010 Permit Section 2.12
264.77	Additional reports	2010 Permit Section 2.12

2.0 PART B GENERAL INFORMATION REQUIREMENTS

Section 2 of the Permit Renewal Application addresses the part B general information requirements under 40 CFR §§270.14(b) through (d) for permitted hazardous waste management units under the current Permit. This section describes compliance with the part B information requirements under 40 CFR §§270.42(b)(1) through (b)(20), the requirements for groundwater under 40 CFR §270.42(c), and requirements for SWMUs at 40 CFR §270.42(d). Not included in this part are the following: (1) pre-application meeting requirements under 40 CFR §270.42(b)(22), which are addressed above in Section 1.2, *Pre-Application Public Meeting*; and (2) DOE-Triad's request to permit interim status treatment units for two open detonation units and one open burning unit, which are addressed below in Section 4, *Open Detonation Treatment*, and Section 5, *Open Burning Treatment*.

Also addressed in this Section are proposed changes to Permit text and Permit Attachments (represented in Supplements 1-1 through 1-9) that fall within part B general information requirements. These changes are also summarized and justified in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit*.

Permit Section 1.2, *Permittees and Permitted Activity,* describes the different hazardous waste management units operated separately by DOE-Triad and DOE-N3B. The Permittees are not proposing to change these permitted units in this Permit Renewal Application. In total, the Permittees currently treat and/or store hazardous waste in 28 hazardous waste management unit locations. DOE-Triad and DOE-N3B also treat hazardous waste (via macroencapsulation or stabilization within containers) at 19 storage units managed by the Permittees.

DOE-Triad stores and/or treats hazardous waste at the following hazardous waste management units:

- Technical Area 3, Building 29, Container Storage/Treatment Unit
- Technical Area 50, Building 69, Indoor Container Storage/Treatment Unit
- Technical Area 50, Building 69, Container Storage/Treatment Outdoor Pad
- Technical Area 54 West, Building 38, Container Storage Unit
- Technical Area 54, West, Outdoor Container Storage/Treatment Unit
- Technical Area 55, Building 4, Container Storage/Treatment Unit, B40
- Technical Area 55, Building 4, Container Storage Unit, B05
- Technical Area 55, Building 4, Container Storage Unit, K13
- Technical Area 55, Building 4, Container Storage/Treatment Unit, B45
- Technical Area 55, Building 4, Container Storage Unit, B13
- Technical Area 55, Building 4, Container Storage Unit, G12
- Technical Area 55, Building 4, Container Storage Unit, Vault
- Technical Area 55, 0355 Pad, Container Storage/Treatment Unit
- Technical Area 55, Container Storage/Treatment Pad
- Technical Area 55, Tank Storage Unit
- Technical Area 55, Stabilization (Treatment) Unit
- Technical Area 60, Building 17, Container Storage/Treatment Unit
- Technical Area 63, Transuranic Waste Facility (TWF), Container/Treatment Storage Unit

DOE-N3B stores and/or treats hazardous waste at the following hazardous waste management units:

- Technical Area 54, Area G, Pad 1, Container Storage/Treatment Unit (macroencapsulation and treatment in containers)
- Technical Area 54, Area G, Pad 3, Container Storage/Treatment Unit
- Technical Area 54, Area G, Pad 5, Container Storage/Treatment Unit
- Technical Area 54, Area G, Pad 6, Container Storage/Treatment Unit
- Technical Area 54, Area G, Pad 9, Container Storage/Treatment Unit (macroencapsulation and treatment in containers)
- Technical Area 54, Area G, Pad 10, Container Storage/Treatment Unit
- Technical Area 54, Area G, Pad 11, Container Storage/Treatment Unit (macroencapsulation and treatment in containers)
- Technical Area 54, Area G, Storage Shed 8, Container Storage Unit
- Technical Area 54, Area G, Building 33, Container Storage/Treatment Unit
- Technical Area 54, Area L, Container Storage/Treatment Unit

2.1 General Facility Description

The general information requirements at 40 CFR §270.14(b)(1) provide that a part B Permit application for hazardous waste management facilities includes "a general description of the facility."

The Permittees do not propose to change the facility description in the Permit and the *LANL General Part A Permit Application, Revision 11.0* (LANL 2025), provided concurrently with this renewal application. The central mission included within the application states as follows:

> *The central mission of Los Alamos National Laboratory is the reduction of global nuclear danger supported by research that also contributes to conventional defense, civilian, and industrial needs. This includes programs in nuclear, medium energy, and space physics; hydrodynamics; conventional explosives; chemistry; metallurgy; radiochemistry; space nuclear systems; controlled thermonuclear fusion; laser research; environmental technology; geothermal, solar, and fossil energy research; nuclear safeguards; biomedicine; health and biotechnology; and industrial partnerships.*

The Facility is located in Los Alamos County in north-central New Mexico. It is approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. The LANL site mailing address is P.O. Box 1663, Los Alamos, New Mexico, 87545. The LANL site is owned by DOE and is operated jointly by the DOE National Nuclear Security Administration Field Office and Triad. Additionally, the Los Alamos Legacy Cleanup Contractor, N3B, conducts corrective action and legacy waste cleanup activities on behalf of DOE's Environmental Management Los Alamos Field Office. The Facility is divided into technical areas as depicted on revised Figure 2 included in Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*. Situated on the Pajarito Plateau, the LANL site occupies an area of approximately 40 square miles, as well as the associated residential and commercial areas of Los Alamos County that occupy an area of approximately 109 square miles. Major roads, neighboring communities, and other surrounding land uses are located on Figures 1-3 within *Permit Attachment N, Figures*. These figures are proposed to be updated as summarized in the Attachment N portion of Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste*

Facility Permit with updates included in Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures.*

2.2 Waste Analysis Plan

The general information requirements at 40 CFR §§270.14(b)(2) and (3) provide that the part B permit application must have a Waste Analysis Plan developed to include the "chemical and physical analysis of the hazardous waste and hazardous debris to be handled at the facility. At a minimum, this analysis shall contain all the information which must be known to treat, store, or dispose of the wastes properly in accordance with part 264 of this chapter."

A copy of the Permittees' Waste Analysis Plan is currently contained as Permit Attachment C, *Waste Analysis Plan*. The plan describes the procedures used to analyze hazardous waste received at the facility, including any waste that may be received from offsite of the facility (40 CFR §264.13the). The Permittees propose minor, non-substantive text changes to the Waste Analysis Plan, including typographical errors, technical edits, rearrangement of information, updates for characterization of transuranic waste, removal of repetitive information, and minor text clarifications. These changes are identified and summarized in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit*; a revised version of the Waste Analysis Plan that meets the requirements at 40 CFR §264.13 is attached to this Permit Renewal Application within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.

2.3 Security

The general information requirements at 40 CFR §270.14(b)(4) provide that the Part B permit application must include "a description of the security procedures and equipment required by 40 CFR §264.14, or a justification demonstrating the reasons for requesting a waiver of this requirement." This requirement is intended to ensure that the Permittees prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active hazardous waste management units the LANL site, in accordance with the requirements at 40 CFR §264.14.

The Permittees ensure the security at active hazardous waste management units by implementing the following measures as required by Permit Section 2.5, *Security*:

1. 24-hour surveillance system that continuously monitors and controls entry into the active hazardous waste management units at the Facility; or
2. controlled entry into the active hazardous waste management units at all times via gates, stations, or other means (e.g., attendants, locks, and prohibited or controlled roadway access).

The Permittees maintain all security fences, entry gates, and entry stations surrounding the active hazardous waste management units as required by the Permit. Figures that represent security features at each of the units are included in Permit Attachment N, *Figures;* these figures are updated in Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures* and include newly numbered, revised, and added Figures 3-13.

The Permittees propose minor non-substantive changes to the access and security description within Permit Attachment A, *Technical Areas Unit Descriptions* of the Permit. The updates include removal of references to security fences or entry gates at Technical Area (TA) 50 that are not relevant for the active

hazardous waste management units at TA-50, Building 69 (TA-50-69). These changes are also summarized in Appendix 1, *Summary Table of Proposed Changes to 2010 the Los Alamos National Laboratory Hazardous Waste Facility Permit* and included in Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11.*

2.3.1 Warning Signs

Per the requirements stipulated in 40 CFR §264.14(c) and Permit Section 2.5.1, *Warning Signs*, warning signs are posted at each active hazardous waste management unit. In Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*, the Permittees propose to remove the warning sign requirement from the individual permit sections within Permit Attachment A, *Technical Area Unit Descriptions,* which address warning sign requirements at hazardous waste management units. The requirement in individual sections is duplicative and, in some cases, inconsistent with the warning sign requirements in Permit Section 2.5.1. Warning signs will still be posted at hazardous waste management units.

2.4 Inspections

The general information requirements at 40 CFR §270.14(b)(5) stipulate a part B permit application to include "a copy of the general inspection schedule as required by §264.15(b), and, where applicable, the inspection schedule must address the requirements at §§264.174, 264.193(i), 264.195, 264.226, 264.273, 264.303, 264.602, 264.1052, 264.1053, 264.1084, 264.1086 and 264.1088 of this part."

A copy of the Permittees' inspection plan is included as Permit Attachment E, *Inspection Plan.* A revised version is attached to this Permit Renewal Application as Supplement 1-5, *Permittees' Proposed Changes to Permit Attachment E, Inspection Plan*, to meet the requirements of 40 CFR §270.14(b)(5). Permit Section 2.6, *General Inspection Requirements,* requires the Permittees to conduct inspections in compliance with the 2010 Permit. The plan addresses the inspection requirements for all hazardous waste management units to meet applicable requirements under 40 CFR Part 264.

The Permittees propose minor, non-substantive changes to the 2010 Permit, including updates to the arrangement of the inspection plan and to the inspection forms. These changes are identified and justified in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit,* and are included within Supplement 1-5, *Permittees' Proposed Changes to Permit Attachment E, Inspection Plan*.

2.5 Waivers for Preparedness and Prevention

The general information requirements at 40 CFR §270.14(b)(6) stipulate that a part B permit application include "a justification for any request to waive the preparedness and prevention requirements of part 264, subpart C."

No waivers of the preparedness and prevention requirements under Part 264, subpart C are being sought by the Permittees.

2.6 Contingency Plan

The general information requirements at 40 CFR §270.14(b)(7) stipulate the part B permit application to include a "copy of the Contingency Plan to meet the requirements of 40 CFR Part 264, Subpart D and, as applicable, the requirements of 40 CFR §§264.227, 264.255, and 264.200."

The Permittees do not manage hazardous waste in waste piles, surface impoundments, land treatment units, or landfills. Therefore, the requirements from §§264.227, 264.254, 264.273, and 264.303 are not applicable.

Permit Section 2.10, *Preparedness and Prevention*, requires the Permittees to develop and have ready for implementation a Contingency Plan that describes the actions carried out by the Permittees to (1) ensure appropriate response to any threat to human health and the environment as a result of fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, or surface water and (2) that the threat is mitigated. A copy of the revised Permit Attachment D, *Contingency Plan,* is included in this Permit Renewal Application in Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*, to meet the requirements of 40 CFR §270.14(b)(7). The Permittees do not propose any substantive changes to the plan. The proposed changes are associated with the general rearrangement of the plan, updating terminology associated with emergency preparedness activities, updating to modern emergency communication technology, and making organizational changes to facilitate implementation, provide clarity, and removal of redundant information. The plan includes information on internal local response activities in accordance with 40 CFR §264.52 as well as arrangements with outside emergency response personnel and services in the area to meet the requirements of 40 CFR §264.37. Required emergency equipment located at the Facility and at the individual hazardous waste management units are listed within Permit Attachment D, *Contingency Plan,* at the proposed reorganized Tables D-3 through D-15. This equipment is referenced by and maintained in accordance with Permit Section 2.10 and the requirements at 40 CFR Part 264, Subpart C, *Preparedness and Prevention*. There are no proposed changes to the actions to be taken in the event of an emergency or reductions in the emergency equipment available at any of the active hazardous waste management units. Evacuation plans are developed for each of the hazardous waste management units for which evacuation may be necessary, as required by Permit Section 2.11.2(6).

2.7 Hazards Prevention

The following sections discuss how the Permittees perform prevention and preparedness under requirements within 20 CFR Part 264, Subpart C, and the application requirements from 40 CFR §§270.14(8)(i-vi).

2.7.1 Waste Handling and Preventing Hazards in Unloading/Loading

The general information requirements for 40 CFR §270.14(8)(i) stipulate that the part B permit application contains a description of procedures, structures, or equipment used at the Facility to "prevent hazards in unloading operations (for example, ramps, special forklifts)."

The following is a description of the procedures used to manage hazardous waste containers in a manner that minimizes risks to the containers and workers in the hazardous waste management units. Small containers (e.g., boxes, bags, plastic buckets, and cardboard containers) of waste are handled

manually or with hand trucks or a dolly. Light drums may be handled manually or with a dolly. The use of proper handling equipment, appropriate to a container's size and weight, helps prevent hazards while moving containers. Forklift operators may use an auxiliary boom, if necessary, to improve handling capabilities. For larger containers, personnel can use a boom or, at TA-50-69 and various locations at TA-54 and TA-55, personnel can use bridge cranes or mobile cranes. At TA-54, waste containers (e.g., fiberglass reinforced plywood crates, drums, and large boxes) are generally handled with forklifts, overhead cranes, or frictionless air pallets. Only a single crane is used at one time. Trained spotters may assist with container movement during forklift or crane operations. To protect the integrity of waste containers received, only equipment designed for moving waste containers is used. Where necessary, each hazardous waste management unit is equipped with structures and equipment to facilitate safe loading, unloading, and movement of waste containers.

Flatbed trucks, trailers, forklifts, or other appropriate vehicles may be used to transport waste containers to and from the hazardous waste management units at LANL. When receiving waste at the hazardous waste management units, waste containers are inspected to ensure that (1) there is no damage or leaking material and that (2) they are properly labeled. For transport, the containers of waste are secured. Wastes are transported to and from hazardous waste management units by appropriately trained and authorized personnel in an appropriate vehicle. Qualified personnel unload waste from the vehicle and place it in an unloading area or directly into storage at the unit. Visual examination is conducted after unloading to ensure that containers are not damaged or leaking and are otherwise in good condition and that no waste remains in the transport vehicle. Waste management personnel are trained for safe-handling operations in accordance with Section 2.11, *Personnel Training,* of this Permit Renewal Application.

2.7.2 Control of Runoff

The general information requirements for 40 CFR §270.14(8)(ii) stipulate the part B permit application to describe procedures and controls used to "prevent runoff from hazardous waste handling areas to other areas of the facility or environment, or to prevent flooding (for example, berms, dikes, trenches)."

The Permittees propose no change in the manner in which runoff is prevented from leaving the hazardous waste management units to the facility or environment where applicable, or to prevent flooding as described in the Permit Section 3.12.2, *Preventing Run-on and Runoff*. The Permittees proposed non-substantial changes within Attachment A, *Technical Area Unit Descriptions*, proposed renumbering of Sections A.6.1 (and subsections), A.6.5 (and subsections), A.7, and A.8.8 are presented within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.

2.7.3 Preventing Water Supply Contamination

The general information requirements for 40 CFR §270.14(b)(8)(iii) stipulate the part B permit application to "describe procedures to prevent contamination of water supplies."

The hazardous waste management units are located, designed, constructed, operated, and maintained in a manner that ensures the prevention of water supply contamination. No hazardous waste disposal activities will occur at the site. Waste storage involving any potential liquids occurs only with secondary containment and under cover, if outdoors. As stated above, hazardous waste management units at the

facility are designed and operated to minimize runoff from the waste storage areas. In the event of a spill or contamination, the provisions of Permit Section 3.12.2, *Preventing Run-on and Runoff* and the provisions of the *Contingency Plan*, included as Supplement 1-4, *Permittees' Proposed Changes to Permit Attachment D, Contingency Plan*, and the *Inspection Plan*, included as Supplement 1-5, *Permittees' Proposed Changes to Permit Attachment E, Inspection Plan*, will provide protection to prevent potential contamination from reaching potable water supplies. Water supply lines at LANL are under pressure and are equipped with backflow prevention devices to prevent potential contamination of potable water supplies.

2.7.4 Mitigate the Effect of Equipment Failure and Power Outages

The general information requirements for 40 CFR §270.14(b)(8)(iv) stipulate the part B permit application to describe procedures to "mitigate equipment failure and power outages."

The Permit addresses the required mitigation procedures at Permit Section 2.10.1, *Required Equipment,* and Permit Section 2.10.2, *Testing and Maintenance of Equipment*. Permit Section 2.10.1 requires that "at permitted units where equipment is necessary to mitigate the effects of a power outage, batteries, generators, or some other form of backup power supply capable of operating equipment including evacuation alarms, emergency communication equipment, automatic fire suppression system, and emergency lights."

The Permittees propose one minor change to Permit Section 2.10.2, *Testing and Maintenance of Equipment*. If during an inspection of a system, device, or equipment is found in need of maintenance, repair, or replacement, the situation may be mitigated until such time as the equipment is returned to normal operating conditions, in addition to the options currently included in Permit Section 2.10.2. Mitigation could include use of substitute equipment, fire watch, or limiting operations in the immediate area. Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit,* and Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11*, includes the specific proposed changes.

2.7.5 Preventing Undue Exposure of Personnel

The general information requirements for 40 CFR §270.14(b)(8)(v) stipulate the part B permit application to describe procedures to "prevent undue exposure of personnel to hazardous waste (for example, protective clothing)."

To prevent undue exposure of personnel to hazardous waste at the permitted and interim status hazardous waste management units, workers follow LANL-wide and facility-specific safety procedures. Prevention and control measures include administrative as well as active controls at the sites.

Administrative controls are maintained at all hazardous waste management units to control entry at the units, and to limit the number of personnel present during waste management and/or treatment activities. Worker exposure to potential hazardous and mixed waste is mitigated by containers being kept closed while in storage, most treatment activities being conducted in containment, or treatment outdoors being conducted remotely. Operations information is included in Permit Application Sections 4 and 5 for specific information regarding pre-treatment and day of treatment protocols related to worker safety for open detonation and open burning hazardous waste management units.

Worker education, training, and involvement in planning activities also provide safety measures. Along with the facility-wide safety program established at LANL during hazardous waste management activities, operations at hazardous waste management units have safety requirements associated with safety in radiological or nuclear facilities (all currently permitted units) and at the open burning and open detonation units explosives safety and fire protection requirements which are discussed in detail in Permit Application Sections 4 and 5. All personnel involved in waste treatment activities are required to have training appropriate for their work. Training requirements are presented in Permit Attachment F, *Personnel Training Plan*. Personnel are required to review job hazards prior to performing waste management or treatment activities. Additionally, hazard control plans (that address monitoring equipment), and work authorizations are required, in accordance with LANL safety procedures.

Personal protective equipment (PPE) appropriate for use during the waste management and treatment activities must be worn by all on-site personnel. Hard hats, safety shoes or boots, safety glasses, hearing protection and gloves are used, as appropriate based on Occupational Safety and Health Administration (OSHA) requirements depending on the associated work hazards identified in job-specific hazard control plans. The PPE will be compatible with the hazards present. The need for Personal Contamination Monitors (PCM, e.g., dosimeter, Draeger™ Tubes) will be established using the job hazard review process. All personnel that use PPE are trained and qualified to use the equipment properly.

Together, the established safety program, required training, plans, and work authorizations will help to prevent undue exposure to personnel.

2.7.6 Preventing Releases to the Atmosphere

The general information requirements for 40 CFR §270.14(b)(8)(vi) stipulate the part B permit application to "describe the procedures to prevent releases to the atmosphere."

The Permittees do not propose any changes in the manner in which they prevent releases to the atmosphere for waste stored in tanks or containers, or treatment activities at the permitted hazardous waste management units. Permit Parts 3, 4, 7, and 8 all have provisions that containers, tanks, or other treatment activities are kept closed during handling and storage or contained while being treated (through glovebox operations or other containment).

In addition, this requirement is met through inspections as required by Permit Section 2.6 and Permit Attachment E, *Inspection Plan*. In summary, inspections are conducted to ensure the integrity of all stored containers and tanks. Hazardous waste stored in containers or tanks must meet requirements of 40 CFR Part 264, Subpart CC, *Air Emission Standards for Tanks, Surface Impoundments, and Containers,* ensuring that containers of hazardous waste be covered so that there are no detectable emissions of volatile organic compounds to the air. Compliance inspection and monitoring associated with container and tank monitoring are described in Permit Attachment E, *Inspection Plan*.

Because the three interim status units proposed for permitting in this Permit Renewal Application are open air treatment units, they will comply with the provisions of 40 CFR § 264, 40 CFR § 264.601 and § 270.14 by proper operation of the units in compliance with the terms of a Resource Conservation and Recovery Act (RCRA) permit issued by the NMED. Precautions and evaluations of the impact to the atmosphere by the operations at these units are included in Sections 4.7.6, *Preventing Releases to the Atmosphere,* and 5.7.6, *Preventing Releases to the Atmosphere,* of this Permit Renewal Application.

The Permittees monitor many different pathways in order to assess their impact on workers, the public, animals, and plants. The air around the Laboratory is monitored to ensure all operations at LANL are not affecting the air of nearby communities. The Permittees expect to emit certain chemical substances to the air based on the materials that are used at each facility. Like similar facilities, LANL has the potential to emit carbon monoxide, sulfur dioxide, nitrogen oxides, volatile organic compounds, and suspended particulate matter.

For more than a decade, monitoring reports have confirmed that the Laboratory is releasing no air emissions higher than regulations allow. The purpose of AIRNET, LANL's ambient air monitoring network, is to monitor locations where people live or work. The community of Los Alamos is downwind from LANL, so there are many monitoring stations in and around the town. Ambient monitoring is the systematic, long-term assessment of pollutant levels by measuring the quantity and types of certain pollutants in the surrounding, outdoor air. AIRNET stations monitor 24 hours a day, 365 days of the year. Particulates are collected on a filter and analyzed every two weeks for identification of analytes and assessment of the potential impact on the public.

The Permittees operate under several air emission permits issued by the New Mexico Environment Department Air Quality Bureau as well as under approvals issued by the U.S. Environmental Protection Agency for construction of new facilities or operations involving radionuclide emissions. These permits and approvals have federally enforceable emission limits and require specific pollution-control devices, monitoring of emissions from stacks, and detailed recordkeeping and reporting.

The LANL site is authorized to use materials and operate equipment that produce some air pollutants under the conditions defined in our Title V Operating Permit. Our permitted emission sources include a steam plant, a combustion turbine, boilers and heaters, emergency generators, beryllium operations, chemical use, degreasers, data destruction (paper shredder), evaporative sprayers, and a small asphalt batch plant. Each source type has its own emission limits for criteria air pollutants and hazardous air pollutants. The Title V Operating Permit also includes facility-wide emission limits for criteria and hazardous air pollutants. As part of compliance with the Title V Operating Permit, emissions are reported and monitoring records are provided from the permitted sources twice a year to the NMED, which inspects the Laboratory periodically for compliance.

Particulate matter consists of smoke, dust, and other material that can be inhaled. Generally, it is not radioactive. Particulate matter can be harmful in high concentrations. The total amount of respirable particulate matter is monitored at two locations: near the intersection of New Mexico State Road 4 and Rover Boulevard in White Rock, and at the Los Alamos Medical Center in Los Alamos. During 2020, the particulate matter concentrations remained well below the U.S. Environmental Protection Agency standard of 35 micrograms per cubic meter for particulate matter smaller than 2.5 micrometers. Typical concentrations (>95 percent of the time) were less than 10 micrograms per cubic meter. The highest concentrations occurred during the spring from windblown dust and during the summer from wildfires.

Both open burning and open detonation activities at the LANL site fall well below the insignificant activity thresholds for Title V permitting under the New Mexico Administrative Code for Air Quality Operating Permits (20.2.70 NMAC). In Section 20.2.70.7.Q for Definitions, “insignificant activity” thresholds means those activities which have been listed by the department and approved by the administrator as insignificant based on size, emissions or production rate. The determination of insignificant activities for operating permits is based on the descriptions and methodology outlined in

the List of Insignificant Activities provided by the NMED- Air Quality Bureau for the Operating Permit Program dated March 24, 2005. Specifically open burning and open detonation determinations for emissions were evaluated based on Subsection D.6 of 20.2.70.300 NMAC (1.a and 1.b) as described in the NMED List of Insignificant Activities.

2.8 Ignitable, Reactive, and Incompatible Waste Precautions

The general information requirements for 40 CFR §270.14(b)(9) stipulate the part B permit application to describe procedures to "prevent accidental ignition or reaction of ignitable, reactive, and incompatible wastes."

Permit Section 2.8, *Ignitable, Reactive, and Incompatible Waste*, addresses the requirements to prevent accidental ignition or reaction of ignitable, reactive, and incompatible hazardous wastes as required to demonstrate compliance with 40 CFR §264.17, including the requirements of 40 CFR §§264.17, 264.176, 264.177, 264.198, and 264.199. Documentation associated with the precautions taken for ignitable, reactive, or incompatible waste at the Facility is kept in accordance with Permit Section 2.12.2, *Facility Operating Record*, and as required by 40 CFR §264.17(c).

Permit Section 2.8 requires precautions to be in place at hazardous waste management units to prevent reactions during the treatment or storage of ignitable or reactive waste, and the mixing of incompatible waste. Permit Section 2.8.1 requires ignitable, reactive, or incompatible waste to be separated and protected from sources of ignition or reaction, including but not limited to the following: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat-producing chemical reactions), and radiant heat. The Permittees recommend three changes to the requirements in Permit Section 2.8.1. The changes are summarized in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit,* and detailed in Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11*.

The proposed changes are associated with the use of non-sparking processes when non-sparking tools are not available, a clarification to the requirements for compatibility of a fire-suppression system, and the addition of the requirement to add "No Smoking" signs at a permitted unit where ignitable, reactive, or incompatible wastes are treated or stored. This change is suggested for completeness and to better mirror the language within the regulations.

Non-sparking tools are used for waste management operations wherever possible. If non-sparking tools are not available or are impractical for the activity, the activity will be evaluated and a "non-sparking process" will be planned and utilized. The Permittees propose the addition of this text to Permit Section 2.8.1(4). These practices have been successfully employed in the past in specific situations such as the addition of filters to mixed transuranic waste containers with nitrate salt waste. Careful evaluation will be conducted to ensure the safe management of any handling or opening of waste containers that hold ignitable and/or reactive waste.

A clarification regarding the fire suppression system compatibility is proposed to be added at Permit Section 2.8.1(9) and is also included in Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11*. The added language associated with fire suppression systems is necessary to allow for mitigation when a waste is determined to be incompatible with the fire suppression system.

2.9 Traffic Pattern, Estimated Volume, and Control

The general information requirements for 40 CFR §270.14((b)(10) stipulate the part B permit application to describe "traffic patterns, estimated volume (number, type of vehicles) and control (for example, show turns across traffic lanes and stacking lanes (if appropriate); describe access road surfacing and load bearing capacity; show traffic control signals)."

This section has been updated to address current traffic patterns, estimated volume, and controls. Traffic pattern information presented in this section is general in nature for the traffic at LANL and generally focuses around the hazardous waste management units.

The rugged topography of alternating mesas and canyons at the LANL site limits traffic circulation to only a few major arterial roads. Approximately 100 miles of paved roads are present within the LANL site. The major roads are shown on Figures 1 and 2 of Permit Attachment N, *Figures*. Revised versions of these figures are included in Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*. There are approximately 19 miles of highway, 22 miles of TA access roads, and 44 miles of roads within TAs at the LANL site.

The main access route to LANL is State Road 502; the majority of traffic to the LANL site approaches from the east on State Road 502 and East Jemez Road. Alternate access routes are available from the south and west on State Roads 4 and 501 (West Jemez Road). All persons entering the LANL site property must show identification in the form of a LANL-issued badge, valid federal- or state-issued identification, or be vouched for by an accompanying person who is a LANL badge holder or a person with other acceptable identification.

The pattern of east-west trending canyons at LANL prohibits north-south automobile travel in nearly all portions of the LANL site, with the exception of Diamond Drive and part of West Jemez Road. Los Alamos Canyon is spanned at Diamond Drive by an 820-ft.-long steel-arch bridge that was completed in 1951 and improved in 1993 and 2014. This bridge provides the main access between LANL facilities located on either side of Los Alamos Canyon.

Approximately 12,000 people are currently employed at the LANL site (including full-time, part-time, casual LANL personnel, and subcontractors). Roughly 6,000 people commute to LANL daily from communities outside Los Alamos County.

Hazardous waste is generated at TAs throughout the LANL site. Small quantities of waste are generally accumulated in containers at central accumulation areas or satellite accumulation areas and then packed in containers, such as drums, boxes, or crates, for transport to storage or treatment areas, as necessary. Bulk liquid waste is contained primarily in drums or tanks. Because hazardous waste may be generated throughout LANL, waste transport may occur on nearly all roads within the LANL site. Offsite wastes may be received at LANL on a limited basis, as described in Permit Section 2.2.1, *Hazardous Waste from Off-Site Sources*.

2.9.1 Routes of Travel

Primary travel routes to and from hazardous waste management units are minimized when possible. Containers received at units are also moved minimal distances on road surfaces along the routes.

TA-3-29 is located on Diamond Drive; however, waste delivered to and from the unit is not generally routed on Diamond Drive. Primary traffic routes used to transport hazardous waste to or from the TA-3-29 hazardous waste management unit include Pajarito Road, Pecos Drive, and State Road 502. Lesser-used traffic routes may include State Road 501 and Mesita del Buey Road (see Figures 1 and 2 in Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*).

Hazardous waste management units at TA-50, TA-54, TA-55, and TA-63 are located along the Pajarito corridor. Pajarito Road is a primary thoroughfare at LANL; the TAs located along this corridor include the following: TA-3, TA-18, TA-36, TA-48, TA-51, TA-54, TA-55, TA-63, and TA-66. Most of the Pajarito corridor is closed to the public. The units located along the corridor cannot be directly accessed via Pajarito Road, and other roads, as shown on Figures 1 and 2 in Permit Attachment N, are used for access to the units. Pajarito Road is a two-lane road built for 55-mile-per-hour traffic with no vehicle size restrictions, with only limited heavy truck and fuel-truck traffic prohibitions. Roads along Pajarito Road that might be used to transport hazardous waste to and from the hazardous waste management units along the Pajarito corridor include the following:

- Pecos Drive and Mesita del Buey Road at TA-50,
- Mesita del Buey Road at TA-54,
- Puye Road at TA-63, and
- Pecos Drive at TA-55.

As discussed in Section 2.7.1, *Waste Handling and Preventing Hazards in Unloading/Loading,* of this Permit Renewal Application, waste transportation may occur using flatbed trucks, trailers, forklifts, or other appropriate vehicles. Loading and unloading activities will be conducted in designated areas at each of the units. It is anticipated that forklifts will be the primary vehicle traffic at each of the units, with the only other vehicle traffic within the unit footprints (at outdoor storage units) being semi-trucks (for occasional placement and removal of characterization equipment/trailers), delivery trucks with specialty gases (for characterization and radiation protection equipment), and snow removal equipment. Snow removal equipment such as blade-equipped all-terrain vehicles may also be used. Snow removal equipment such as snowplows may be used for heavy snows, but those vehicles would not be used near waste containers stored outside. If snow removal within the vicinity of any stored waste containers is needed, snow shovels or a snow blower will be used. Other vehicles or equipment that may be required to perform maintenance at the units will also be escorted and speeds will be limited around waste operations in the area.

2.9.2 Traffic Volumes

Pajarito Road has an average daily traffic volume of approximately 4,000 vehicles per 24-hour day (LANL 2008). This road has since been closed to the public and only badge holders are permitted on the corridor. This includes vehicles traveling both northwest and southeast. Vehicle types include cars, light- and medium-duty trucks, and vans. Anticipated traffic volumes at each of the outdoor storage hazardous waste management units will be from one to several waste shipments by truck to or from loading/unloading areas per day, forklift traffic within the units, occasional delivery trucks for analytical gases and other supplies, and (rarely) waste characterization trailer movement (at applicable units). All parking areas are located well away from the location of hazardous waste management units.

2.9.3 Traffic Control Signals

Applicable traffic control signals at each of the hazardous waste management units are shown on site maps included within new renumbered Figures included in Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*.

2.9.4 Road Surfacing and Load-Bearing Capacity

Roads at the LANL site are generally two-lane roads with asphaltic concrete surfaces. Load-bearing capacity for these roads is 32,000 pounds per axle. These roads are typically constructed with a 6-inch-thick base course overlain with a 3-inch-thick asphaltic concrete surface. These roads were designed and constructed to meet Specification HS-20 of the American Association of State Highway and Transportation Officials.

2.10 Facility Location Information

The general information requirements for 40 CFR §270.14(b)(11) stipulate the part B permit application to describe compliance with the follow standards:

- the seismic standard;
- the floodplain requirements for 40 CFR §§270.14(b)(11) and 264.18; and
- the topographic map requirements at 40 CFR §270.14(b)(19).

2.10.1 Seismic Standard

The general information requirements for 40 CFR §270.14(b)(11) stipulate the part B permit application to address the seismic standard for 40 CFR §264.18(a) under certain circumstances. Proposed new or enlarged units are required to demonstrate compliance with the seismic location standard of 40 CFR 264.18(a) and 270.14(b)(11)(ii). 40 CFR §270.14(b)(11) requires Applicants to identify the political jurisdiction (e.g., county, township, or election district) in which the Facility is proposed to be located and, if the Facility is proposed to be located in an area listed in Appendix VI of part 264, the owner or operator shall demonstrate compliance with the seismic standard for 40 CFR §264.18(a). The seismic standard requires that portions of new facilities where treatment, storage, or disposal of hazardous waste will be conducted must not be located within 61 meters (200 feet) of a fault that has experienced displacement in Holocene time.

The LANL site is located in Los Alamos County, New Mexico, which is a political jurisdiction listed in Appendix VI of part 264. Therefore, the seismic standard for 40 CFR §264.18(a) is applicable.

The Permittees demonstrated compliance with 40 CFR §264.18(a) for each of their permitted units. As required by 40 CFR §270.14(b)(11)(ii), this demonstration was made using either published geologic data or data obtained from field investigations carried out by the Permittees.

The Permittees are not proposing any new or enlarged units. The three interim status units (TA-16-388 Flash Pad, TA-36-8, and TA-39-6) included in this Permit Renewal Application are exempt from the seismic standards in 40 CFR §§ 270.14(b)(11) and 264.18(a). The units have been in use since the 1940s; therefore, the units existed before the promulgation of the hazardous waste regulations. Consistent with the criteria provided in 40 CFR §§ 270.14(b)(11)(i) and 264.18(a), the hazardous waste management units at TA-16-388, TA-36-8, and TA-39-6 are not new units; thus, the seismic standard is

not applicable. At the request of the NMED-HWB, seismic location standard information for the three interim status units (TA-16-388 Flash Pad, TA-36-8, and TA-39-6) is included as part of the Permittees' response to a letter received from the NMED-HWB on January 25, 2022 (LANL 2022). The seismic investigation demonstrates that there has been no direct evidence observed for Holocene faulting within the noted radius of the facility. The report is included as Supplement 4-16 within Appendix 4, *Revision 1: Seismic Location Standards Evaluation for Three Open Burning/Open Detonation Locations under Consideration for Permitting under the Resource Conservation and Recovery Act at Los Alamos National Laboratory: Technical Areas 16, 36, and 39*.

2.10.2 Floodplain Standard

The general information requirements for 40 CFR §270.14(b)(11)(iii) stipulate the part B permit application to "identify whether the facility and hazardous waste management units are located within a 100-year floodplain."

None of the hazardous waste management units making up the LANL Facility lie within a 100-year floodplain as defined in 40 CFR §264.18(b)(2)(i) and as regulated under §264.18(b)(1). Figures 2-1 and 2-2 within this Permit Renewal Application depict the 100-year floodplains at the LANL site and the locations of hazardous waste management units.

2.10.3 Topographic Maps

The general information requirements for 40 CFR §270.14(b)(19) (i) – (xii) stipulate a part B permit application to include topographic maps, figures, and drawings to meet the requirements of 40 CFR §§270.14(b)(19) and 270.13(l). For large facilities, the use of other scales is allowed on a case-by-case basis. The maps show the map scale, the date of preparation, and a north arrow. The maps and figures used to fulfill these regulatory requirements include the following:

- 100-year floodplain maps showing the location of each of the hazardous waste units at LANL is provided as Figures 2-1 and 2-2 of this Permit Renewal Application.
- Maps showing surface waters, including intermittent streams, near each of the hazardous waste management units are included on the TA-specific topographic maps within the concurrent submittal of the LANL General Part A Permit Application, Revision 11.0 (LANL 2025).
- Surrounding land uses (e.g., residential, recreational) are depicted on updated Figures 1 and 3 within Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*.
- Wind roses for LANL are shown on Figure 2-3.
- A topographic map showing the legal boundaries of LANL is included within the concurrent submittal of the *LANL General Part A Permit Application, Revision 11.0* (LANL 2025).
- The access control features (fences, gates) applicable for each of the hazardous waste management units are shown on newly numbered Figures 3 through 13 in Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*.
- A map that includes supply wells, monitoring wells, test wells, springs, and surface-water sampling stations at LANL is included as Map 3 within the concurrent submittal of the *LANL General Part A Permit Application, Revision 11.0* (LANL 2025).
- The locations of buildings and structures, the hazardous waste management units, and the terrain for a distance of at least 1,000 feet beyond each of the hazardous waste management units are all shown on the topographic maps for each of the TAs that house hazardous waste

management unit that are included within the concurrent submittal of the *LANL General Part A Permit Application, Revision 11.0* (LANL 2025).

- The locations of the Clean Water Act National Pollutant Discharge Elimination System discharge structures are included within Map 2 within the concurrent submittal of the *LANL General Part A Permit Application, Revision 11.0* (LANL 2025).
- Storm, sanitary, and process sewer systems at LANL are shown on Map 2 within the concurrent submittal of the *LANL General Part A Permit Application, Revision 11.0* (LANL 2025).
- Drainage control features, where appropriate, located at each of the hazardous waste management units are shown onsite maps included within the concurrent submittal of the *LANL General Part A Permit Application, Revision 11.0* (LANL 2025).
- Natural surface drainages near the active hazardous waste management units are shown on the TA-specific topographic maps within the concurrent submittal of the *LANL General Part A Permit Application, Revision 11.0* (LANL 2025).
- Fire stations serving LANL and the County of Los Alamos are shown on Figure D-2 within the revised Permit Attachment D, *Contingency Plan,* included as Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.
- All existing wells and boreholes at LANL are shown on Map 3 in the concurrent submittal of the *LANL General Part A Permit Application, Revision 11.0* (LANL 2025).

Contour lines on all topographic maps are at intervals sufficient to detail natural drainage at the LANL site. As provided in 40 CFR §270.14(b)(19), the LANL site has submitted the maps to the NMED-HWB at these scales and contour intervals due to the size of the units, the extent of the LANL Facility, and the topographic relief in the area.

2.11 Personnel Training

The general information requirements for 40 CFR §270.14(b)(12) stipulate that the part B permit application have an "outline of both the introductory and continuing training programs by owners and operators to prepare persons to operate or maintain a hazardous waste management facility in a safe manner as required to demonstrate compliance with 40 CFR §264.16. A brief description of how training will be designed to meet actual job tasks in accordance with the requirements of 40 CFR §264.16(a)(3)."

A copy of the Permittees' personnel training program is included in the Permit as Permit Attachment F, *Personnel Training*, and a revised version of that plan attached to this Permit Renewal Application as Supplement 1-6, *Permittees' Proposed Changes to Attachment F, Personnel Training Plan*. The Training Plan is required for hazardous waste management activities or activities that have the potential to have contact with waste containers in a hazardous waste management unit in compliance with the requirements of 40 CFR §264.16. The Permittees are proposing minor, non-substantive changes to the plan that include updates to reflect revised terminology, updated standards, and deletion of repetitive language. These changes are summarized in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit,* and are included as Supplement 1-6, *Permittees' Proposed Changes to Permit Attachment F, Personnel Training Plan*.

2.12 Closure Plan

The general information requirements for 40 CFR § 270.14(b)(13) stipulate that the part B permit application have a "copy of the Closure Plan and, where applicable, the post-closure plan required by 264.112, 264.118, and 264.197. Include, where applicable, as part of the plans, specific requirements in 264.178, 264.197, 264.228, 264.258, 264. 280, 264.310, 264. 351, 264.601, and 264.603."

A closure plan for each of the 27 permitted hazardous waste management units is included in Permit Attachments G.1–G.31. Proposed changes to existing closure plans and additional closure plans are summarized in Appendix 3, *Summary Table of Proposed Changes to Hazardous Waste Management Unit Closure Plans,* and are included Supplement 3-1, *Permittees' Proposed Changes to Attachments G.1 through G.31 Closure Plans*, to meet the requirements of 40 CFR §§270.14(b)(13) and 264.112. All the plans within the 2010 Permit were approved in accordance with 40 CFR §§264.110 through 264.116, 264.178, 264.197, 264.601, and 265.381. In addition, the Permittees propose specific changes to closure plans in Permit Attachments G.1 through G.31, in accordance with the Settlement Agreement reached in *U.S. v. Curry*, DC NM Case No. 10-01251 (see Section 6.0, Permit Changes). These proposed changes to the closure plans are also summarized in Appendix 3.

Addition of closure plans are discussed in Sections 4.11 and 5.11 of this document.

2.13 Closure for Hazardous Waste Disposal Units

The general information requirements for 40 CFR §270.14(b)(14) stipulate that the part B permit application include "for hazardous waste disposal units that have been closed, documentation that notices required under 264.119 have been filed."

The Permittees do not have active hazardous waste disposal units under the Permit. Therefore, no notices required by 264.119 have been filed.

2.14 Cost Estimates, Insurance, Financial Mechanisms

The general information requirements for 40 CFR §§270.14(b)(15) – 270.14(18) stipulate that the part B permit application include, where appropriate, the most recent closure and post-closure cost estimate for the facility; a copy of insurance policy; and proof of coverage by a State's financial mechanism.

The LANL site is a federally owned facility and is exempt from the financial assurance requirements of 40 CFR subpart H, including cost estimates, liability insurance, financial mechanisms, and proof of financial coverage under 40 CFR §§270.14(b)(15) – 270.14(18), incorporating the requirements of 40 CFR §§264.142-.150.

2.15 Other Federal Law

The general information requirements for 40 CFR § 270.14(b)(20) stipulate that a part B permit application include such information as necessary to enable the applicable regulator to carry out duties under other federal laws as required under 40 CFR §270.3 to be given consideration when applying for a hazardous waste facility permit. When any of these laws are applicable, its procedures must be followed:

The Wild and Scenic Rivers Act (16 United States Code [USC] 1273 et seq.). This act provides for a national wild and scenic rivers system and prohibits construction of any waterway that would have a direct adverse effect on the values for which a wild and scenic river was established.

The National Historic Preservation Act of 1966 (16 USC 470 et seq.). This act establishes a program to preserve historic properties throughout the country. The act has provisions that require mitigation of adverse effects to registered properties.

The Endangered Species Act of 1973 (16 USC 1531). This act provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The act prohibits any action that would jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat.

The Migratory Bird Treaty Act (16 U.S.C. 703-712). This act makes it illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid Federal permit. Migratory bird species protected by the Act are listed in 50 CFR 10.13.

The Coastal Zone Management Act of 1972 (16 USC 1451 et seq.). This act establishes national policy for the management, use, protection, and development of land and water resources of the nation's coastal zones. Section 307(c) of the act and implementing regulations prohibit the EPA from issuing a permit for activity affecting coastal zone land or water without the certification from the applicant that the activity is in compliance with the state's Coastal Zone Management Program.

The Fish and Wildlife Coordination Act of 1934, as amended (16 USC 661 et seq.). This act promotes the conservation of wildlife, fish, and game and integrates this conservation with water resource projects. Certain provisions of the act require that permits proposing or authorizing the impoundment, diversion, or other control or modification of any body of water be considered by the appropriate state agency for impacts to wildlife resources.

Because the LANL site has ongoing programs in support of the National Historic Preservation Act, the Endangered Species Act, and the Fish and Wildlife Coordination Act, consideration was given to all these federal laws.

The National Historic Preservation Act is administered by the Advisory Council on Historic Preservation, appointed by the President, along with the New Mexico State Historic Preservation Office. Section 106 of the Act requires DOE to consider the effects of its actions on historic properties and provide the Council with a reasonable opportunity to comment on those actions and the manner in which DOE takes historic properties into account in their decisions. DOE accomplishes this through consultation with the State Historic Preservation Office whenever a project may potentially impact a historic property. At LANL, historic properties include prehistoric and historic archaeological sites, historic Manhattan Project and Cold War-era buildings, and associated artifacts. LANL may prepare a Historic Building Survey Report assessing the eligibility of a historic building dating from the Manhattan Project and early Cold War periods (1943 to 1956) for the National Register of Historic Places and evaluating the impacts of the proposed actions. The consultation process was formalized in April 2000 through a Programmatic Agreement between DOE, the Council, and the State.

For any undertaking on DOE land that may directly or indirectly impact threatened and endangered species or their habitat, DOE must consult with the U.S. Fish and Wildlife Service, as provided under Section 7 of the Endangered Species Act. Similarly, DOE must consult with the U.S. Fish and Wildlife Service for projects that would impound, divert, or otherwise control or modify a body of water, as required by the Fish and Wildlife Coordination Act.

For Endangered Species Act compliance, LANL may prepare a Biological Assessment to document the presence of threatened and endangered species and to evaluate the impacts of a project on a listed species or its habitat. DOE will then request in writing that the U.S. Fish and Wildlife Service concurs with DOE's findings in the Biological Assessment. In 2000, DOE and LANL streamlined the consultation process by preparing a threatened and endangered Species Habitat Management Plan. This plan fulfills the provisions of the Endangered Species Act that require federal agencies to carry out programs for the conservation of threatened and endangered species and their habitat. The U.S. Fish and Wildlife Service approved this plan in February 1999.

For Migratory Bird Treaty Act compliance, LANL ensures that operations and activities do not cause the take (including killing, capturing, selling, trading, and transport) of any migratory bird, including eggs and nestlings in an active nest.

Provisions in the Wild and Scenic Rivers Act and the Coastal Zone Management Act are not applicable to LANL's activities.

Consideration will be given to Executive Orders, issued by the President, that are relevant to waste management activities at LANL. When any of these Orders is applicable, its provisions will be followed. Requirements for Executive Orders are reserved in 40 CFR §270.3(f).

2.16 Groundwater Monitoring

The general information requirements for 40 CFR §§270.14(c)(1) – 270.14(c)(8) stipulate that a part B Permit Renewal Application include additional information regarding groundwater protection for regulated units. The three regulated units at LANL are located at TA-54. They are Material Disposal Areas (MDAs) G, H, and L.

The requirements of 40 CFR §§270.14(c)(1 through 8) for regulated units are met by LANL Interim Facility-Wide Groundwater Monitoring Plan for the 2020 Monitoring Year, October 2019-September 2020 (IFGMP) (LANL 2020a), Section 5-*Technical Area 54 Monitoring Group*. As described in Section 2.C of the Consent Order (New Mexico 2005 (modified 2024)), the monitoring conducted under this program meets the requirements of 40 CFR §§270.14(c)(1 through 8) for the Permittee's groundwater, detection and compliance monitoring programs, as well as the required corrective action program.

"(c) ***Additional information requirements.*** The following additional information regarding protection of groundwater is required from owners or operators of hazardous waste facilities containing a regulated unit, except as provided in § 264.90(b) of this chapter:

> **(1)** A summary of the groundwater monitoring data obtained during the interim status period under §§ 265.90 through 265.94, where applicable."

The Permittees have not collected groundwater data under interim status.

> **"(2)** Identification of the uppermost aquifer and aquifers hydraulically interconnected beneath the facility property, including groundwater flow direction and rate, and the basis for such identification (i.e., the information obtained from hydrogeologic investigations of the facility area)."

There has been no change in the identification of the uppermost aquifer or aquifers hydraulically connected beneath the LANL site property, as detailed in the most recent version of the IFGMP.

> "**(3)** On the topographic map required under paragraph (b)(19) of this section, a delineation of the waste management area, the property boundary, the proposed "point of compliance" as defined under § 264.95, the proposed location of groundwater monitoring wells as required under § 264.97, and, to the extent possible, the information required in paragraph (c)(2) of this section."

There is no change to the delineation of the waste management area, the property boundary, the point of compliance as defined under §264.95, or the location of groundwater monitoring wells as required under §264.97. The information required in paragraph (c)(2) of this section (i.e., identification of the uppermost aquifer and aquifers hydraulically interconnected beneath the facility property, including groundwater flow direction and rate) is provided in detail in the most recent version of the IFGMP, including Figure 5.1-1.

> **"(4)** A description of any plume of contamination that has entered the groundwater from a regulated unit at the time that the application was submitted that:
>
> > **(i)** Delineates the extent of the plume on the topographic map required under paragraph (b)(19) of this section;"

No plume of contamination has entered the groundwater from the regulated units at TA-54. Groundwater monitoring results for the regulated units are reported in the Annual Periodic Monitoring Report for the TA-54 Monitoring Group.

> "**(ii)** Identifies the concentration of each Appendix IX, of part 264 of this chapter, constituent throughout the plume or identifies the maximum concentrations of each Appendix IX constituent in the plume."

No plume of contamination has entered the groundwater from the regulated units at TA-54. Groundwater monitoring results for the regulated units are reported in the Annual Periodic Monitoring Report for the TA-54 Monitoring Group.

> "**(5)** Detailed plans and an engineering report describing the proposed groundwater monitoring program to be implemented to meet the requirements of § 264.97."

The detailed plans and an engineering report describing the proposed groundwater monitoring program for the regulated units are included in the most recent version of the IFGMP.

> "**(6)** If the presence of hazardous constituents has ***not*** been detected in the groundwater at the time of permit application, the owner or operator must submit sufficient information, supporting data, and analyses to establish a detection monitoring program that meets the

requirements of § 264.98. This submission must address the following items specified under § 264.98:"

Hazardous constituents have been detected above applicable standards in groundwater in the vicinity of the regulated units (MDAs G, H, and L) at TA-54 in the most recent groundwater monitoring sampling event. Groundwater monitoring results for the regulated units are reported in the Annual Periodic Monitoring Report for the TA-54 Monitoring Group. The IFGMP includes the detection monitoring program that has been established to meet the requirements within Section 2.C of the 2016 Consent Order (New Mexico 2016 (modified 2024)) and hence §264.98 for regulated units.

"**(i)** A proposed list of indicator parameters, waste constituents, or reaction products that can provide a reliable indication of the presence of hazardous constituents in the groundwater;"

The indicator parameters, waste constituents, and reaction products that provide a reliable indication of the presence of hazardous constituents in the groundwater are listed in the most recent version of the IFGMP, Section 5 - Technical Area 54 Monitoring Group.

"**(ii)** A proposed groundwater monitoring system;"

The Permittees' groundwater monitoring system is detailed in the most recent version of the IFGMP, Section 5 - Technical Area 54 Monitoring Group.

"**(iii)** Background values for each proposed monitoring parameter or constituent, or procedures to calculate such values; and"

There has been no change to the background values for each proposed monitoring parameter. The applicable background or screening levels used for each analyte are listed in Appendix B of the most recent version of the IFGMP.

"**(iv)** A description of proposed sampling, analysis, and statistical comparison procedures to be utilized in evaluating groundwater monitoring data."

The Permittees' sampling, analysis, and statistical comparison procedures to be utilized in evaluating groundwater monitoring data are detailed in the most recent version of the IFGMP, Table 1.7-2.

"**(7)** If the presence of hazardous constituents has been detected in the groundwater at the point of compliance at the time of the permit application, the owner or operator must submit sufficient information, supporting data, and analyses to establish a compliance monitoring program that meets the requirements of § 264.99. Except as provided in § 264.98(h)(5), the owner or operator must also submit an engineering feasibility plan for a corrective action program necessary to meet the requirements of § 264.100, unless the owner or operator obtains written authorization in advance from the Regional Administrator to submit a proposed permit schedule for submittal of such a plan. To demonstrate compliance with § 264.99, the owner or operator must address the following items:

(i) A description of wastes previously handled at the facility.

(ii) A characterization of the contaminated groundwater, including concentrations of hazardous constituents.

(iii) A list of hazardous constituents for which compliance monitoring will be undertaken in accordance with §§ 264.97 and 264.99.

(iv) Proposed concentration limits for each hazardous constituent, based on the criteria set forth in § 264.94(a), including a justification for establishing any alternate concentration limits.

(v) Detailed plans and an engineering report describing the proposed groundwater monitoring system, in accordance with the requirements of § 264.97.

(vi) A description of proposed sampling, analysis, and statistical comparison procedures to be utilized in evaluating groundwater monitoring data."

Hazardous constituents ([1,4-]dioxane and bis(2-ethylhexyl)phthalate) have been detected above applicable standards in groundwater in the vicinity of the regulated units (MDAs G, H, and L) at TA-54 in the most recent groundwater monitoring sampling event. Groundwater monitoring results for the regulated units are reported in the Annual Periodic Monitoring Report for the TA-54 Monitoring Group. The IFGMP establishes the requirements for the compliance monitoring program, as described in § 264.99 for the regulated units at TA-54. The informational requirements to items (i) through (vi) are provided in the most recent version of the IFGMP and the Annual Periodic Monitoring Report for the TA-54 Monitoring Group.

"**(8)** If hazardous constituents in the groundwater have been measured that exceed the concentration limits established under § 264.94 Table 1, or if groundwater monitoring conducted at the time of permit application under 265.90 through 265.94 at the waste boundary indicates the presence of hazardous constituents from the facility in groundwater over background concentrations, the owner or operator must submit sufficient information, supporting data, and analyses to establish a corrective action program that meets the requirements of § 264.100. However, an owner or operator is not required to submit information to establish a corrective action program if he or she demonstrates to the Regional Administrator that alternate concentration limits will protect human health and the environment after considering the criteria listed in § 264.94(b). An owner or operator who is not required to establish a corrective action program for this reason must instead submit sufficient information to establish a compliance monitoring program that meets the requirements of § 264.99 and paragraph (c)(6) of this section. To demonstrate compliance with § 264.100, the owner or operator must address, at a minimum, the following items:

(i) A characterization of the contaminated groundwater, including concentrations of hazardous constituents.

(ii) The concentration limit for each hazardous constituent found in the groundwater, as set forth in § 264.94.

(iii) Detailed plans and an engineering report describing the corrective action to be taken.

(iv) A description of how the groundwater monitoring program will demonstrate the adequacy of the corrective action.

> **(v)** The permit may contain a schedule for submittal of the information required in paragraphs (c)(8) (iii) and (iv), provided the owner or operator obtains written authorization from the Regional Administrator before submitting the complete permit application."

Hazardous constituents ([1,4-]dioxane and bis(2-ethylhexyl)phthalate) have been detected above applicable standards in groundwater in the vicinity of the regulated units (MDAs G, H, and L) at TA-54 in the most recent groundwater monitoring sampling event. Groundwater monitoring results for the regulated units are reported in the Annual Periodic Monitoring Report for the TA-54 Monitoring Group. The Consent Order and the IFGMP meet the corrective action program requirements of § 264.100. The informational requirements to items (i) through (v) are provided in the most recent version of the IFGMP and the Annual Periodic Monitoring Report for the TA-54 Monitoring Group.

At the request of the NMED, recent published plume maps for chromium and RDX are included as Figures 2-4 and 2-5. These plume maps have already been provided in the *Quarterly Report for the Discharge of Treated Groundwater to the Regional Aquifer under Discharge Permit 1835, Calendar Year 2020 Quarter 4,* submitted to the NMED-HWB on February 26, 2021, and *Investigation Report for Royal Demolition Explosive in Deep Groundwater*.

2.17 Solid Waste Management Units

The general information requirements at 40 CFR §270.14(d) stipulate that a part B permit application contains information regarding each SWMU at the Facility. This information includes location, designation, descriptions, operation, and all wastes managed at the unit. Furthermore, information is required for releases of hazardous wastes or hazardous constituents from these units.

The Permittees conduct limited corrective actions for releases from SWMUs or Areas of Concern (AOCs) under the Permit rather than under the Consent Order, under the following circumstances:

1. New releases and newly discovered releases of hazardous waste or hazardous constituents from hazardous waste management units at the Facility.
2. The closure and post-closure care requirements of 40 CFR Part 264, Subpart G, as they apply to hazardous waste management units at the Facility.
3. Implementation of controls, including long-term monitoring, for any SWMUs or AOCs listed in Permit Attachment K (Listing of SWMUs and AOCs), Table K-2 (Corrective Action Complete with Controls).
4. Any corrective action conducted to address releases of hazardous waste or hazardous constituents that occur or are discovered after the date on which the Consent Order terminates.
5. Newly created SWMUs and AOCs from nonpermitted operations.

The Permittees coordinate all corrective action conducted under the current Permit with corrective action conducted under the Consent Order, in accordance with the requirements for 40 CFR §264.101. Corrective action for releases from hazardous waste management units that commingle with releases originating from other sources are conducted under the Consent Order and represent the bulk of the corrective actions undertaken. If corrective action for a SWMU or an AOC is not subject to corrective action under the Consent Order, the corrective action will be performed under the Permit.

2.17.1 Summary Tables of SWMUs and AOCs

Tables 2.1 through 2.8 herein provide summaries of all SWMUs and AOCs located within or in close proximity to the RCRA Permitted units. The Table provides

- the SWMU Number (current or former number),
- the location of the unit,
- the type of unit,
- the SWMU and AOC general dimensions and structural description,
- operational dates (if known),
- the type(s) of waste managed at the unit and release information, and
- the unit's current status (active or inactive and NMED status).

The documents used to prepare this Table are cited in the Reference List within Section 7, *References,* of this Permit Renewal Application.

Note that where applicable, references below to SWMU and AOC listings on the LANL Hazardous Waste Facility Permit Table K-1 may not be reflective of the investigative status of the SWMU/AOC, as the Permittees plan to propose adjustments to the LANL Hazardous Waste Facility Permit Tables K-1, K-2, and K-3 through permit modification requests apart from this reapplication.

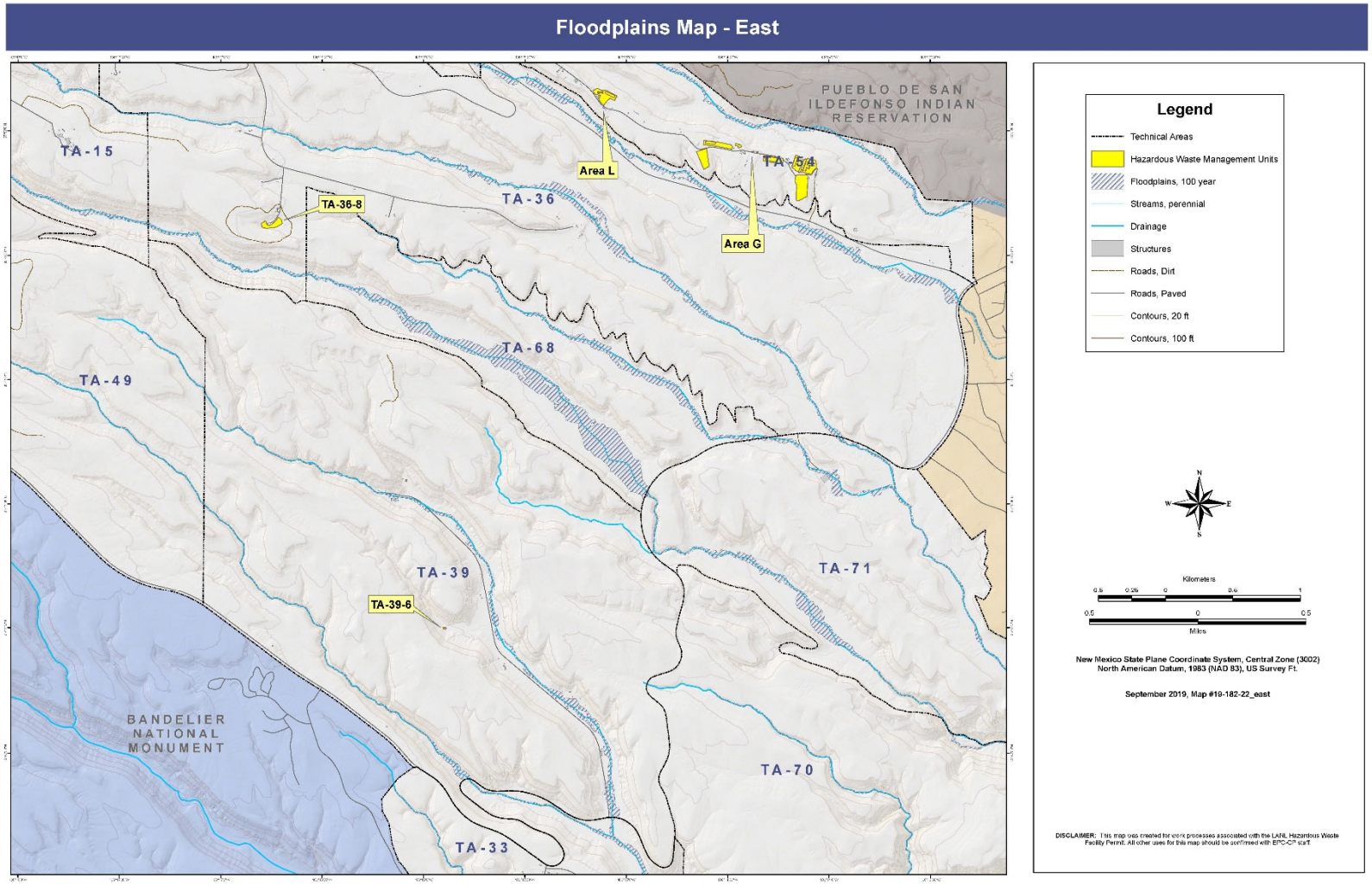


Figure 2-1. LANL floodplains (East)

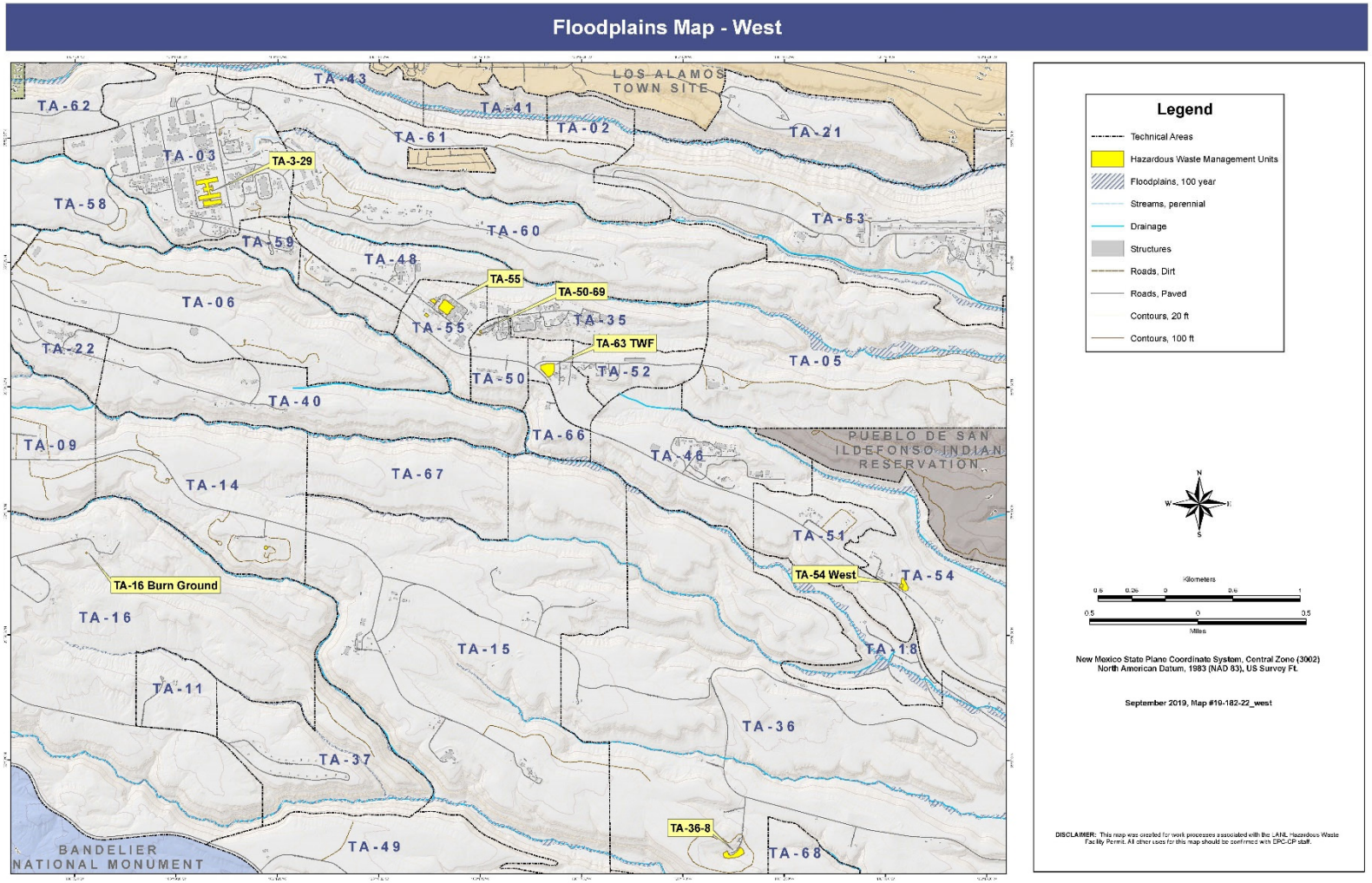


Figure 2-2. LANL floodplains (West)

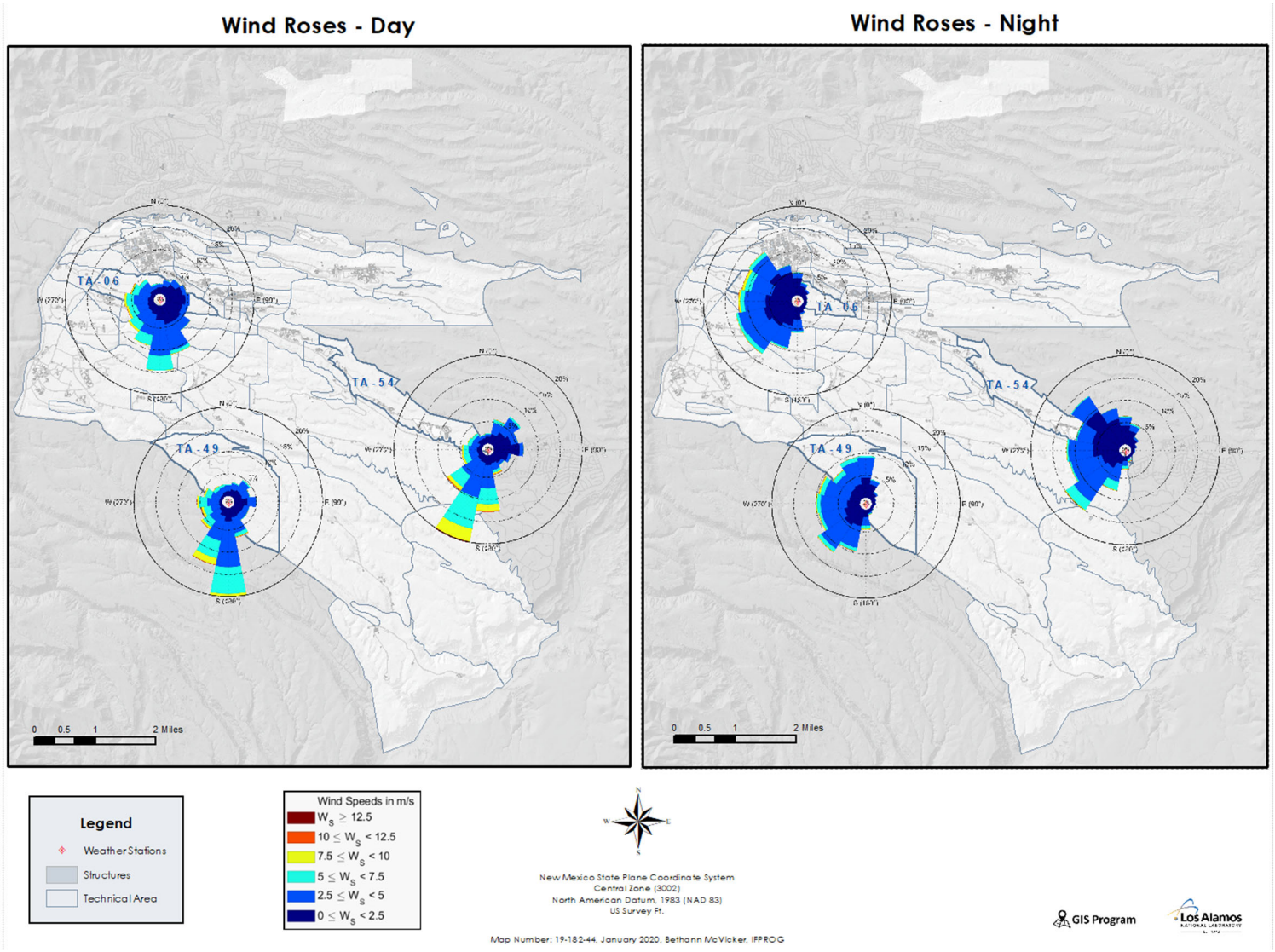
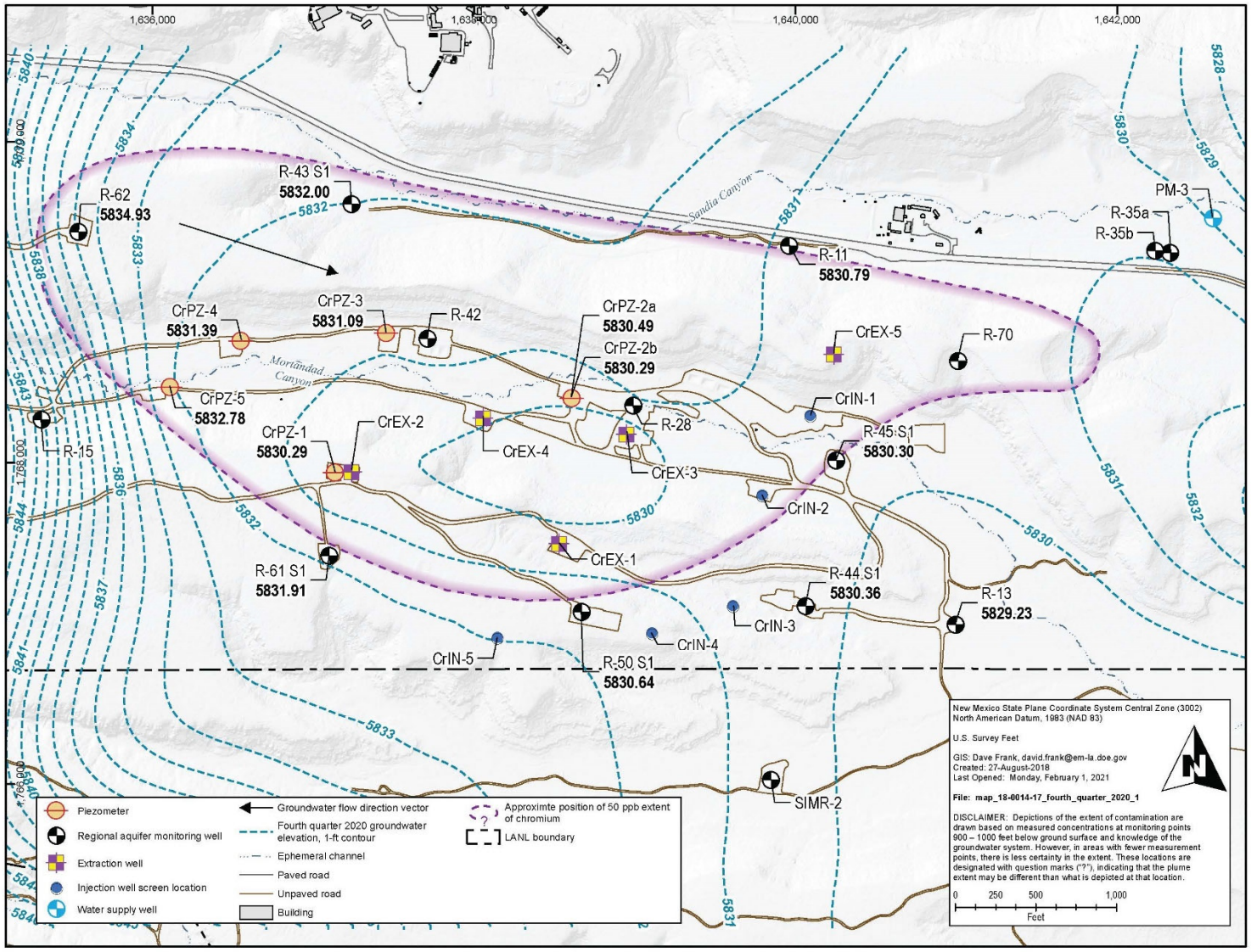
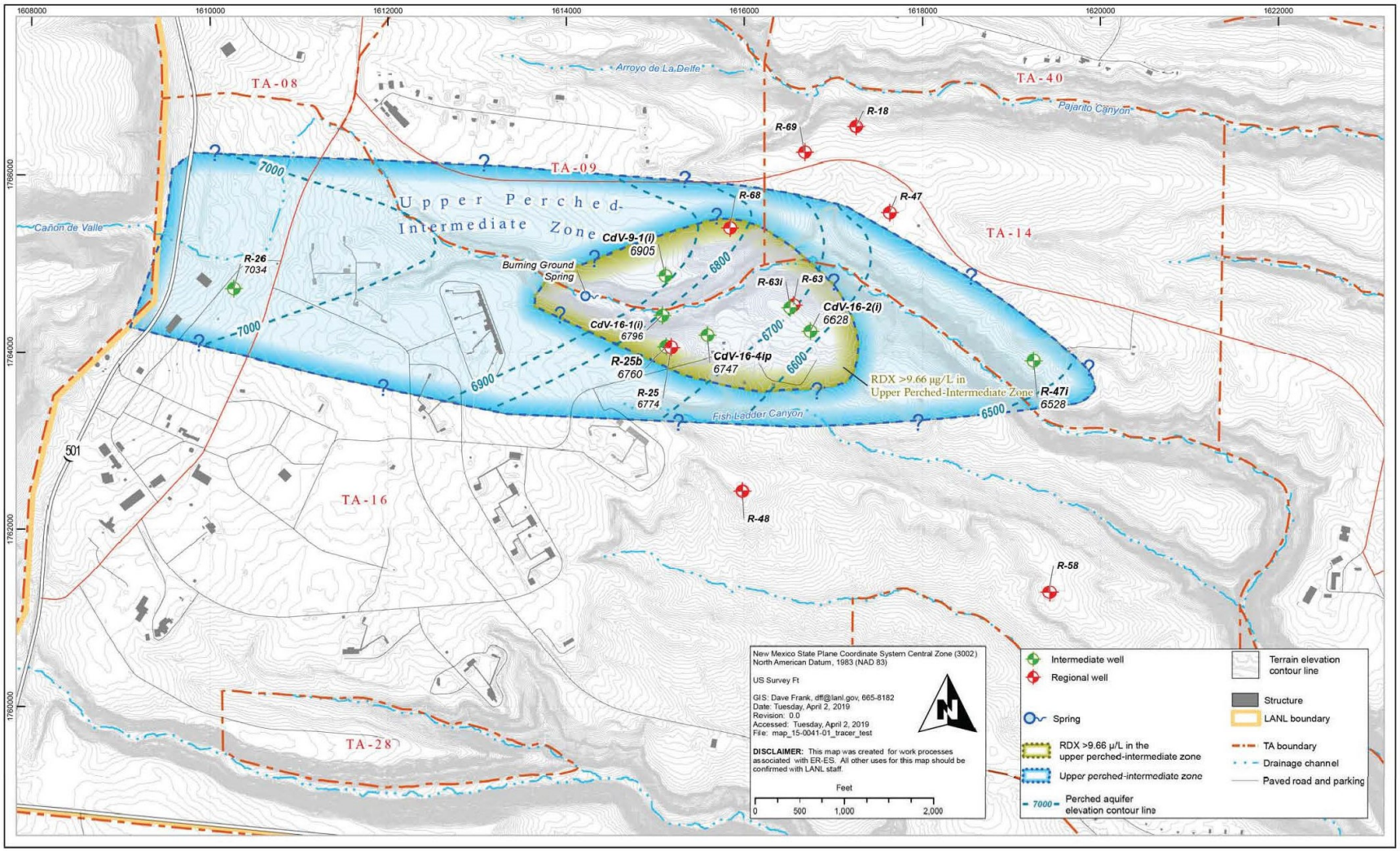


Figure 2-3. Wind Roses (day and night averaged for the 365 days of 2018)



From: Quarterly Report for the Discharge of Treated Groundwater to the Regional Aquifer under Discharge Permit 1835 (EM2021-0056)

Figure 2-4. Groundwater Elevation Contour and Approximate Extent of 50 ppb Chromium Plume Map, Mortandad Canyon, CY2020, Quarter 4



Note: Green inner zone is extent of RDX contamination >9.66 µg/L in the upper perched-intermediate groundwater (LANL 2015, 600535).

Figure 2-5. Map showing RDX extent and water table contours for the upper perched-intermediate groundwater zone at TA-16

Table 2-1. TA-3 SWMU Descriptions

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
03-025(b)	TA-03 (building 03-102)	Sumps	Active sump: 40 inches x 24 inches x 30 inches; this unit is positioned on the concrete basement floor within an 8-inch-high concrete berm. Inactive sump: 0.25-inch-thick welded steel box contained in a concrete sump in the sub-floor; wastewater flows from floor, show and sink drains in 03-102 through sumps to the radioactive liquid waste line to the radioactive liquid waste treatment facility at TA-50.	Unknown to present	Radiological wastewater, oil; no investigations have been conducted to date. However, available information indicates a very low likelihood of release of contaminants.	Active. Site is deferred per the Consent Order. This SWMU is included on the LANL Hazardous Waste Facility Permit Table K-1.
03-050(d)	TA-03 (south side of building 03-102)	Soil contamination	Approximately 20-ft. x 6-ft. area of potential soil contamination from deposition of contaminants from exhaust emissions from a baghouse air-pollution control device.	1957-1992	Radioactive air emissions; radiological field survey results showed no detectable activity on the concrete pad or surrounding soil.	Inactive. Investigation in progress; SWMU is on the LANL Hazardous Waste Facility Permit Table K-1
03-051(b)	TA-03 (southwest corner of building 03-102)	Soil contamination	Two areas of soil contamination associated with former location of two air compressors; each area measures approximately 12 ft. x 12 ft.	Unknown to 1992	Lightweight mineral oil, polychlorinated biphenyls (PCBs); wipe samples collected from two compressors previously located in this location showed PCB concentrations ranging from 9.4 ug/100 sq. cm to 17 ug/100 sq. cm; a concrete slab now extends from the former compressor locations to the fence line south of building 03-0102; there is no evidence of staining on the concrete.	Inactive. Investigation in progress; AOC is on the LANL Hazardous Waste Facility Permit Table K-1.

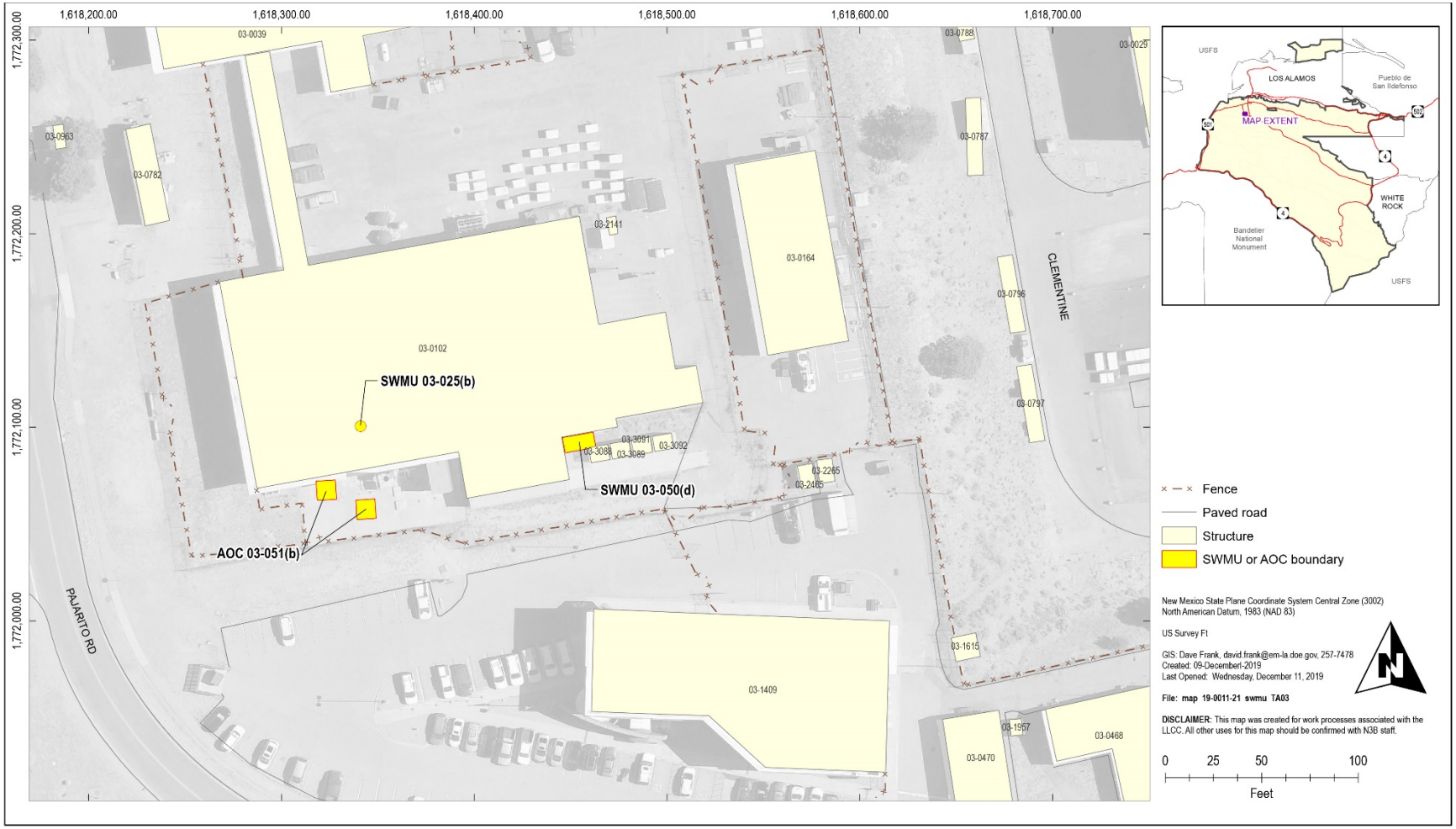


Figure 2-6. TA-03 SWMUs and AOCs

Table 2-2. TA-16 SWMU Descriptions

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
16-010(c)	TA-16-388	Flash Pad/Burn Tray	Former burn tray converted to an enclosed 100-ft x 100-ft. concrete pad and 16-ft. x 4-ft. metal tray situated 2 ft. above ground surface. The current unit consists of a 22-ft. x 22-ft. concrete pad set on secondary containment and surrounded on three sides by a concrete wall. The current burn tray consists of a stainless-steel kettle that is 30 inches in diameter and 24 inches in height. Propane burners are used to treat HE-contaminated liquid wastes at the burn tray. The entire assembly, which can be covered with a retractable cover, is provided with secondary containment.	1950s to present	HE, metals, and dioxins/furans were all known to have been used onsite; periodic soil monitoring is conducted as part of operational conditions.	Active RCRA unit; not subject to the Consent Order.
16-010(d)	TA-16-399 (Burning Ground)	Burn Tray	100 sq. ft. enclosed area consisting of a concrete pad and burn table situated 2 ft. above the ground surface and a 16 ft. x 4 ft. metal tray.	1950s to present	HE and metals were known to have been used onsite; no soil sampling has been performed under the Consent Order at SWMU 16-010(d).	Inactive; currently undergoing RCRA closure; anticipated for clean closure approval.
C-16-001	TA-16 (NE Corner) 16-384	Building – Former Aboveground Platform	This elevated platform was situated above three HE wastewater troughs that exited former building 16-390. Wash water originally flowed to HE filter beds and then to metal	1951-1970	HE; no documented releases or management of solid or hazardous wastes is associated with this AOC.	Inactive; will be recommended for corrective action complete; included on LANL Hazardous Waste Facility Permit Table K-1

Table 2-2. TA-16 SWMU Descriptions (continued)

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
			pressure filter vessels. The T-shaped platform was constructed of steel and measured 8.5 ft. x 3 ft. x 4 ft.			
16-010(h)/16-010(h)-99	TA-16 (NE Corner)	Former Basket Wash House (Building 16-390)	Former basket wash facility used to clean filters from site wide HE sumps and directed filtered wash water to troughs. The former basket-wash house measured approximately 25 ft. x 25 ft.	1951-1966	HE and metals; suspected lead and HE releases.	Inactive; investigation in progress; included on LANL Hazardous Waste Facility Permit Table K-1
16-010(j)/16-010(h)-99	TA-16 (NE Corner)	Former Filter Bed/Burn Tray	Unknown	1951-1966	HE, oils, and solvents; soil sampling confirmed presence of contaminants, including HE, inorganic chemicals, organic chemicals, and in some cases uranium	Inactive; no longer subject to the Consent Order; no further action approved.
C-16-070	TA-16 Burning Ground 50 ft. NE of structure 16-390	Underground Tank (propane)	24. ft. x 5 ft., 3063 gallons. The tank contained a manhole cover to access tank valves and a 6-inch corrugated metal drain from the manhole tank. The tank stored propane that was used to heat and dry the filtering material (sand) in the Burning Ground's two filter tanks. Sand was burned to remove residual HE.	1951-1970	HE; tank was never used to manage RCRA solid or hazardous waste and survey results show no HE or rad contamination.	Inactive; investigation in progress; included on LANL Hazardous Waste Facility Permit Table K-1.
C-16-061	TA-16, 80 feet east of structure 16-390	Soil Contamination (former latrine)	Wood frame latrine 4 ft. x 4 ft. x 7.5 ft. with no plumbing	1951-1968	Never used to manage RCRA solid or hazardous waste. No hazardous materials are associated with this structure.	Inactive; investigation in progress; included on LANL Hazardous Waste Facility Permit Table K-1.
16-010(n)/16-010(h)-99	TA-16 (NE Corner), east of 16-399	Former Trough Structure 16-1136	Approximately 10 ft. wide by 275 ft. long	1951-1966	Uranium and HE; HE found above soil	Inactive; investigation in progress; included on

Table 2-2. TA-16 SWMU Descriptions (continued)

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
					screening levels in shallow subsurface.	LANL Hazardous Waste Facility Permit Table K-1.
16-005(g)/16-010(h)-99	TA-16 (NE Corner)	Soil Contamination from Former Filter Bed Treatment Unit Structure 16-393	Approximately 150 ft. long, 10 ft. wide	1951-1966	HE; HE releases	Inactive; investigation in progress; included on LANL Hazardous Waste Facility Permit Table K-1.
16-010(m)/16-010(h)-99	TA-16 (NE Corner), east of 16-399	Former Trough Structure 16-1135	Approximately 10 ft. wide by 350 ft. long (based on drawing estimates). This trough carried wash water from the bucket wash facility to a filter bed (16-393) and later a filter vessel.	1951-1966	HE; HE found above soil screening levels in shallow subsurface.	Inactive; investigation in progress; included on LANL Hazardous Waste Facility Permit Table K-1.
16-010(i)/16-010(h)-99	TA-16 (NE Corner)	Burn Pad Structure 16-392	Approximately 400 ft. long by 10 ft. wide	1951-1966	Uranium contaminated objects; likely release.	Inactive; investigation in progress; included on LANL Hazardous Waste Facility Permit Table K-1.
16-010(k)/16-010(h)-99	TA-16 (NE Corner)	Former Trough Structure 16-1129	This former steel trough was open at the top and elevated 3 ft. off the ground surface; this structure measured approximately 370 feet long and extended south from structure 16-390.	1951-1966	HE; HE and lead found above soil screening levels in soil.	Inactive; investigation in progress; included on LANL Hazardous Waste Facility Permit Table K-1.
16-010(l)/16-010(h)-99	TA-16 (NE Corner)	Former Trough Structure 16-1134	This former steel trough was open at the top and elevated 3 ft. off the ground surface; this structure measured approximately 370 feet long and extended south from structure 16-390.	1951-1966	HE; HE found above soil screening levels in shallow subsurface.	Inactive; investigation in progress; included on LANL Hazardous Waste Facility Permit Table K-1.

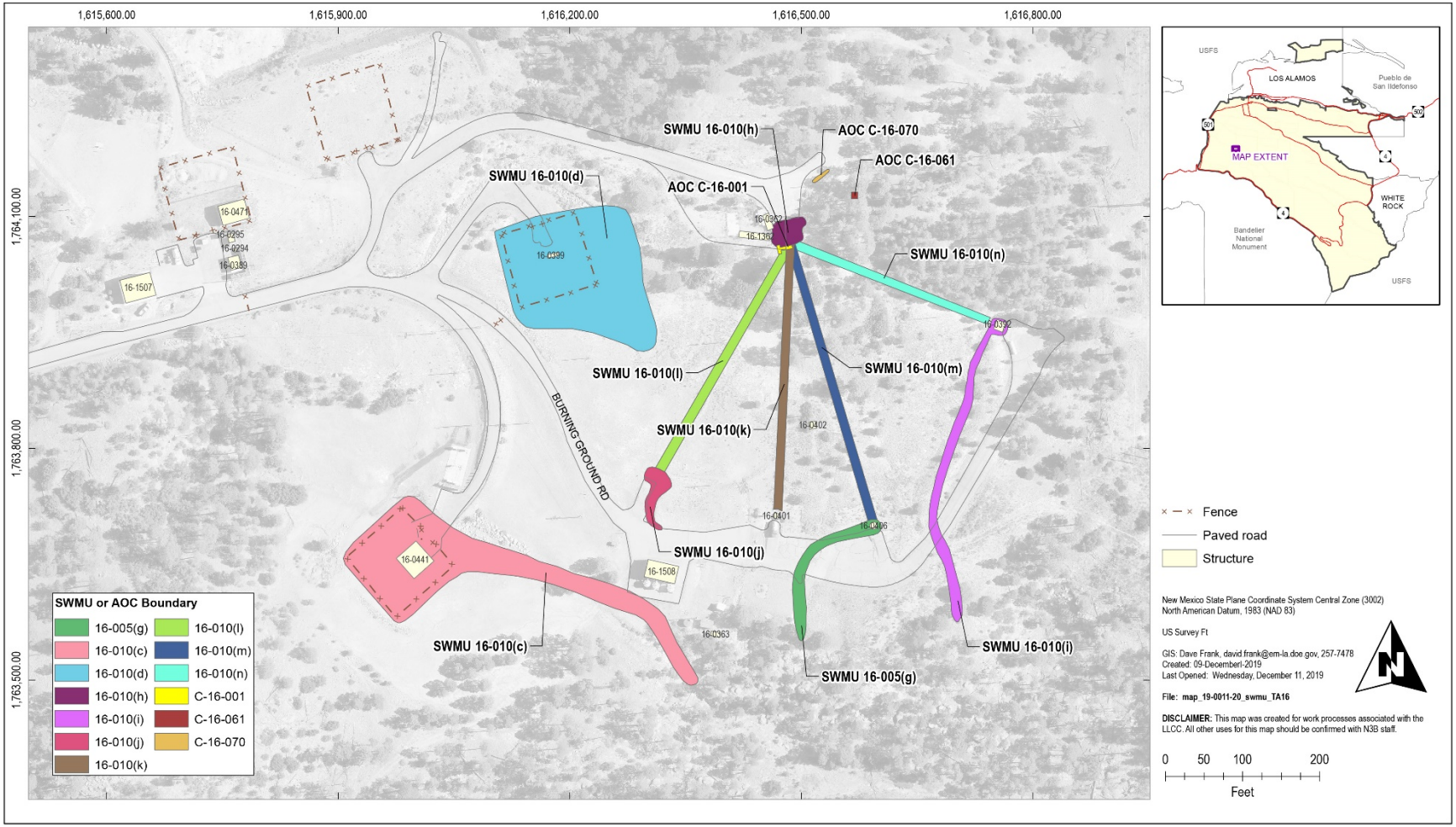


Figure 2-7. TA-16 SWMUs and AOCs

Table 2-3. TA-36 SWMU Descriptions

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
36-004(c)	TA-36 near the head of Fence Canyon, approximately 800 ft south of AOC 36-004(b)	Firing Site	This site consists of the firing point, a control bunker (building 36-8), a make-up building (36-7), a firing platform, and an x-ray house.	1950s to present	DU, beryllium, lead, copper, iron, barium, aluminum, steel, and various plastics; samples collected in the downgradient drainage show no migration of potential contaminants.	Active firing site; investigation deferred under the Consent Order; included on LANL Hazardous Waste Facility Permit Table K-1.
36-005	TA-36 near the head of Fence Canyon between AOCs 36-004(b) and 36-004(c)	Surface Storage Area	260 ft. x 300 ft. undeveloped storage area is largely covered with grass and ponderosa pine.	1950s to present	Radioactive constituents, metals, and VOCs; some release; nature and extent not defined at the area.	Inactive; investigation in progress; does not pose a potential unacceptable risk or dose under the industrial, construction worker, and residential scenarios; poses no unacceptable ecological risk; included on LANL Hazardous Waste Facility Permit Table K-1.

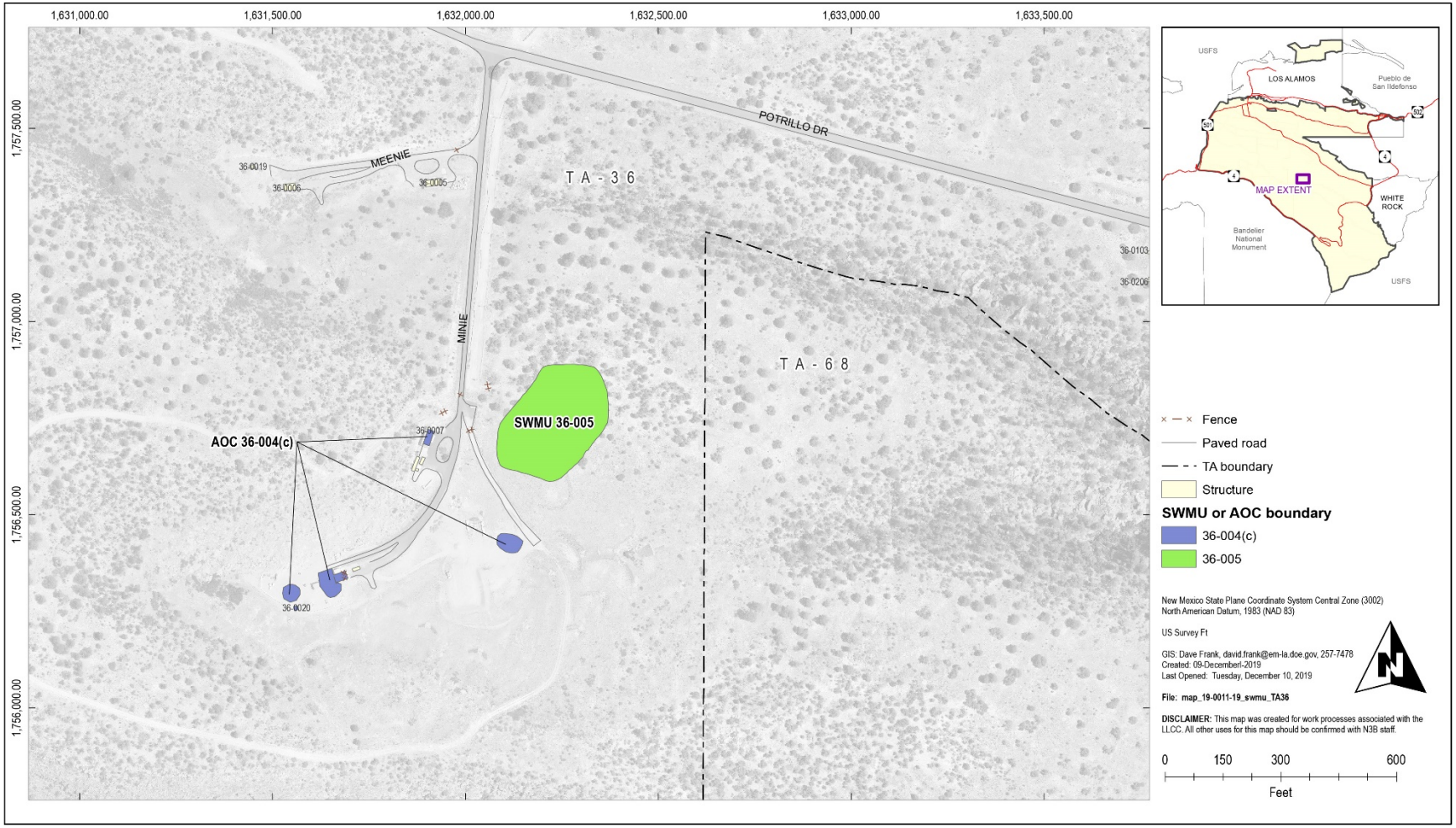


Figure 2-8. TA-36 SWMUs and AOCs

Table 2-4. TA-39 SWMU Descriptions

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
39-004(a)	TA-39	Firing Site Structure 39-7	Approximately 1000 sq. ft. (based on SWMU/AOC map)	1953-present	HE and metals; samples collected in the downgradient drainage show no migration of potential contaminants.	Active; investigation is deferred under the Consent Order; included on LANL Hazardous Waste Facility Permit Table K-1.
39-004(d)	TA-39	Firing Site Structure 39-57	Approximately 1000 sq. ft. (based on SWMU/AOC map)	1953-present	HE and metals; samples collected in the downgradient drainage show no migration of potential contaminants.	Active; investigation is deferred under the Consent Order; included on LANL Hazardous Waste Facility Permit Table K-1.
39-002(d)	TA-39	Container Storage Area	5 ft. x 5 ft. x 4 ft.	1980s to 1990s	Photographic wastes, cloth, and paper contaminated with various substances (acetone, ethanol, transformer oil, trichloroethane, vacuum grease, and copper sulfate); no known or documented releases.	Inactive; certificate of completion received without controls from NMED; listed on the LANL Hazardous Waste Facility Permit Table K-1.



Figure 2-9. TA-39 SWMUs and AOCs

Table 2-5. TA-50 SWMU Descriptions

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
50-001(a)	Building 50-1	Radioactive Liquid Waste Treatment Facility (RLWTF)	System of drain lines and tanks	1963 to present	RLW, sludge, and potentially hazardous constituents; no information on unintentional releases.	Active; included on LANL Hazardous Waste Facility Permit Table K-1; deferred investigation per Consent Order.
50-001(b)	TA-50	Waste Lines and Manholes	A manhole (structure 50-72) is the central collection area for most incoming liquid waste. Three lines feed into manhole 50-72; all manholes that transport wastewater to Building 50-1 are monitored continuously. Four other waste lines run from TA-55 to Building 50-1 through structure 50-106 to tanks in an underground vault (structure 50-66). Three of the lines are 1.5-inch stainless-steel lines, each encased in 3-inch PVC.	1963 to present	RLW and potentially hazardous constituents; potential releases west and north of the tank farm.	Active; included on LANL Hazardous Waste Facility Permit Table K-1; deferred investigation per Consent Order.
50-002(a)	Building 50-2	Tank Farm	A reinforced concrete vault that houses six flow-through process tanks, an equipment room, and associated waste transfer lines; floor 17 ft. below ground surface; incoming raw-waste tanks (25,000 gallons and 75,000 gallons) and two 25,000-gallon tanks used to store treated waste for reuse; fifth tank (capacity 25,000 gallons) flows into the 75,000-gallon tank and was previously used to	1963 to present	RLW, sludge, and potentially hazardous constituents; in July and September 1974, two separate, unintended operational releases occurred from the overflow of a sump in Building 50-2. Both releases caused untreated wastewater to be discharged to waste lines 55 and 67 (the waste lines for treated effluent) and into the outfall area at the head of Ten Site Canyon [see SWMU 50-	Active; included on LANL Hazardous Waste Facility Permit Table K-1; deferred investigation per Consent Order.

Table 2-5. TA-50 SWMU Descriptions (continued)

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
			store waste during D&D activities; currently, this tank receives waste from chemistry labs in the building; The sixth tank (capacity 30,000 gallons) originally functioned as a holding tank for low-level sludge.		006(a)]. In February 1975, waste line 67 was plugged at its outfall.	
50-002(b)	30 ft. west of the southwest corner of Building 50-1	Underground Storage Tank Structure 50-67	Concrete vault measures 18 ft. x 16 ft. x 14 ft. deep	Unknown to present	RLW and potentially hazardous waste; no documented releases.	Active; included on LANL Hazardous Waste Facility Permit Table K-1; deferred investigation per Consent Order.
50-002(c)	30 ft. west of the southwest corner of Building 50-1	Underground Storage Tank Structure 50-68	Concrete vault measures 18 ft. x 16 ft. x 14. ft. deep	Unknown to present	RLW and potentially hazardous waste; no documented releases.	Active; included on LANL Hazardous Waste Facility Permit Table K-1; deferred investigation per Consent Order.
50-002(d)	Building 50-1 adjacent to room 63D	Aboveground Storage Tank Structure 50-5	Decommissioned aboveground, 5000-gallon, stainless-steel tank used for nitric acid storage	1964 to 1996	Unused product storage only; no documented releases.	Active; included on LANL Hazardous Waste Facility Permit Table K-1; deferred investigation per Consent Order.
50-003(a)	Building 50-1, Room 59 along the northwest wall	Container Storage Unit	Approximately 2-ft. x 19-ft. area	Unknown	Mixed waste; no documented releases.	Inactive; in November 2004, NMED approved this RCRA interim status unit for clean closure.
50-004(a)	RLWTF	Historical Waste Lines	Decommissioned RLW and industrial waste lines routed to the RLWTF from LANL TAs located along Pajarito Road.	1963 to 1989	RLW and potentially hazardous constituents; release of radionuclides; area remediated to meet ALARA levels in 1975.	Inactive; site meets residential and ecological risk levels and is recommended for corrective action complete without controls; included on LANL Hazardous Waste Facility Permit Table K-1.
50-004(b)	RLWTF	Underground Vault Structure 50-3	Decommissioned underground concrete vault that housed three stainless-steel-lined concrete storage tanks (1,000–4,500 gallons) used to collect and store	1963 to 1989	RLW and potentially hazardous constituents; no elevated concentration were detected during decommissioning in 1989.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; site meets residential and ecological risk levels and is recommended for corrective action

Table 2-5. TA-50 SWMU Descriptions (continued)

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
			wastewater from the Omega Reactor.			complete without controls.
50-004(c)	RLWTF	Soil Contamination from Historical Waste Lines and Manholes	13 industrial waste lines and three manholes that discharged to the decommissioned underground vault	Most 1963 to 1989; line #56 still in service	RLW and potentially hazardous constituents; field screening for radionuclides confirmed ALARA levels met.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; site meets residential and ecological risk levels and is recommended for corrective action complete without controls.
50-006(a)	RLWTF pump house	Operational Release	Outfall area at the head of Ten Site Canyon	1963 to present	RLW and potentially hazardous constituents; approximately 0.72 cubic yards of radioactively contaminated soil was excavated and removed from release area.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; site meets residential and ecological risk levels and is recommended for corrective action complete without controls.
50-006(c)	TA-50	Operational Release	Surface Soil contamination from historical stack emissions; unknown dimensions; seven stacks.	1963 to present	Soil contaminated with radioactive and potentially hazardous constituents; release of metals, PAHs, and radionuclides.	Active; included on LANL Hazardous Waste Facility Permit Table K-1; requesting certificate of completion.
50-006(d)	Mortandad Canyon	Effluent Discharge	Drain line and National Pollutant Discharge Elimination System-permitted Outfall 051 in Mortandad Canyon; 6-inch-diameter iron discharge pipe that was rerouted in 1983.	1963 to present	Soil contaminated with a variety of chemicals, radionuclides, and heavy metals.	Active Permitted outfall; no discharges since 2010; included on LANL Hazardous Waste Facility Permit Table K-1; investigation and remediation complete; plan to ask for a certificate of completion.
50-007	In Rooms 112 and 115 at TA-50-37	Former Incinerator Complex	An incinerator, various waste feed components, two waste feed tanks; maximum inventory of 600 gallons.	1975 to 1987	Hazardous and mixed waste; radioactively contaminated PCBs; slightly elevated plutonium detected in nearby soils.	Inactive; EPA issued a permit for the incineration of PCBs in 1984, and NMED included the incinerator in a 1989 HWFP; operation of the incinerator was discontinued in 1987 to

Table 2-5. TA-50 SWMU Descriptions (continued)

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
						allow for system upgrades; removed and underwent RCRA closure in 1998 included on LANL Hazardous Waste Facility Permit Table K-1.
50-008	Inside Rooms 102 and 103 at TA-50, Building 69	Reduction Site	Container storage unit inside Rooms 102 and 103	1982 to 1991	Mixed waste; radionuclide release in nearby soils.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; investigation in progress
50-009	North side of Pajarito Road at TA-50	MDA C	11.8 acres and consists of 7 pits and 108 shafts; depths of the 7 pits at MDA C range from 12 to 25 ft. below the original ground surface, and the depths of the 108 shafts range from 10 to 25 ft. below the original ground surface.	1948 to 1974	Radioactive, mixed, hazardous, and solid waste; release of VOCs and potentially tritium.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; corrective action path forward in progress; vapor monitoring ongoing.
50-010	Room 34 B of the RLWTF	Decontamination Facility	An inactive vehicle decontamination area.	1963 to 1999	Radioactive and potentially hazardous waste; no known releases.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; deferred investigation per Consent Order.
50-011(a)	South end of RLWTF	Soil Contamination associated with Septic System	Influent line from TA-50-1, septic tank, manhole, a sanitary distribution system, and a seepage pit; removed in 1983.	1964 to 1983	Sanitary waste; known releases of radionuclides remediated to meet ALARA levels.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; deferred investigation per Consent Order.
50-011(b)	RLWTF	Lift Stations	Two active sanitary wastewater lift stations (TA-50-91 and TA-50-92) and approximately 400 ft. of piping that transport sanitary wastewater.	1983 to present	Sanitary waste; Permitted outfall releases.	Active; included on LANL Hazardous Waste Facility Permit Table K-1; deferred investigation per Consent Order.
50-003(d)	Against the south wall of the east wing of Building 1	Container Storage Unit	Canvas building about 12-ft. wide and 14-ft. deep, whose floor had an inflatable berm; the second structure is a modular 9 ft. x 24 ft.	Unknown	Hazardous and mixed waste; no documented releases.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-3; no further action approved.

Table 2-5. TA-50 SWMU Descriptions (continued)

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
			steel shed set on a concrete pad			
50-005	Inside building 50-1	Waste Treatment Facility	Closed 500-gallon pressure vessel and associated processing components.	Unknown	Hazardous waste; no known release.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-3; no further action approved.
C-50-001	East of building 50-0001	Former Transformer	PCB transformer was situated on a 20 ft. x 10 ft. concrete pad.	1963-1994	PCB oil; one release described as a minor seep of PCB oil is documented from this AOC in 1989.	Inactive; Consent Order investigation in progress; listed in the LANL Hazardous Waste Facility Permit Table K-1.

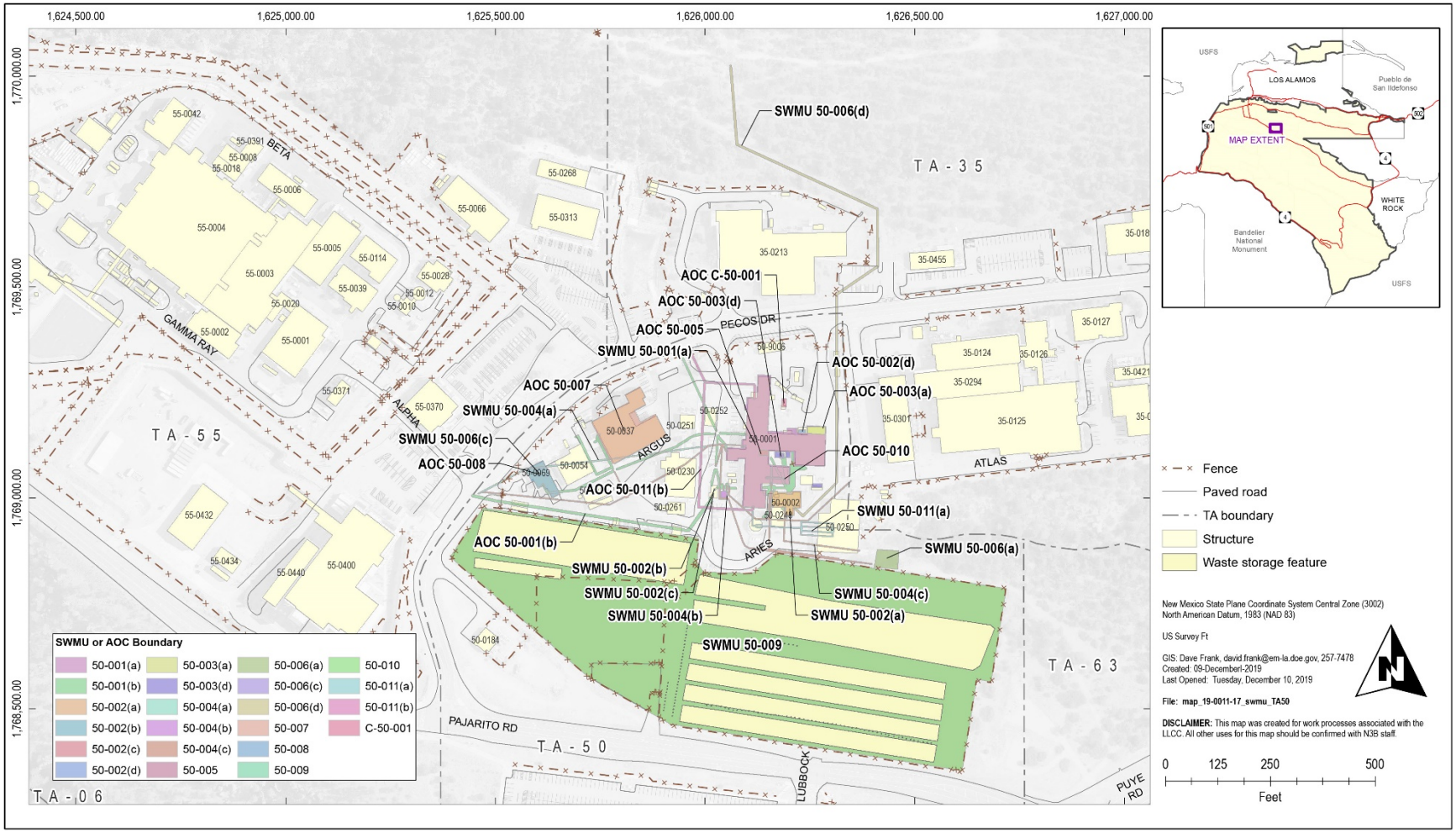


Figure 2-10. TA-50 SWMUs and AOCs

Table 2-6. TA-54 SWMU Descriptions

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
54-001(a)	Structure 54-215, Area L	Storage Area	150-ft. x 40-ft. bermed paved storage area	Unknown to present	Mixed waste and hazardous waste; VOC release.	Active; VOC monitoring; no longer subject to the Consent Order.
54-002	TA-54, Area L (eastern portion)	Container Storage Area	1950-gallon-capacity area	Unknown to present	Mixed, solid, and hazardous waste.	Active; no further action approved; no longer subject to the Consent Order.
54-004	TA-54, Area H	Material Disposal Area MDA H	0.3-acre site, containing 9 shafts	1960 to 1986	Classified waste; nonhazardous and hazardous wastes, depleted uranium, fuel elements, plutonium, HE; VOC release.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; to undergo corrective action.
54-005	TA-54, Area J	Material Disposal Area MDA J, Pits 1-5, Shafts 1-4	5.5-acre site containing 6 pits and 4 shafts	1961 to 2001	Barium sand and administratively controlled waste; no known release.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; post-closure monitoring complete.
54-006	TA-54, Area L	Material Disposal Area MDA L, all subsurface units such as Pit A; Impoundments B, C, D; Shafts 1-28 and 29-34	2.5-acre fenced area that includes MDA L, which consists of 1 inactive subsurface disposal pit (pit A); 3 inactive subsurface treatment and disposal impoundments (impoundments B, C, and D); and 34 inactive disposal shafts (shafts 1 through 34).	1959 to1985	Uncontainerized chemical wastes and liquids; VOC release.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; VOC monitoring.
54-007(a)	Structure 54-16, Area G	Former Septic System	1000-gallon concrete septic tank (54-16), concrete distribution box, and VCP drain lines.	Unknown to 1998	Sanitary wastes and potentially radioactive constituents; septic tank releases determined not to be of concern.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; certificate of completion without controls received from NMED.
54-007(c)/54-007(c)-99	TA-54 West	Former Septic System	Consisted of a fiberglass tank 4 ft. in diameter and 12 ft. in length, a drain line, and a drain field formed by three parallel-buried lines of slotted PVC pipe,	1960s to 1992	Sanitary wastewater; Septic tank releases detected in soil not of human health or ecological concern.	Inactive; VCA completed; included on LANL Hazardous Waste Facility Permit Table K-3; no further action approved.

Table 2-6. TA-54 SWMU Descriptions (continued)

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
			approximately 4 ft. below ground surface.			
54-007(e)/54-007(c)-99	TA-54 West	Former Septic System	1500-gal. concrete septic tank and a 4-inch PVC drain line connected to a drain field formed by two parallel lines of 4-inch slotted PVC pipe	1960s to 1992	Sanitary wastewater; septic tank releases detected in soil not of human health or ecological concern.	Inactive; VCA completed; included on LANL Hazardous Waste Facility Permit Table K-3; no further action approved.
54-012(b)	TA-54-82, Area L	Drum Crusher	Drum compactor in the central portion of Area L	Unknown to present	Radionuclides, organics, and metals; suspected release.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; to undergo corrective action.
54-013(b)/54-013(b)-99	TA-54, Area G	MDA G, Vehicle Monitoring/Decontamination Area	Exact dimensions unknown	Unknown	Radiological wash water; releases of radiological constituents and metals.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; to undergo corrective action.
54-014(a)	TA-54, Area L (northwest corner)	MDA L, Storage Shafts	Shaft 36 is 30 inches x 27.5 feet, shaft 37 is 48 inches by 35.75 feet, each has a storage capacity of 300 gallons; each shaft is constructed of CMP and equipped with a 1-ft. thick concrete plug at the bottom and a steel cap and concrete shielding block	Mid-1980s to 2004	Steel rods filled with irradiated lead and concrete; no known releases.	Active; included on LANL Hazardous Waste Facility Permit Table K-1; currently operated under RCRA interim status requirements for storage of mixed waste.
54-014(b)/54-013(b)-99	TA-54, Area G	MDA G, Pit 9	30 ft. wide by 400 ft. long by 20 ft. deep	1974 to1978	Retrievable TRU and mixed TRU waste; releases of radiological constituents and metals.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; to undergo corrective action.
54-001(b)	TA-54, building 54-31 (inside)	Storage Area	13.5 ft. x 14.5 ft. (440 gallons) with a paved, sealed and bermed floor	Unknown to present	Mixed wastes; no releases have been identified.	Active; no further action approved; no longer subject to the Consent Order.
54-001(d)	TA-54, Area L	Storage Area	17 ft. x 59 ft. constructed of a bermed concrete floor	Unknown to present	PCBs; no releases have been identified.	Active; no further action approved; no longer subject to the Consent Order.

Table 2-6. TA-54 SWMU Descriptions (continued)

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
54-001(e)	TA-54, Area L	Container Storage Area	15.5 ft. x 116.5 ft. (17,220 gallons) constructed of a bermed, sealed concrete pad divided into six cells, each equipped with secondary containment sump	1987 to present	Mixed waste; no releases have been identified.	Active permitted container storage area; no further action approved; no longer subject to the Consent Order.
54-007(d)	TA-54, north of Pajarito Road	Former Septic System	972-gallon concrete septic tank, distribution box, 4-inch drain line and two 60-ft. x 4-inch diameter drain lines.	1962 to 1970	Radiological constituents, VOC, SVOCs, PCBs, pesticides, inorganic chemicals; VCA conducted in 2000 showed no elevated gross radiation screening levels and no VOCs or SVOCs above screening levels.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; certificate of completion without controls received from NMED.
54-009	TA-54, Area L	Former Aboveground Tanks	Four carbon steel tanks each with a capacity of 1660 gallons measuring 9 ft. (diameter) x 3.5 ft.	1988 to1993	Ammonium bifluoride, barium; o releases have been identified.	Inactive; closure certification report for these tanks was submitted to NMED in October 2006; no further action approved; not subject to the Consent Order.
54-014(c)/54-013(b)-99	TA-54, Area G	MDA G, Shafts 200-233	1 ft. in diameter, 18 ft. deep; they are lined with concrete and contain TRU waste	1978 to 1987	TRU waste and tritium; releases of radiological constituents and metals.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; to undergo corrective action.
54-014(d)/54-013(b)-99	TA-54, Area G	MDA G, Trenches A-D	Trenches A, B, and C vary in size from 219 ft. to 262.5 ft. long by 13 ft. wide by 6 ft. to 8 ft. deep; Trench D is 60 ft. long x 13 ft. wide x 6 ft. deep	1974 to unknown	TRU and mixed LLW; releases of radiological constituents and metals.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; to undergo corrective action.
54-015(a)	TA-54, Area G	Storage Area	15 ft. x 40 ft. x 12 ft. metal shed	Unknown to present	Mixed waste, TRU waste.	Active; no further action approved; not subject to Consent Order.

Table 2-6. TA-54 SWMU Descriptions (continued)

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
54-015(b)	TA-54, Area G	Storage Area	Approximately 30 ft. in diameter	Unknown to 1992	TRU and LLW retrievable waste; investigations not conducted to date.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; to be closed under MDA G closure.
54-015(c)	TA-54, Area G	Low-Level Waste (LLW) Storage Area	Three levels of subsurface storage totaling 960,000 gallons	Unknown to present	LLW and TRU retrievable waste; investigations not conducted to date.	Active permitted container storage unit; no further action approved; not subject to the Consent Order.
54-015(d)	TA-54, Area G	Storage Area	Six levels of subsurface, retrievable waste storage totaling 430,000 gallons	1974 to present	Retrievable TRU waste; investigations not conducted to date.	Inactive; no further action approved; not subject to the Consent Order.
54-015(e)	TA-54, Area G	Storage Area	Three levels of subsurface retrievable waste storage totaling 300,000 gallons	1974 to present	TRU retrievable waste; investigations not conducted to date.	Active permitted storage unit; no further action approved; not subject to the Consent Order.
54-015(f)	TA-54, Area G	Storage Area	Approximately 40 ft. x 290 ft.; six levels of retrievable waste storage totaling 970,000 gallons	1974 to present	TRU retrievable waste; investigations not conducted to date.	Active permitted storage unit; no further action approved; not subject to the Consent Order.
54-015(j)	TA-54, Area G	Storage Area	Bermed storage area approximately 60 ft. x 450 ft.	Unknown to present	Mixed waste; investigations not conducted to date.	Active permitted storage unit; no further action approved; not subject to the Consent Order.
54-015(k)/54-013(b)-99	TA-54, Area G	MDA G, Layer of Retrievable TRU Waste	Layer of retrievable TRU waste in cement-filled sections of corrugated pipe located inside a mound of fill material within the top of pit 29	Unknown	TRU and mixed TRU; releases of radiological constituents and metals.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; to undergo corrective action.
54-016(b)	TA-54, Area G	Sump	Dimensions unknown	Unknown to present	TRU waste drum (corrosion inhibitor); investigations not conducted to date.	Active; included on LANL Hazardous Waste Facility Permit Table K-1; investigation will be performed when the structure 54-33 is removed.
54-017/54-013(b)-99	TA-54, Area G	MDA G, Disposal Pits 1-8, 10, 12, 13, 16-22, and 24	19 pits ranging in area from approximately 20	1959 to 1980	Radioactive mixed and TRU waste; releases of	Inactive; included on LANL Hazardous Waste

Table 2-6. TA-54 SWMU Descriptions (continued)

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
			ft. x 450 ft. to 100 ft. x 600 ft.		radiological constituents and metals.	Facility Permit Table K-1; to undergo corrective action.
54-018/54-013(b)-99	TA-54, Area G	MDA G, Disposal Pits 25-33 and 35-37	12 pits ranging in area from approximately 100 ft. x 300 ft. to 100 ft. x 600 ft.	1979 to 1980	Radioactive mixed and TRU waste; releases of radiological constituents and metals.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; Pit 29 has been proposed to undergo closure/post-closure in accordance with alternative requirements, as allowed by 20.4.1 NMAC §264.110(c) [6-14-00], to meet post-closure care requirements.
54-019/54-013(b)-99	TA-54, Area G	MDA G, Disposal Shafts 1-20, 24-34, 38-92, 96, 109-112, and 150	Range in size from 1 ft. to 6 ft. in diameter and 25 ft. to 60 ft. deep and are located primarily in the northeast quadrant of Area G	1966 to 1980	LLW and hazardous and mixed waste; releases of radiological constituents and metals.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; to undergo corrective action.
54-020/54-013(b)-99	TA-54, Area G	MDA G, Disposal Shafts C1-C10, C12, C13, 22, 35-37, 93-95, 99-108, 114, 115, 118-136, 138-140, 151-160, 189-192, and 196	Range in size from 1 ft to 8 ft. in diameter and 0.25 ft. to 65 f.t deep, and are located throughout the eastern portion of Area G	1970 to early 1990s	PCB residues, LLW, hazardous and mixed waste; releases of radiological constituents and metals.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; Shaft 124 has been proposed to undergo closure/post-closure in accordance with alternative requirements, as allowed by 20.4.1 NMAC §264.110(c) [6-14-00], to meet post-closure care requirements.
54-021	TA-54, MDA L	Six Aboveground Oil Storage Tanks (former location)	Six former aboveground fiberglass storage tanks; four had capacities of 771 gallons, one had a capacity of 5650 gallons and one had a capacity of 5086 gallons	1987 to 1989	PCB and solvent-contaminated waste oil; no known releases.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-3; no further action approved.

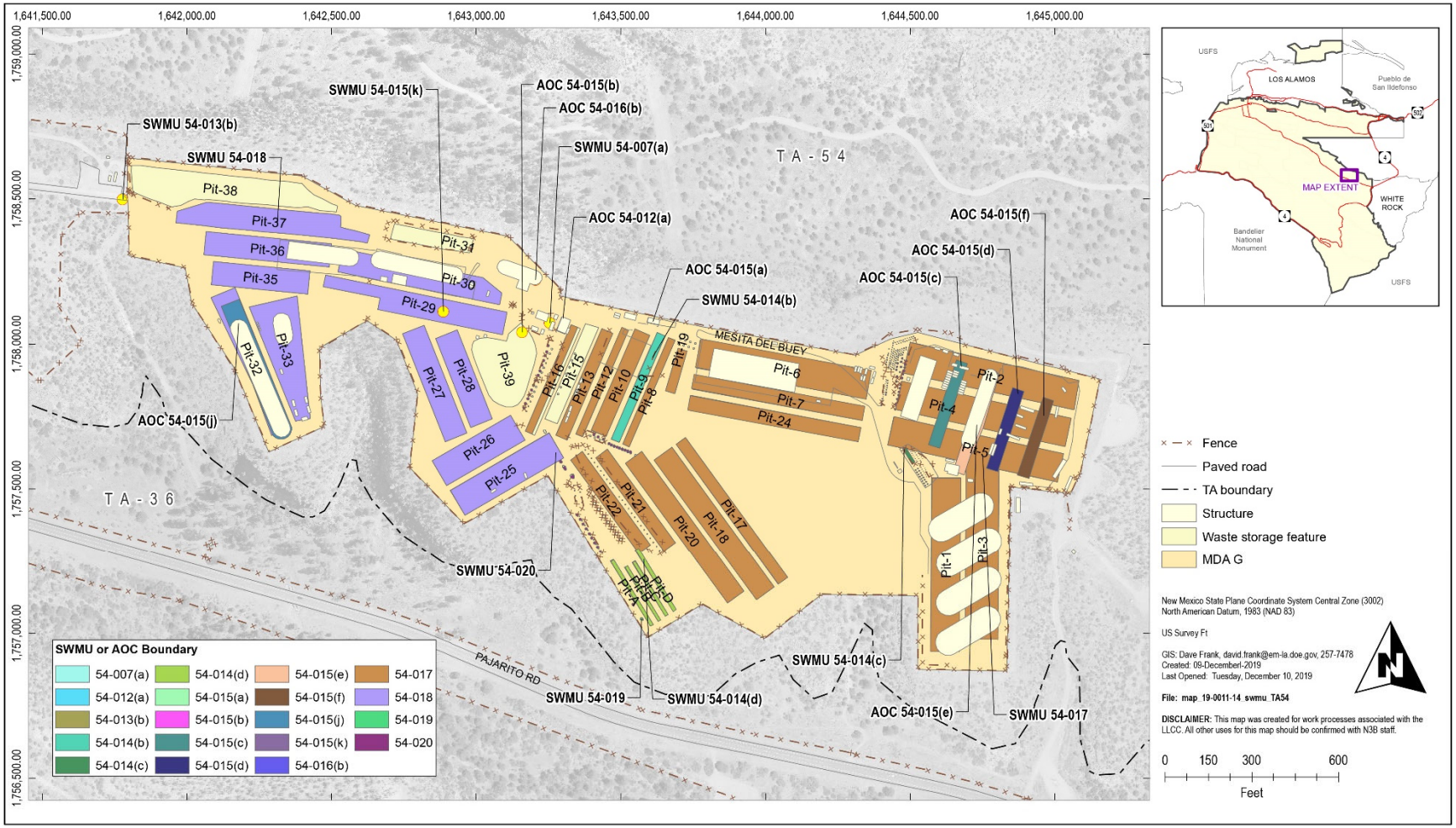


Figure 2-11. TA-54 Area G SWMUs and AOCs

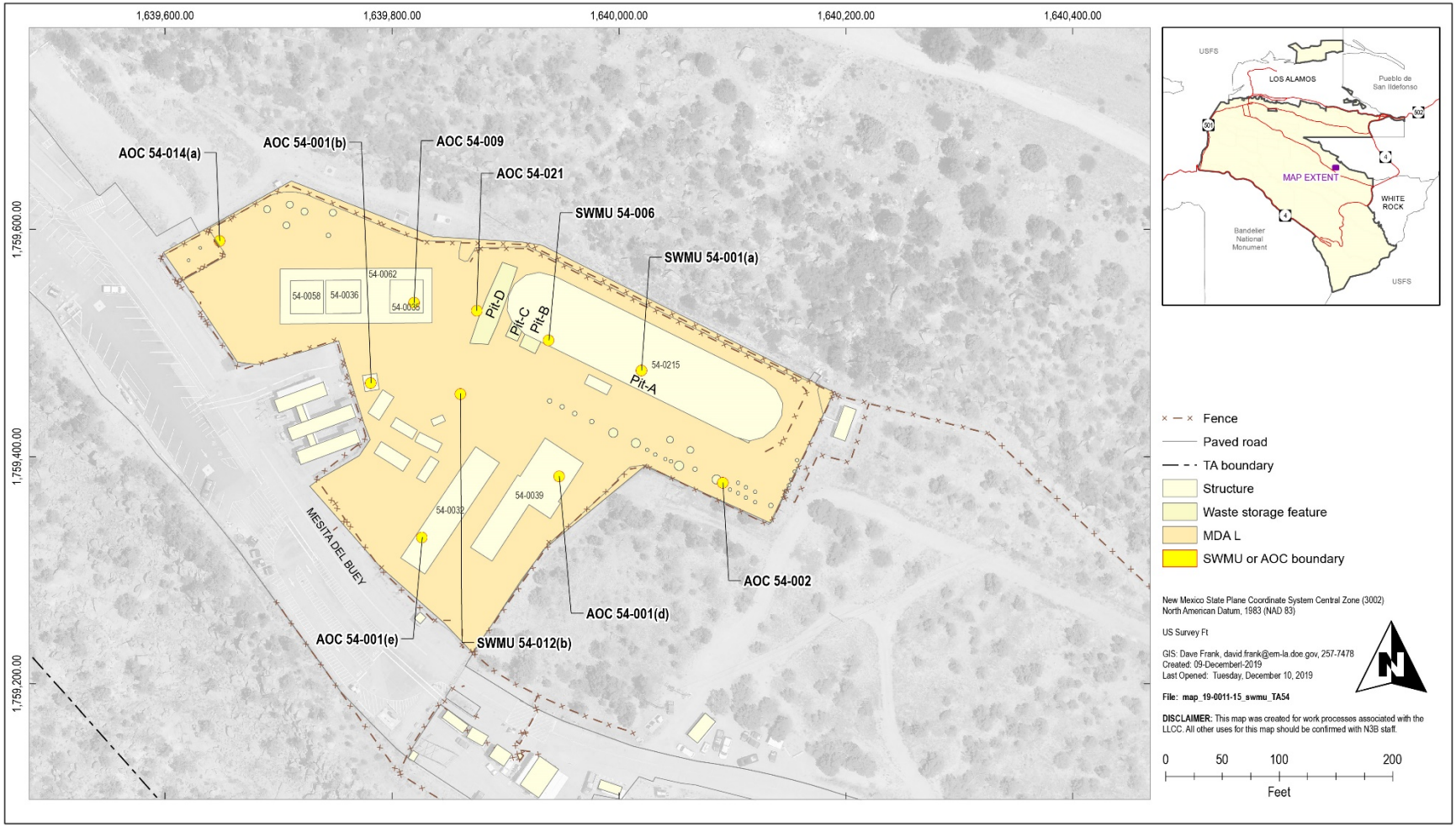


Figure 2-12. TA-54 Area L SWMUs and AOCs

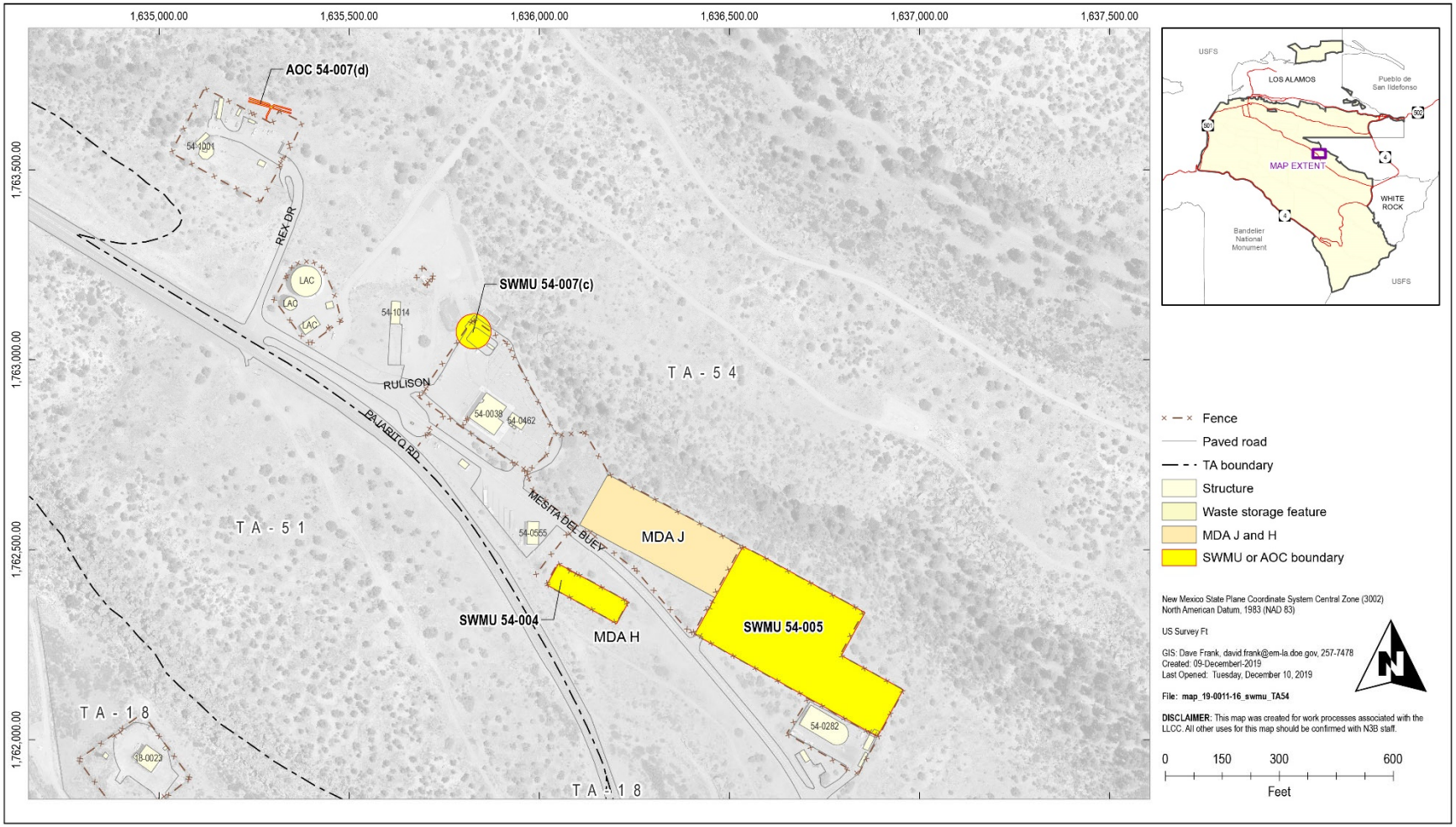


Figure 2-13. TA-54 West SWMUs and AOCs

Table 2-7. TA-55 SWMU Descriptions

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
42-001(a)/42-001(a)-99	North of former building 42-1 (removed by 1978) within TA-55	Soil Contamination from Former Incinerator Building 42-1	Designed to burn radioactive-contaminated waste in a cylindrical chamber with a throughput between 45.5 and 90.8 kilograms per hour; combustion products passed through an off-gas treatment system before being released through an exhaust stack, the off-gas system consisted of a Venturi scrubber, filter bank, and an ash separator	1951 to 1952	Radioactive-contaminated waste; releases from the incinerator are currently below residential and ecological risk levels.	Inactive; listed on the LANL Hazardous Waste Facility Permit Table K-1; site meets residential and ecological risk levels and is recommended for corrective action complete without controls.
42-001(b)/42-001(a)-99	Structure 42-2 located at former building 42-1 within TA-55	Soil Contamination from Former Ash Storage Tank	Tank was 22 ft. in diameter and approximately 13 ft. high, with a volume of 37,000 gallons	1951 to unknown	Radioactive-contaminated waste; no known releases at this tank.	Inactive; listed on the LANL Hazardous Waste Facility Permit Table K-1; site meets residential and ecological risk levels and is recommended for corrective action complete without controls.
42-001(c)/42-001(a)-99	Structure 42-3 located at former building 42-1 within TA-55	Soil Contamination from Former Ash Storage Tank	Tank was 22 ft. in diameter and approximately 13 ft. high, with a volume of 37,000 gallons	1951 to unknown	Radioactive-contaminated waste; no known releases at this tank.	Inactive; listed on the LANL Hazardous Waste Facility Permit Table K-1; site meets residential and ecological risk levels and is recommended for corrective action complete without controls.

Table 2-7. TA-55 SWMU Descriptions (continued)

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
42-002(b)/42-001(a)-99	West of former building 42-1 within TA-55	Soil Contamination from Former Decontamination Area	Unknown	1956 to 1969	Radioactive-contaminated waste; releases in this area are currently below residential and ecological risk levels.	Inactive; listed on the LANL Hazardous Waste Facility Permit Table K-1; site meets residential and ecological risk levels and is recommended for corrective action complete without controls.
42-003/42-001(a)-99	Site of former building 42-1 within TA-55	Soil Contamination from Former Septic System	565-gallon tank structure 42-4, drain line, filter trench, tile leach field, and outfall to Mortandad canyon removed in 1978	1951 to 1978	Sanitary sewage; septic tank may have overflowed in 1973; radiological contamination found and removed in 1978.	Inactive; listed on the LANL Hazardous Waste Facility Permit Table K-1; site meets residential and ecological risk levels and is recommended for corrective action complete without controls.
42-004	TA-42/TA-55	Canyon Disposal	Approximately 200 ft. x 100 ft.	1950s	Unknown constituents; no apparent releases based onsite soil sampling.	Inactive; listed on LANL Hazardous Waste Facility Permit Table K-3; no further action approved.
55-008	Building 55-4 basement	Sumps and Tanks	Six sumps/pumps, each with a capacity of 3 cubic ft., collect spills and mop-water generated in the building.; our 8-inch-diameter x 4-ft.-long condensate tank pumps and eight 8-inch-diameter x 4-ft.-long blowdown tanks receive condensate from cooling coils	1973 to present	Possibly small amounts of hazardous and/or radioactive constituents; no known releases to the environment.	Active; listed on LANL Hazardous Waste Facility Permit Table K-1; deferred site investigation per Consent Order.

Table 2-7. TA-55 SWMU Descriptions (continued)

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
55-009	Structure 55-263	Concrete Enclosure	9-ft. x 9-ft. x 6-ft.-deep concrete-lined pit; walls and floor of the monitoring station consist of 6-inch-thick reinforced concrete	1973 to unknown	Hazardous wastes were not generated, treated, stored, or disposed at the site, and radioactivity was never detected in the waste stream.	Inactive; listed on LANL Hazardous Waste Facility Permit Table K-3; no further action approved.

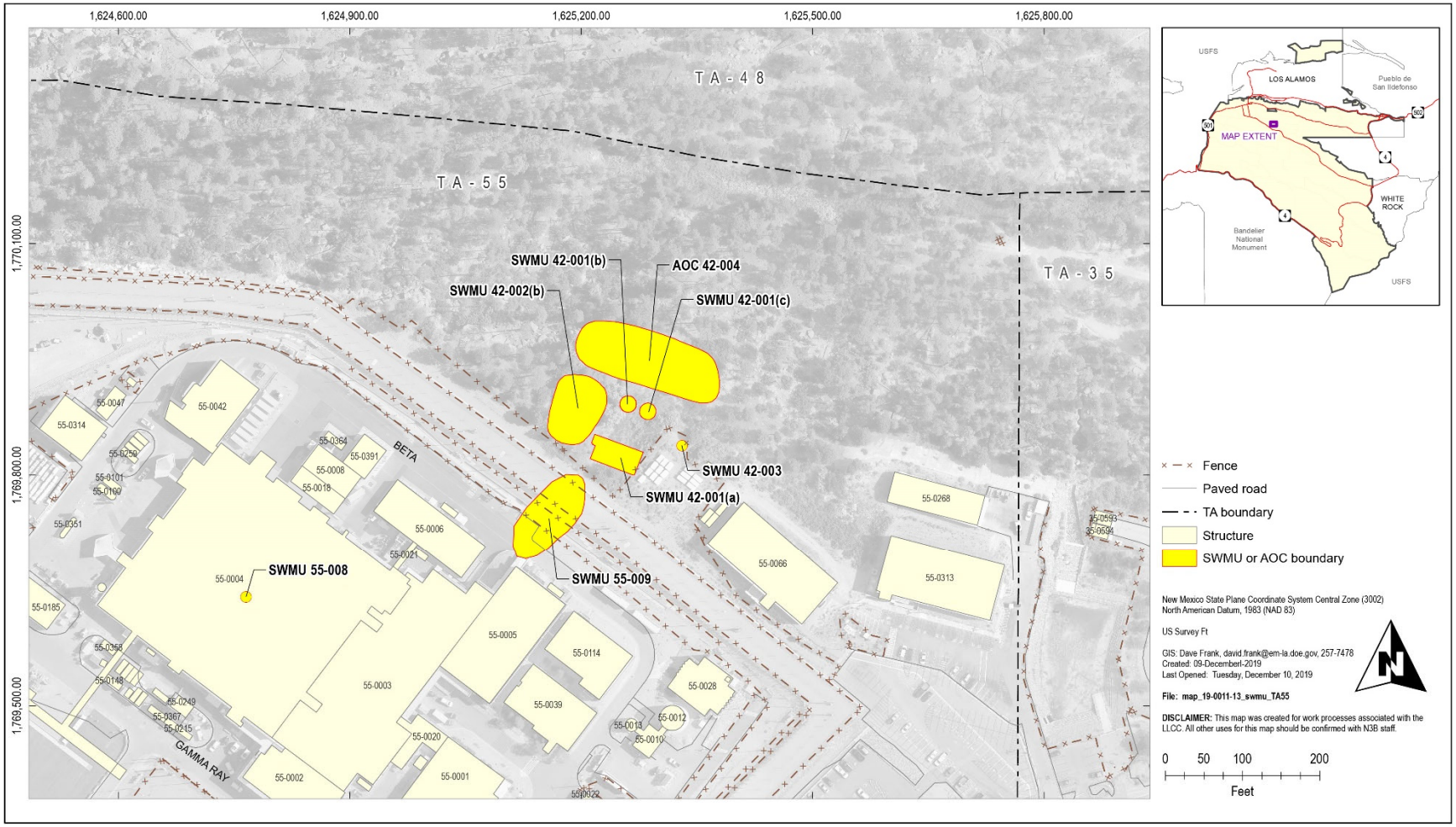


Figure 2-14. TA-55 SWMUs and AOCs

Table 2-8. TA-63 SWMU Descriptions

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
63-001(a)	TA-6 structure 63-12	Septic System	1000-gallon tank with associated seepage pit and drain line	Unknown	Sanitary wastewater; no documentation of spills, releases, or incidents at TA-63 has been found.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; certificate of completion without controls received from NMED.
63-001(b)	TA-63 structure 63-14 at Building 1	Septic System	920-gallon tank with associated seepage pit and drain lines; seepage pit 4 ft. by 50 ft. dep	Unknown	Sanitary wastewater; no documentation of spills, releases, or incidents at TA-63 has been found.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-1; certificate of completion without controls received from NMED.
63-002	Fenced yard east of the north parking area at TA-63	Container Storage Area	Unknown	Unknown	Solvents; no identified releases.	Inactive; included on LANL Hazardous Waste Facility Permit Table K-3; NFA approved.

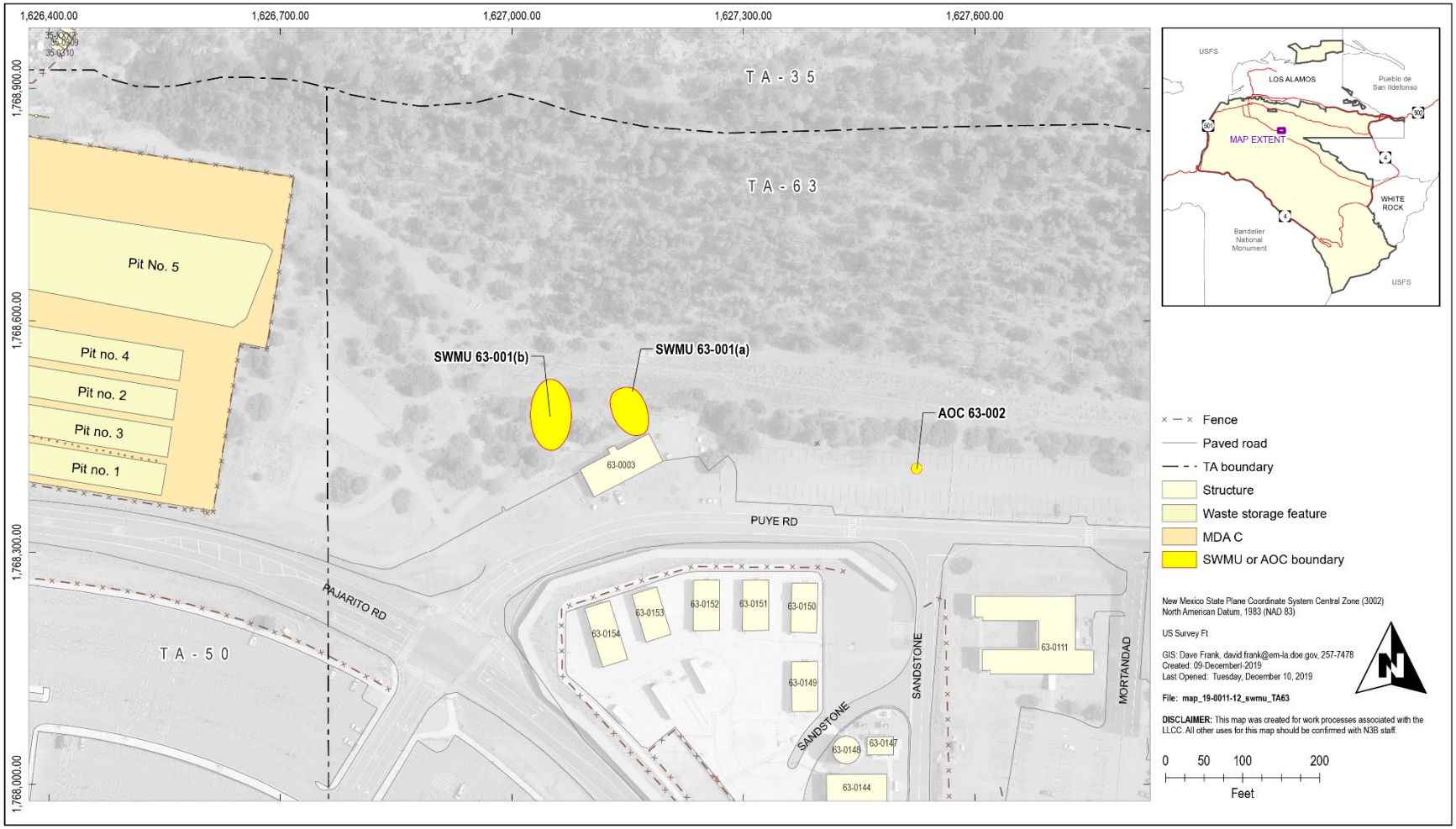


Figure 2-15. TA-63 SWMUs and AOCs

Table 2-9. TA-60 SWMU Descriptions

SWMU/AOC Number	Location	Type of Unit	General Dimensions and Structural Description	Operation Dates	Wastes Managed at the Unit and Release Info	Unit Status
60-001(c) (two areas)	One-half mile east of TA-60-0002	Storage Areas	Established inside buildings at the Nevada Test Site (NTS) Test Fabrication Facility.	1990 - 1992	No historical releases	No further action approved
60-006(a)	Near the northeast corner of the fence that surrounds buildings TA-60-0017 and TA-60-0019	Septic system	A 1,000-gal. septic tank, drainlines, and associated 4-ft-wide x 50-ft-deep seepage pit.	1986-1989	Metals, VOCs, SVOCs, PCBs, cyanide, nitrate, perchlorate, isotopic uranium, isotopic plutonium, americium-241, and tritium	Inactive; certificate of completion received without controls from NMED; listed on the LANL Hazardous Waste Facility Permit Table K-1.
C-60-002	Underground storage tank (UST), TA-03-0318.	Underground tank	The UST was situated on the ground surface on Sigma Mesa near a decommissioned communications bunker, structure 03-219.	Unknown	Metals, VOCs, SVOCs, PCBs, and TPH.	No further action proposal were approved by EPA in 1995.
60-002	Three former storage areas (designated as West, Central, and East) at TA-60	Storage Area	The former western storage area measures approximately 150 ft x 300 ft and is located approximately 300 ft southeast of building 60-2.	Unknown	RCRA solid or hazardous wastes and/or constituents, radionuclides, or other Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances.	Recommended for corrective action complete without controls in that report. SWMU 60-002 will be eligible for a certificate of completion upon approval of the investigation report by NMED.
60-001(d)	Pesticide storage shed, TA-60-0029	Storage Area - Pesticide Shed	Former structure 60-29 was a corrugated metal structure.	Unknown	Pesticides	Site is listed in Permit Attachment K, Table K-3, SWMUs and AOCs Corrective Action Complete Without Controls.

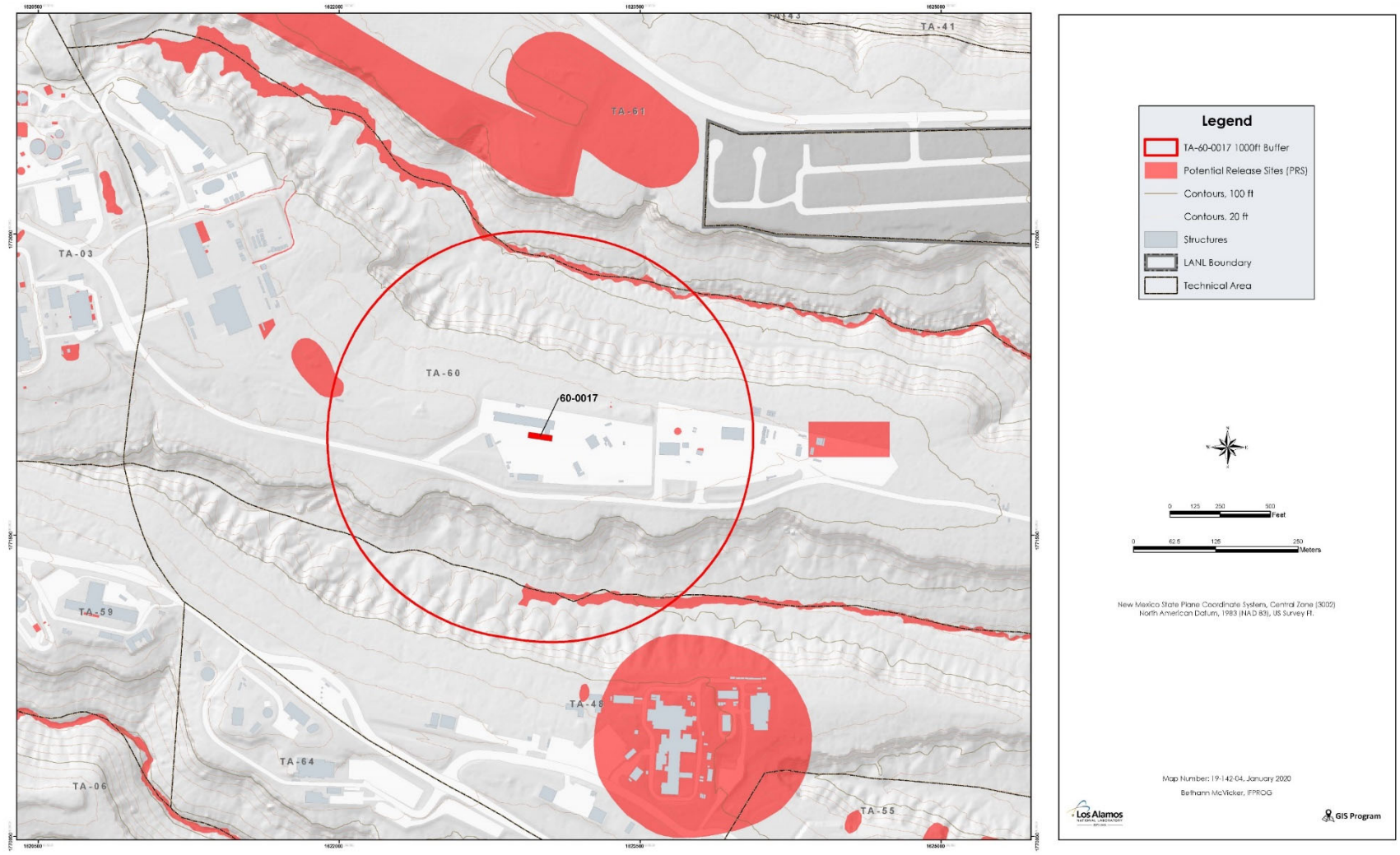


Figure 2-16. TA-60 SWMUs and AOCs

3.0 SPECIFIC UNIT INFORMATION REQUIREMENTS

This section of the Permit Renewal Application addresses the stipulated specific part B information requirements for permitted units, including 26 container storage units, one storage tank, and one treatment (stabilization) unit under 40 CFR §§270.15, 270.16 and 270.23. The Permittees are also authorized to treat hazardous waste (via macroencapsulation or stabilization within containers) at 19 units primarily utilized for storage as described below.

The Permittees do not propose any changes to these permitted units. However, as described below, DOE-Triad proposes one minor change to delete permit text at Permit Section 3.10.2. Information associated with the addition of three treatment units conducting open detonation and open burning under 40 CFR Subpart X are included in Sections 4.0 and 5.0 of this Permit Renewal Application.

3.1 Storage in Containers

Permit Part 3, *Storage in Containers,* includes requirements for active hazardous waste management units used for container storage. The Permittees propose no substantive changes to the hazardous waste management units used for storage of waste in containers. All the requirements within 40 CFR Part 264, Subpart I, are included within Permit Part 3 of the current LANL Hazardous 2010 Permit.

Under the Permit, DOE-Triad manages and operates container storage units at the following locations:

- Technical Area 3, Building 29, Container Storage Unit
- Technical Area 50, Building 69, Indoor Container Storage Unit
- Technical Area 50, Building 69, Outdoor Pad
- Technical Area 54 West, Building 38, Container Storage Unit (TA-54-38)
- Technical Area 54, West, Outdoor Container Storage Unit
- Technical Area 55, Building 4, Container Storage Unit, B40
- Technical Area 55, Building 4, Container Storage Unit, B05
- Technical Area 55, Building 4, Container Storage Unit, K13
- Technical Area 55, Building 4, Container Storage Unit, B45
- Technical Area 55, Building 4, Container Storage Unit, B13
- Technical Area 55, Building 4, Container Storage Unit, G12
- Technical Area 55, Building 4, Container Storage Unit, Vault
- Technical Area 55, 0355 Pad
- Technical Area 55, Outdoor Storage Pad
- Technical Area 60, Building 17, Container Storage Unit
- Technical Area 63, TWF

Under the Permit, DOE-N3B manage and operate container storage units at the following locations:

- Technical Area 54, Area G, Pad 1, Container Storage Unit
- Technical Area 54, Area G, Pad 3, Container Storage Unit
- Technical Area 54, Area G, Pad 5, Container Storage Unit
- Technical Area 54, Area G, Pad 6, Container Storage Unit
- Technical Area 54, Area G, Pad 9, Container Storage Unit

- Technical Area 54, Area G, Pad 10, Container Storage Unit
- Technical Area 54, Area G, Pad 11, Container Storage Unit
- Technical Area 54, Area G, Storage Shed 8, Container Storage Unit
- Technical Area 54, Area G, Building 33, Container Storage Unit
- Technical Area 54, Area L, Container Storage Unit

The Permittees propose minor change to remove Permit Section 3.10.2, *Secondary Containment,* regarding the storage of hazardous waste in Technical Area 3, Building 29. Containers with free liquids stored within the hazardous waste management unit at TA-3-29 are managed on secondary containment pallets, as required by Permit Section 3.7.2, *Containers with Free Liquids*. Permit Section 3.10.2 indicates that the epoxy that coats the floor within the unit is utilized as part of the unit's containment system. Although the epoxy is chemical-resistant, it is not designed to operate as containment per the requirements of 40 CFR §264.175. The Permittees maintain the epoxy flooring as part of general facility management; however, secondary containment requirements are met by using secondary containment pallets. [Include description of TWF SVM changes here and justification.] A summary table of changes summarized Appendix 1, *Summary Table of Changes to the Los Alamos National Laboratory Hazardous Waste Facility Permit,* and is included in Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11*.

3.2 Storage in Tanks and Mixed Waste Stabilization

Permit Part 4, *TA-55 Storage in Tanks and Treatment by Stabilization,* includes the requirements for active hazardous waste management units used for storage in tanks and stabilization by cementation at Technical Area 55. The Permittees propose no changes to these hazardous waste management units. All applicable requirements within 40 CFR Part 264, Subpart J and Subpart X, are included within Permit Part 4 of the most recent Permit. It should be noted that while the application requirements utilized to permit the mixed waste stabilization units are located in Subpart X of 40 CFR Part 264, the unit process code is T04, for "Other Treatment" in the *LANL General Part A Permit Application*, *Revision 11.0* (LANL 2025).

3.3 Treatment in Containers

Permit Part 7, *Treatment in Containers,* includes the Permit conditions associated with the treatment of hazardous waste in contained environments at Technical Area 50, Building 69; TA-54, Area G, Pad 9, Dome 231 Perma-Con; TA-54, Area G, Pad 1, Building 412; and TA-54, Area G, Pad 11, Dome 375. The Permittees propose no changes to the operations at these hazardous waste management units.

3.4 Treatment by Macroencapsulation

Macroencapsulation is an EPA-approved immobilization technology that includes the application of surface coating materials such as polymeric organics (e.g., resins and plastics) or use of a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media. Permit Part 8, *Treatment by Macroencapsulation,* includes the Permit conditions associated with the treatment of hazardous waste debris and radioactive lead solids by macroencapsulation. The Permittees propose no changes to this treatment process and may conduct this treatment at the following hazardous waste management units:

- TA-3-29, up to 3,441 gallons/day
- TA-50-69 Outdoor Pad, up to 3,441 gallons/day
- TA-54 Area G Pad 1, up to 23,160 gallons/day
- TA-54 Area G Pad 3, up to 23,160 gallons/day
- TA-54 Area G Pad 5, up to 23,160 gallons/day
- TA-54 Area G Pad 6, up to 23,160 gallons/day
- TA-54 Area G Pad 9, up to 23,160 gallons/day
- TA-54 Area G Pad 10, up to 23,160 gallons/day
- TA-54 Area G Pad 11, up to 23,160 gallons/day
- TA-54 Area G TA-54-33, up to 23,160 gallons/day
- TA-54 Area L Outdoor Pad, up to 23,160 gallons/day
- TA-54-38 West Outdoor Pad, up to 3,441 gallons/day
- TA-55-4, B40, up to 3,441 gallons/day
- TA-55-4, B45, up to 3,441 gallons/day
- TA-55-4 Outdoor Storage Pad, up to 3,441 gallons/day
- TA-55-355 Pad, up to 3,441 gallons/day
- TA-60, Building 17, up to 3,441 gallons/day
- TA-63 Transuranic Waste Facility, up to 23,160 gallons/day

4.0 OPEN DETONATION TREATMENT

This section, in conjunction with the appendices and supplemental materials referenced herein, sets forth the operational, human health and environment, and regulatory rationale to include two long-standing open detonation waste management units under the umbrella of the LANL Hazardous Waste Facility Permit. Including the open detonation waste management units in the Permit will incrementally intensify scrutiny and regulation of the units by the NMED-HWB.

Open detonation at TA-36 and TA-39 has been conducted since the 1950's. Two small open detonation units at TA-36 and TA-39 have been subject to regulation under the RCRA as interim status hazardous waste treatment units since November 1980 (43+ years). These interim status open detonation waste management units have been inspected annually by the NMED-HWB and/or EPA. None of these inspections has resulted in any allegation of noncompliance with any applicable RCRA regulations. Furthermore, environmental testing of soils, surface water, groundwater and air quality in the vicinity of the interim status open detonation units and intensive risk analysis show no evidence that an unacceptable or actionable level of any hazardous constituent has come to exist after 70+ years of operation. Consequently, continued operation of the open detonation waste treatment units under the Permit will be fully protective of human health and the environment.

To continue operating the open detonation waste management units in their proven historically safe and environmentally protective manner, LANL is seeking the approval of the NMED to include the units under the intensified regulation umbrella of the LANL Hazardous Waste Facility Permit. Action by the NMED to include the open detonation waste management units in the Permit will not increase the capacity of waste treatment relative to past practice. Such inclusion will, however, increase the level of scrutiny and regulation of the OD treatment units to ensure continued operation in a manner protective of human health and the environment.

This section also addresses the requirements in 40 CFR §270.14 (Contents of part B: General requirements) and 40 CFR §270.23 (Specific requirements for miscellaneous units) for permitting the specific treatment processes conducted in the two open detonation units at TA-36 and TA-39. Furthermore, this section describes the operating steps and requirements in place to ensure full compliance with the applicable requirements of 40 CFR §§ 264.601, .602 and .603. Compliance with these rules, in essence, guarantees the protection of human health and the environment via safe and effective waste treatment of small quantities of intermittently generated explosives waste and explosives-contaminated waste.

Proposed changes to the current 2010 Permit to facilitate incorporation of the open detonation treatment units under the Permit umbrella are summarized in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit,* and Supplements 1-1 through 1-9, within the following Permit parts and attachments:

- Permit Part 1, *General Permit Conditions*
- Permit Part 5, *(Reserved)*
- Attachment A, *Technical Area Unit Descriptions*
- Attachment C, *Waste Analysis Plan*
- Attachment D, *Contingency Plan*
- Attachment E, *Inspection Plan*

- Attachment G, addition of closure plans, *Attachment G.2 Technical Area 36-8 Open Detonation Unit Closure Plan, and Attachment G.3 Technical Area 39-6 Open Detonation Unit Closure Plan*
- Attachment J, *Hazardous Waste Management Units*
- Attachment K, *Listing of SWMUs and AOCs*
- Attachment N, *Figures*

4.1 Open Detonation Facility Background and Descriptions

Since the 1950s, the LANL site has conducted treatment of solid and liquid explosive waste and explosive-contaminated waste by open detonation operations at TA-36-8, known as the Minie Site, and TA-39-6, known as Point 6. These sites are interim status units proposed by the DOE and Triad's predecessor (Los Alamos National Security, LLC) to be permitted through a Class 3 permit modification request submitted to the NMED in July 2011. This Permit Renewal Application incorporates by reference this Class 3 modification request (LANL 2011). This application was determined to be administratively complete on February 14, 2012 (NMED 2012).

Construction of the TA-36 Minie Firing Site was completed in 1950. The site has been used extensively to conduct armor-piercing experiments, in which penetrator jets are directed at targets at the canyon wall to the west of the site. Metal plates are placed behind the targets to stop the penetrators. The Minie Firing Site has also been used for open detonation of excess high explosives determined to be reactive RCRA waste. In addition, emergency detonation of leaking gas cylinders has also been performed, but on a very infrequent basis.

The TA-39 Point 6 site was established and began use as a test firing site in 1953. The site is located in the southernmost western tributary of Ancho Canyon at the canyon bottom between an ephemeral stream and steep hill slopes to both the north and the south. The site is used for explosives experiments and for treating reactive hazardous waste by open detonation. The experiments conducted at this firing site are designed to expend all high explosives in the device. The open detonation units are used to treat only solid and liquid hazardous explosive waste. The open detonation units are used to open air detonate waste-excess explosives and explosive-contaminated combustible waste to remove the characteristic of reactivity. The wastes treated by open detonation cannot be safely disposed through other modes of treatment, and open detonation treatment leaves any treatment residuals of the reactive hazardous waste safe to handle and dispose.

The types of hazardous listed waste treated at the open detonation units include the following EPA Hazardous Waste Numbers: D001, D003, D005, D008, D030, and F003. The waste categories treated at the open detonation units fall under several general categories: excess explosives; explosives-contaminated debris; detonators, initiators, and mild detonating fuses; shaped charges and test assemblies; projectiles and munitions larger than 50 caliber; pressing molds; small-caliber ammunition; and black powder or gunpowder. The treated waste streams consist of many different components, but they generally consist of waste contaminated with high explosives, such as off-specification high explosive powders, filters, filter cartridges, fiber drums, gun test debris, gun targets, prep room debris, shrapnel, plastic bags, vials, plastics, cellulosic material (e.g., wipes, swabs, paper), wood, tape, gloves, brass casings, magazines, steel canisters, and excess experimental energetics. Data from 2006 through 2014 demonstrate that the Facility's waste minimization program reduced the amount of waste treated by open detonation from more than 2,553.66 pounds over 20 events in 2006 to 6.49 pounds in one

event in 2014. The largest treatment shot over those years was approximately 685 pounds. Through careful planning, the Facility established other uses for explosives that used to be considered waste requiring treatment at the open detonation units. Now, there are efforts that use the explosives as fuel for training, sanitization, or experimental purposes, which is why in the short term there is not a regular need for these units. However, as buildings are decommissioned, areas are closed, and demolition activities are conducted to reduce the LANL facility footprint, explosives and explosives-containing materials will be found that cannot be used for their intended purposes and the open detonation units will need to be used to safely treat the material.

4.1.1 Open Detonation Permitting History

Since 1980, the LANL site has operated the TA-36-8 and TA-39-6 open detonation units under the "interim status" requirements of the New Mexico Hazardous Waste Act and 40 CFR Part 265, Subpart P. Interim status is a designation given to facilities in existence before 1980, and interim status requirements apply until issuance of a final permit. The TA-36-8 and TA-39-6 units are classified as "thermal treatment hazardous waste management units" because they are used to treat explosive hazardous wastes; the units must meet requirements applicable to "miscellaneous units" under 40 CFR 264, Subpart X.

The permitting process for the TA-36-8 and TA-39-6 open detonation units has taken several decades. In November 1988, DOE and the University of California (the predecessor to the current contractor, Triad) submitted a permit application for hazardous waste treatment, including these two open detonation units. In January 1991, a Part A application for mixed waste units at LANL was submitted to NMED and included the units. The units were also included in Revision 1.0 and Revision 2.0 of the Part A permit application for mixed waste submitted to NMED in September 1993 and September 1994, respectively. In accordance with direction from NMED, a unit-specific Part A permit application (LANL 1996b) for the units was submitted in 1996 (referred to as the OB/OD Part A), along with a unit-specific Part B as separate document. Prior to the issuance of the 2010 Permit, the most recent permit applications for TA-36-8 and TA-39-6 were submitted in September 1999 and February 2000, respectively.

A Class 3 Permit Modification request was submitted July 19, 2011, as required by the 2010 Permit. The application was determined to be administratively complete on February 14, 2012. NMED issued a Notice of Deficiency on March 27, 2012, regarding two of the technical documents (the air-modeling report and the human-health risk assessment) included within the Permittees' 2011 application. The technical documents for which comments were provided have been updated and replaced herein as the following supplemental documents within Appendix 4, *Open Detonation and Open Burning Information*:

- Supplement 4-3, *Hybrid Air Modeling Analysis and Ecological and Health Risk Assessment for Open Burning and Open Detonation Operations at Los Alamos National Laboratory*
- Supplement 4-7, *Open Detonation Unit at Technical Area 36 Human Health and Ecological Risk Screening Assessments*
- Supplement 4-8, *Open Detonation Unit at Technical Area 39 Human Health and Ecological Risk Screening Assessments*

The units treat only explosives waste streams. The open detonation units are used to open air detonate waste explosives and explosive-contaminated combustible waste.

4.1.2 Open Detonation Facility Descriptions

The two open detonation units at the LANL site are located at TA-36 and TA-39. The descriptions provided below meet the application requirements for 40 CFR §§270.14(b)(1) and 270.23(a).

4.1.2.1 Technical Area 36 Open Detonation Unit

Located in the east central portion of LANL, TA-36 is spread over several mesa tops between a branch of Pajarito Canyon to the north and Water Canyon to the south. Mesa-top elevations at TA-36 range from approximately 6,380 to 7,120 ft. above mean sea level. TA-36 contains an open detonation unit, several other firing sites, and supporting offices where research is conducted with various types of explosives. The location of the unit is depicted on revised Figure 2 included within Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*.

The TA-36-8 open detonation unit is located in the southern portion of TA-36. The unit consists of an irregularly shaped area near Building TA-36-8 (the control building), as shown on newly included Figure 6 within Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*, and on the TA-36 topographic map included with the updated *Los Alamos National Laboratory General Part A Permit Application, Revision 11.0* (LANL 2025). The TA-36-8 open detonation unit is a sand- and grass-covered area that measures approximately 500 ft. east to west and 300 ft. north to south. The western portion is relatively flat; the eastern portion is concave to minimize fragment dispersion. Because the unit consists simply of an area on soil-covered tuff, an engineering drawing for structures cannot be developed for the unit. The topography and extent of the TA-36-8 open detonation unit are shown on the aerial figure included in the *Los Alamos National Laboratory General Part A Permit Application, Revision 11.0* (LANL 2025). The TA-36-8 open detonation unit has a maximum treatment capacity of 2,000 pounds of explosive waste per detonation and an annual treatment limit of 15,000 pounds. The unit is used primarily for non-treatment-related experimental test detonations and is occasionally used to treat explosive hazardous waste. Operations at the unit require post-detonation visual surveys as soon as practical for materials not consumed by the detonation. This practice minimizes the potential for precipitation contacting untreated hazardous waste, if any is generated.

4.1.2.2 Technical Area 39 Open Detonation Unit

TA-39 is located in the southern portion of LANL (revised Figure 2 within Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*) and includes much of the mesa between Water Canyon to the north and Ancho Canyon to the south. Mesa-top elevations at TA-39 range from approximately 6,500 to 7,000 ft. above mean sea level. The area was established in 1959 to test explosive materials and has been used continuously for that purpose. TA-39 contains a number of structures located in the north fork of Ancho Canyon; however, these structures are not routinely occupied and are only used during firing site operations or maintenance activities.

The TA-39-6 open detonation unit is associated with Building TA-39-6 (the control building). The location of the unit is shown on newly included Figure 7 of Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures,* and on the TA-39 topographic map in the updated *LANL General Part A Application, Revision 11.0* (LANL 2025). The TA-39-6 open detonation unit is a relatively flat, sand-covered area and measures approximately 40 ft. by 40 ft., and is located near the canyon bottom. Steep canyon walls that rise to heights of 100 ft. or more in the immediate vicinity of the TA-39-6 open detonation unit serve to attenuate the force of the detonations. Additionally, the area recently has been reconfigured to have a retaining wall in front of the canyon wall roughly forming a semicircle around the

unit, which also provides attenuation of the detonation force. Building TA-39-6 (the control building) is a reinforced concrete structure that partially extends beneath the detonation area. An engineering drawing cannot be developed for the unit because it consists simply of an open area on sand-covered tuff. The topography and aerial extent of the unit are shown on the figure included in the *LANL General Part A Application, Revision 11.0* (LANL 2025). The TA-39-6 open detonation unit has a maximum waste treatment capacity of 1,000 pounds of explosive waste per detonation and an annual treatment limit of 15,000 pounds. The unit is used primarily for non-treatment-related experimental test detonations and is also occasionally used to treat hazardous explosive waste. Operations require post-detonation visual surveys as soon as practical for materials not consumed by the detonation. This practice minimizes the potential for precipitation contacting untreated hazardous waste, if any is generated.

4.2 Waste Characterization and Acceptance

The explosives waste and explosives-contaminated waste treated by open detonation typically consists of off-specification explosives wastes, excess explosives waste, and other explosives-contaminated solid wastes (e.g., rags, glass, and wood). These wastes exhibit the characteristic of reactivity, as defined in 40 CFR §261.23. Open detonation treatment of these wastes involves a detonation that chemically transforms the high explosives component of the waste faster than the speed of sound and renders the waste nonreactive.

Waste characterization and analysis requirements for explosives and explosives-contaminated waste treated by open detonation at the LANL site are included within Permit Attachment C, *Waste Analysis Plan*. These waste streams include homogeneous and heterogeneous wastes. Open detonation operations are necessary for hazardous waste treatment to remove the characteristic of reactivity. Treatment by open detonation renders hazardous waste nonreactive and any potential remaining residue amenable to handling and dispositioning. Solid and liquid hazardous explosives waste may be treated (i.e., open detonated) at the units. Proposed changes to the Permit necessary to include these treatment operations are incorporated within the revised Permit Attachment C, *Waste Analysis Plan,* within Appendix 1, Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan,* of this Permit Renewal Application.

Waste characterization, acceptance, authorized wastes, and plans for waste analysis prior to treatment and after treatment (if needed) are outlined in Appendix 1, Supplement 1-3, in accordance with the requirements under 40 CFR §§264.13(a-c), 265.375, 265.382, and 270.14(b)(2-3). The changes include information specific to waste analysis and acceptance at the open detonation units. The Waste Analysis Plan was developed to ensure that all hazardous waste streams treated at the hazardous waste management units are properly characterized and any hazardous constituents that might contain or that are released through treatment are sufficiently identified.

The process of generating, reviewing, and approving a waste stream profile includes a certification by the generator that the characterization is complete, a review by hazardous waste characterization subject matter experts, and a review by an environmental professional that the waste meets waste acceptance criteria and can be treated by open detonation. The final check occurs when the waste is picked up from storage/accumulation and a visual inspection of the waste is conducted to ensure that the waste picked up is consistent with the waste described in the waste stream profile.

4.3 Security

At the LANL site, the Permittees prevent the unknowing entry and minimize the possibility for the unauthorized entry of persons or livestock onto the active hazardous waste management units, in accordance with the requirements from 40 CFR §§264.14 and 270.14(b)(4). Security is of paramount importance to safe and successful operations at LANL.

Access to the isolated and security-controlled locations of the open detonation units at TA-36 and TA-39 is maintained through both administrative controls and physical barriers. Entry into each of the firing sites or high explosives exclusion areas are controlled through an industrial fence with access granted through an access control station or a locked access gate. Access into the security area through the fence can only be gained by persons possessing an appropriate security clearance and site-specific training. Entry into the secured area is controlled via a combination of an entry station that is manned by LANL security personnel or by badge readers on gates 24 hours per day. Unescorted access to the appropriate firing site or high explosives exclusion area is granted only to persons possessing appropriate security clearance and meeting site-specific training requirements. Visitors must check in at the appropriate access control station to be added to the site-specific badge-reader system to gain access to the area. Proposed changes to the Permit to update descriptions of security measures at the open detonation units are included to Attachment A, *Technical Area Unit Descriptions*, within this Permit Renewal Application in Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.

4.4 Inspection Schedules and Procedures

Per the requirements at 40 CFR §§ 270.14(b)(5) and 264.602, inspections at the open detonation units are conducted and documented as outlined in Permit Section 2.6, *General Inspection Requirements*. Permit Attachment E, *Inspection Plan,* with a revised inspection plan that includes the requirements for inspections at the open detonation hazardous waste management units, can be found in Supplement 1-5, *Permittees' Proposed Changes to Permit Attachment E, Inspection Plan,* of this Permit Renewal Application. No changes to Permit Section 2.6 are associated with the addition of these hazardous waste management units.

4.5 Waivers for Preparedness and Prevention

The information requirements for 40 CFR §270.14(b)(6) stipulate that a part B permit application include "a justification for any request to waive the preparedness and prevention requirements of Part 264, subpart C." No waivers of the preparedness and prevention requirements under Part 264, subpart C, are being sought by the Permittees.

4.6 Contingency Plan

As required by 40 CFR §270.14(b)(7), the Contingency Plan meets the requirements for 40 CFR Part 264, Subpart D, *Contingency Plan and Emergency Procedures*. Information on emergency response resources and release prevention/mitigation are included in the current 2010 Permit Attachment D, *Contingency Plan*. A copy of the revised Contingency Plan that includes updates for the inclusion of the open detonation units is included in this Permit Renewal Application as Supplement 1-4, *Permittees' Proposed*

Changes to Permit Attachment D, Contingency Plan. The revised plan incorporates the emergency equipment located at the open detonation units at TA-36-8 and TA-39-6.

4.7 Hazards Prevention

The following sections present how operations at the open detonation units comply with the preparedness and prevention requirements of 40 CFR Part 264, Subpart C, and the application requirements for 40 CFR §§270.14(8)(i-vi), where they differ from those presented in Section 2.7, *Hazards Prevention,* of this Permit Renewal Application. Health and safety procedures are followed by site personnel during routine operations.

4.7.1 Waste Handling at Open Detonation Units

All waste-handling operations at the open detonation treatment units are conducted as discussed in Section 2.7.1, *Waste Handling and Preventing Hazards in Unloading/Loading*, of this Permit Renewal Application, thus meeting the requirements of 40 CFR §270.14(8)(i).

4.7.2 Control of Run-on/Runoff

Prevention of runoff from the hazardous-waste-handling areas per the requirements for 40 CFR §270.14(8)(ii) is described in Section 4.18.2, *Protection of Surface Water/Wetlands/Soil Surface,* of this Permit Renewal Application.

4.7.3 Preventing Water Supply Contamination

The water supply at the LANL site is as described in Section 2.7.3, *Preventing Water Supply Contamination,* of this Permit Renewal Application.

4.7.4 Mitigate the Effect of Equipment Failure and Power Outages

There are no special requirements at the open detonation units required to mitigate equipment failure and power outages, per the requirements of 40 CFR §270.14(b)(8)(iv). The description of required equipment and testing maintenance of that equipment follow the permit conditions referenced in Section 2.7.4, *Mitigate the Effect of Equipment Failure and Power Outages,* of this Permit Renewal Application with the proposed permit changes as described within the section.

4.7.5 Preventing Undue Exposure of Personnel

The requirements at the open detonation units to prevent undue exposure of personnel, per the requirements at 40 CFR §270.14(b)(8)(v), are as described in Section 2.7.5, *Preventing Undue Exposure of Personnel,* of this Permit Renewal Application.

4.7.6 Preventing Releases to the Atmosphere

The requirements of 40 CFR §270.14(b)(8)(vi) reflect the standards promulgated in 40 CFR §264.601, which is applicable to the open detonation waste management units. 40 CFR §264.601 requires that “A miscellaneous unit must be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment. Permits for miscellaneous units are to contain such terms and provisions as necessary to protect human health and the environment, including, but not limited to, as appropriate, design and operating requirements,

detection and monitoring requirements, and requirements for responses to releases of hazardous waste or hazardous constituents from the unit. Permit terms and provisions must include those requirements of subparts I through O and subparts AA through CC of this part, part 270, part 63 subpart EEE, and part 146 of this chapter that are appropriate for the miscellaneous unit being permitted. …" Protection of human health and environment with respect to the air and the atmosphere includes, but is not limited to:

> "(c) Prevention of any release that may have adverse effects on human health or the environment due to migration of waste constituents in the air, considering:
> (1) The volume and physical and chemical characteristics of the waste in the unit, including its potential for the emission and dispersal of gases, aerosols and particulates;
> (2) The effectiveness and reliability of systems and structures to reduce or prevent emissions of hazardous constituents to the air;
> (3) The operating characteristics of the unit;
> (4) The atmospheric, meteorologic, and topographic characteristics of the unit and the surrounding area;
> (5) The existing quality of the air, including other sources of contamination and their cumulative impact on the air;
> (6) The potential for health risks caused by human exposure to waste constituents; and
> (7) The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents."

The open detonation units will comply with the provisions of 40 CFR § 264, 40 CFR § 264.601 and § 270.14 by proper operation of the units in compliance with the terms of a RCRA permit issued by NMED. The Permittees' historic interim status compliance at the open detonation treatment units is unsurpassed and an indication of superior prospective compliance with any NMED issued RCRA permit conditions.

The *RCRA 40 CFR Part 264, Subpart X Permit Writers Technical Resource Document* (EPA 1997), specifies that the destruction and removal efficiency of open detonation units ranges from "99.98% to 99.9996%." These extremely high destruction and removal efficiencies ensure the prevention of any release that may have adverse effects on human health or the environment due to migration of waste constituents in the air. Data discussed in Section 4.18.3, *Protection of Atmosphere,* and included in Supplement 4-3, *Hybrid Air Modeling Analysis and Ecological and Health Risk Assessment for Open Burning and Open Detonation Operations at Los Alamos National Laboratory,* shows that any potential emissions from operation of the open detonation waste management units will not exceed any regulatory level established to protect human health or the environment. The very conservative scenarios assumed for the treatment activities modeled at each of the units both overestimate the quantities of waste expected to be treated at the units and the types of waste that will be treated at the units. Efforts to minimize the quantity and toxicity of the waste that must be treated by open detonation have net positive impacts for the frequency of needed treatment at the units. Therefore, such emissions will not adversely affect human health or the environment and thereby will meet and comply with the requirements of 40 CFR § 264, 40 CFR § 264.601(c) and 40 CFR § 270.14(b)(8)(vi).

Specifically, air-monitoring data collected in 2011 during treatment events at the open detonation units is included as Supplement 4-4, *Air Sampling at Open Detonation Units,* of this Permit Renewal

Application. Each sample was collected as close to the treatment unit as possible and downwind of the shot. The data indicate that much of the measurable air contaminants can be attributed to air entrainment of soil, rather than emissions from the treatment processes. Finally, the entirety of Section 4.18 is incorporated into this Section 4.7.6 by reference.

4.8 Ignitable, Reactive, and Incompatible Waste Precautions

The application requirements for 40 CFR §270.14(b)(9) are included in Section 2.8, *Ignitable, Reactive, and Incompatible Waste Precautions,* of this Permit Renewal Application. There are no changes required to Permit Section 2.8, *Ignitable, Reactive, and Incompatible Waste*, for the inclusion of the open detonation units within the 2010 Permit. The treatment of wastes by open detonation is an appropriate treatment method under RCRA. It is necessary to mitigate the ignitable and/or reactive hazards associated with explosives waste streams and is the preferred waste management practice for health and safety concerns for the employee.

4.9 Traffic

In accordance with the requirements of 40 CFR §270.14(b)(10), the primary traffic routes used to transport hazardous waste to the TA-36-8 open detonation unit include West Jemez Road (State Road 501), Anchor Ranch Road, R Site Road, and Potrillo Drive. The primary traffic routes used to transport hazardous waste to the TA-39-6 open detonation unit are within TA-39. Ancho Road is a nonpublic road within TA-39 (see Figures 1 and 2 in Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*). Additional discussion of traffic at LANL is included in Section 2.9, *Traffic Pattern, Estimated Volume, and Control*.

4.10 Location and Facility-Wide Information

Facility location information to meet the requirements for 40 CFR §270.14(b)(11) is included within this Permit Renewal Application within Section 2.10, *Facility Location Information*. Additionally, the information requirements for 40 CFR §§270.14(b)(12, 14, 15, 16, 17, 18, 19, 20, 21, and 22) and 270.14(c & d) are covered for the LANL facility within Sections 1 and 2 of this Permit Renewal Application. There are no additional information requirements necessary to add the open detonation units to the 2010 Permit.

4.11 Closure Plan

Copies of the closure plans for each of the open detonation units as required by 40 CFR §270.14(b)(13) are included within Supplement 3-1, *Permittees' Proposed Changes to Attachments G.1 through G.31, Closure Plans,* of this Permit Renewal Application.

4.12 Design, Construction, Materials, and Operation

Open detonation completely removes the characteristic of reactivity from explosives waste and explosives-contaminated waste. However, these wastes may also exhibit RCRA toxicity characteristics or contain listed wastes. In some cases, open detonation is effective in removing these other characteristics and destroying listed waste associated with organic hazardous constituents (e.g., 2,4-dinitrotoluene and solvents). This is not the case when it comes to high explosives contaminated with

RCRA-regulated metals. However, untreated explosives waste and explosives-contaminated waste do not usually contain metals in high enough concentrations to be considered hazardous.

The open detonation units are used to treat solid and liquid explosive hazardous waste. Descriptions of waste streams that might be treated by open detonation at the unit are discussed in Section 2.2, *Waste Analysis Plan,* of this Permit Renewal Application.

The TA-36-8 open detonation unit has a maximum treatment capacity of 2,000 pounds of explosive waste per detonation and an annual treatment limit of 15,000 pounds. Following waste placement at the unit, detonation operations are conducted remotely from Building TA-36-8 (the control building). The TA-39-6 open detonation unit has a maximum waste treatment capacity of 1,000 pounds of explosive waste per detonation and an annual treatment limit of 15,000 pounds. Following waste placement at the TA-39-6 unit, detonation operations are conducted from Building TA-39-6 (the control building). Both units are used primarily for non-treatment-related experimental test detonations and are also occasionally used to treat hazardous explosive waste. Operations at each of the units require post-detonation visual surveys as soon as practical for materials not consumed by the detonation. This practice minimizes the potential for precipitation, if any, contacting untreated hazardous waste. The Permittees have proposed treatment permit conditions for these units to update Permit Part 5. These proposed revisions are included within in newly proposed Permit Part 5, *Treatment by Open Detonation,* and within Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11,* of this Permit Renewal Application.

4.12.1 Containment Systems

In accordance with requirements from 40 CFR §264.601(b)(2), the effectiveness and reliability of containment, confinement, and collection systems and structures that prevent contaminant migration at the open detonation units are evaluated in Section 4.18, *Environmental Performance Standards.*

Engineering controls are in place at each open detonation unit to prevent runoff of waste constituents from the unit to other areas of the facility or to the environment. A site plan and an aerial photograph of the unit is included in the *LANL General Part A Application, Revision 11.0* (LANL 2025). Drainage control features and storm water controls are included on figures in Supplement 4-2, *Open Detonation Unit Groundwater Monitoring and Surface Drainage Information.*

Existing storm water controls at the TA-36-8 open detonation unit include an earthen berm and swale that direct run-on around and to the south of the unit. The lower reach of this swale is well vegetated, and a 12-inch culvert directs runoff under the access road, with the banks of the drainage adjacent to the outlet lined with riprap. The general unit area is surrounded with an earthen berm, and the outfall for the site is well vegetated and has a layer of wood chips that filter runoff from the site. The site is flat, so the vast majority of rainfall is absorbed into the soil. Native vegetation in the area surrounding the unit holds soil in place, increases infiltration, and slows and filters runoff.

Storm water controls at the TA-39-6 open detonation unit include a retaining wall to the north and west of the TA-39-6 firing pad. This wall diverts surface water run-on north to a tributary of Ancho Canyon and prevents potentially contaminated runoff from entering the tributary to Ancho Canyon. The north slope of the retaining wall is covered with native vegetation to provide stabilization. Several rock check dams are located north of the firing point in a tributary to Ancho Canyon. Runoff from the TA-39-6 open

detonation unit is directed into a rock-lined channel that leads to a culvert under the site access road. The discharge outlet of this culvert is protected with rock check dams. A drainage swale around the south edge of the dirt access road leading to the unit directs storm water away from the firing point and through the easternmost culvert present at the site. Several rock check dams are located within the swale above this culvert. The discharge outlet of these culverts is protected with rock check dams. Thick native vegetation at the easternmost culvert's outlet serves as detention, filtration, and infiltration control, preventing sediment transport into the tributary to Ancho Canyon.

4.12.2 Operating Requirements

Open detonation operations are conducted in accordance with this section and as detailed in the most recent, approved versions of the LANL facility plans and operating procedures. These procedures are described in the following sections to address the general and site-specific safety and health hazards associated with working with explosives.

Waste to be treated is collected from various areas at the Facility. Prior to treatment of any waste, the waste generator submits waste characterization documentation and a request for treatment. This information is reviewed for acceptance at the treatment unit by a trained professional familiar with the waste characterization requirements of the Waste Analysis Plan and the site-specific restrictions of the waste treatment unit at TA-36-8 or TA-39-6. Treatment event(s) is/are scheduled once waste characterization documentation has been approved by the firing site leader, waste acceptance personnel, high explosives official safety personnel, and responsible line management.

4.12.2.1 Waste Treatment Process

Scheduling a waste treatment event involves arranging for transportation of waste from one or more locations to the make-up building (or preparation building) or to the TA-36-8 or TA-39-6 open detonation units. When loading waste, the cargo compartment of the transport vehicle is checked to ensure that it is clean and contains no loose items such as tools or pieces of metal. For transport, the wastes are placed in an enclosed compartment or secured with tie-downs. The load limit for transporting explosives is determined by the capacity of the transport vehicle. Wastes are transported by appropriately trained personnel in a designated vehicle to a make-up building or to the open detonation unit. The waste is unloaded from the vehicle and placed within the make-up building by qualified technicians/specialists. A visual examination is conducted after unloading to ensure that no explosive material remains in the transport vehicle.

For efficiency and with the intent to minimize handling of explosives, waste may be staged overnight after transport to the make-up room. The make-up buildings are located near the TA-36-8 and TA-39-6 open detonation units within an area where access is controlled.

Specific treatment operations and explosives handling, and assemblies are addressed in operating procedures described in this document and consider all the potential hazards present during treatment preparation. The wastes treated at the open detonation units are prepared in the make-up room, where assemblies necessary for detonation of the waste are located. The required amount of explosive is moved into the open detonation unit for a treatment event. Final setup for waste treatment occurs at the open detonation unit, and this setup includes configuration of explosives and detonator. This includes connecting electronic components and wiring at the open detonation unit to ensure remote initiation of the waste treatment detonation functions correctly.

The firing site leader at each open detonation unit configures a waste treatment shot that ensures complete detonation of the waste. Multiple compatible waste streams may be consolidated to create efficiencies in the waste treatment. Wastes requiring the use of more fuel may be paired with wastes that require less fuel, so the least amount of fuel possible is used to treat waste effectively and efficiently. Also considered in the process are other safety and health considerations, including but not limited to minimizing the handling and transport of explosives, noise mitigation, meteorological conditions, and fire danger. Risk to human health is the greatest consideration. Should operational or meteorological conditions change rapidly and unexpectedly, the waste may remain at the open detonation unit under administrative control until open detonation treatment can be conducted safely.

Operations at firing sites at the LANL site are carefully coordinated and Access Control is notified prior to and after conducting of treatment operations via phone or radio. Fire department personnel may be notified, and these personnel may be present or on standby at certain treatment events, as determined by high explosives safety personnel. Initiation for all waste treatment operations is performed remotely by qualified personnel from inside the control buildings. Upon completion of shot setup, area clearances are completed, and the shot is fired. After the shot is fired, the firing site leader (or designee) conducts a visual inspection to ensure that the high explosives were expended, and safe conditions exist. If the inspection confirms that the shot fired completely, an “All Clear” is signaled via phone or radio. All personnel must remain in the bunker until given permission to leave the control building by the personnel inspecting the site.

If there are indications that the shot did not fire properly, clearance personnel will be notified of the condition. All personnel within the control building will remain in the control building, with misfire or partial fire procedures going into effect. LANL minimizes the impact to the environment by conducting treatment operations in strictly controlled remote areas within LANL boundaries. Waste treatment shots are carefully assembled to ensure thorough detonation and minimize fragment dispersion. Residues (metallic shards, wood, plastic, cables, or foam pieces) are managed in accordance with appropriate LANL waste management procedures.

4.12.2.2 Waste Accumulation

Explosives waste is not routinely accumulated at the firing site. When possible, explosives waste and explosives-contaminated waste are removed from compliant storage at the generating location just prior to being treated.

4.12.2.3 Treatment Operations

The TA-36-8 open detonation unit and the TA-39-6 open detonation unit are used for thermal treatment of explosive-contaminated hazardous waste that exhibits the characteristic of reactivity, in accordance with 40 CFR Part 265, Subpart P. The purpose of waste treatment at the units is to remove the characteristic of reactivity by open detonation. Treatment of the waste is accomplished by using a predetermined amount of explosive (fuel or donor charge) to initiate and increase the effectiveness of treatment. All treatment detonations are conducted above the ground surface, with a clearance area established based on the size of the treatment shot. Detonations are configured at each unit to minimize fragmentation dispersal. The detonation may create temperatures ranging from 4,500 to 9,000 degrees Fahrenheit (2,500 to 5,600 degrees Celsius) (NAVAMI 2005).

Generally, explosives-contaminated waste includes make-up room (located in the make-up building) wastes and, to a very limited degree, firing site debris. Make-up room waste consists of explosives-contaminated debris such as paper towels, gloves, swabs, and similar materials that contain no tangible pieces of explosives but are used in the preparation of detonations (i.e., shots) in the make-up building. Firing site debris that is potentially contaminated with explosives would only be generated in the rare instance that a waste treatment or experimental shot is incomplete. This debris waste stream consists of wood scraps, cardboard, burlap, Plexiglas®/Lexan®, plastic, glass, Styrofoam, electrical cables, and metallic foils used for pin switches or metals such as target plates. When generated, firing site debris is characterized using LANL waste management procedures and determined to not meet the criteria for a reactive waste. Therefore, firing site debris is almost always sent offsite for dispositioning.

Explosives waste includes identifiable excess explosives that are safe to handle. These materials include excess explosives assemblies and explosives, identifiable booster charge scrap, and any other process or cleanup wastes that have been determined to be potentially reactive.

Waste containers for explosives-contaminated waste and explosives waste generally consist of plastic bags, paper-lined cardboard boxes, or plywood boxes. Explosives-contaminated waste and explosives waste are packaged for intrusive transport typically in compliance with U. S. Department of Transportation requirements. Explosives-contaminated waste is placed within a container, sealed, and labeled appropriately. These waste containers are stored in a central accumulation area or a satellite accumulation area. Excess explosive waste may be stored in compliant explosives storage. Firing site debris that includes pieces of damaged explosives resulting from a misfire, sensitivity experiment, incomplete detonation, or exposure to severe testing is packaged separately from explosives waste. Exceptions to handling are done on special items, which are handled safely and appropriately.

4.12.2.3.1 Pretreatment Activities

Open detonation operations are conducted in accordance with this section and as detailed in the most recent, approved versions of LANL facility plans within the Permit and operating procedures (as described here), which are designed to help trained personnel assess and address the general and site-specific safety and health hazards associated with working with explosives.

Waste to be treated is collected from various areas at the Facility. Prior to treatment of any waste, the waste generator must submit waste characterization documentation and a request for treatment. This information is reviewed for acceptance at the treatment unit by a trained professional familiar with the waste characterization requirements of the Permit Attachment C, *Waste Analysis Plan* (the revised Waste Analysis Plan with the proposed changes to include open detonation is in this Permit Renewal Application's Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*) and the site-specific restrictions of the waste treatment unit at TA-36-8 or TA-39-6. A treatment event(s) is/are scheduled once the waste characterization documentation has been approved by the firing site leader, waste acceptance personnel, high explosives official safety personnel, and responsible line management.

4.12.2.3.2 Waste Staging

For efficiency and with the intent of minimizing handling of explosives, waste may be staged overnight after transport to the make-up room in the make-up building. The make-up buildings are located near the TA-36-8 and TA-39-6 open detonation units, and within an area where access is controlled. Waste is not staged outside on the firing point.

4.12.2.3.3 Restrictions on Operations

Operating conditions for the open detonation units include not conducting detonation operations during adverse weather conditions and accepting only a maximum of up to 2,000 pounds of waste explosives per treatment at the TA-36-8 open detonation unit and 1,000 pounds of waste per treatment at the TA-39-6 open detonation unit. Annually, the Facility is limited to 15,000 pounds per year for both the open detonation units combined.

Transportation of or routine operations with explosives waste at the open detonation units may not occur during the following severe conditions:

- Lightning within a six-mile radius (9.6 kilometers) of the open detonation units
- Icy roads (for transport)
- During precipitation events
- Any time winds are greater than 20 miles per hour
- Winds greater than 10 miles per hour in drier weather conditions, such as in the spring and summer seasons when fire danger rating is deemed to be “Very High” or “Extreme”

Specific bounding conditions for treatment operations are detailed in the LANL Fire Danger Matrix maintained by emergency operations personnel at the Facility. Wind data is standardized using the facility-wide LANL Weather Machine, meteorological tower 6 postings. The Weather Machine compiles temperature, wind, pressure, relative humidity, data collected by LANL meteorological towers and other pertinent National Weather Service forecast information. Routine open detonation operations occur only during daylight hours (i.e., one hour after sunrise or one hour before sunset).

4.13 Demonstration of Treatment Effectiveness

To address the applicable miscellaneous unit requirements specified in 40 CFR §270.23(d), a demonstration of treatment effectiveness must be included for the open detonation units. As indicated in the U.S. Army Environmental Hygiene Agency (AEHA) guidance document, "RCRA Part B Permit Writers Guidance Manual for Department of Defense Open Burning/Open Detonation Units" (AEHA 1987), a demonstration of treatment effectiveness can be based on laboratory or field data. For wastes treated by open detonation, information demonstrating that any residues or fragments remaining are not reactive after the detonation (i.e., as defined by RCRA) should be provided. At the open detonation units, the goal of waste treatment is to have no residue after each waste treatment event. The area is visually inspected for complete detonation directly after each treatment event. If any explosives waste remains after the initial treatment, it is treated again to ensure that any residues or fragments remaining are not reactive. Remaining residues that could be reactive would be considered an off-normal situation and would be documented as such. Any remaining explosive remnants would be treated in accordance with safety practices and approved LANL waste management procedures. Residues that are not reactive are managed as such, and must follow applicable state, federal, and local requirements.

4.14 Assessment of Alternatives

An assessment of alternatives to onsite open burning and open detonation treatment activities is included in Supplement 4-1, *Assessment of Alternatives for Open Detonation and Open Burning Activities for Open Detonation and Open Burning Activities* of Appendix 4, *Open Detonation and Open Burning*

Information, of this Permit Renewal Application. The assessment discusses waste minimization efforts, operational practice changes, and process efficiencies that have occurred to decrease the amount and types of waste that require treatment through open detonation and open burning activities. Waste-minimization and process-efficiency efforts have decreased the volume of waste generated during routine operations. These efforts are continual at LANL and prove effective at reducing explosives waste for treatment by open detonation, resulting in no waste treatment detonations at either unit since 2014 at LANL. This reduction has been accomplished mainly by identifying other uses for excess and out-of-specification explosives. However, these activities do not eliminate all potential waste streams requiring thermal treatment (i.e., open detonation or open burning).

The assessment also outlines alternative treatment technologies to open detonation and open burning and the restrictions for offsite transport of explosive hazardous waste. Overall, the assessment concludes that no single treatment technology exists that could treat all wastes currently treated by open burning and open detonation at LANL; therefore, multiple treatment technologies would have to be employed onsite to replace open detonation and open burning treatment activities. These technologies would also require RCRA permits prior to construction.

Additionally, the assessment in Supplement 4-1 outlines the safety considerations that are important for both onsite treatment activities and offsite shipment of explosives waste streams. It concludes that onsite open detonation and open burning treatment are the only options for treatment of certain waste streams. Open detonation or open burning is the safest and most reliable method for all explosives waste streams treated onsite and thus cannot be eliminated.

4.15 Noise Considerations

Noise resulting from open detonation treatment activities is minimized by conducting such treatment in a remote area within LANL boundaries and under optimal meteorological conditions. This section describes the potential impacts to human health and the environment resulting from noise and ground vibrations.

Impulse noise is a discrete noise event that typically lasts less than two seconds (often less than one second) and produces a rapid increase in the sound pressure level. Impulse noise measurements were collected at the intersection of Piera Loop and New Mexico State Road 4 in White Rock, New Mexico, located approximate 2.5 miles east of the TA-36-8 open detonation during the detonation of explosives. Measurements were taken on approximately 110 separate occasions between 2008 and early 2011. On seven of those occasions, impulse noise measurements were also taken at a location approximately 13 miles east of the open detonation unit, in El Rancho, New Mexico. The El Rancho location has a “direct line of sight” to LANL boundaries. The practice for evaluating noise concerns associated with all routine detonation activities is specifically described in Supplement 4-10, *Predicting and Controlling Noise from Detonation Activities*. Historic measurements collected that support the information in Supplement 4-10 are described below.

On December 21, 2010, the noise levels of a 35-pound detonation were recorded at the two locations. The measurement at Piedra Loop and State Road 4 intersection was 118 decibels (dB), and the measurement at El Rancho was 100 dB. There was a weather inversion during this event. Impulse noise measurements were also made at Piedra Loop and New Mexico State Road 4 intersection during a 400-pound detonation on August 20, 2009. The reading at this location was 106 dB.

On December 15, 2010, a noise measurement was made at the entrance to Bandelier National Monument during an open detonation at the TA-39-6 open detonation unit. The observed reading was 110 dB. Additional noise monitoring was conducted at the intersection of Monte Ray South and State Road 4 in White Rock, New Mexico, on seven additional occasions, with the highest reading being 106 dB on January 20, 2011, taken during a 100-pound open detonation.

Workers involved in actual open detonation operations are stationed in the control building at the unit during detonation and, based on the levels measured at the TA-36-8 unit, exposure is expected to be between approximately 126 and 132 dB. Exposure received at the TA-39-6 unit would be approximately 134 dB. Both of these potential exposures are below the occupational exposure limit of 140 dB set by the American Conference of Governmental Industrial Hygienists. As a precautionary measure, various types of hearing protection are made available to workers and visitors during open detonation operations.

4.16 Minimum Distance Requirements

Treatment of waste at the open detonation units is conducted using a noncontinuous (batch) thermal process, in which a discrete quantity of waste is treated through a complete thermal cycle, in accordance with requirements specified in 40 CFR §§265.370 and 265.373. Open detonation of wastes at the open detonation units will be conducted in a manner that does not threaten human health or the environment. Based on the unit's maximum 2,000-pound treatment capacity at the TA-36-8 open detonation unit, a minimum required distance of 1,730 ft. will be maintained between the point of detonation and the property of others. For the TA-39-6 open detonation unit's maximum 1,000-pound treatment capacity, a minimum required distance of 1,250 ft. will be maintained between the point of detonation and the property of others, as required by 40 CFR §265.382.

4.17 Ground Vibration Concerns

LANL measured ground vibration during a series of 400-pound open detonation events at the TA-36 open detonation in August 2009. The largest seismic ground motion at 0.6 miles (1 kilometer) from the TA-36-8 open detonation unit was approximately 10 times less than the U.S. Bureau of Mines Safe Level Standards for the 400-pound shots. At a distance of 1.2 miles, the acoustic signals were below U.S. Bureau of Mines Safe Level Standards for the 400-pound shots. In the nearest community of White Rock, New Mexico, located approximately 2.5 miles away from the TA-36-8 open detonation unit, all measurements were at least 15 dB below safe level standards. LANL has been taking detailed acoustic and seismic measurements for all shots at three locations since December 2010. Additionally, based on the fact that measurements are well below established safe level standards and due to the remote location of the open detonation units, potential impacts to human health and the environment resulting from ground vibration are assessed to be minimal.

4.18 Environmental Performance Standards

The TA-36-8 and TA-39-6 open detonation units are located in remote areas of LANL. The units are operated, maintained, and will be closed in a manner that will ensure protection of human health and the environment, in accordance with 40 CFR §264.601. General geologic and hydrologic characteristics

of the LANL Facility and land-use patterns in the Los Alamos area are discussed in Section 2.1, *General Facility Description,* and Section 2.10, *Facility Location Information,* of this Permit Renewal Application.

The open detonation units are designed to facilitate safe handling and treatment of wastes to prevent adverse human health and environmental impacts. Design information and waste management practices for the TA-36-8 open detonation unit and the TA-39-6 open detonation unit are detailed above.

4.18.1 Protection of Groundwater/Vadose Zone

As required by 40 CFR §264.601(a), the open detonation treatment units are operated in a manner that prevents releases that might have adverse effects to human health or the environment as a result of migration of waste constituents through the vadose zone to groundwater. The following sections provide information on the hydrogeology beneath the TA-36-8 open detonation unit and at the TA-39-6 open detonation unit, as well as describe monitoring and reporting conducted to assess the impact of open detonation operations on groundwater.

4.18.1.1 Hydrogeology

The TA-36-8 open detonation unit and the TA-39-6 open detonation unit are located in a mixed semiarid, temperate, and mountain climatic zone. From 1981 to 2010, the average annual precipitation in Los Alamos was 18.97 inches and the average annual snowfall was 57.5 inches (LANL 2009a). Published precipitation data for TA-36 and TA-39-6 units do not exist; however, TA-49, located southwest of TA-36, has an annual precipitation of 22.27 inches per year (LANL 1998). The evaporation rate of freestanding water exceeds the average annual precipitation. A discussion of the hydrology beneath each of the open detonation units is included in the sections below. Pertinent locations for monitoring are included within figures in Supplement 4-2, *Open Detonation Unit Groundwater Monitoring and Surface Drainage Information*, which lists the possible contaminants of concern and shows their monitoring frequency. Tables included within Supplement 4-2 are modified from the 2020 Interim Facility-Wide Groundwater Monitoring Plan and include the analyte suite and the frequency of analysis (C = continuous, Q = quarterly, S = semi-annual, and A = annual) conducted in 2019 for the constituents listed in the columns (LANL 2020a). Map 3 within the concurrent submittal of the LANL *General Part A Permit Application, Revision 11.0* (LANL 2025), shows the locations of all regional and alluvial wells used for data gathering at LANL, whereas the TA-36 and TA-39 topographic maps within the LANL General Part A Permit Application depict more detailed information about wells, surface water stations, springs, and groundwater movement at and around each of the open detonation units. Supplement 4-2, *Open Detonation Unit Groundwater Monitoring and Surface Drainage Information,* of this Permit Renewal Application contains monitoring data for alluvial, perched-intermediate, and regional groundwater zones near the open detonation units.

4.18.1.1.1 Hydrogeology near and beneath the TA-36-8 Open Detonation Unit

A detailed description of the hydrogeologic characteristics immediately below the TA-36-8 open detonation unit is not currently documented in published or internal reports. However, a discussion of surface water, the vadose zone, and groundwater specific to Operable Unit 1130, which includes TA-36, and a conceptual hydrogeologic model of the area are presented in Sections 3.5 and 3.6 of the RFI Work Plan for Operable Unit 1130 (LANL 1993a). Additional hydrologic information for the area north of the

TA-36-8 open detonation unit is presented in the Pajarito Canyon Investigation Report, Revision 1 (LANL 2009b).

The hydrologic conditions on the surface and within the dry-mesa setting such as that found at the TA-36-8 open detonation unit lead to slow unsaturated flow and transport (Birdsell et al. 2005). Dry mesas shed precipitation as surface runoff to the surrounding canyons, and most mesa-top infiltration occurs episodically following snowmelt. Much of the water that enters the soil zone is lost through evapotranspiration. Potential evapotranspiration was estimated to exceed precipitation at a climate station on the eastern portion of the plateau by a ratio of 6:1 (LANL 2003b). As a result, annual net infiltration rates for dry mesas are less than ten 10 millimeters per year (mm/yr.) and are more often estimated to be on the order of 1 mm/yr. or less (Kwicklis et al. 2006). Because the dry mesas generally consist of nonwelded to moderately welded tuffs with low water content, flow is matrix dominated. Travel times for contaminants migrating through mesas to the regional aquifer are expected to be several hundred to thousands of years (Newman 1996; Newman et al. 1997; Birdsell et al. 2000; Nylander et al. 2003).

The regional water table is approximately 1,000 ft. below the TA-36-8 open detonation unit. The only aquifer in the Los Alamos area capable of municipal and industrial water supply is the regional aquifer. The nearest supply well to the TA-36-8 open detonation unit, PM-2 is located 6,500 ft. to the northeast. PM-4 is 9,300 ft. north-northeast of the TA-36-8 open detonation unit. Upper levels of the regional aquifer on the Pajarito Plateau are predominantly under phreatic (unconfined) conditions (LANL 2009b). The deep portion of the regional aquifer is predominantly under confined conditions, and it is the portion of the regional aquifer influenced by Pajarito Plateau municipal supply pumping. The intensive pumping causes very small water-level fluctuations in the upper (phreatic) portions of the aquifer. Seasonal water-table fluctuations of approximately 0.5 ft. are observed at monitoring well R-27 (Koch and Schmeer 2010), located 2,400 ft. west of the TA-36-8 open detonation unit (Supplement 4-2, *Open Detonation Unit Groundwater Monitoring and Surface Drainage Information*). These low-magnitude responses in the phreatic zone from municipal well pumping are in contrast to the larger responses at monitoring wells completed in deeper parts of the aquifer, indicating that the hydraulic communication is poor between the phreatic zone and deeper parts of the aquifer. The small-scale fluctuations in the phreatic zone may be from drawdowns and/or strata compaction. The small water-level fluctuations do not seem to affect the magnitudes and directions of groundwater flow. Capture of contaminants by municipal supply wells, such as well PM-4, which is screened approximately 180 to 1,775 ft. below the regional water table (Koch and Schmeer 2010), is unlikely because of this poor vertical hydraulic communication. As a result, contaminant migration follows the ambient water-table gradients rather than diverting towards the pumping water supply wells, based on hydraulic data. Based on water-table maps, the regional groundwater flow direction in the vicinity of the TA-36-8 open detonation unit is expected to range from east-northeast to east-southeast.

4.18.1.1.2 Hydrogeology near and beneath the TA-39-6 Open Detonation Unit

The TA-39-6 open detonation unit is located in a semiarid, temperate, mountain climate. From 1981 to 2010, the average annual precipitation in Los Alamos was 18.97 inches and the average annual snowfall was 57.5 inches (LANL 2009a). Published precipitation data for TA-39 do not exist; however, TA-49, located west of TA-36, has an annual precipitation of 22.27 inches per year (LANL 1998). The evaporation rate of freestanding water exceeds the average annual precipitation.

A detailed description of the hydrogeologic characteristics immediately below the TA-39-6 open detonation unit is not currently documented in published or internal reports. However, a discussion of surface water, the vadose zone, and groundwater specific to Operable Unit 1132, which includes TA-39, and a conceptual hydrogeologic model of the area is presented in Section 3.7 of the RFI Work Plan for Operable Unit 1132 (LANL 1993b). Additional hydrologic information for the areas surrounding the TA-39-6 open detonation unit is presented in the Investigation Report for North Ancho Canyon Aggregate Area, Revision 1 (LANL 2010a).

Ancho Canyon is classified as a dry canyon, as described by Birdsell et al. (2005). Generally, on the Pajarito Plateau, dry canyons have relatively small catchment areas (less than 13 square kilometers), experience infrequent surface flows, and have limited or no saturated alluvial systems. The hydrologic conditions yield little down canyon, near-surface contaminant migration and are characterized by very slow unsaturated water flow from the surface to the regional aquifer. Because surface-water flow is infrequent and shallow alluvial groundwater is not common, contaminants largely remain near their original sources, predominantly in soil and sediment. Net infiltration beneath dry canyons is low, with rates generally believed to be less than tens of mm/yr. and commonly on the order of 1 mm/yr. or less. Finally, transport times to the regional aquifer beneath dry canyons are expected to exceed hundreds of years.

The only aquifer in the Los Alamos area capable of municipal and industrial water supply is the regional aquifer. There are no municipal supply wells downgradient of the TA-39-6 open detonation unit. The regional water table is approximately 560 ft. below the TA-39-6 open detonation unit. Upper levels of the regional aquifer on the Pajarito Plateau are predominantly under phreatic (unconfined) conditions (LANL 2009b). The deep portion of the regional aquifer is predominantly under confined conditions, and it is the portion of the regional aquifer influenced by Pajarito Plateau municipal supply pumping. The intensive pumping causes very small water-level fluctuations in the upper (phreatic) portions of the aquifer. Seasonal water-table fluctuations of less than 0.5 ft. have been observed at monitoring well R-31 (Koch and Schmeer, 2010), located 1,550 ft. southeast of the TA-39-6 open detonation unit. These low-magnitude responses in the phreatic zone from municipal well pumping are in sharp contrast to the much larger (10 to 20 ft.) responses at monitoring wells completed in deeper parts of the aquifer (e.g., well R-20 screen 3 in Pajarito Canyon near PM-2), indicating that the hydraulic communication is poor between the phreatic zone and deeper parts of the aquifer. The small-scale fluctuations in the phreatic zone may be from drawdowns and/or strata compaction. The small water-level fluctuations do not seem to affect the magnitudes and directions of groundwater flow. Capture of contaminants by municipal supply wells is unlikely because of this poor vertical hydraulic communication. Additionally, the small hydraulic response observed at well R-31 is attributable to pumping at the nearest municipal supply well PM-2, which is located 14,775 ft. north of the TA-39-6 open detonation unit. As a result, contaminant migration follows the ambient water-table gradients rather than diverting towards the pumping water supply wells, based on hydraulic data. Based on water table maps, regional groundwater flow in the vicinity of the TA-39-6 open detonation unit is expected to be towards the southeast.

4.18.1.2 Groundwater Monitoring and Reporting

LANL has an established groundwater monitoring network to assess the quality of groundwater in the Los Alamos area. The monitoring network includes monitoring wells, water-supply wells, surface-water sampling stations, and springs located both inside and outside the LANL boundary. Three groundwater

zones—alluvial, perched-intermediate, and regional groundwater—are monitored as part of the monitoring network. Sample locations, analytical suites, and sampling schedules for the monitoring network are identified in the most recent version of the IFGMP (LANL 2020a), a document updated annually with approval by NMED-HWB in accordance with the June 2016 Compliance Order on Consent (New Mexico 2016). These water-quality data are used for characterization purposes, to support corrective-measures work conducted at sites around the Facility, and to support general surveillance. Map 3 within the concurrent submittal of the *LANL General Part A Permit Application, Revision 11.0* (LANL 2025), shows the locations of all wells sampled as part of the IFGMP. The TA-36 topographic map within the LANL General Part A Permit Application shows the locations of IFGMP wells pertinent for monitoring groundwater downgradient of the TA-36-8 open detonation unit. The TA-39 topographic map within the LANL General Part A Permit Application shows the locations of the IFGMP wells pertinent for monitoring the TA-39-6 open detonation unit. These topographic maps also include wells upgradient of the TA-36-8 and the TA-39-6 open detonation units that provide baseline information about groundwater quality entering the site.

The locations of routinely monitored wells that are downgradient of the TA-36-8 and the TA-39-6 open detonation units are shown on figures within Supplement 4-2, *Open Detonation Unit Groundwater Monitoring and Surface Drainage Information*. The monitoring schedule for these wells is also included within Supplement 4-2. Details can be found in the most current version of the IFGMP. Surface and groundwater samples collected under the IFGMP are routinely analyzed for potential contaminants and other water-quality parameters. Figures and summary of the data from 2000 to present for the monitoring locations are provided in Supplement 4-2 of this Permit Renewal Application. The data indicate that no constituents related to the operations at these units have impacted groundwater at levels exceeding applicable standards. The sampling results are also published in periodic groundwater-monitoring reports submitted to the NMED-HWB and in the Facility's annual environmental reports. Tables and figures are located in Supplement 4-2, *Open Detonation Unit Groundwater Monitoring and Surface Drainage Information*.

4.18.2 Protection of Surface Water/Wetlands/Soil Surface

As required by 40 CFR §264.601(b), the open detonation units are located in a remote area and are operated in a manner that prevents any releases that might have adverse effects on human health or the environment as a result of migration of waste constituents in surface waters, wetlands, or on the soil surface. General operation of these units includes incorporating best management practices, such as the following: spill prevention and response; control of storm water run-on and runoff; installation of erosion and sediment controls; personnel training; and good housekeeping practices.

4.18.2.1 Surface Water

Storm water discharges from both of these units are regulated under the Clean Water Act by the National Pollutant Discharge Elimination System permit program. Prior to the issuance of the current LANL Storm Water Individual Permit in 2010, these open detonation units were regulated under the Multi-Sector General Permit (MSGP) for Storm Water Discharges Associated with Industrial Activity. The LANL Storm Water Individual Permit (NM0030759) issued by the EPA, Region 6, became effective on November 1, 2010. The current LANL Storm Water Individual Permit expired on March 31, 2014, but it has been administratively continued, pending issuance of a new permit. The EPA issued LANL a draft Storm Water Individual Permit on November 30, 2019. A final Permit is expected following a public

comment period, which ends on July 31, 2020. Additional historic surface-water compliance information and Permit applicability is included in Section 2.3.2, "Protection of Surface Water/Wetlands," of the Los Alamos National Laboratory Permit Modification Request for Open Detonation Units at Technical Areas 36 and 39 (TA-36-8 and TA-39-6), Revision 0 (LANL 2011).

The LANL Storm Water Individual Permit contains nonnumeric technology-based effluent limitations, coupled with a comprehensive, coordinated monitoring program and implementation of corrective actions where necessary, to minimize pollutants in LANL's storm water discharges from SWMUs and AOCs. LANL must implement site-specific control measures (including best management practices) to address the nonnumeric technology-based effluent limits contained in the LANL Storm Water Individual Permit, followed by confirmation monitoring against New Mexico water-quality criteria-equivalent target action levels to determine the effectiveness of the site-specific measures. If target action levels are exceeded, corrective actions detailed in the LANL Storm Water Individual Permit are initiated and additional confirmation monitoring is conducted following completion of corrective actions. Monitoring of storm water under the LANL Storm Water Individual Permit has been ongoing since 2011.

4.18.2.1.1 Hydrologic Assessment and Surface Water Flow

Net annual precipitation for the Los Alamos area, including the open detonation units, is low. Surface waters within LANL are limited to ephemeral or intermittent flows in the canyon bottoms that result from rainfall or snowmelt. The locations of these surface waters, including intermittent streams, at each of the open detonation units are located on figures within Supplement 4-2, *Open Detonation Unit Groundwater Monitoring and Surface Drainage Information*.

The TA-36-8 open detonation unit is located near the headwaters of Fence Canyon, which connects geographically to Potrillo Canyon but does not discharge into it. Drainage from this unit flows east to Fence Canyon (receiving water). The stream flow in Fence Canyon and Potrillo Canyon is ephemeral and occurs only as the result of rainfall or snowmelt. Currently, LANL Storm Water Individual Permit monitoring is conducted below the point of discharge from the TA-36-8 open detonation unit, prior to entering Fence Canyon. Surface waters from the upstream portion of the Potrillo Canyon watershed do not contribute to flows that reach the Rio Grande through Water Canyon (LANL 1993a). Canyon bottom surface waters from Potrillo Canyon downstream of the TA-36-8 open detonation unit eventually flow into Water Canyon. A gaging station (E267) in Portillo Canyon, located 3 miles upstream of the Rio Grande, recorded no flow for water year 2019.

The TA-39-6 open detonation unit is located in a tributary of the north branch of Ancho Canyon. All runoff from the TA-39-6 open detonation unit eventually flows to the main Ancho Canyon watercourse. Impervious surfaces comprise 99% of the 197-acre watershed that comprises the site monitoring area (SMA). The stream flow in Ancho Canyon is ephemeral and occurs only as the result of rainfall or snowmelt. Canyon bottom surface waters from the north branch of Ancho Canyon eventually flow into the main channel of Ancho Canyon. A gaging station (E275) in Ancho Canyon, located approximately 2 miles upstream of the Rio Grande, recorded two days of flow for E275 in water year 2019, with a recorded maximum daily flow for water year of 8.9 cubic feet per second.

4.18.2.1.2 Monitoring and Reporting

The open detonation units were historically permitted under the National Pollutant Discharge Elimination System MSGP for Storm Water Discharges Associated with Industrial Activity. This permit coverage was replaced by the LANL Storm Water Individual Permit when it first became effective in

2010. Baseline storm water controls and other measures, including collection of storm water samples, have been implemented at both open detonation units, in accordance with applicable LANL Storm Water Individual Permit requirements.

LANL Storm Water Individual Permit controls incorporated into the TA-36-8 open detonation unit [identified as AOC 36-004(c)] include earthen and rock berms, swales, riprap, an infiltration basin, and rock check dams to control run-on and runoff of storm water and erosion and movement of sediment from the site.

LANL Storm Water Individual Permit controls incorporated into the TA-39-6 open detonation unit [identified as SWMU 39-004-(c)] include berms, swales, and rock check dams, the combination of which control storm water run-on and runoff, erosion, and movement of sediment from the site, as discussed in Section 4.12.1, *Containment Systems*.

For both units, these controls are designed to prevent pollutant migration that could affect surface water quality. Stormwater runoff monitoring at both open detonation units has been underway since the implementation of the LANL Storm Water Individual Permit in 2011.

Stormwater discharge from TA-36-8 open detonation unit is monitored from LANL Storm Water Individual Permit Site Monitoring Area F-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on August 15, 2011. Analytical results from this sample yielded the following target action level exceedances:

- Aluminum concentration of 866 micrograms per liter (µg/L) (maximum target action level is 750 µg/L)
- Copper concentration of 72.5 µg/L (maximum target action level is 4.3 µg/L)
- Gross-alpha activity of 140 picocuries per liter (pCi/L) (average target action level is 15 pCi/L).

Following the installation of enhanced control measures at F-SMA-2, corrective-action storm water samples were collected on July 15, 2014, and July 31, 2014. Analytical results from these corrective-action monitoring samples yielded the following target action level exceedances:

- Copper concentrations of 10.8 µg/L (maximum target action level is 4.3 µg/L)
- Gross-alpha activities of 112 pCi/L and 58.9 pCi/L (average target action level is 15 pCi/L).

Site history and shallow (i.e., less than 3 ft. below ground surface) soil-sampling data (where available) are used to determine whether the target action level exceedance constituent(s) may be related to historical industrial activities.

Copper was likely associated with industrial materials historically managed at this site. Copper was detected in 5 of 14 samples at maximum concentration 2.9 times the sediment's background value.

Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at AOC 36-004(c)/TA-36-8. Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which can detect americium-241 and uranium-235, and for uranium isotopes, all of which are alpha-emitting radionuclides. Alpha-emitting radionuclides managed by the Permittees are exempt from regulation under the Clean Water Act and are excluded from the definition of adjusted gross-alpha radioactivity. Target action level exceedances were also evaluated against the appropriate storm water background value, that is, "Bandelier Tuff background" for

undisturbed SMAs or "developed background" for urban settings. Background values are expressed as upper-tolerance limits using the approved EPA method to calculate background values. Upper-tolerance limits for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff. Upper-tolerance limits developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features. Monitoring location F-SMA-2 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—copper's upper-tolerance limit from developed landscape storm water run-on is 32.3 µg/L; copper background storm water upper-tolerance limit from locations with sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is greater than both values, whereas the 2014 results are between these two values.
- Gross alpha—the gross-alpha background upper-tolerance limit for locations with sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water upper-tolerance limit for storm water run from a developed landscape is 32.5 pCi/L. The 2011 and 2014 gross-alpha results are between these two values.

Stormwater discharge from TA-39-6 open detonation [identified by the LANL Storm Water Individual Permit as SWMU 39-004(c] is monitored from LANL Storm Water Individual Permit Site Monitoring Area A-SMA-3 along with another site [AOC 39-002(b)]. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013. Silver is reported as a nondetectable result equal to or greater than the target action level. This value is reported at the practical quantitation level; however, the maximum target action level for this analyte is below the target action level. Analytical results from this sample yielded the following target action level exceedances:

- Aluminum concentration of 997 µg/L (maximum target action level is 750 µg/L)
- Copper concentration of 245 µg/L (maximum target action level is 4.3 µg/L)
- Mercury concentration of 9.04 µg/L (average target action level is 0.77 µg/L)
- Selenium concentration of 12.1 µg/L (average target action level is 5 µg/L)
- Gross-alpha activity of 136 pCi/L (average target action level is 15 pCi/L)
- Polychlorinated biphenyl concentration of 3060 ng/L (average target action level is 0.6 ng/L)

Following the installation of enhanced control measures at A-SMA-3, a corrective action storm water sample was collected on August 10, 2018. Analytical results from this corrective action monitoring sample yielded the following target action level exceedances:

- Copper concentration of 50.2 µg/L (maximum target action level is 4.3 µg/L)
- Gross-alpha activity of 90.8 pCi/L (average target action level is 15 pCi/L)
- PCB concentration of 3400 ng/L (average target action level is 0.6 ng/L)

Site history and shallow (i.e., less than 3 ft. below ground surface) soil-sampling data (where available) are used to determine whether the target action level exceedance constituent(s) may be related to historical industrial activities. Regarding SWMU 39-004(c)/TA-39-6:

- Aluminum is known to be associated with industrial materials historically managed at the site. Aluminum, however, was not detected above background value in 45 shallow (i.e., less than 3 ft. below ground surface) soil samples collected during the 2009 Consent Order investigation and 1995 RFI.
- Copper is known to be associated with industrial materials historically managed at the site. Copper was detected above background value in shallow Consent Order and RFI soil samples. Copper was detected above the soil background value in 15 of 45 shallow samples, with a maximum concentration 180 times the soil background value.
- Mercury is known to be associated with industrial materials historically managed at the site. Mercury was only detected above the soil background value in 2 of 45 shallow samples, with a maximum concentration 85 times the soil background value.
- Selenium is not known to be associated with industrial materials historically managed at the site. Selenium was not detected above background value in 45 shallow Consent Order and RFI soil samples.
- PCBs are known to have been associated with industrial materials historically managed at this site. Three PCB mixtures (Aroclor-1248, Aroclor-1254, and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1248 was detected in 3 of 4 shallow samples, with a maximum concentration 30 times the residential soil screening level. Aroclor-1254 was detected in 1 of 4 shallow samples, with a maximum concentration 52% of the residential soil screening level. Aroclor-1260 was detected in 2 of 4 shallow samples, with a maximum concentration 3.1 times the residential soil screening level.
- Thorium and uranium are known to have been associated with industrial materials historically managed at this site. RFI and Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for plutonium, thorium, and uranium isotopes, all of which are alpha-emitting, as well as total uranium, which has alpha-emitting isotopes. Alpha-emitting radionuclides managed by the Permittees are exempt from regulation under the Clean Water Act and are excluded from the definition of adjusted gross-alpha radioactivity.

Target action level exceedances were also evaluated against the appropriate storm water background value, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. Background values are expressed as upper-tolerance limits using the approved EPA method for calculating background values. Upper-tolerance limits for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff. Upper tolerance limits developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features. Most of the A-SMA-3 drainage area is located on Bandelier Tuff, and there is no run-on from developed facilities (e.g., buildings, parking lots, and pavement). Therefore, the Bandelier Tuff background upper-tolerance limit was compared with aluminum, copper, PCBs, and gross-alpha storm water exceedances. Mercury and selenium do not have a sufficient number of detected results to determine the upper-tolerance limit background value.

- Aluminum—aluminum is a major component of Bandelier Tuff. Aluminum’s upper-tolerance limit for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L; the result from 2013 is less than this value.

- Copper—copper is associated with trace minerals in Bandelier Tuff. Copper's upper-tolerance limit for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from the storm water confirmation samples in 2013 and 2018 are above this value.
- PCBs—the PCB upper-tolerance limit for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The average target action level exceedances in the storm water confirmation samples in 2013 and 2018 are greater than the storm water baseline upper-tolerance limit.
- Gross alpha—gross-alpha activity is associated with naturally occurring radioactive uranium- and thorium-bearing minerals in Bandelier Tuff. The gross-alpha upper-tolerance limit for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L; the results from 2013 and 2018 confirmation samples are below this value.

Tables and figures are located in Supplement 4-2, *Open Detonation Unit Groundwater Monitoring and Surface Drainage Information*.

4.18.2.2 Soil Surface Monitoring

The texture of the soils in Los Alamos County range from very fine clay and sandy loams to gravelly, sandy loams and stony, clay loams. Soil erosion by storm water or winds could potentially transport contaminants from the open detonation units to surrounding areas. Natural sediment storage features created by surface water runoff, such as stream bank and bar deposits or drainage channels, could contain heavy metals or explosives residues redistributed from the units.

Operational procedures for the open detonation units have been developed (described in previous sections) and are followed using careful assessment to limit the amount of contamination that may enter or remain in the soil. Preventative measures include implementing good housekeeping procedures, using a sufficient charge to ensure complete destruction, and performing effective treatment of the waste.

To meet the requirements of 40 CFR §264.601(b), the firing sites are operated in a manner that minimizes or prevents releases that might have adverse effects to human health or the environment as a result of migration of waste constituents on the soil surface. The following information assesses the potential for adverse effects to human health or the environment as a result of operations at the open detonation units and describes monitoring and reporting efforts that have been or will be undertaken to assess the impact of operations at the units. Surface soil samples were collected at both open detonation treatment units and analyzed for potential constituents to assess any impact from the units to the soil surface and mark any changes from previous monitoring activities.

The following paragraphs detail soil-monitoring efforts that have been performed at the open detonation units, in accordance with the requirements in 40 CFR §264.602. Description of modeling associated with the potential for soil deposition is included in Section 4.18.3, *Protection of Atmosphere,* and is included in Supplement 4-3, *Hybrid Air Modeling Analysis and Ecological and Health Risk Assessment for Open Burning and Open Detonation Operations at Los Alamos National Laboratory* of Appendix 4, *Open Detonation and Open Burning Information,* of this Permit Renewal Application.

In 2010 and early 2011, soil samples were collected at the TA-36-8 open detonation unit and the TA-39-6 open detonation unit. A summary of the analytical results of these sample collection events is included in Attachment D of *Los Alamos National Laboratory Permit Modification Request for Open Detonation*

Units at Technical Areas 36 and 39 (TA-36-8 & TA-39-6), Revision 0 (LANL 2011). Samples were analyzed for high explosives, metals, dioxins/furans, semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), perchlorates, and radiological constituents (gross alpha, gross beta, and isotopic uranium). Both composite and grab samples were collected at each of the sites. Concentrations for the constituents of concern were measured within the soil in and around the units to determine the soil concentration baseline at the units after more than 50 years of use. Analytical results indicate that the average soil constituent concentration in and around the TA-36-8 open detonation unit and the TA-39-6 open detonation unit are less than the selected soil screening levels (in 2011) and operations at the units do not pose an unnecessary risk to human health. Potential contamination is believed to be primarily limited to the surface (i.e., the first few inches in depth) of the sites.

In 2018, the Permittees collected additional surface soil samples to assess any changes that might have occurred to the units. However, it should be noted that the last time the TA-36-8 unit was utilized for treatment operations was in February 2014 and the last waste-treatment operation at the TA-39-6 unit was September 2013. Supplement 4-5, *Soil Sampling Results Summary Report for the Open Detonation Unit at Technical Area (TA) 36-8,* and Supplement 4-6, *Soil Sampling Results Summary Report for the Open Detonation Unit at Technical Area (TA) 39-6,* of Appendix 4 of this Permit Renewal Application, both include the most current soil analytical summaries for the open detonation units. Soil sampling and laboratory analysis for constituents of concern, as detailed in the soil monitoring reports, were conducted at the open detonation units to determine if treatment activities affected the area. Soil samples were collected from the ground surface to 2 inches below the ground surface from locations in and around the open detonation areas based on predominant wind direction and drainage features. The laboratory analytical results were compared to established background values and to New Mexico residential soil screening levels. The soil-sampling and analysis results indicate most constituents for which the samples were analyzed were not detected in the soil samples. The soil constituent concentrations that were detected at both of the units are less than the selected soil screening levels, with a single exception. Organics detected at both units were all below available soil screening levels. Several inorganic constituents at both units were detected above established background values but below soil screening levels. All metals detected at TA-39-6 were less than residential soil screening levels. At TA-36-8, a single concentration of thallium was measured to be above residential soil screening levels. Details of the constituents detected are in Supplements 4-5 and 4-6.

Utilizing the 2018 soil-sampling analytical results, risk assessment analyses were conducted for each of the open detonation treatment units. These assessments conclude that there are no unacceptable risks associated with hazardous waste constituents measured within the soil that could pose increased risk to human and ecological receptors. These risk assessments are included as Supplement 4-7, *Open Detonation Unit at Technical Area 36 Human Health and Ecological Risk Screening Assessments*, and Supplement 4-8, *Open Detonation Unit at Technical Area 39 Human Health and Ecological Risk Screening Assessments,* of Appendix 4 of this Permit Renewal Application. Additionally, for completeness, a revision of the 2011 risk assessment (LANL 2011) is included as Supplement 4-9, *Revision of 2011 Open Detonation Risk Assessment.* This assessment includes an ecological risk assessment, as requested by the NMED in a March 2012 letter of disapproval for the 2011 open detonation permit modification request (NMED 2012a).

This risk-screening assessments are utilized to determine whether hazardous contaminants from ongoing treatment operations over the lifetime history of the units pose an unacceptable risk to human health or the environment. Screening criteria for these assessments require that residential, industrial, and construction worker exposure scenarios be evaluated despite that the Permittees' OB and OD units are not located at residential locations. The NMED target levels for acceptable risk to identified receptors are a noncancer calculated Hazard Index (HI) of 1 and a cumulative cancer risk calculation of less than 1x10-5.

At TA-36-8 the residential scenario calculated risks were an HI of 0.3 and cancer risk of 3x10-6. For an industrial scenario calculated risks were an HI of 0.02 and cancer risk of 4x10-7. Based on a construction worker scenario, calculated risks were an HI of 0.09 and cancer risk of 6x10-8.

At TA-39-6 the residential scenario calculated risks were an HI of 0.2 and a cancer risk of 3x10-7. For an industrial scenario calculated risks were an HI of 0.01 and cancer risk of 6x10-8. Based on the construction worker scenario calculated risks are an HI of 0.1 and cancer risk of 8x10-9. These screening evaluations indicate that any hypothetical future resident or workers are not at risk due to exposure to soils at the OD Units.

Risk to potential ecological receptors is also evaluated as part of the risk screening process. The results of these assessments indicate OD Units do not present a significant ecological risk to any receptor evaluated, based on evaluations of soil contaminant concentrations at the units, and mitigating factors as to why a receptor would not be present in the areas.

Supplement 4-7, *Technical Area 36 - Open Burn/Open Detonation (OB/OD) Area - Technical Area 36-8 Open Detonation Unit Human Health and Ecological Risk Screening Assessments,* details the human health and ecological risk assessments conducted using the 2018 soil data collected from the TA-36-8 open detonation unit. The screening evaluation concluded that residents and workers at the site are not at risk as a result of exposure to soils at the hazardous waste management unit. Although the calculated risk for three ecological receptors was above the minimum no-effect ecological screening levels (American robin, plants and earthworms), there is likely no unacceptable risk to ecological receptors at the hazardous waste management units. Because of the nature of the operations at the unit, the entire unit footprint is kept cleared as disturbed, bare ground. Therefore, plants and earthworms are not expected to be present at the unit. Furthermore, surface water (as well as sediment) migration from the site is minimized and monitored, as described in 4.18.2.1, *Surface Water*. Lastly, robins are not expected to feed within the area of the unit that is kept bare, and regular monitoring of avian receptors within the area do not indicate that birds are adversely affected.

Supplement 4-8, *Technical Area 39 - Open Burn/Open Detonation (OB/OD) Area - Technical Area 39-6 Open Detonation Unit Human Health and Ecological Risk Screening Assessments*, details the human health and ecological risk assessments conducted using the 2018 soil data collected at the TA-39-6 open detonation unit. The screening evaluation concluded that residents and workers at the site are not at risk caused by exposure to soils at the hazardous waste management unit. Additionally, calculated risk for plants and earthworms at the site were above the minimum no-effect ecological screening levels. However, for the reasons described above (the area is kept bare, and migration is controlled and monitored), plants and earthworms are not expected to be present at the unit.

4.18.3 Protection of Atmosphere

To meet the requirements of 40 CFR §264.601(c), the TA-36-8 and the TA-39-6 open detonation units are operated in a manner that prevents any releases that could have adverse effects to human health or the environment as a result of migration of waste constituents to the atmosphere. The following information addresses the potential for operations at the open detonation units to adversely affect human health or the environment, describes the air modeling, and provides monitoring efforts to assess the impact of operations at the units on air quality.

Air-dispersion modeling was used to predict maximum ground-level concentrations of contaminants that could be predicted to occur downwind from the treatment operations; this type of modeling is a standard technique accepted by the U.S. EPA and the NMED. Conservative model input parameters were used for the treated waste streams, including maximum treatment volumes, independently obtained emission products and constituents, and unattenuated air-dispersion routes to receptor locations. These potential receptor locations were used in the modeling to estimate contaminant concentrations close to the detonation sites and to nearby public receptors. Model results indicate that the maximum ground-level contaminant concentrations for each detonation site occur on LANL property adjacent to the sites and predicted concentrations at public receptors were far less.

Maximum contaminant concentrations derived from the model were applied to emission factors for each predicted contaminant, with the results compared to air-quality standards. This analysis was conducted using the highest maximum model result, which occurred at any public receptor outside the LANL boundary, as is the protocol under NMED modeling guidelines when demonstrating compliance with ambient air-quality standards for permit purposes.

Computed results were also used to show the predicted impacts for acute and annual air concentrations to be below additional recommended human health screening levels. This evaluation was conservatively obtained by using the maximum contaminant concentrations within the LANL property boundary. Additionally, predicted soil deposition over a 10-year period shows impacts from the treatment operations to soil contaminant concentrations from the treatment operations to be less than residential screening levels and the minimum identified ecological screening levels. Supplement 4-3, *Hybrid Air Modeling Analysis and Ecological and Health Risk Assessment for Open Burning and Open Detonation Operations at Los Alamos National Laboratory,* of this Permit Renewal Application, includes the full air-modeling evaluation conducted for open detonation treatment operations at LANL.

In 2010 and 2011, the Permittees conducted air sampling at each of the open detonation units to determine if dioxins, furans, or metals could be detected in the air after an open detonation treatment event. These sampling efforts and the analytical results are detailed in Supplement 4-4, *Air Sampling at Open Detonation Units*, of Appendix 4 of this Permit Renewal Application. There were no dioxins or furan compounds detected within any of the samples collected. Comparisons of metals detected within the samples were below acute inhalation-exposure screening levels.

The radiological sampling network at LANL, AIRNET measures environmental levels of airborne radionuclides, such as plutonium, americium, uranium, and tritium. Three AIRNET stations were installed in 1994 near LANL firing sites to evaluate any relationship between firing site activities and airborne concentrations of radioactive material. After ten years of sampling, AIRNET stations along the LANL perimeter measured no detectable levels of airborne radiological emissions that could be linked to firing

site operations. Moreover, no correlation between firing site activities and the AIRNET stations could be made (Fuehne et. al., 2007). Therefore, the stations were shut down in 2003 and 2004, and there are no further plans for ambient air-quality monitoring at the open detonation units. There are approximately 60 air stations within and around the LANL boundary that continue to gather information on radionuclides by collecting water vapor and particulate matter.

5.0 OPEN BURNING TREATMENT

This section, in conjunction with the appendices and supplemental materials referenced herein, sets forth the operational, human health and environment and regulatory rationale to include a long-standing open burning waste management unit that was upgraded int 1998 under the umbrella of the LANL Hazardous Waste Facility Permit. Including the open burning waste management unit in the Permit will incrementally intensify scrutiny and regulation of the units by NMED-HWB.

Open burning at TA-16 has been conducted since the late 1940's. This small open burning unit at TA-16 have been subject to regulation under the RCRA as an interim status hazardous waste treatment unit since November 1980 (41+ years). These interim status waste management unit has been inspected annually by NMED-HWB and/or USEPA. None of these inspections has resulted in any allegation of noncompliance with any applicable RCRA regulations. Furthermore, environmental testing of soils, surface water, groundwater and air quality in the vicinity of the interim status unit and intensive risk analysis show no evidence that an unacceptable or actionable level of any hazardous constituent has come to exist after 70+ years of operation. Consequently, continued operation of the waste treatment unit under the Permit will be fully protective of human health and the environment.

To continue operating the open burning waste management unit in their proven historically safe and environmentally protective manner, LANL is seeking the approval of NMED to include the units under the intensified regulation umbrella of the LANL Hazardous Waste Facility Permit. Action by NMED to include the open burning waste management unit in the Permit will not increase the capacity of waste treatment relative to past practice. Such inclusion will, however, increase the level of scrutiny and regulation of the treatment unit to ensure continued operation in a manner protective of human health and the environment.

This section also addresses the requirements in place to ensure safe and effective waste treatment events of explosives waste and explosives-contaminated waste to meet the requirements in 40 CFR § 270.23 and 265, Subpart P. To permit the unit, summarized proposed changes to the 2010 Permit are included in this Permit Renewal Application in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit*. The Permittees propose language for the operations requirements for the unit, as outlined in newly proposed Permit Part 6 included within Permit Renewal Application in Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11*. Additionally, the Permittees propose a soil monitoring program as the preferred approach to continue to meet the monitoring and analysis requirements of 40 CFR §264.602. All changes are included within Supplements 1-1 through 1-9, and occur within the following permit parts and attachments:

- Permit Part 1, *General Permit Conditions*
- Permit Part 6 *(Reserved)*
- Attachment A, *Technical Area Unit Descriptions*
- Attachment C, *Waste Analysis Plan*
- Attachment D, *Contingency Plan*
- Attachment E, *Inspection Plan*
- Attachment G, addition of Closure Plan, *Attachment G.28 Closure Plan Open Burning Treatment*

Unit Technical Area 16-388 Flash Pad

- Attachment J, *Hazardous Waste Management Units*
- Attachment N, *Figures*

5.1 Open Burning Facility Background and Description

Since the 1950s, LANL has treated hazardous wastes by open burning operations at several units at an area known as the "TA-16 Burn Ground." As discussed below, open burning operations have changed dramatically over time. With the exception of the TA-16-388 Flash Pad, the subject of this Permit Renewal Application, all open burning treatment operations conducted at LANL have ceased and the remaining units have closed (or are undergoing closure). The TA-16-388 Flash Pad, in turn, is currently considered an interim status unit proposed by the DOE and Triad's predecessor (Los Alamos National Security, LLC) to be permitted through a Class 3 permit modification request submitted to NMED on September 30, 2013 (LANL 2013). This permit modification request was determined to be administratively complete on April 24, 2014 (NMED 2014). This Permit Renewal Application incorporates by reference this Class 3 modification request. The Class 3 permit modification request, in Appendix B, discusses the (1) historical and regulatory history of the open burning treatment operations at the TA-16 Burn Ground, (2) required permits for open burning operations, and (3) the history of the open burning Permit Renewal Application (see reference LANL 2013).

5.1.1 Open Burning Permitting History

Since 1980, LANL has operated the TA 16-388 Flash Pad as an open burn treatment unit under the "interim status" requirements of the New Mexico Hazardous Waste Act and 40 CFR Part 265, Subpart P. Interim status is a designation given to facilities that were in existence prior to 1980 and contain requirements that apply until issuance of a final permit. The TA-16-388 Flash Pad is classified as a "thermal treatment hazardous waste management unit" because it is used for treating explosives hazardous wastes; the Flash Unit must meet requirements applicable to "miscellaneous units" under 40 CFR Part 264, Subpart X.

The permitting process for the TA-16-388 Flash Pad has taken several decades. In June 1995, DOE and the University of California (the predecessor to the current contractor, Triad) submitted a revised permit application for two open burning units, the TA-16-388 Flash Pad and the TA-16-399 Burn Tray. In July 2009, NMED-HWB issued a revised Draft Permit authorizing use of these units. On February 2, 2010, NMED issued a Notice of Intent to Deny (NOID) the application for the TA-16-388 Flash Pad and the TA-16-399 Burn Tray. The Fact Sheet accompanying the NOID identified the following deficiencies supporting denial: (1) the need to fully characterize the low to moderate risk associated with the ecological risk assessment conducted by the Permittees, (2) public opposition to open burning, and (3) the need to evaluate alternatives to open burning.

Following a public hearing, the Secretary of NMED issued a final decision to deny the open burn units on November 30, 2010. In December 2010, DOE and Los Alamos National Security, LLC (LANS), petitioned the Secretary of the NMED to reconsider the decision to deny the open burn units and allow the Permittees to resubmit an application that addressed the deficiencies identified in the application. On December 21, 2010, the Secretary granted the Permittees the request in an *Order Granting Applicants' Motion for Partial Reconsideration*. This Order required the Applicants to file a "full and complete permit

application that adequately addresses all deficiencies previously identified in writing and at the hearing by the HWB at a date determined by the HWB."

Pursuant to the Secretary's Order, on September 30, 2013, DOE and Triad's predecessor (LANS) submitted a Class 3 permit modification request to permit the addition of the interim status unit TA-16-388 Flash Pad to the Permit. The Permittees decided to close TA-16-399 because it was no longer necessary from an operational standpoint. As required by the Secretary's Order, the Class 3 modification request specifically addressed all the deficiencies identified by the NMED. After the Class 3 permit modification was submitted, NMED-HWB issued an administrative completeness determination on April 24, 2014.
No further action was taken on this Class 3 permit modification request, and it was determined to pursue approval of this request in this Permit Renewal Application.

5.1.2 Open Burning Facility Description

At LANL there is one open burning treatment unit located at TA-16. The description provided below meets the application requirements for 40 CFR §§270.14(b)(1) and 270.23(a) and 265, Subpart P.

TA-16 is located in the southwestern portion of LANL (revised Figure 2 within Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*). TA-16 is situated on a broad mesa bounded on the north by Cañon de Valle, on the south by State Road 4 and Bandelier National Monument, and on the west by West Jemez Road (State Road 501) and the Santa Fe National Forest. Elevation ranges from approximately 7,700 ft. at the west end of the Technical Area to approximately 6,800 ft. at the lower east end. Topography is varied, ranging from steep precipitous canyon walls to sloping mesa tops. The open burning unit at LANL is located at the "TA-16 Burn Ground" in the northeast corner of TA-16. It is located on a mesa that drains to the east and south and is bordered on the northern side by Cañon de Valle and on the southern side by Water Canyon. The location coordinates of the TA-16-388 Flash Pad in Universal Trans Mercator Zone 13, North American Datum 1983 (NAD83) coordinates are X-Coordinate- 379670.0 and Y-Coordinate- 3967821.0.

The open burning unit, known as the TA-16-388 Flash Pad (newly included Figure 15 within Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*), consists of a 22-ft. by 22-ft. concrete pad set on a secondary containment area. The base of the pad is 12 inches thick. The entire concrete pad is on a 45-mil Hypalon liner, which is 6 inches below the bottom of the pad and curved up to ground level on all 4 sides, extending out 2 ft. from the pad perimeter. Inset 1 ft. from the edge of the concrete pad along the two sides and back is a 3-ft.-high, 8-inch-thick, integrally poured concrete wall. The pad is slanted down toward the back concrete wall. The TA-16-388 Flash Pad is also equipped with a retractable steel roof that covers the entire unit when not in use. A chain-link fence and brick retaining wall surround the TA-16-388 Flash Pad. Updated topographic map and aerial photography are included in the *LANL General Part A Application, Revision 11.0* (LANL 2025).

Three 5-ft.-long forced-air propane burners with adjustable mounts are mounted on the concrete wall. These propane burners provide the heat source for treatment activities at the unit. A burner is mounted outside the wall on each side and on the back of the pad. One, two, or three burners can be used, depending on the amount and configuration of the material to be treated. Most treatment events utilize the two side burners. The total capacity of the propane supply system is approximately 7 million British thermal units per hour (BTU/hr.). Therefore, the output of each burner is dependent on how many are

used for a burn. Usually, the burners are operated at approximately 2.5 million BTU/hr. This provides adequate heat to bring the material being flashed to a temperature sufficient to destroy explosives, as well as to maintain it at a level sufficient to avoid formation of incomplete combustion products for the duration of the treatment event. The burners and other components are maintained, modified, and/or replaced as needed to ensure proper operation and treatment effectiveness.

The TA-16-388 Flash Pad is used exclusively for open burning treatment of explosives waste streams that are generated at LANL—it is not used for any other activities. Following waste placement at the unit, open burning operations are controlled and monitored remotely from Building 16-389 (the control building). Operations at the unit require visual surveys and post-burn covering of the unit. This practice minimizes the potential for precipitation contacting untreated hazardous or residual waste, if any exists.

5.2 Waste Characterization and Acceptance

The explosives waste and explosives-contaminated waste treated by open burning typically consists of off-specification explosives wastes, excess explosives waste, and other explosives-contaminated solid wastes (e.g., rags, glass, and wood). These wastes exhibit the characteristic of reactivity, as defined in 40 CFR §261.23. The open burning treatment unit will only treat those wastes with the EPA Hazardous Waste Numbers listed in association with the open burning unit in the *LANL General Part A Permit Application, Revision 11.0* (LANL 2025). Changes necessary to permit the treatment operations at the unit are proposed in the revised Permit Attachment C, *Waste Analysis Plan,* included within Supplement 1-3, *Permittees' Proposed Changes to Permit Attachment C, Waste Analysis Plan*.

The Permittees' proposed changes include waste characterization and analysis requirements for explosives and explosives-contaminated waste treated by open burning at LANL. The waste streams include homogeneous and heterogeneous wastes. Open burning operations are necessary for hazardous waste treatment to remove the characteristic of reactivity. Treatment by open burning renders hazardous waste nonreactive and any infrequent residue amenable to handling and dispositioning. Solid and liquid hazardous explosives waste may be treated (i.e., open burned) at the unit.

Waste characterization, acceptance, authorized wastes, and plans for waste analysis prior to treatment and after treatment (if needed) are outlined in Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*, in accordance with the requirements at 40 CFR §§264.13(a-c), 265.375, 265.382, and 270.14(b)(2-3). The changes include information specific to waste analysis and acceptance at the open burning unit. The plan was developed to ensure that all hazardous waste streams treated at the hazardous waste management units are properly characterized and any hazardous constituents that the treated waste could contain or that are released through treatment are identified.

The types of hazardous listed waste treated at the open burning unit include the following: D001, D003, D030, F003, and F005. The waste categories treated at the open burning unit fall under several categories, such as explosives-contaminated combustible debris, explosives-contaminated solvents, explosives-contaminated noncombustible debris, excess explosives, and explosives from machining waste. Waste streams include combustibles contaminated with high explosives, sludge, sand, wipes, rags, tile, filters and filter socks, paper, spent carbon, scrap metal, and pipes. The average amount of waste treated at the unit from 2005 through 2023 was approximately 2,460 pounds of waste per year. The largest amount of waste treated in a year was approximately 4,000 pounds, and the least amount of

waste was less than 1,000 pounds. Average treatment between the years 2018 through 2023 was approximately 2,700 pounds per year and is a better indicator of current treatment practices.

The process of generating, reviewing, and approving a waste stream profile includes a certification by the generator that the characterization is complete, a review by hazardous waste characterization subject matter experts, and a review by an environmental professional that the waste meets waste acceptance criteria and can be treated by open burning. The final check occurs when the waste is picked up from storage/accumulation and a visual inspection of the waste is conducted to ensure that the waste picked up is consistent with the waste described in the waste stream profile.

5.3 Security

The Permittees prevent the unknowing entry, and minimize the possibility for unauthorized entry, of persons or livestock onto the unit, in accordance with the requirements at 40 CFR §§264.14 and 270.14(b)(4). Security is of paramount importance to safe and successful operations at LANL.

Access to the isolated and security-controlled location of the open burning unit at TA-16 is maintained through both administrative controls and physical barriers. Access into the security area is gained only through controlled entry stations by persons possessing an appropriate security clearance and site-specific training. Entry into the secured area is controlled via an entry station manned by LANL security personnel or by badge readers 24 hours per day. In addition, entry into the high explosives exclusion area is controlled through an industrial fence, with access granted through an access control station or a locked access gate. To gain access to the area, visitors must check in at the appropriate access control station to be added to the site-specific badge reader system. Unescorted access to the high explosives exclusion area is granted only to persons possessing appropriate security clearance and meeting site-specific training requirements. Proposed changes required to add the unit to the 2010 Permit include adding the unit description to Permit Attachment A, *Technical Area Unit Descriptions*, and also including a figure to Permit Attachment N, *Figures.* These proposed changes are included within this Permit Renewal Application within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions,* and Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*.

5.4 Inspection Schedules and Procedures

Per the requirements for 40 CFR §§270.14(b)(5) and 264.602, inspections at the TA-16-388 Flash Pad are conducted and documented, as outlined in Permit Section 2.6, *General Inspection Requirements*, and Permit Attachment E, *Inspection Plan*. A revised inspection plan, including the requirements for the open burning hazardous waste management unit, can be found in Supplement 1-5, *Permittees' Proposed Changes to Permit Attachment E, Inspection Plan,* of this Permit Renewal Application. No changes to Permit Section 2.6 are associated with the addition of these hazardous waste management units.

5.5 Waivers for Preparedness and Prevention

The information requirements stipulated in 40 CFR §270.14(b)(6) require that a part B permit application include "a justification for any request to waive the preparedness and prevention requirements of Part 264, subpart C." No waivers of the preparedness and prevention requirements under Part 264, subpart C, are being sought by the Permittees.

5.6 Contingency Plan

The information requirements for 40 CFR §270.14(b)(7) stipulate inclusion of a Contingency Plan to meet the requirements of 40 CFR Part 264, Subpart D.

Information on emergency response resources and release prevention/mitigation are included in the 2010 Permit Attachment D, *Contingency Plan*. A copy of the revised Contingency Plan is included in this Permit Renewal Application in Supplement 1-4, *Permittees' Proposed Changes to Permit Attachment D, Contingency Plan,* as required by 40 CFR §270.14(b)(7), which has been drafted to meet the requirements in 40 CFR Part 264, Subpart D, *Contingency Plan and Emergency Procedures*.

5.7 Hazards Prevention

The following sections present how operations at the TA-16-388 Flash Pad comply with the preparedness and prevention requirements of 40 CFR Part 264, Subpart C, and the application requirements for 40 CFR §§270.14(8)(i-vi), where they differ from those presented in Section 2.7, *Hazards Prevention,* of this Permit Renewal Application. Health and safety procedures are followed by site personnel during routine operations.

5.7.1 Waste Handling at the Open Burning Unit

All waste handling operations at the TA-16-388 Flash Pad are conducted, as discussed in Section 2.7.1, *Waste Handling and Preventing Hazards in Unloading/Loading*, of this Permit Renewal Application, meeting the requirements of 40 CFR §270.14(8)(i).

5.7.2 Control of Run-on/Runoff

Prevention of runoff from the hazardous waste handling areas, per the requirements at 40 CFR §270.14(8)(ii), is described in Section 5.16.2, *Protection of Surface Water/Wetlands/Soil Surface,* of this Permit Renewal Application.

5.7.3 Preventing Water Supply Contamination

The water supply at LANL is as described in Section 2.7.3, *Preventing Water Supply Contamination,* of this Permit Renewal Application.

5.7.4 Mitigate the Effect of Equipment Failure and Power Outages

There are no special requirements at the TA-16-388 Flash Pad required to mitigate equipment failure and power outages, per the requirements of 40 CFR §270.14(b)(8)(iv). The description of required equipment and testing maintenance of that equipment follow the permit conditions referenced in Section 2.7.4, *Mitigate the Effect of Equipment Failure and Power Outages,* of this Permit Renewal Application, with the permit changes as described within the section.

5.7.5 Preventing Undue Exposure of Personnel

There are no special requirements at the TA-16-388 Flash Pad to prevent undue exposure of personnel, per the requirements in 40 CFR §270.14(b)(8)(v) and described in Section 2.7.5, *Preventing Undue Exposure of Personnel,* of this Permit Renewal Application.

5.7.6 Preventing Releases to the Atmosphere

The requirements of 40 CFR §270.14(b)(8)(vi) reflect the standards promulgated in 40 CFR §264.601, which is applicable to the open detonation waste management units. 40 CFR §264.601 requires that "A miscellaneous unit must be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment. Permits for miscellaneous units are to contain such terms and provisions as necessary to protect human health and the environment, including, but not limited to, as appropriate, design and operating requirements, detection and monitoring requirements, and requirements for responses to releases of hazardous waste or hazardous constituents from the unit. Permit terms and provisions must include those requirements of subparts I through O and subparts AA through CC of this part, part 270, part 63 subpart EEE, and part 146 of this chapter that are appropriate for the miscellaneous unit being permitted. …" Protection of human health and environment with respect to the air and the atmosphere includes, but is not limited to:

> "(c) Prevention of any release that may have adverse effects on human health or the environment due to migration of waste constituents in the air, considering:
> (1) The volume and physical and chemical characteristics of the waste in the unit, including its potential for the emission and dispersal of gases, aerosols and particulates;
> (2) The effectiveness and reliability of systems and structures to reduce or prevent emissions of hazardous constituents to the air;
> (3) The operating characteristics of the unit;
> (4) The atmospheric, meteorologic, and topographic characteristics of the unit and the surrounding area;
> (5) The existing quality of the air, including other sources of contamination and their cumulative impact on the air;
> (6) The potential for health risks caused by human exposure to waste constituents; and
> (7) The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents."

The open burning unit will comply with the provisions of 40 CFR §264, 40 CFR §264.601 and §270.14 by proper operation of the units in compliance with the terms of a RCRA permit issued by NMED. The Permittees' historic interim status compliance at the open burning treatment unit is unsurpassed and an indication of superior prospective compliance with any NMED issued RCRA permit conditions.

Data discussed in Section 5.16.3, *Protection of Atmosphere*, and included in Supplement 4-3, *Hybrid Air Modeling Analysis and Ecological and Health Risk Assessment for Open Burning and Open Detonation Operations at Los Alamos National Laboratory*, demonstrate the estimated resulting emissions will not exceed regulatory levels established to protect human health and the environment. An extremely conservative scenario was utilized for modeled treatment activities at the unit that intentionally overestimates the quantity of waste treated as well as the types of waste that will be treated at the units. Explosives waste minimization efforts and process improvements have significantly reduced the toxicity, types, and quantity of the waste that must be treated by open burning. The demonstrated ability of the open burning process with propane fuel to destroy explosives and create few residuals display high removal efficiencies and ensure the prevention of any release that may have adverse effects on human health or the environment due to migration of waste constituents in the air. Therefore, these

emissions will not adversely affect human health or the environment and thereby will meet and comply with the requirements of 40 CFR §264, 40 CFR §264.601(c) and 40 CFR §270.14(b)(8)(vi).

Specifically, air-monitoring data collected in 2011 and 2022 during treatment events at the open burning unit is included as Supplement 4-12, *Air Sampling at Open Burning Treatment Unit,* of this Permit Renewal Application. Each sample in 2011 was collected downwind of the TA-16-388 Flash Pad at a distance of 25 ft. and 75 ft. Samples collected from five treatment events were analyzed for metals and dioxins/furans. The analysis results were then compared to acute air-inhalation exposure concentration screening levels, where screening levels could be identified. The data comparisons indicate the operations monitored did not exceed any appropriate state or federal levels specified for the analytes monitored. The samples collected in 2022 represented a more chronic air concentration scenario, as the samples were left in place overnight and collected the morning after the treatment event being measured. The data comparisons also indicate the operations did not exceed the appropriate state of federal levels specified for the analytes monitored. Finally, the entirety of Section 5.16 is incorporated into this Section 5.7.6 by reference.

5.8 Ignitable, Reactive, and Incompatible Waste Precautions

The application requirements for 40 CFR §270.14(b)(9) are included in Section 2.8, *Ignitable, Reactive, and Incompatible Waste Precautions,* of this Permit Renewal Application. There are no changes required within the 2010 Permit to Permit Section 2.8, *Ignitable, Reactive, and Incompatible Waste,* for the inclusion of the open burning unit. The treatment of wastes by open burning is an appropriate treatment method under RCRA. It is necessary to mitigate the ignitable and/or reactive hazards associated with explosives waste streams—it is the preferred waste management practice for health and safety concerns.

5.9 Traffic

In accordance with requirements for 40 CFR §270.14(b)(10), the primary traffic routes that might be used to transport hazardous waste to or from the TA-16-388 Flash Pad at TA-16 include Pajarito Road, State Road 502, Diamond Drive, State Road 501, Anchor Ranch Road, K-Site Road, State Road 4, and East Jemez Road (see Figures 1 and 2 in Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*). Additional discussion of traffic at LANL is included in Section 2.9, *Traffic Pattern, Estimated Volume, and Control*.

5.10 Location and Facility-Wide Information

Facility location information to meet the requirements for 40 CFR §270.14(b)(11) is included within this Permit Renewal Application within Section 2.10, *Facility Location Information*. Additionally, the information requirements under 40 CFR §§270.14(b)(12, 14, 15, 16, 17, 18, 19, 20, 21, and 22) and 270.14(c & d) are covered for the LANL Facility within Sections 1 and 2 of this Permit Renewal Application. There are no additional information requirements necessary to add to the open burning unit to the 2010 Permit.

5.11 Closure Plan

A Closure Plan for the open burning unit, as required by 40 CFR §270.14(b)(13), is included as a portion of Supplement 3-1, *Permittees' Proposed Changes to Attachments G.1 through G.31, Closure Plans,* of this Permit Renewal Application.

5.12 Design, Construction, Materials, and Operation

Open burning treatment is a recognized, well-characterized, and dependable method used to treat hazardous wastes that exhibit the explosive characteristic of reactivity (a subset of EPA hazardous waste number D003), which occurs by self-sustained combustion ignited by an external source. Reactive hazardous wastes are treated by open burning when it has been determined to be the safest method for treatment compared to other modes of treatment. It renders the treatment residuals safe to handle and dispose. After treatment, the characteristic of reactivity is removed, with remaining residues tested and generally disposed as nonhazardous wastes. The TA-16-388 Flash Pad is used to treat certain types of explosives hazardous waste streams by open burning. A description of the unit is included in Section 5.1, *Open Burning Facility Description*. The Permittees propose treatment permit conditions for these units to update Permit Part 5. These proposed revisions are included in Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11,* of this Permit Renewal Application.

5.12.1 Containment Systems

In accordance with requirements stipulated in 40 CFR §264.601(b)(2), the effectiveness and reliability of containment, confinement, and collection systems and structures that prevent contaminant migration at the open burning unit are evaluated in Section 5.16, *Environmental Performance Standards.*

The TA-16-388 Flash Pad open burning unit (newly included Figure 15 within Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*) consists of a 22-f.t by 22-ft. concrete pad set on a secondary containment area. The base of the pad is 12 inches thick. The entire concrete pad is on a 45-mil Hypalon liner, which is 6 inches below the bottom of the pad and curved up to ground level on all 4 sides, extending out 2 ft. from the pad perimeter. Inset 1 ft. from the edge of the concrete pad along the two sides and back is a 3-ft.-high, 8-inch-thick, integrally poured concrete wall. The pad is slanted down toward the back concrete wall. The TA-16-388 Flash Pad is also equipped with a retractable steel roof that covers the entire unit when not in use.

5.12.2 Operating Requirements

The TA-16-388 Flash Pad is used for thermal treatment (via open burning) of hazardous waste that exhibits the characteristic of reactivity, in accordance with 40 CFR Part 265, Subpart P. Treatment of waste at the TA-16-388 Flash Pad is conducted using a noncontinuous (batch) thermal process, where a discrete quantity of waste is treated through a complete thermal cycle, in accordance with the requirements specified in 40 CFR §§265.370 and 265.373. Treatment is accomplished using propane burners to supply heat and fuel to dry the explosives, if necessary, and destroy the explosives contamination to make the waste residuals more amenable to disposal. All treatment operations are conducted on the pad either using a steel tray that may be lined with firebrick or on a steel platform. Prior to waste treatment operations, the area is cleared of all personnel, except for authorized Burn

Ground personnel. The gate in front of the TA-16-388 Flash Pad is closed to prevent entry until after the treatment is complete.

Open burning waste treatment operations occur only during the daylight hours (i.e., from one hour after sunrise to one hour before sunset) to ensure that the entire burn can be observed by a TA-16 Burn Ground Operator. Treatment events are monitored in accordance with 40 CFR §265.377, as applicable, to ensure that waste treatment is progressing as expected and that propane burners are operating correctly. Monitoring is performed through a closed-feed camera system, or a periscope located at the TA-16-389 control building.

Based on the TA-16-388 Flash Pad's maximum 200-pound treatment capacity, a minimum required distance of 1,250 ft. will be maintained between the perimeter of the burn and the nearest non-LANL property, as required in 40 CFR §265.382. The closest property not owned by the Permittees is at a distance greater than one mile (5,280 feet) from the TA-16 Burn Ground. Additionally, the TA-16-388 Flash Pad is limited to an annual treatment capacity of 6,000 pounds per year.

5.12.3 Waste Treatment Process

Open burning operations are conducted in accordance with this section. The description below discusses how to assess and manage general and site-specific safety and health hazards associated with working with explosives. This section describes normal treatment operations at the TA-16-388 Flash Pad.

5.12.4 Waste Accumulation

Waste treated at the TA-16-388 Flash Pad is initially accumulated in less-than-90-day accumulation areas or satellite accumulation areas until the day of treatment. Explosives may also be collected directly from explosives storage locations at the Facility on the day of treatment. Safety concerns dictate that waste be burned promptly (within a couple of hours) after arriving at the TA-16 Burn Ground. Therefore, almost all wastes are treated on the same day that they are moved to the TA-16-388 Flash Pad.

5.12.5 Waste Transport

Waste to be treated is collected from various areas at the Facility. Prior to treatment of any waste, the waste generator must provide waste characterization documentation and a request for treatment. This information is reviewed for acceptance at the treatment unit by a trained professional familiar with waste characterization requirements of the Waste Analysis Plan and the site-specific restrictions of the waste treatment unit at the TA-16-388 Flash Pad. A treatment event(s) is/are scheduled once the waste characterization documentation has been approved by a TA-16 Burn Ground Operator, waste acceptance personnel, official explosives safety personnel, and responsible line management.

Scheduling of a waste treatment event involves arranging for the transportation of waste from one or more locations to the TA-16-388 Flash Pad. When loading waste, the cargo compartment of the transport vehicle is checked to ensure that it is clean and contains no loose items such as tools or sharp objects. For transport, the containers of waste are inspected for damage or leaking material and are then secured with tie-downs. The load limit for transporting explosives is determined by the capacity of the transport vehicle(s). Wastes are transported to the Burn Ground by appropriately trained and authorized personnel in vehicles designed to transport explosives. Qualified explosives handlers unload

the waste from the vehicle and place it within the unloading area. A visual examination is conducted after unloading to ensure that containers are not damaged or leaking and that no explosive material remains in the transport vehicle.

Explosives-contaminated waste and explosives waste that must be transported on public roads between sites is packaged in compliance with requirements stipulated by the U.S. Department of Transportation. Onsite transportation requires that explosives waste be packaged in approved containers, sealed, and labeled appropriately. Waste containers (generally plastic bags, paper-lined cardboard boxes, plywood boxes, or plastic buckets) are then transported from the generator accumulation areas. Exceptions to packaging are made for special items to ensure the waste materials are handled and transported safely.

5.12.6 Waste Staging

Most waste streams treated at the TA-16-388 Flash Pad do not require staging prior to treatment. Waste streams that do not require staging include explosives machining waste, excess explosives, explosives-contaminated combustible debris, and explosives-contaminated solvent waste. The waste stream that may require staging prior to or during the burning treatment process is the explosives-contaminated noncombustible debris waste stream.

The explosives-contaminated noncombustible debris waste stream can consist of large pieces of equipment, debris from firing sites, material from decommissioning and demolition activities, and material from explosives processing areas that must be "flashed" prior to shipment offsite for recycle or disposal. Depending on the size and amount of waste to be flashed, it may take several days to stage the waste on the flash pad. The waste material to be treated may include relatively large metal pieces that involve extensive scheduling of collection and transport resources. They may require equipment such as forklifts or additional procedures for lifting of large pieces, as well as complicated stacking arrangements on removable steel supports.

Factors that influence waste staging are safety, the degree of difficulty in placing the waste on or removing it from the TA-16-388 Flash Pad, and the potential for influence from environmental factors (e.g., wind speed, fire conditions). Treatment operations can be delayed from a scheduled burn time caused by environmental factors, which are discussed below. If burning is delayed, a cover is placed over the waste.

5.12.7 Treatment Operations

The following sections describe open burning treatment operations on the day of treatment events.

5.12.7.1 Pretreatment Activities

Propane burners are tested for functionality on the day of or the day before treatment operations, before the waste is transported to the TA-16-388 Flash Pad. Prior to waste treatment, the area at the TA-16 Burn Ground is visually inspected for unauthorized personnel and large animals. When staging of the waste is not required, the waste is placed in a steel tray or on a steel pallet. Multiple compatible waste streams may be consolidated to create efficiencies in waste treatment. Wastes requiring the use of more fuel may be paired with wastes that require less fuel, so that the least amount of fuel possible is used to effectively and efficiently treat the waste. Wastes that contain combustible materials are placed within a screen cage inside the tray to reduce the potential for residue to escape.

5.12.7.2 Open Burning Treatment Operations

After the waste is placed within the burn tray at the TA-16-388 Flash Pad, the roof over the concrete pad is retracted and all access barricades and gates are confirmed to be in place. All personnel present at the TA-16 Burn Ground are moved to the control building. Additional personnel are not allowed to be present at the TA-16 Burn Ground during treatment operations. Access Control is notified via phone or radio that the burn is about to commence and that the propane burners have been started. All treatment operations are initiated remotely by qualified personnel from inside the control building and observed on the monitor located in the control building.

During the entire waste treatment operation, either a television camera mounted above the front of the TA-16-388 Flash Pad, or a periscope located at the TA-16-389 control building is used to monitor the operation from inside the control building at TA-16-389. The lockout key for the power that operates the unit is also located in the control building. The lockout key is controlled by the Lead TA-16 Burn Ground Operator at all times.

Most commonly, treatment events last approximately 30 minutes. However, treatment is always continued until the TA-16 Burn Ground Operator determines visually that the waste is fully treated. After the propane burners have been shut off, the power to the unit is switched off and the lockout key is locked away. Access control is then notified that the treatment event is complete. The barricades in front of the TA-16-388 Flash Pad are left in place for up to an eight-hour period after the treatment event is complete to allow the tray to cool. Security access gates in front of building 16-389 and at the entryway to the TA-16 Burn Ground are lifted after treatment operations are completed.

5.12.7.3 Post-Treatment Operations

The burn trays must be left uncovered while they cool after each treatment event. The metal cover is placed back over the TA-16 Flash Pad eight hours after a treatment event, or earlier if a TA-16 Burn Ground Operator determines that it is safe to do so. Any residue (i.e., ash) that is left from a treatment event is left within the tray for a minimum of 24 hours after treatment. After 24 hours, the ash is removed using a shovel, broom, dustpan, or other tools, as necessary. The residue is then placed in a plastic bucket and accumulated until the container is approximately half full. Residues are characterized as described within Permit Attachment C, *Waste Analysis Plan.* The proposed changes to the Permit Attachment C are presented in this Permit Renewal Application as Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*, to account for the addition of the open burning unit.

5.12.7.4 Restrictions on Operations

As part of fire safety considerations, grasses and weeds located within a 200-ft. radius of the TA-16-388 Flash Pad are kept trimmed. This minimizes the potential for fire around the unit. Additionally, treatment operations are conducted within the bounding conditions detailed in the LANL Fire Danger Matrix which is maintained by LANL emergency operations personnel. Wind data is standardized using the facility-wide LANL Weather Machine, meteorological tower 6 postings. The Weather Machine compiles temperature, wind, pressure, relative humidity, data collected by LANL meteorological towers and other pertinent National Weather Service forecast information.

Other environmental factors restrict treatment operations at the TA-16-388 Flash Pad. Transportation or treatment of explosives waste at the TA-16-388 Flash Pad may not occur under the following conditions:

- When lightning is detected within a 6-mile (9.6 kilometer) radius of the unit
- During all precipitation events; or if storms are forecasted to occur within 3 hours at the location of the unit
- When roads are icy (for transport)
- When wind speeds are determined to be greater than 20 miles per hour at the TA-16-389 control building
- When winds are greater than 10 miles per hour in drier weather conditions, such as in the spring and summer seasons when the fire danger rating is deemed to be "Very High" or "Extreme"

Risk to human health is the greatest consideration. Should any environmental factors change rapidly and unexpectedly, the waste may remain at the TA-16-388 Flash Pad, under administrative control, until treatment can be safely conducted. Applicable administrative controls include covering the waste if it is safe to do so and prohibiting nonessential personnel from entering the area.

5.13 Demonstration of Treatment Effectiveness

To address the applicable miscellaneous unit requirements specified in 40 CFR §270.23(d) and the thermal treatment unit requirements of 40 CFR Subpart 265, Subpart P, a demonstration of treatment effectiveness must be included for the TA-16-388 Flash Pad. As indicated in the AEHA guidance document, "RCRA Part B Permit Writers Guidance Manual for Department of Defense Open Burning/Open Detonation Units" (AEHA 1987), a demonstration of treatment effectiveness can be based on laboratory or field data. For wastes treated by open burning, information demonstrating that any residues remaining after burning are not reactive (i.e., as defined by RCRA) should be provided. At the TA-16-388 Flash Pad, this is accomplished by testing all residues for explosives. If explosives are present within the residue, it is treated again. Residues deemed not reactive are managed in accordance with LANL waste management procedures, characterized in accordance with Attachment C, *Waste Analysis Plan,* of the 2010 Permit (the proposed changes are presented in Supplement 1-3, *Permittees' Proposed Changes to Permit Attachment C, Waste Analysis Plan*), and managed in compliance with applicable state, federal, and local requirements.

Additionally, to provide an assessment of the temperatures of open burning treatment activities, measurements were collected from various types of burns at the TA-16-388 Flash Pad. Most open burning treatment events last approximately 50 minutes. The TA-16-388 Flash Pad internal operating procedures require that, for all burn events, the waste must continue to be treated until the operator determines visually that the waste is fully treated. The multidirectional propane burners ensure that high combustion turbulence is maintained throughout the treatment event.

Thermal studies, as described within Supplement 4-13, *Thermal Measurements at the TA-16-388 Flash Pad*, demonstrate that the propane burners on the TA-16-388 Flash Pad are capable of elevating the temperature within the burn cage well in excess of 2,000°F in most of the burn runs, to achieve complete combustion of complex and persistent toxins such as dioxins and furans and their building blocks. The thermal studies also demonstrate that open burning, as conducted on the TA-16-388 Flash Pad, meets all three major requirements of the American Chemistry Council's "3-T rule" for dioxin destruction: high combustion temperature to maximize waste destruction, adequate combustion time, and high combustion turbulence (American Chemistry Council 2003).

5.14 Inspection Schedules and Procedures

Per the requirements for 40 CFR §264.602, inspections at the open burning unit are conducted and documented, as outlined in Section 2.4, *Inspections.* Proposed changes to the plan are summarized in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit,* and a revised version of the plan is attached as Supplement 1-5, *Permittees' Proposed Changes to Permit Attachment E, Inspection Plan,* of this Permit Renewal Application.

5.15 Special Requirements for Ignitable, Reactive, and Incompatible Wastes

Waste management procedures for ignitable, reactive, and incompatible wastes to be treated will be followed, pursuant to 40 CFR §264.17 and as described in Section 2.8, *Ignitable, Reactive, and Incompatible Wastes,* of this Permit Renewal Application.

5.16 Environmental Performance Standards

This section addresses the ability of the TA-16-388 Flash Pad operations to meet environmental performance standards that protect groundwater, surface water, soil, and air quality. EPA identified these media as having the greatest chance of becoming exposure pathways for migration of hazardous waste and hazardous waste constituents to potential human and environmental receptors. As required by 40 CFR §264.601, the Flash Pad is located, designed, constructed, operated, and maintained in a manner that facilitates safe handling and treatment of explosives wastes to prevent adverse impacts to human health and the environment.

5.16.1 Protection of Groundwater/Vadose Zone

As required by 40 CFR §264.601(a), the TA-16-388 Flash Pad is operated in a manner that prevents releases that might have adverse effects to human health or the environment caused by migration of waste constituents through the vadose zone to groundwater. Specific items to be considered include the following:

- The volume and physical and chemical characteristics of the waste in the unit, including its potential for migration through soil, liners, or other containing structures.
- The hydrologic and geologic characteristics of the unit and the surrounding area.
- The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater.
- The quantity and direction of groundwater flow.
- The proximity to and withdrawal rates of current and potential groundwater users.
- The patterns of land use in the region.
- The potential for deposition or migration of waste constituents into subsurface physical structures and into the root zone of food-chain crops and other vegetation.
- The potential for health risks caused by human exposure to waste constituents.
- The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents.

The following sections provide information on the hydrogeology beneath the TA-16-388 Flash Pad and describe monitoring and reporting conducted in and around the area that can be used to assess the impact of open burning operations on groundwater. Tables and figures regarding groundwater flow and monitoring are located in Supplement 4-11, *Open Burning Unit Groundwater Monitoring and Surface Drainage Information,* of this Permit Renewal Application.

5.16.1.1 Hydrogeology in the Vicinity of the TA-16-388 Flash Pad

The TA-16-388 Flash Pad is located in the southwestern portion of LANL in a semiarid, temperate, mountain-climate setting. General geologic and hydrologic characteristics of LANL and land use patterns in the Los Alamos area are discussed in Appendix 1 of the Los Alamos National Laboratory General Part B Permit Application (LANL 2003b).

The TA-16 Burn Ground, where the TA-16-388 Flash Pad is located, is situated on a mesa top within TA-16. A hydrologic conceptual model for TA-16, including the area of the TA-16 Burn Ground, is presented in the TA-16 Well Network Evaluation and Recommendations (LANL 2012b). That document ranks different sources at TA-16 by their potential to impact groundwater. High- and moderate-ranking sources were characterized by significant hydrologic drivers, i.e., either large outfall volumes released to canyons or ponds located on mesa tops. Sources were also characterized in terms of the release of large inventories or high contaminant concentrations. Both of these conditions are necessary to consider an area to have a high or moderate impact to groundwater. The TA-16 Burn Ground area was ranked as a low-priority source for its potential to impact groundwater, because it lacks both a large contaminant inventory and a large volume of water to provide a hydrologic driving force for contaminant infiltration.

5.16.1.2 Existing Quality of Groundwater

From 1981 to 2010, the average annual precipitation in Los Alamos County was 18.97 inches and the average annual snowfall was 57.5 inches (LANL 2012a). The evaporation rate of freestanding water exceeds the average annual precipitation. Infiltration is limited and generally occurs in canyons or on mesas at sites that release large volumes of water (LANL 2011a; LANL 2012b). The topographic map for TA-16 within the concurrent submittal of the *LANL General Part A Permit Application, Revision 11.0* (LANL 2025), and the table within Supplement 4-11, *Open Burning Unit Groundwater Monitoring and Surface Drainage Information,* of this Permit Renewal Application, present the locations of all monitored springs and wells (regional, intermediate, and alluvial) that are pertinent to the TA-16 Burn Ground to evaluate potential impacts from the TA-16-388 Flash Pad. The table also contains monitoring data for groundwater contaminants in alluvial, perched-intermediate, and regional groundwater zones near the TA-16 Burn Ground that are equal to or exceed applicable regulatory screening levels.

Discharges from past explosives-manufacturing activities at TA-16 (high- and moderate-ranking sources, particularly at the nearby TA-16-260 outfall) are believed to be the dominant sources of the constituents found in deep groundwater (LANL 2011a; LANL 2012b). Contaminants are present in groundwater collected from springs and groundwater monitoring wells located at TA-16. It is believed that the spring contamination may be the result of ponded water on the mesas (e.g., historical and current ditches and ponds) and potentially the presence of fractures as infiltration pathways. The wells showing the highest contaminant concentrations are downgradient of higher priority TA-16 sources. However, those wells are located along infiltration pathways that are not downgradient of the TA-16-388 Flash Pad.

5.16.1.3 Quantity and Direction of Groundwater Flow

The only aquifer in the Los Alamos area capable of municipal and industrial water supply is the regional aquifer. The regional water table is approximately 1,200 ft. below the TA-16 Burn Ground. This aquifer occurs primarily within the poorly to semi-consolidated basin-fill sediments of the Santa Fe Group. The total thickness of the Santa Fe Group beneath the Pajarito Plateau is poorly defined. The deepest well on the plateau (PM-5), with a depth of 3,110 ft., does not fully penetrate the base of the basin-fill sediments. Estimates of the total thickness of these sediments range from 6,650 ft. in the central basin to as much as 9,000 to 10,000 ft. in the central and western parts of the basin (Broxton and Vaniman, 2005). Given the average long term water level declines on the order of 1.2–1.3 ft./yr., the aquifer should meet projected water demands for hundreds of years.

Water supply well PM-5, the nearest water-supply well to the TA-16-388 Flash Pad, is located approximately 16,000 ft. (3 miles) to the northeast. Water-supply well PM-4 is located approximately 19,000 ft. (3.6 miles) east of the TA-16-388 Flash Pad, and PM-2 is located approximately 21,000 ft. (4 miles) southeast of the unit. Upper levels of the regional aquifer on the Pajarito Plateau are predominantly under phreatic (unconfined) conditions (LANL 2011a).

5.16.1.4 Current and Potential Groundwater Users

The deep portion of the regional aquifer is predominantly under confined conditions, and it is the portion of the regional aquifer influenced by Pajarito Plateau municipal supply pumping (note: neither the alluvial or perched groundwater systems are influenced by municipal water supply pumping). At TA-16, water-supply pumping does not cause any obvious water-level responses in either shallow or deep aquifer screens for those regional aquifer wells near the TA-16-388 Flash Pad (LANL 2011a). As a result, potential contaminant migration follows the ambient water-table gradients rather than diverting towards the water supply wells. Based on hydraulic data, capture of potential contaminants near the water table by municipal supply wells is unlikely. Based on water table maps, the regional groundwater flow direction in the vicinity of the TA-16 Burn Ground is expected to range from east-northeast to east-southeast. Because the TA-16-388 Flash Pad has a low likelihood of impacting groundwater beneath TA-16, impact at the water-supply wells is even less likely. Supplement 4-11, *Open Burning Unit Groundwater Monitoring and Surface Drainage Information,* of this Permit Renewal Application, includes figures that show the locations of groundwater monitoring wells and springs that are pertinent for evaluating potential impacts of the TA-16-388 Flash Pad and data tables with groundwater monitoring information.

5.16.1.5 Groundwater Monitoring and Reporting

LANL has established a groundwater monitoring network to assess the quality of groundwater in the Los Alamos area. The monitoring network includes monitoring wells, water-supply wells, surface-water sampling stations, and springs located both inside and outside the LANL boundary. Three groundwater zones (alluvial, perched-intermediate, and regional groundwater) are monitored as part of the monitoring network. Sample locations, analytical suites, and sampling schedules for the monitoring network are identified in the IFGMP (LANL 2020a). The IFGMP is updated annually with approval by NMED-HWB, in accordance with the June 2016 Compliance Order on Consent, referred to as the Consent Order (New Mexico 2016 (modified 2024)). The groundwater monitoring points provide information regarding potential impacts to groundwater from contaminant sources upgradient of the TA-16-388 Flash Pad.

A summary of the data from 2000 to the present for locations both upgradient and downgradient of the TA-16 Burn Ground is provided in Supplement 4-11. The table shows the frequency of detections above the listed regulatory standards for constituents potentially related to operations at the TA-16-388 Flash Pad. A key confounding factor regarding the groundwater monitoring data is that constituents of concern are common across TA-16 and are predominantly attributable to sources other than those at TA-16-388 Flash Pad, many of which have substantially higher amounts of contamination associated with releases to the environment. Therefore, Supplement 4-11 includes data from groundwater monitoring locations that are upgradient of the TA-16 Burn Ground to provide local baseline groundwater conditions for comparison to groundwater data collected to monitor the TA-16-388 Flash Pad. The sampling results are also published in periodic groundwater monitoring reports submitted to the NMED-HWB and in the Facility's annual environmental reports.

5.16.2 Protection of Surface Water/Wetlands/Soil Surface

As required by 40 CFR §264.601(b), the TA-16-388 Flash Pad is operated in a manner that prevents any releases that might have adverse effects on human health or the environment caused by migration of hazardous waste constituents in surface waters or wetlands. There are no permanent surface-water bodies within the confines of the Flash Pad and the unit operations will not utilize water. However, as discussed within this section, surface-water runoff from the Flash Pad has the potential to flow and impact Fishladder Canyon, which in turn is a tributary to Cañon de Valle. As used in this section, "surface waters" includes storm water runoff and snowmelt runoff that can create sheet flow across the site. In addition, there is a wetland located approximately 1,500 ft. away from the TA-16-388 Flash Pad.

The following factors were considered in the surface-water analysis discussed below:

- The volume and physical and chemical characteristics of the waste in the unit.
- The effectiveness and reliability of containing, confining, and collecting systems and structures in preventing migration.
- The hydrologic characteristics of the unit and the surrounding area, including the topography of the land around the unit.
- The patterns of precipitation in the region.
- The quantity, quality, and direction of groundwater flow.
- The proximity of the unit to surface waters.
- The current and potential uses of nearby surface waters and any water quality standards established for those surface waters.
- The existing quality of surface waters and surface soils, including other sources of contamination and their cumulative impact on surface waters and surface soils.
- The patterns of land use in the region.
- The potential for health risks caused by human exposure to waste constituents.
- The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents.

5.16.2.1 Hydrologic Assessment and Surface Water Flow

Located in the southwestern portion of LANL, TA-16 occupies portions of the Water Canyon, Cañon de Valle, and S-Site Canyon watersheds. The TA-16-388 Flash Pad is located on the mesa top in TA-16's northeastern corner, which lies within the Cañon de Valle watershed. This watershed extends east-

southeast across LANL from TA-16 to its confluence with Water Canyon at the boundary between TA-15 and TA-37. Surface water in TA-16 consists of storm water runoff, snowmelt runoff, and perennial spring flow that drains in small drainages or by sheet flow into Cañon de Valle. Surface water in Cañon de Valle to the north of the TA-16 Burn Ground is perennial from Burning Ground Spring to a stream gage (E256) below MDA P, which is an SWMU on the northern portion of the mesa top for which corrective actions are complete. From the southern portion of the TA-16 Burn Ground, where the TA-16-388 Flash Pad is located, intermittent surface water occurs from natural and anthropogenic sources from gage station (E257) to the Cañon de Valle confluence with Water Canyon.

Surface-water runoff from the TA-16-388 Flash Pad flows southwest to a small tributary to Fishladder Canyon, which in turn is a tributary to Cañon de Valle. Fishladder Canyon is located between the main channel of Cañon de Valle and S-Site Canyon, with a drainage length of approximately 3.5 kilometers (2.2 miles) and a drainage area of approximately 1.2 square kilometers (0.4 square miles). Surface water in the vicinity of the TA-16 Burn Grounds consists of storm water and snowmelt runoff that may flow by small drainages or sheet flow into Fishladder Canyon. Fishladder Seep is located in a hanging valley approximately 800 ft. southeast of the Burning Ground. Alluvial groundwater occasionally discharges at Fishladder Seep, although the prevalence of surface flow in Fishladder Seep has decreased significantly in recent years. Supplement 4-11, *Open Burning Unit Groundwater Monitoring and Surface Drainage Information,* of this Permit Renewal Application, contains a figure of drainage (Figure 4.11-1) near the open burning unit.

The US Army Corps of Engineers has identified and delineated a small wetland in this area (ACOE 2005). Wetland 16-1 is approximately 70 ft. long and 20 ft. wide, with an area of 0.03 acres. The wetland is more than 1500 ft. away from the TA-16-388 Flash Pad and is unlikely to be impacted by activities at the open burning unit.

Surface water within the Cañon de Valle watershed has been detrimentally impacted by two severe forest fires (LANL 2011a). In May 2000, the Cerro Grande fire burned the headwaters of Cañon de Valle and Water Canyon west of LANL, and also burned a large part of the Water Canyon watershed within LANL, including areas in TA-08, TA-09, TA-11, TA-14, TA-15, TA-16, TA-28, and TA-37. Various naturally occurring inorganic chemicals (e.g., barium, cobalt, and manganese) and anthropogenic fallout radionuclides (e.g., cesium-137, plutonium-239 and -240, and strontium-90) were concentrated in Cerro Grande ash at levels exceeding that of background sediment before the fire, and the transport of ash has resulted in elevated levels of these analytes in post-fire sediment deposits in some canyons.

In June 2011, the Las Conchas fire burned the headwaters of Cañon de Valle and Water Canyon west of LANL. The upper Cañon de Valle watershed was burned more severely than the upper Water Canyon watershed: 60% of the Cañon de Valle watershed within the burn perimeter was classified as high or moderate severity. Floods in July and August 2011 transported ash from the burn area onto LANL; it is expected that various inorganic chemicals and fallout radionuclides will be elevated in these media similar to the baseline samples collected from post-Cerro Grande fire runoff.

5.16.2.2 Surface Water Monitoring and Reporting

Protection of surface water is established by implementation of a Clean Water Act National Pollutant Discharge Elimination System storm water individual permit associated with industrial activities from certain SWMUs and AOCs (referred to as the “LANL Storm Water Individual Permit”) (NPDES Permit No.

NM0030759). The LANL Storm Water Individual Permit was initially effective on November 1, 2010. The LANL Storm Water Individual Permit expired on March 31, 2014, and has been administratively continued pending issuance of a new permit. A draft permit was issued by the EPA on November 30, 2019. A final permit is expected following a public comment period, which ended on July 31, 2020. The 2005 Consent Order (New Mexico 2005) designated the TA-16-388 Flash Pad as SMWU [16-010(c)], regulated under the LANL Storm Water Individual Permit. However, under the 2016 Consent Order (New Mexico 2016 (modified 2024)), the unit is identified as a permitted unit and is regulated by the 2010 Permit. A request to remove the TA-16-388 Flash Pad from the LANL Storm Water Individual Permit is currently pending with the EPA. Until the unit is removed from the LANL Storm Water Individual Permit, it will be monitored in compliance with that permit.

The LANL Storm Water Individual Permit contains non-numeric technology-based effluent limitations, coupled with a comprehensive, coordinated monitoring program and corrective action where necessary, to minimize pollutants in storm water discharges from sites. LANL is also required to implement site-specific control measures (including best management practices) to address the non-numeric technology-based effluent limits contained in the LANL Storm Water Individual Permit, followed by confirmation monitoring against New Mexico water-quality-criteria-equivalent target action levels to determine the effectiveness of the site-specific measures. If target action levels are exceeded, corrective actions detailed in the LANL Storm Water Individual Permit are initiated and additional confirmation monitoring is conducted, following completion of corrective actions. The LANL Storm Water Individual Permit designates SWMU 16-010(c) as a Moderate Priority Site with a corrective action deadline of October 31, 2015.

Installation of baseline control measures at CDV-SMA-2.5 (Cañon de Valle-Site Monitoring Area-2.5) were completed on December 15, 2010, and certified on January 12, 2011 (LANL 2011b). The active control measures are listed in the 2020 Individual Permit Annual Report (LANL 2020b) and the 2019 update to the Individual Permit Site Discharge Pollution Prevention Plan (LANL 2020c). The control measures include established vegetation, an earthen berm, straw wattles, riprap-lined channels/swales, and rock check dams that function as run-on, runoff, erosion, and/or sediment controls.

The pollutants of concern to be monitored for each SMA are specified in Appendix B of the LANL Storm Water Individual Permit. At a minimum, all SMAs must be initially monitored for metals, gross-alpha radiation, Ra-226 + Ra-228, and cyanide (weak acid dissociable). The storm water monitoring requirement for CDV-SMA-2.5 also includes high explosives and SVOCs. Baseline confirmation monitoring at CDV-SMA-2.5 started in May 2011 at station SS090420, which is collocated with the E257 station (shown on Figure 4.11-1 within Supplement 4-11, *Open Burning Unit Groundwater Monitoring and Surface Drainage Information*). Baseline confirmation samples were collected on September 1, 2011, and October 12, 2012. No target action level exceedances were observed. However, the SVOC results were rejected as an outcome of data validation and are not usable for confirmation sampling assessment. A second sample was collected on July 26, 2013, and analyzed for SVOCs. No target action level exceedances were observed, thereby completing baseline confirmation monitoring.

Because this SWMU is an active hazardous waste management treatment unit, it is no longer subject to the Consent Order. A request to remove this site from the LANL Storm Water Individual Permit is currently pending with the EPA. Until this site is removed from the LANL Storm Water Individual Permit, it will be monitored in compliance with that permit. Supplement 4-11, *Open Burning Unit Groundwater*

Monitoring and Surface Drainage Information, of this Permit Renewal Application, contains a figure of drainage near the open burning unit.

5.16.2.3 Soil Surface Monitoring

The following paragraphs detail soil monitoring efforts at the TA-16-388 Flash Pad, in accordance with the requirements in 40 CFR §264.602(b). Description of modeling associated with the potential for soil deposition as a result of modeled air impacts at the TA-16-388 Flash Pad is included in Supplement 4-3, *Hybrid Air Modeling Analysis and Ecological and Health Risk Assessment for Open Burning and Open Detonation Operations at Los Alamos National Laboratory,* of this Permit Renewal Application. This modeling is discussed in the next section.

In 2009, 2012, and 2013, soil sampling occurred using grab sampling to collect soil samples to measure soil constituent levels at the TA-16-388 Flash Pad. A summary of the soil laboratory analytical results for the 2012 and 2013 sample collection events and a comparison of those results to the 2009 data are included in Attachment F of *Class 3 Permit Modification Request for Addition of an Open Burning Unit at Technical Area (TA) 16 to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit, EPA ID No. NM0890010515* (LANL 2013).

The most recent soil-sampling event occurred on September 2018, to continue to monitor and assess soil constituents at the TA-16-388 Flash Pad site. Sample locations were selected based on areas where deposition from air to soil is likely to occur and at locations of storm water runoff. Soil samples were collected from the ground surface to 2 inches below the ground surface and analyzed for constituents of concern. The laboratory soil analytical results were compared to established background values and New Mexico residential soil screening limits. The soil analytical results demonstrate that the majority of constituents analyzed for were nondetect. Soil sample concentrations were measured above their background values for eight inorganic constituents, but the concentrations did not exceed the soil screening levels. Supplement 4-14, *2018 Soil Sampling Results Summary Report for the Open Burning Unit at Technical Area (TA) 16-388 Flash Pad,* of Appendix 4 of this Permit Renewal Application, includes the most current soil analytical summary for the open burning unit and provides more detailed information regarding the soil sampling and analytical results.

5.16.2.4 Assessment of Potential Health Risks

Using the 2018 soil-sampling analytical results, risk assessment analyses were conducted to assess the potential for risk to human and ecological receptors from the open burning treatment unit. The assessments are included as Supplement 4-15, *Technical Area 16 - Open Burn/Open Detonation (OB/OD) Area - Technical Area 16-388 Flash Pad Human Health and Ecological Risk Screening Assessments,* of this Permit Renewal Application. The human health risk assessment concluded that there are no unacceptable risks associated with the constituents measured within the soil. The ecological risk assessment concluded that there is a minimal risk to ecological receptors. The detected concentrations of barium above background levels presents a potential risk to plants. However, no effects on plants were noted during a site visit. The calculation of risk presented by the detected concentrations of dioxins/furans in the soils demonstrates that the low-effect ecological screening level for mammals and the no-effect ecological screening level for birds was exceeded at one sample location. Small mammal studies at TA-16 have found no uptake of dioxins/furans by small mammals.

5.16.3 Protection of Atmosphere

To meet the requirements of 40 CFR §264.601(c), the TA-16-388 Flash Pad is located in a remote area within LANL boundaries and is operated in a manner that prevents any releases of waste constituents to the atmosphere that may have adverse effects to human health or the environment.

Air modeling using the Open Burn and Open Detonation Model was conducted for the open burning unit. The air-dispersion model is used to estimate the ground-level concentrations that might occur downwind after an open burning event. The data inputs for the model use the most conservative values to provide the most protective modeling. For example, the data input regarding the maximum amount of explosives waste treated at the unit overestimates the quantity of waste to be 6,000 pounds per year compared to the actual amount of waste treated which is approximately 2,500 pounds per year on average over the last 5 years. Additionally, the number of treatments conducted and the amount of time it takes to complete treatment operations were also overestimated. The waste stream emissions factors used for the analysis were also based on constituents that are more hazardous than what would ever be treated at the unit and estimate a higher air impact than what would be released from the unit under normal operations. After running the model through several iterations, the results demonstrate that all maximum ground-level concentrations occur close to the TA-16 Burn Ground. No ambient air-quality standards are projected to exceed the modeling results, since the model results are conservative. The calculated air-concentration results were compared to the air-quality standards and the appropriate human health screening levels, where available, and the predicted impacts are all below the appropriate screening levels. Predicted soil deposition (over a 10-year period) demonstrates that impacts to soil concentrations are also less than the human health and ecological screening levels. The air-analysis report which includes more detailed discussion of model inputs, emission factors, and results is included in Supplement 4-3, *Hybrid Air Modeling Analysis and Ecological and Health Risk Assessment for Open Burning and Open Detonation Operations at Los Alamos National Laboratory,* of this Permit Renewal Application.

Atmospheric monitoring efforts that have been performed at the TA-16-388 Flash Pad, in accordance with the requirements of 40 CFR §264.602 and are included in Supplement 4-12, *Air Sampling at Open Burning Treatment Unit,* of this Permit Renewal Application. Each sample in 2011 was collected downwind of the open burning treatment unit at a distance of 25 ft. and 75 ft. Samples collected from five treatment events were analyzed for metals and dioxins/furans. The analysis results were then compared to acute air-inhalation exposure concentration screening levels, where screening levels could be identified. The data comparisons indicate the operations monitored did not exceed any appropriate state or federal levels specified for the analytes monitored. In 2022, air monitoring was conducted in the predicted downwind directions and concluded similar findings to those in 2011, this time compared to chronic air-inhalation screening levels.

6.0 PERMIT CHANGES

This Permit Renewal Application contains a number of proposed Permit changes sought by the Permittees. These changes include proposed modifications to the text in both the Permit Parts and in Permit Attachments. All proposed Permit changes are specifically identified and summarized in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit*, which outlines changes proposed in Supplements 1-1 through 1-9; and Appendix 3, *Summary Table of Proposed Changes to Hazardous Waste Management Unit Closure Plans*, which outlines proposed changes in Supplement 3-1, *Permittees' Proposed Changes to Attachments G.1 through G.31, Closure Plans*. There are six categories of proposed permit changes summarized below.

1) Changes referred to within Section 2 of this Permit Renewal Application include changes to text and figures within the 2010 Permit Parts 1-11 and Permit Attachments C, D, E, and F. Section 2 of this Permit Renewal Application addresses several minor and non-substantive changes as needed to update terminology and/or organizational changes, facilitate implementation, clarify information where needed, update or add practices that are in place by the Permittees, and remove redundant information. These changes occur in the following:

    - Permit Section 1.9.12, *24 Hour and Subsequent Reporting*
    - Permit Section 1.9.12.1, *24 Hour Oral Report*
    - Permit Section 2.5, *Security*
    - Permit Section 2.8, *Special Requirements for Ignitable, Reactive, or Incompatible Waste*
    - Permit Section 2.8.1, *Ignitable and Reactive Waste Precautions*
    - Permit Section 2.10.2, *Testing and Maintenance of Equipment*
    - Permit Section 2.10.5, *Arrangements with Local Authorities*
    - Permit Section 2.11.3, *Distribution*
    - Permit Section 3.15, *TA-60 Container Storage Requirements*
    - Permit Section 4.4, *Tank Systems and Stabilization Unit Containment*
    - Attachment C, *Waste Analysis Plan*
    - Attachment D, *Contingency Plan*
    - Attachment E, *Inspection Plan*
    - Attachment F, *Personnel Training Plan*

2) Changes referred to within Section 3 of this Permit Renewal Application include removal of text regarding secondary containment that is not applicable, inclusion of practices that are already in place by the Permittees, corrections of typographical errors, and updates to referenced sections. These changes occur in the following:

    - Permit Section 3.5, *Management of Containers*
    - Permit Section 3.10.2, *Secondary Containment*
    - Permit Section 3.12.1, *General Operating Conditions*
    - 3.14.2(1), *Retention Basin*
    - 3.14.3, *Subsurface Vapor Monitoring*

3) Changes based on the Class 3 permit modification request pursuant to the 2017 Settlement Agreement in *U.S. v. Curry*, DC NM Case No. 10-0125. The changes associated with the request are described within Section 6.1 of this Permit Renewal Application. These proposed changes occur in the following:

- Proposed new Permit Section 1.4.2, *Integration with Consent Order*
- Permit Section 1.8, *Definitions*
- Permit Section 1.9.1, *Duty to Comply*
- Deleted Permit Section 4.6, *TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF)*
- Permit Section 9.1, *Introduction*
- Permit Section 9.1.1, *Regulated Units*
- Permit Section 9.3, *Closure Requirements for Regulated Units*
- Deletion of applicable text within Attachment G, *Closure Plans*, applicable tables within Attachments G.1 through G.31: deletion of text "low-level radioactive solid waste" under column "Waste Type"

4) Changes required for the proposed addition of three treatment units. The application requirements for the addition of two open detonation units and one open burning unit are included in Sections 4 and 5 of this Permit Renewal Application. Specific Permit Parts and Permit Attachment changes necessary to include these units within the Permit are outlined in Sections 4.0 and 5.0. The other proposed changes occur in the following:

   - Permit Section 1.2, *Permittees and Permitted Activity*, Table 1.2.1
   - Permit Section 1.4.1, *Effect of this Permit on Interim Status Units*
   - Permit Section 1.5, *Effects of Inaccuracies in Permit Application*
   - Proposed new Permit Part 5, *Treatment by Open Detonation*
   - Proposed new Permit Part 6, *Treatment by Open Burning*
   - Attachment A, *Technical Area Unit Descriptions*
   - Attachment C, *Waste Analysis Plan*
   - Attachment D, *Contingency Plan*
   - Attachment E, *Inspection Plan*
   - Attachment G, addition of applicable closure plans
   - Attachment J, *Hazardous Waste Management Units*
   - Attachment N, *Figures*

5) Changes based on a Class 3 permit modification request submitted by the Permittees in September 2021 as described in Section 6.2 of this Permit Renewal Application. The proposed changes are included in Attachment K, *Listing of SWMUs and AOCs* (Supplement 1-8 of this Permit Renewal Application).

6) Other proposed changes to the 2010 Permit text and figures that are not addressed in the five circumstances listed above are described in Section 6.3 of this Permit Renewal Application. These changes are minor in nature and have been proposed in most cases for clarity, consistency, establish deliverable due dates that are more appropriate, or to remove redundant information within the 2010 Permit. These proposed changes are included in the following:

   - Permit Table of Contents
   - Permit Section 1.5, *Effects of Inaccuracies in Permit Application*
   - Permit Section 1.8, *Definitions*
   - Permit Section 1.9.8, *Inspection and Entry*
   - Permit Section 1.9.14, *Other Noncompliance*
   - Permit Section 1.10, *Information Repository*
   - Permit Section 1.13, *Public Notification Via Electronic Mail (E-Mail)*

- Permit Section 1.16, Transfer of Land Ownership
- Permit Section 1.17.2, *Demolition Activities Update*
- Permit Section 2.4.7, *Waste Characterization Review*
- Permit Section 2.9, *Waste Minimization Program*
- Permit Section 2.12.2, *Facility Operating Record*
- Permit Section 3.5, *Management of Containers*
- Permit Section 3.12.1, *General Operating Conditions*
- Permit Section 3.14.2, *Retention Basin*
- Permit Section 3.14.3, *Subsurface Vapor Monitoring*
- Permit Section 11.1, *Corrective Action Requirements Under the Consent Order*
- Permit Section 11.2, *Corrective Action Requirements Under the Permit*
- Permit Section 11.3.1.1, *Notification of Detections*
- Permit Section 11.3.2, *Groundwater Monitoring Reporting*
- Permit Section 11.4.1.1, *Groundwater Cleanup Level for Perchlorate*
- Permit Section 11.8.6.7, *Statement of Basis*
- Permit Section 11.10.2.7.i, *Groundwater Levels*
- Attachment A, *Technical Area Unit Descriptions*
- Attachment B, *Part A Application*
- Attachment C, *Waste Analysis Plan*
- Attachment D, *Contingency Plan*
- Attachment E, *Inspection Plan*
- Attachment F, *Personnel Training Plan*
- Attachment J, *Hazardous Waste Management Units*
- Attachment N, *Figures*

6.1 U.S. v. Curry

On July 20, 2017, the DOE and LANS (predecessor to Triad and N3B) submitted a Class 3 permit modification request to propose changes to the 2010 Permit that were agreed to under the terms of a Settlement Agreement dated April 17, 2017, resolving the Permittees' appeal of the 2010 Permit in *U.S. v. Curry*, DC NM Case No. 10-0125. This permit modification request is incorporated by reference into this renewal application and can be found at https://permalink.lanl.gov/object/tr?what=info:lanl-repo/eprr/ESHID-602518. As required by 40 CFR §270.42(c), the Permittees issued a public notice for a 60-day public comment period and conducted an informational public meeting on August 30, 2017. Permittees are requesting that the NMED approve these permit changes as part of this Permit Renewal Application. The Class 3 permit modification request, along with the administrative record (e.g., public notice, public comments, and public meeting) are incorporated by reference into this Permit Renewal Application, as referenced (LANL 2017). This permit modification request was determined to be administratively complete on April 2, 2018 (NMED 2018).

Following is a summary of the proposed changes in the *U.S. v. Curry* Class 3 PMR sought for approval in this renewal application:

- Permit Section 1.4, *Effective of Permit*: revisions to provide information for the integration of corrective action in the Consent Order for regulated units at TA-54 MDAs G, H, and L.
- Permit Section 1.4.2.2, *Public Participation*: addition of language to this section related to public participation.

- Permit Section 1.8, *Definitions*: addition of definitions for the Consent Order and regulated units.
- Permit Section 1.9.1, *Duty to Comply*: addition of language related to delegation and assignment of the Permittees' responsibilities under the Permit.
- Permit Section 4.6, *TA-50 RLWTF:* deletion of permit text related to the regulation of RLWTF.
- Permit Section 9.1, *Introduction*: addition of language related to three categories of permitted units at the Facility.
- Permit Section 9.1.1, *Regulated Units*: addition of language related to the closure requirements for regulated units within MDAs G, H, and L.
- Permit Section 9.4, *Closure Requirements for Indoor and Outdoor Units*: addition of language related to closure requirements for indoor and outdoor permitted units.
- Attachment G, *Closure Plans*, Tables G.1 through G.31: deletion of text "low-level radioactive solid waste" under column "Waste Type."
- Attachment J, *Hazardous Waste Management Units*: deletion of text under Table J-1, *Active Portions of the Facility*, related to TA-54 MDA G, H, and L.

6.2 Request for 19 Corrective-Action-Complete Sites

On September 30, 2021, the DOE and N3B proposed changes to the 2010 Permit to move 19 SWMUs and AOCs from Permit Attachment K, *Listing of SWMUs and AOCs*, Table K-1, *SWMUs and AOCs Requiring Corrective Action,* and placing them into Table K-3, *SWMUs and AOCs Corrective-Action-Complete without Controls*, to signify corrective-action-complete per Permit Section 11.7, *Permit Modification for Corrective-Action-Complete*, and Section VII.D of the Consent Order (New Mexico 2005 (modified 2024)). The 19 sites proposed to be moved from Table K-1 to Table K-3 were granted certificates of completion (COCs) without controls from NMED between 2006 and 2015 as described within the permit modification request. Moving these 19 sites to Table K-3 will signify these sites have been fully remediated and are complete without controls.

As required by 40 CFR §270.42(c), the Permittees issued a public notice for a 60-day public comment period and conducted an informational public meeting on November 9, 2021. Permittees are requesting that the NMED approve these permit changes as part of this Permit Renewal Application. The Class 3 permit modification request, along with the administrative record (e.g., public notice, public comments, and public meeting) are incorporated by reference into this Permit Renewal Application, as referenced (LANL 2021). This permit modification request was determined to be administratively complete in February 2022 (NMED 2022).

6.3 Other Permit Changes

This section includes a summary of the proposed changes to the 2010 Permit that are not otherwise discussed in the rest of the Permit Renewal Application. The Permittees' proposed changes are detailed within Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit*, and the appropriate supplements.

Most of the proposed changes within Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11*, fall under "other proposed permit changes" and include the following: minor changes to update the table of contents, removal of redundant information, updates to terminology, updates to current practices in place at the Facility, clarification of definitions and provisions for requirements such as the

requirement to provide the NMED with copies of records during inspections, updates to new figure references, and the correction of typographical errors. Additional proposed changes to reporting requirement dates and waste minimization requirements are described herein and summarized in the table included as Appendix 1.

The Permittees propose to change the due dates for the annual reports required by Permit Section 1.9.14, *Other Noncompliance,* and Permit Section 2.9, *Waste Minimization Program*. The Permittees request that report due dates be moved to December 15 of each year due to several factors. The first is because data calls for information cannot be finalized until September 30 of each year due to the nature of the reports—that provides only 61 days for data gathering, drafting, finalizing, security review, and submittal. Additionally, there are now two contractors coordinating a single reporting deliverable, which typically requires more time for all parties to review the submittal. Lastly, the Thanksgiving holiday at the very end of the drafting and finalization window (e.g., the last weekend in November) results in complications for timely submittal to the NMED and subsequent placement in the Information Repository.

Proposed changes to Permit Section 1.10, *Information Repository*, include revision of the public notice requirements for the annual training to include the words “at least” before the 30-day requirement. The addition of the words “at least” provides flexibility for publishing the newspaper advertisements, because it is not possible for the five newspapers that are required to publish the advertisements to occur exactly 30 days before the scheduled training due to the weekly-published newspaper’s publish days.

The Permittees propose a revision to the e-mail notification requirement included in Permit Section 1.13 *Public Notification Via Electronic Mail (E-Mail)*. The revision proposes a change to the deadline for completion of these e-mail notifications be increased to 15 days. This deadline better coincides with the deadline to place documents within the LANL Information Repository, as required by the 2010 Permit (10 days). Therefore, the e-notification deadline would fall after the deadline for placement in the Information Repository, rather than before, as it does now. The additional time will enable the Permittees to better coordinate placement of documents into the Information Repository, especially for submittals around holiday closures.

The Permittees propose a change to the frequency of reporting demolition activities at LANL. The proposed revisions reduce the reporting to twice yearly (biannually) to include a fiscal year notice (due September 30 every year) and an update to the annual notice (to be due March 30 every year). Additional language is proposed to require a supplemental notice in the event that a demolition project is identified outside of the proposed reporting. Changes within this section are proposed based on reporting experience over the last several years that have identified few changes during current quarterly reporting. Occasional changes to the schedule that affect regular reporting would be more effectively managed through a supplemental notice.

Within Permit Section 2.4.7, *Waste Characterization Review,* Item (4) states that when re-characterization of a hazardous waste stream is needed because the Permittees are notified by a receiving offsite facility that characterization of a hazardous waste they obtained from the offsite facility does not match a pre-approved waste analysis certification or accompanying waste manifest or shipping paper, the Permittees must notify the NMED in writing within three days of their receipt of the notice of the discrepancy from a receiving facility. The Permittees propose this notification requirement be

revised to be 15 days, as stipulated by the manifest discrepancy requirements at 40 CFR §264.72 to allow adequate time for the Permittees and the offsite facility to resolve the characterization issue, if necessary, and to draft a response and perform proper accuracy and security review for the notification. The regulation specifically states that manifest discrepancies be resolved within 15 days after the offsite facility receives the waste before requiring that a report be made to the regulatory agency. Per the regulation, differences in discrepancy type that can be resolved include the potential for inspection or analysis of the waste [40 CFR §264.72(b)]. Resolution of the discrepancy may entail repeated or additional waste analysis before determining that there is a characterization basis for the discrepancy or a final resolution. In addition, the 40 CFR §264.13(a)(3) waste analysis requirements include the need for repeat analysis of a waste stream following the offsite receiving facility's notification, but there is no minimum timeframe given at that regulatory citation. The current three-day notification provision prevents the Permittees from being allowed to resolve the discrepancy before notifying the NMED. Documentation of the actions resulting from such a notice will also be available, as required by the Facility Operating Record. Additionally, this Permit Section is particularly difficult to comply with at LANL because of the size and number of waste-generating organizations at the Facility. Often, notifications of characterization discrepancies of a waste stream are received from the offsite receiving facility via informal means (e-mail) to individuals, rather than facility liaison groups that can facilitate the notification to NMED.

The change proposed within Section 2.12.2, *Facility Operating Record:* correct a typographical error to a regulation citation.

Editorial updates are proposed to the text within Permit Section 3.14.3, *Subsurface Vapor Monitoring*, to aid in the clarification associated with the intent of the soil vapor monitoring conducted under the provisions of the Permit, to update sampling and reporting frequencies, and to update appropriate concentration comparison values for measured constituents based on latest information available for soil vapor levels.

Several permit revisions are proposed to align the 2010 Permit with the Consent Order (New Mexico 2016 (modified 2024)). These proposed revisions occur in the following sections of the 2010 Permit:

- Permit Section 1.16, *Transfer of Land Ownership*
- Permit Section 3.14.3, *Subsurface Vapor Monitoring*
- Permit Section 11.1, *Corrective Action Requirements Under the Consent Order*
- Permit Section 11.2, *Corrective Action Requirements Under the Permit*
- Permit Section 11.3.1.1, *Notification of Detections*
- Permit Section 11.3.2, *Groundwater Monitoring Reporting*
- Permit Section 11.4.1.1, *Groundwater Cleanup Level for Perchlorate*

An update to Permit Section 11.10.2.7.i, *Groundwater Levels*, is proposed to change the length of the groundwater sampling period. This change was made related to the first Triennial Review (2018) findings; in accordance with the January 2016 Settlement Agreement and Stipulated Final Order, which found an inconsistency between the Permit which required a 14-day sampling period, whereas the IFGMP required a 21-day period. Groundwater corrective actions are being conducted in accordance with Consent Order Section 12, Groundwater Monitoring. Consistent with this, all monitoring wells within a watershed or area-specific monitoring group are sampled with 21 days of the start of the

groundwater sampling event. This 21-day timeframe is necessary because of the number of monitoring locations in many of the monitoring groups.

Proposed revisions throughout Permit Attachment A, *Technical Area Unit Descriptions,* are included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*. The Permittees propose to update the section numbering and references to accommodate the proposed addition of open burning and open detonation sections. The Permittees propose correction of typographical errors within Permit Attachment A, including correction of the title of the attachment. Proposed changes also include formatting headings and section numbering consistency. Other proposed revisions to the attachment include removal of redundant information that may be inconsistent or that may not be complete when compared to the other instances within the 2010 Permit, where text regarding equipment, specific requirements, or information resides. Proposed updates to the description of security and access at Technical Area 50, Building 69, to remove information that is no longer relevant to the units that remain within the area. The information regarding TA-50 is based on outdated information originally included within a permit application that proposed permitting more units at Technical Area 50, which were subsequently closed. Additionally, the unit descriptions for units located at Technical Area 55 have been updated. Grammatical and formatting edits proposed within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions* are all reflected in the redline document, but may not be specifically highlighted in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit*, because formatting changes are difficult to highlight in table format. Additionally, grammatical and consistency changes may provide unnecessary clutter in the summary table.

Proposed changes to Permit Attachment B, *Part A Application*, have not been highlighted in this Permit Renewal Application because they are included in the concurrent submittal of the *LANL General Part A Permit Application, Revision 11.0* (LANL 2025). No substantive changes have been proposed to the form. Updates to the form include signatory name changes and environmental permit listing updates.

As described in Sections 2.2, 4.2, and 5.2 of this Permit Renewal Application proposed changes to Permit Attachment C, *Waste Analysis Plan*, are summarized in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit,* and included in Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*. Major updates to the plan include the addition of hazardous waste management units proposed for permitting. All other changes to the attachment are to improve consistency within the plan, remove outdated or redundant information, update terminology, remove acronyms and abbreviations, and organize tables in a consistent manner. Grammatical and formatting edits proposed within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan* are all reflected in the redline document, but may not be specifically highlighted in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit*, because formatting changes are difficult to highlight in table format. Additionally, grammatical and consistency changes may provide unnecessary clutter in the summary table.

Changes to Permit Attachment D, *Contingency Plan*, are described in Sections 2.6, 4.6, and 5.6 of this Permit Renewal Application and are included as Supplement 1-4, *Permittees' Proposed Changes to Permit Attachment D, Contingency Plan.* Changes are associated with hazardous waste management

units that are proposed to be added to the 2010 Permit, general rearrangement of the plan, updating terminology associated with emergency preparedness activities, updating to modern emergency communication technology, and organizational changes to facilitate implementation, provide clarity, and remove redundant information. Grammatical and formatting edits proposed within Supplement 1-4, *Permittees' Proposed Changes to Permit Attachment D, Contingency Plan*, are all reflected in the redline document, but may not be specifically highlighted in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit*, because formatting changes are difficult to highlight in table format. Additionally, grammatical and consistency changes may provide unnecessary clutter in the summary table.

Sections 2.4, 4.4, and 5.4 of this Permit Renewal Application discuss the changes summarized in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit,* and included as Supplement 1-5, *Permittees' Proposed Changes to Permit Attachment E, Inspection Plan*. Proposed changes include adding open burning and open detonation unit inspection requirements, as well as making updates to the arrangement of the inspection plan and the inspection forms.

Changes to Permit Attachment F, *Personnel Training*, are included as Supplement 1-6, *Permittees' Proposed Changes to Attachment F, Personnel Training Plan*. The Permittees propose updates to the plan to improve the quality of the document, correct inconsistencies, and update language to reflect multiple contractors and consolidate repetition within the plan.

Proposed changes within Attachment J, *Hazardous Waste Management Units,* are summarized in Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit,* and are detailed in Supplement 1-7, *Permittees' Proposed Changes to Attachment J, Hazardous Waste Management Units*. These changes propose to remove reference to interim status units, remove descriptions of units that are no longer valid, make changes as described in Section 6.1 above, and correct a typographical error.

The Permittees propose changes to Attachment N, *Figures,* including the consolidation of duplicative figures, updating outdated figures, and moving a figure to Permit Attachment D, *Contingency Plan,* where it is more appropriately placed. Proposed changes are summarized in the Attachment N portion of Appendix 1, *Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit,* and are included in Supplement 1-9, *Permittees' Proposed Changes to Attachment N, Figures*. Necessary proposed text changes to the 2010 Permit are included in Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1-11*; Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*; and Supplement 1-4, *Permittees' Proposed Changes to Permit Attachment D, Contingency Plan.* Text changes are necessary within the following sections:

- Permit Section 2.5, *Security*
- Permit Section 2.8, *Special Requirements for Ignitable, Reactive, or Incompatible Waste*
- Permit Section 3.14.1, *General Operating Conditions*
- Permit Section 3.14.3, *Subsurface Vapor Monitoring*
- Permit Attachment Section A.1.1, *TA-3 Building 29*
- Permit Attachment Section A.1.1.1, *TA-3-29 Room 9010*
- Permit Attachment Section A.1.1.3, *TA-3-29 Portion of Room 9030*

- Permit Attachment Section A.5, *TA-50*
- Permit Attachment Section A.5.1, *TA-50-69 Indoor Permitted Unit*
- Permit Attachment Section A.5.2, *TA-50-69 Outdoor Permitted Unit*
- Permit Attachment Section A.5.3, *Security and Access*
- Permit Attachment Section A.6, *TA-54*
- Permit Attachment Section A.6.1, *Area L*
- Permit Attachment Section A.6.1.1, *Storage Dome 215*
- Permit Attachment Section A.6.1.2, *Storage Sheds 68, 69, and 70*
- Permit Attachment Section A.6.1.3, *Storage Shed 31*
- Permit Attachment Section A.6.1.4, *TA-54-32*
- Permit Attachment Section A.6.1.5, *TA-54-35*
- Permit Attachment Section A.6.1.6, *TA-54-36*
- Permit Attachment Section A.6.1.7, *TA-54-58*
- Permit Attachment Section A.6.1.8, *TA-54-39 and Containment Pad*
- Permit Attachment Section A.6.2, *Area G*
- Permit Attachment Section A.6.2.1, *Pad 9*
- Permit Attachment Section A.6.2.2, *Pad 1*
- Permit Attachment Section A.6.2.3, *Pad 3*
- Permit Attachment Section A.6.3, *TA-54 West*
- Permit Attachment Section A.6.3.1, *TA-54 West Building (RANT, Radioactive Assay Nondestructive Testing)*
- Permit Attachment Section A.6.3.2, *TA-54 West Outdoor Pad*
- Permit Attachment Section A.6.4, *Security and Access Control*
- Permit Attachment Section A.7, *TA-55*
- Permit Attachment Section A.7.8, *Outdoor Storage Pad*
- Permit Attachment Section A.7.9, *TA-55-0355 Pad*
- Permit Attachment Section A.7.12, *Security and Access Control*
- Permit Attachment Section A.8, *TA-63*
- Permit Attachment Section A.8.1, *Concrete Pad*
- Permit Attachment Section A.8.10, *Subsurface Vapor Monitoring*
- Permit Attachment Section D.1.6.2, *Emergency Facilities at Los Alamos National Laboratory*

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8.0 CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

STEVEN A. COLEMAN (Affiliate) Digitally signed by STEVEN A. COLEMAN (Affiliate) Date: 2025.07.09 16:53:32 -06'00' 7/9/25

Steven A. Coleman Date Signed
Associate Laboratory Director
Environment, Safety, Health, and Quality
Triad National Security, LLC
Operator

Mark L Lesinski Digitally signed by Mark L Lesinski Date: 2025.07.07 14:34:02 -06'00' FOR 7/7/25

Bradley A. Smith Date Signed
President
Newport News Nuclear BWXT-Los Alamos, LLC
Operator

THEODORE WYKA Digitally signed by THEODORE WYKA Date: 2025.07.10 17:09:27 -06'00' 7/10/25

Theodore A. Wyka Date Signed
Manager
U.S. Department of Energy
National Nuclear Security Administration
Los Alamos Field Office
Owner/Operator

JESSICA KUNKLE Digitally signed by JESSICA KUNKLE Date: 2025.07.09 12:36:40 -06'00' 7/9/25

Jessica M. Kunkle Date Signed
Manager
U.S. Department of Energy
Environmental Management
Los Alamos Field Office
Owner/Operator

Appendix 1

Summary Table of Proposed Changes to the 2010 Los Alamos National Laboratory Hazardous Waste Facility Permit

Appendix 1 - Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit

Introduction

This appendix to the Part B Permit Application for Renewal of the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit (2010 Permit) summarizes the changes proposed by the United States Department of Energy (DOE) and its field offices, the National Nuclear Security Administration Los Alamos Field Office (NA-LA), the DOE-Environmental Management Los Alamos Field Office (EM-LA), along with Triad National Security, LLC (Triad), and Newport News Nuclear BWXT-Los Alamos, LLC (N3B)—collectively, the Permittees. Changes have been proposed within the following permit sections:

- Permit Table of Contents
- Permit Section 1.2, Permittees and Permitted Activity, Table 1.2.1
- Permit Section 1.4.1, Effect of this Permit on Interim Status Units
- New Permit Section 1.4.2, Integration with Consent Order
- Permit Section 1.5, Effects of Inaccuracies in Permit Application
- Permit Section 1.8, Definitions
- Permit Section 1.9.1, Duty to Comply
- Permit Section 1.9.8, Inspection and Entry
- Permit Section 1.9.12, 24 Hour and Subsequent Reporting
- Permit Section 1.9.12.1, 24 Hour Oral Report
- Permit Section 1.9.14, Other Noncompliance
- Permit Section 1.10, Information Repository
- Permit Section 1.13, Public Notification Via Electronic Mail (E-Mail)
- Permit Section 1.16, Transfer of Land Ownership
- Permit Section 1.17.2, Demolition Activities Update
- Permit Section 2.4.7, Waste Characterization Review
- Permit Section 2.5, Security
- Permit Section 2 .8, Special Requirements for Ignitable, Reactive, or Incompatible Waste
- Permit Section 2.8.1, Ignitable and Reactive Waste Precautions
- Permit Section 2.9, Waste Minimization Program
- Permit Section 2.10.2, Testing and Maintenance of Equipment
- Permit Section 2.10.5, Arrangements with Local Authorities
- Permit Section 2.11.3, Distribution
- Permit Section 2.12.2, Facility Operating Record
- Permit Section 3.5, Management of Containers

Appendix 1 - Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit

- Permit Section 3.10.2, Secondary Containment
- Permit Section 3.12.1, General Operating Conditions
- Permit Section 3.14.1, General Operating Conditions
- Permit Section 3.14.2(1), Retention Basin
- Permit Section 3.14.3, Subsurface Vapor Monitoring
- Permit Section 3.15, TA-60 Container Storage Requirements
- Permit Section 4.4, Tank Systems and Stabilization Unit Containment
- Permit Section 4.6, TA-50 Radioactive Liquid Waste Treatment Facility
- Permit Part 5, Treatment by Open Detonation
- Permit Part 6, Treatment by Open Burning
- Permit Section 9.1, Introduction
- Permit Section 9.1.1, Regulated Units
- Permit Section 9.3, Closure Requirements for Regulated Units
- Permit Section 11.1, Corrective Action Requirements Under the Consent Order
- Permit Section 11.2, Corrective Action Requirements Under the Permit
- Permit Section 11.3.1.1, Notification of Detections
- Permit Section 11.3.2, Groundwater Monitoring Reporting
- Permit Section 11.4.1.1, Groundwater Cleanup Level for Perchlorate Permit Section 11.2, Corrective Action Requirements Under the Permit
- Permit Section 11.8.6.7, Statement of Basis
- Permit Section 11.10.2.7.i, Groundwater Levels

Additionally, changes are proposed in the following Attachments to the Permit:

- Attachment A, Technical Area Unit Descriptions
- Attachment B, Part A Application
- Attachment C, Waste Analysis Plan
- Attachment D, Contingency Plan
- Attachment E, Inspection Plan
- Attachment F, Personnel Training Plan
- Attachment J, Hazardous Waste Management Units
- Attachment K, Listing of SWMUs and AOCs
- Attachment N, Figures

Appendix 1 - Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit

Necessary changes to the closure plans for the active hazardous waste management units (HWMUs) at LANL have been included in a separate appendix to the Permit Renewal Application.

The summary tables contained within this appendix detail the location of the change, depict the change or direct to the supplement document where the change is included, and provide justification for the proposed change to the Permit. Where specific changes are not included within the table, there are multiple small changes within a section that are described or the changes are too large to see clearly within the table and are more easily seen within the supplement document that contains the proposed changes. The supplemental document may also be referenced when a longer or entire section has been added, moved, or removed.

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
Permit Parts 1 – 11

Permit Section	Proposed modification	Justification
Table of Contents	Please see revised Table of Contents within Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1 – 11*.	The table of contents within the permit has been updated to include deleted sections as well as address additions for treatment units that the Permittees propose to be added to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit.
1.2, Permittees and Permitted Activity, Table 1.2.1	The Secretary of the New Mexico Environment Department issues this Permit for hazardous waste management at the Los Alamos National Laboratory (LANL) site (EPA ID Number NM 0890010515). The LANL site is broader than the Los Alamos National Laboratory. LANL is a national security laboratory and a federally funded research and development center (FFRDC). LANL is owned by the United States Department of Energy (DOE). Triad National Security, LLC (Triad), under contract with the DOE National Nuclear Security Administration (NNSA), manages and operates LANL. The LANL site, which is more than LANL, is where the execution by separate entities of distinct missions occurs. LANL executes the national security, science, and energy missions at the LANL site. Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under contract with the DOE Office of Environmental Management (DOE-EM), executes the environmental remediation mission at the LANL site. This Permit authorizes DOE, Triad, and N3B (the Permittees) to manage, store, and treat hazardous waste at the LANL site, and establishes the general and specific standards for these activities, pursuant to the HWA and the HWMR. This Permit also establishes standards for closure and post-closure care of permitted units at the LANL site pursuant to the HWA and HWMR. Triad and N3B manage and operate different permitted units (also known as "hazardous waste management units" or HWMUs) as identified below in Table 1.2.1, and detailed in Attachment J, *Hazardous Waste Management Units*, Table J-1. Triad and N3B are solely responsible for operating their respective permitted units,	The Permittees propose to update the text within the table to include the locations where macroencapsulation treatment processes were added in 2017 to the list of hazardous waste management units for units at TA-3 (macroencapsulation), TA-63 (macroencapsulation), TA-54-38 West (macroencapsulation), and TA-54 Areas G, H, and L (macroencapsulation). The Permittees also propose to update the table to remove "interim status" from TA-16, TA-36, and TA-39 open burning/open detonation units, as the Permittees propose to permit these units in the Permit Renewal Application.

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
Permit Parts 1 – 11

<table>
<tr><th>Permit Section</th><th>Proposed modification</th><th>Justification</th></tr>
<tr><td></td><td>and do not share management or operational authorities or responsibilities at these units. The Permittees have a duty to comply with this Permit and the conditions applicable to their respective permitted units identified in Table 1.2.1. Where this Permit addresses the duties or requirements of Permittees or the effects of noncompliance or Permit violations (including penalties), the duty or effect is solely on the Permittee with management or operational authority or responsibility for the permitted unit.

Table 1.2.1. List of Hazardous Waste Management Units and Co-Operators
<table>
<tr><th>Location</th><th>Type of Permitted Unit</th><th>Owner/Operator</th></tr>
<tr><td>TA-3</td><td>Storage and Treatment</td><td>DOE/Triad</td></tr>
<tr><td>TA-14</td><td>Interim Status
Open Burning/Open Detonation</td><td>DOE/Triad</td></tr>
<tr><td>TA-16</td><td>~~Interim Status~~
Open Burning</td><td>DOE/Triad</td></tr>
<tr><td>TA-36</td><td>~~Interim Status~~
Open ~~Denotation~~Detonation</td><td>DOE/Triad</td></tr>
<tr><td>TA-39</td><td>~~Interim Status~~
Open ~~Denotation~~Detonation</td><td>DOE/Triad</td></tr>
<tr><td>TA-50</td><td>Storage and Treatment</td><td>DOE/Triad</td></tr>
<tr><td>TA-55</td><td>Storage and Treatment</td><td>DOE/Triad</td></tr>
<tr><td>TA-63</td><td>Storage and Treatment</td><td>DOE/Triad</td></tr>
<tr><td>TA-54-38 West</td><td>Storage and Treatment</td><td>DOE/Triad</td></tr>
<tr><td>TA-54
Areas G, H and L</td><td>Storage, Treatment, and Disposal (Including Units Undergoing Closure)</td><td>DOE/N3B</td></tr>
<tr><td>TA-60</td><td>Storage and Treatment</td><td>DOE/Triad</td></tr>
</table></td><td></td></tr>
<tr><td>1.4.1, Effect of this Permit on Interim Status Units</td><td>1.4.1 Effect of this Permit on Interim Status Units

The Permittees have submitted a revised closure plan for~~For~~ the interim status units listed in Table J-1 that the Permittees have determined ~~do not choose to operate, the Permittees shall submit to the Department within 180 days of the effective date of this</td><td>The Permittees’ Permit Renewal Application proposes to permit the interim status units as hazardous waste management units. Closure plans for each of the remaining</td></tr>
</table>

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
Permit Parts 1 – 11

Permit Section	Proposed modification	Justification
	~~Permit either a notice of intent~~ to close ~~in accordance with a current closure plan, or a revised closure plan~~. ~~These documents shall indicate that t~~The closure of these interim status units shall be initiated in accordance with 40 CFR § 265.113(a) no later than 270 days after the approval of the individual plan~~effective date of this Permit~~. ~~For the interim status units listed in Table J-1 that the Permittees propose to permit, the Permittees shall submit to the Department 180 days of the effective date of this Permit a permit modification request in accordance with 40 CFR § 270.42 that includes all applicable information required at 40 CFR §§ 270.10, 270.11, 270.14, and 270.23 for each unit.~~	interim status hazardous waste management units have been submitted to the Department for review and approval.
New section 1.4.2, Integration with Consent Order	**1.4.2 Integration with Consent Order** **1.4.2.1 MDAs G, H, and L** The Consent Order requires ~~the Permittees~~DOE to conduct corrective action for releases of hazardous waste, hazardous waste constituents, and contaminants as defined in Section 3 of the Consent Order, at all solid waste management units (SWMUs) and Areas of Concern (AOCs) to fulfill, among other requirements, the requirements of 40 CFR § 264.101. TA-54 Material Disposal Areas (MDAs) G, H, and L, in their entirety, are undergoing corrective action under the Consent Order. The Department has determined that all corrective action for releases of hazardous waste and hazardous constituents from the "regulated units" at MDAs G, H, and L will be conducted solely under the Consent Order and not under this or any future Permit, with the exception of long-term monitoring and maintenance which will be conducted under a future modified permit. MDAs G, H, and L include land disposal units that meet the definition of regulated units as defined in 40 CFR § 264.90(a)(2). These regulated units are situated among SWMUs or AOCs. Investigations performed under the Consent Order have found that releases have occurred at MDAs G, H, and L and that both SWMUs and regulated units have likely contributed to these releases. These regulated units meet the conditions in 40 CFR §§ 264.90(f) and 264.110(c) for the use of alternative requirements under the Consent Order in place	The Permittees propose to add this section as the result of the 2017 Settlement Agreement in *U.S. v. Curry* (*see* Section 6.1 of the Permit Renewal Application). This language reflects NMED's decision that the regulated units at TA-54 MDAs G, H, and L qualify for alternative closure requirements pursuant to 40 CFR §§ 264.90(f) and 264.110(c) under the June 2016 Consent Order (Modified September 2024). The regulated units at MDAs G, H, and L are co-located with solid waste management units and areas of concern, and contaminants from these units are commingled and cannot be addressed separately. As such, these regulated units qualify for alternative closure under the Consent Order to meet the closure, groundwater monitoring, and post-closure requirements of the LANL

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
Permit Parts 1 – 11

Permit Section	Proposed modification	Justification
	of the closure, groundwater monitoring, and post-closure requirements in 40 CFR Part 264, Subparts F and G. ~~The Permittees~~DOE shall propose remedies in the Corrective Measures Evaluation Report under the Consent Order that achieve compliance with the closure performance standards at 40 CFR § 264.111. Fulfilling the requirements of the approved Corrective Measures Implementation Plan under the Consent Order shall also satisfy the requirements of 40 CFR Part 264, Subpart G. **1.4.2.2 Public Participation** Pursuant to Consent Order Section 17~~XVII~~.B, statements of basis and remedies selected by the Department under Consent Order Section 17~~XVII~~ associated with MDAs G, H, and L will follow the public participation requirements applicable to remedy selection under sections 20.4.1.900 NMAC incorporating 40 C.F.R § 270.41, 20.4.1.901 NMAC, 20.4.1.902 NMAC, and 20.1.4 NMAC. This will include a public comment period that extends for at least 60 days, and an opportunity for a public hearing on the remedy.	Hazardous Waste Facility Permit under Part 264, Subparts F and G. This section explains the change and how the work will be executed under the Consent Order. Please note that section numbers have been updated to be consistent with the Consent Order. The Permittees propose addition of this Public Participation section as the result of the Settlement Agreement in *U.S. v. Curry* (*see* Section 6.1 of the Permit Renewal Application).
1.5 Effects of Inaccuracies in Permit Application	**1.5 EFFECT OF INACCURACIES IN PERMIT APPLICATION** This Permit is based on information submitted in the Permittees' Application. The Application has numerous iterations; however, this Permit is based on: (1) the Part A Application dated ~~August 2018~~June 2025; (2) the General Part B Permit Application dated August 2003; (3) the TA-3-29 CMR Part B Application dated September 1999; (4) the TA-50 Part B Permit Application dated August 2002; (5) the TA-54 Part B Permit Application dated June 2003;	The Permittees propose to add the appropriate references to include the documents submitted in support of the open burning/open detonation units as proposed permitted units and update to the most recent Part A and B applications for the Permit Renewal Application.

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
Permit Parts 1 – 11

Permit Section	Proposed modification	Justification
	(6) the TA-55 Part B Permit Application dated September 2003; (7) the TA-63 Permit Modification Request dated August 2011; ~~and~~ (8) the TA-60 Permit Modification Request dated March 2023; (9) the Permit Modification Request for Open Detonation Units at TAs 36 and 39 (TA-36-8 & TA-39-6) dated July 2011; (10) the Permit Modification Request for an Open Burning Unit at TA-16 dated September 2013; (11) Request for Class 3 Permit Modification, Settlement Agreement Case No. 10-01251, Los Alamos National Laboratory Hazardous Waste Facility Permit, EPA I.D. #NM0890010515 dated July 2017; (12) Class 3 Permit Modification Request for 19 Corrective-Action-Complete Sites in Pueblo Canyon Aggregate Area for the Los Alamos National Laboratory Hazardous Waste Facility Permit, EPA ID No. NM0890010515 dated September 2021; and (13) the Los Alamos National Laboratory Part B Permit Application for Renewal of the LANL Hazardous Waste Facility Permit, Revision 1 dated July 2025.	
1.8, Definitions	**Consent Order** means the June 2016~~March 1, 2005~~ Compliance Order on Consent (Modified September 2024) issued to the DOE~~Permittees~~ pursuant to the HWA and the New Mexico Solid Waste Act requiring the DOE~~Permittees~~ to conduct Facility-wide investigations and cleanups of contaminants released to the environment. **Regulated Unit** means a surface impoundment, waste pile, land treatment unit, or landfill that accepted hazardous waste after July 26, 1982 (*see* 40 CFR 264.90(a)(2)). **Waste Stream** means each waste material generated from a single process or from an activity that is similar in the materials from which it was generated, similar in its	The Permittees propose to update the definition of "Consent Order" to the June 2016 Consent Order (as modified September 2024) and to add a definition of "Regulated Unit" consistent with the regulatory definition at 40 CFR § 264.90(a)(2) as a result of the settlement Agreement in *U.S. v. Curry* (*see* Section 6.1).

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
Permit Parts 1 – 11

Permit Section	Proposed modification	Justification
	physical form and hazardous constituents, and distinguishable from other wastes by EPA Hazardous Waste Numbers or~~and~~ Land Disposal Restriction (LDR) status.	Propose to update the definition of "Waste Stream" to correct a typographical error.
1.9.1, Duty to Comply	The Permittees shall comply with all applicable conditions in this Permit except to the extent and for the duration such noncompliance is authorized in a temporary emergency permit pursuant to 40 CFR § 270.61. Any Permit noncompliance, except under the terms of an emergency permit, constitutes a violation of the HWA and RCRA and is grounds for enforcement or other Department action and may subject the Permittees to an administrative or civil enforcement action, including civil penalties and injunctive relief, as provided in Permit Sections 1.2 and 1.9.2, or permit modification, suspension, termination, or revocation, or denial of a permit application or modification request under § 74-4-4.2 of the HWA and 40 CFR §§ 270.41 and 270.43. ~~No delegation or assignment of the Permittees' responsibilities under this permit can be made to any person or entity, including a separately organized agency, without the expressed permission of the Department; this prohibition does not preclude the Permittees' use of contractors for remediation.~~ ~~The Permittees shall not allow any person or entity which currently exists or may be created, including a separately organized agency, to interfere with the performance of their obligations or responsibilities under this Permit.~~	The Permittees propose deletion of language from Section 1.9.1, Duty to Comply, as the result of the Settlement Agreement in *U.S. v. Curry* (*see* Section 6.1).
1.9.8, Inspection and Entry	(4) have access to, and copy, at reasonable times, any records that must be kept; and (5) sample or monitor, for the purposes of ensuring Permit compliance or as otherwise authorized by the HWA or RCRA, any substances or parameters at any location. (*see* 40 CFR § 270.30(i))	The Permittees propose minor changes to this section to reflect the regulatory requirement under 40 CFR 270.30(i) which expressly includes the requirement to allow NMED to access "and copy, at reasonable times any records that must be kept under conditions of the permit". The additional change

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
Permit Parts 1 – 11

Permit Section	Proposed modification	Justification
	In the event that the Permittees are~~entry, access, or the ability to photograph or sample is~~ not able to immediately provide inspection and entry as identified above in Permit Section 1.9.8(1) through (5) ~~available~~ due to security or safety restrictions, the Permittees shall provide needed inspection and entry~~, photographs, or samples~~ as soon as reasonably possible.	clarifies that if entry and inspection requirements cannot be met due to security or safety concerns, the requirements will be met as soon as possible.
1.9.12, 24 Hour and Subsequent Reporting	The Permittees shall report to the Department, both orally and in writing, any noncompliance that may endanger human health or the environment, ~~and~~ any incident that requires implementation of Attachment D (*Contingency Plan*) (*see* 40 CFR § 270.30(l)(6)), or any unexpected event as described in Permit Section 5.4(1) or 6.4(1). This report shall be submitted in accordance with Permit Sections 1.9.12.1 and 1.9.12.2.	Added references to thermal treatment sections for completeness.
1.9.12.1, 24 Hour Oral Report	(3) any information of a ~~-~~release or discharge of hazardous waste or hazardous waste constituents, or of a fire or explosion at a permitted unit, which may threaten the environment or human health ~~inside or~~ outside the permitted unit (*see* 40 CFR § 270.30(l)(6)(i)(b)).	Removal of text to be consistent with regulations cited.
1.9.14, Other Noncompliance	The Permittees shall report all instances of noncompliance not reported under Permit Section 1.9.11. This report shall be submitted to the Department annually by December 15~~1~~ for the year ending the previous September 30. These reports shall contain the information listed in Permit Section 1.9.12.2 and 40 CFR § 270.30(1)(10), which is incorporated herein by reference. The Permittees shall notify the Department in writing if there were no instances of noncompliance during the reporting period. This notice shall be submitted to the Department by December 15~~1~~ for the year ending the previous September 30.	The Permittees request that this deliverable due date be moved from December 1 to December 15 of each year to facilitate compliance and implementation due to Laboratory operations. There are several reasons to support this minor change. The first is because the Laboratory "data calls" for information cannot be finalized until September 30 of each year due to the nature of the Laboratory's

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		reporting system. It is difficult to provide reports by December 1st because this provides only 61 days for the Permittees to gather, draft, finalize the data, complete security review, and finalize the submittal. Additionally, the Thanksgiving holiday at the very end of the drafting and finalization window (e.g., the last weekend in November) results in complications for timely submittal to the NMED and subsequent addition to the Information Repository.
1.10, Information Repository	(10) public notice in area newspapers, including the *Santa Fe New Mexican*, the ~~*Journal North*~~ *Albuquerque Journal*, the *Rio Grande Sun*, the *Taos News*, and the *Los Alamos Daily Post* when the IR becomes operational; -and- The Permittees shall conduct annual training to inform inexperienced computer users of how they can access and utilize the electronic IR. The Permittees shall inform the public of this training at least 30 days prior to the training by methods specified in Permit Section 1.10(9) through (11). The Permittees shall document the training content and all efforts to inform the public in the Facility Operating Record.	The Permittees propose the removal of "Journal North" as this paper is no longer applicable, and the addition of the words "at least" to accommodate timing of public notices published in multiple newspapers and mailed for which the date cannot be coordinated to be exactly 30 days.
1.13, Public Notification Via Electronic Mail (E-Mail)	The Permittees shall notify individuals by e-mail of submittals as specified in this Permit. The Permittees shall maintain a list of individuals who have requested e-mail notification and send such notices to persons on that list. The notice shall be sent within fifteen~~seven~~ days of the submittal date and shall include a direct link to the specific document to which it relates.	The Permittees request a change from seven days to fifteen days to submit the notice to align more closely with the timing of placement of documents in the information repository. In addition, the seven-day requirement has unnecessarily created an administrative burden

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		for the Permittee with very little (or no) additional benefit. Please see Section 6.3 of the Permit Renewal Application for further description.
1.16, Transfer of Land Ownership	The provisions of this Permit Section shall apply to any transfer in fee of Facility property subject to the requirements of this Permit to another entity. ~~This Section does not apply to Facility property subject to requirements of Section III.Y of the Consent Order.~~	The Permittees propose to revise this section to reflect that there is not a section regarding land transfer within the Consent Order.
1.17.2, Demolition Activities Update	**1.17.2 Demolition Activities Update** On or before ~~the last day of each quarter (December 31,~~ March ~~30~~31~~, June 30, and September 30)~~every year, the Permittees shall update the list to include any additional buildings and fixed structures that may contain hazardous material scheduled for demolition, or shall notify the Department in writing that no such additional demolitions have been scheduled. In the event a demolition project is identified after the previous notice due date, but will occur prior to the next notice due date, Permittees shall submit a supplemental notice conforming to Section 1.17.1 not less than 30 days prior to demolition.	The Permittees propose a change to frequency of reporting for demolition activities that would include only a single update to the annual report, due September 30 every year. The proposed change reduces the administrative reporting and review burden on Permittees and the Department while at the same time ensuring adequate notice is provided. Based on experience over the last several years, a twice per year reporting requirement will capture the majority of demolition projects. The supplemental notice provision captures any "in between" projects. Please see Section 6.3 of the Permit Renewal Application for further description.
2.4.7, Waste Characterization Review	(4) Recharacterize a hazardous waste stream whenever the Permittees are notified by a receiving off-site facility that the characterization of a hazardous waste they obtained from the Permittees' Facility does not match a pre-approved waste analysis certification or accompanying waste manifest or shipping paper. The Permittees shall notify the Department in writing within	The Permittees propose to adjust the notification requirement from three days to fifteen days to account for the communication time between the off-site facility and the Facility and to account for the time

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	fifteen~~three~~ days of their receipt of the notice of the discrepancy from a receiving facility.	to process the waste discrepancy notice and to align better with the regulatory requirement for notification. Please see Section 6.3 of the Permit Renewal Application for further discussion of this change.
2.5, Security	The Permittees shall maintain and ensure the effectiveness of all security fences, entry gates, and entry stations surrounding the permitted units as specified in Figures 4 through ~~10 and 55~~14 in Attachment N (*Figures)*.	The Permittees propose a figure update.
2.8, Special Requirements for Ignitable, Reactive, or Incompatible Waste	The Permittees shall ensure that containers holding ignitable or reactive wastes are located at least 15 meters from the facility boundary defined as the technical area (TA) specific ~~boundary~~ boundaries identified in Figure~~s 11, 22, 24, and 38~~ 2 in Permit Attachment N (*Figures*). At TA-63, the Permittees shall ensure that containers holding ignitable or reactive waste are located at least 15 meters from the Transuranic Waste Facility (TWF) fence line, as shown in Figure 14~~55~~ in Permit ~~attachment~~Attachment N (*Figures*) (*see* 40 CFR §§ 264.176 and 270.32(b)(2)).	The Permittees propose to modify language to be grammatically correct when referring to multiple technical area boundaries. Also, note that figure number updates are consolidated in a separate table of this appendix for completeness.
2.8.1, Ignitable and Reactive Waste Precautions	(4) use only non-sparking tools or non-sparking processes when managing hazardous waste containers that contain ignitable or reactive wastes; (8) stack containers of ignitable and reactive wastes no more than 2 drums high to comply with the National Fire Protection Association's (NFPA) *Flammable and Combustible Liquids Code*; ~~and~~ (9) ensure that each permitted unit's fire suppression system is compatible with the hazardous waste being stored or treated at the permitted unit or that any waste containers stored within a unit that may hold waste incompatible with a fire suppression system discharge are stored in a manner that will prevent contact with fire suppression system discharges; and (10) ensure "No Smoking" signs are conspicuously placed prior to entry at a permitted unit.	The Permittees propose the addition of "non-sparking processes" to the requirements for the use of non-sparking tools in order to provide flexibility that has been required in the past to safely plan for and conduct the work based on the circumstances present at the time the work is conducted and on the tools and processes available. The Permittees also propose addition of language for safety and to prevent potential contact of incompatible fire suppression

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		discharge with waste containers as is the practice at the facility at this time. Lastly, the Permittees propose addition of language to include a requirement from the regulations at 40 CFR § 264.17 for completeness.
2.9, Waste Minimization Program	The Permittees shall submit to the Department a report regarding progress made in the waste minimization program in the previous year. The report shall address items (1)-(8) above, shall show changes from the previous report, and shall be submitted annually by December 15~~1~~ for the year ending the previous September 30.	The Permittees request that the submittal date change from December 1st to the 15th. Data calls for information cannot be finalized until September 30 of each year due to the nature of the report. This provides only 61 days for data gathering, drafting, finalizing, security review, and submittal. Additionally, the Thanksgiving holiday at the very end of the drafting and finalization window (e.g., the last weekend in November) results in complications for timely submittal to the NMED and subsequent addition to the LANL Information Repository.
2.10.2 Testing and Maintenance of Equipment	If testing or inspections identify any missing or nonfunctioning communication equipment, alarm system, fire protection component, spill control, or decontamination equipment, the Permittees shall ensure it is promptly repaired or mitigated, provide substitute equipment, or provide other functionally equivalent measures and/or equipment (e.g., placement of fire watch and use of fire extinguishers, or limiting operations in the immediate area)~~provide substitute equipment~~. If applicable, the~~The~~ Permittees shall ensure that employees and	The Permittees propose minor changes to allow for the use of functionally equivalent equipment and/or measures until such time as the equipment is returned to normal operating conditions, rather than the options currently included. Functionally equivalent equipment

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	contractors working in the area are notified of the presence of substitute equipment and, if necessary, provide them with training in its use (*see* 40 CFR § 270.32(b)(2)). The Permittees shall document in the Facility Operating Record instances of such notifications and trainings. The Permittees shall ensure that malfunctioning equipment is clearly marked as out of use and that the location of the substitute or functionally equivalent equipment and/or measures are ~~is~~ clearly posted on or adjacent to the faulty equipment or that such equipment/measures are communicated to any personnel working within the area (*see* 40 CFR §§ 264.31 and 270.32(b)(2)).	and/or measures could include (but aren't limited to) fire watch and use of fire extinguishers or limiting operations in the immediate area. The proposed change will allow the Permittees to exercise multiple options that are functionally equivalent to the existing emergency equipment or system when it is found to be out of service or requires maintenance and/or replacement and ensures safety and compliance with permit.
2.10.5, Arrangements with Local Authorities	The Permittees shall provide the Chief of the Los Alamos Fire Department (LAFD) with information that would ensure that emergency response personnel are at all times familiar with the potential hazards in performing their duties associated with the hazardous wastes at ~~LANL's~~the permitted hazardous waste management units. This information shall be specific to each permitted unit and at a minimum include:	The Permittees propose a minor changed to the language to clarify applicability of the section.
2.11.3, Distribution	The Permittees shall also distribute copies of the current Contingency Plan to the State of New Mexico's Department of Homeland Security and Emergency Management (DHSEM) ~~Area 3 Emergency~~Local Preparedness Coordinator.	The Permittees propose an update to the applicable position at the Department of Homeland Security and Emergency Management.
2.12.2, Facility Operating Record	(11) if applicable, for hazardous wastes left in the ground after closure (*i.e.,* disposal units), the information required of a treatment facility under 40 CFR § 268.7(c~~b~~), which is incorporated herein by reference;	The Permittees propose correction of a typographical error to track the correct regulatory citation.
3.5, Management of Containers	(2) The Permittees shall establish and maintain lines of demarcation which identify the boundaries of all permitted CSUs. The line may be identified by paint, tape, signs, or other permanent, visible marking on the floor or base material (*see* 40 CFR § 270.32(b)(2)). Permanent fences marking the unit	The Permittees propose to include signs to be used as lines of demarcation for hazardous waste management units.

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	boundary, or rooms or buildings whose walls constitute the boundary of the permitted units, satisfy this requirement.	
3.10.2, Secondary Containment	~~**3.10.2 Secondary Containment**~~ ~~The Permittees shall paint the floors in Rooms 9010, 9020, and 9030 within the TA-3-29 permitted unit with an epoxy sealant. The sealant must be maintained in accordance with Permit Section 3.7.1 of this Part and the manufacturer's specifications.~~	The Permittees propose to remove this permit condition because containers with free liquids stored within the hazardous waste management unit at TA-3-29 are managed on secondary containment pallets as allowed for in Permit Section 3.7, *Containment Systems*. The requirement to paint and maintain floors in these specific rooms at TA-3-29 with an epoxy sealant is an unnecessary requirement because the epoxy coats the floor and although chemical-resistant, this material is not designed to operate as secondary containment per the requirements of 40 CFR § 264.175. The Permittees maintain the epoxy flooring as part of general facility management; however, secondary containment requirements are met through storage of free liquids on secondary containment pallets.
3.12.1, General Operating Conditions	(2) The Permittees shall ensure that at Area G, all containers storing hazardous waste with free liquids are stored on secondary containment pallets, except inside the following structures: Dome~~s~~ 230, and Sheds 144, 145, 146, 177, 1027, 1028, 1030~~1029~~, and 1041.	The Permittees propose correction of a typographical error.
3.14.2(1), Retention Basin	The Permittees shall control run-on and run-off as specified in Permit Attachment A, Section A.8.9~~6.9.~~, *Control of Run-on/Run-off*. Run-off collected in the retention	The Permittees propose an update to Permit Attachment section.

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	basin shall be evaluated before discharge. If the run-off is known to be or potentially contaminated with hazardous waste constituents from a spill, leak, or other release, it shall be sampled.	
3.14.3, Subsurface Vapor Monitoring	Please see Permit Section 3.14.3 of Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1 – 11*.	The Permittees propose an update to the requirements for monitoring and reporting soil vapor concentrations at the Technical Area 63, Transuranic Waste Facility to better align with current practices and appropriate reporting based on the data that has been collected to-date. Additionally, the Permittees propose an update to the frequency of sampling and the due date of the associated written report to allow for more stable coordination of document finalization. Also, note that figure number updates are consolidated in a separate table of this appendix for completeness. The Permittees also propose to correct the reference to the Consent Order.
3.15, TA-60 Container Storage Requirements	Moved sections with no changes to text.	Moved section below table for Permit Section 3.14.3 for completeness.
4.4, Tank Systems and Stabilization Unit Containment	(1) The Permittees shall ensure that the tank and stabilization units have an associated secondary containment system that conforms to the requirements specified at 40 CFR § 264.193, which is incorporated herein by reference. The Permittees shall consider the walls and floor of the entire room~~Room 401~~	The Permittees propose this change to clarify the secondary containment.

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	as the secondary containment system for the storage tank and the stabilization units.	
4.6, TA-50 Radioactive Liquid Waste Treatment Facility	~~**4.6 TA-50 RADIOACTIVE LIQUID WASTE TREATMENT FACILITY**~~ ~~The Permittees shall discharge all treated wastewater from the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF) through the outfall permitted under Section 402 of the federal Clean Water Act, or as otherwise authorized by the terms of an applicable Clean Water Act permit that regulates the treatment and use of wastewater. If the Permittees intentionally discharge through a location other than the permitted outfall or as otherwise authorized, they will fail to comply with this requirement, and as a consequence the wastewater treatment unit exemption under 40 CFR § 264.1(g)(6) will no longer apply to the RLWTF. The Permittees shall not accept listed hazardous wastes as specified at 40 CFR Part 261 Subpart D at the RLWTF.~~	The Permittees propose this section be removed as the result of the Settlement Agreement in *U.S. v. Curry* (*see* Section 6.1 of the Permit Renewal Application).
5, Treatment by Open Detonation	Please see Permit Part 5 of Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1 – 11*.	The Permittees propose the addition of Permit Part 5 to incorporate permitted operations for open detonation treatment at two units at LANL. Application requirements for these units are included and described in Section 4 of this Permit Renewal Application.
6, Treatment by Open Burning	Please see Permit Part 6 of Supplement 1-1, *Permittees' Proposed Changes to Permit Parts 1 – 11*.	The Permittees propose the addition of Permit Part 6 to incorporate permitted operations for an open burning treatment unit at LANL. Application requirements for this unit are included and described in Section 5 of this Permit Renewal Application.

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9.1, Introduction	(1) regulated units; ~~(*i.e.*, material disposal areas G, H, L);~~	The Permittees propose to remove the reference to material disposal areas G, H, and L per the Settlement Agreement in U.S. v. Curry (*see* Section 6.1 of the Permit Renewal Application).
9.1.1, Regulated Units	The closure requirements for regulated units within MDAs G, H, and L shall be addressed under the Consent Order (*see* Permit Section 1.4.2.1)~~not accept hazardous or mixed waste and shall undergo closure. The Permittees shall adhere to the closure performance standards in Permit Section 9.2 and the closure requirements in Permit Sections 9.3 and 9.5 for the closure of these units~~. .	The Permittees propose to add language requiring closure requirements for regulated units with MDAs G, H, and L to be addressed under the Consent Order per the Settlement Agreement in *U.S. v. Curry* (*see* Section 6.1 of the Permit Renewal Application).
9.3, Closure Requirements for Regulated Units	**9.3 RESERVED~~CLOSURE REQUIREMENTS FOR REGULATED UNITS~~** ~~Closure of the regulated units must meet the corrective action requirements of the March 1, 2005 Compliance Order on Consent (Consent Order). The Consent Order is an enforceable document that sets forth alternative closure requirements in accordance with 40 CFR § 264.110(c). The Permittees shall propose remedies in the Corrective Measures Evaluation Report under the Consent Order that achieve compliance with the closure performance standards at 40 CFR § 264.111. Fulfilling the requirements of the approved Corrective Measures Implementation Plan under the Consent Order shall also satisfy the requirements of 40 CFR Part 264, Subpart G.~~	The Permittees propose that this section be changed to "Reserved" per the Settlement Agreement in *U.S. v. Curry* (*see* Section 6.1 of the Permit Renewal Application).
11.1, Corrective Action Requirements Under the Consent Order	The Department and the Permittees have agreed to a Compliance Order on Consent (Consent Order) ~~dated March 1, 2005~~modified September 2024, which requires the ~~Permittees~~DOE to conduct corrective action at all solid waste management units (SWMUs) and Areas of Concern (AOCs), at the Facility to fulfill the requirements of 40 CFR § 264.101.	The Permittees propose to update the reference to the 2016 Consent Order.

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11.2, Corrective Action Requirements Under the Permit	The Permittees shall conduct corrective action under this Permit (or other enforceable document) rather than under the Consent Order, in the following circumstances: (1) new releases and newly discovered releases of hazardous waste or hazardous constituents from hazardous waste management units at the Facility; (2) the closure and post-closure care requirements of 40 CFR Part 264, Subpart G, as they apply to hazardous waste management units at the Facility; (3) implementation of the controls, including long-term monitoring, for any SWMUs or AOCs listed in the Permit in~~on~~ Attachment K (*Listing of SWMUs and AOCs*), Table K-2 (*Corrective Action Complete with Controls*); ~~and~~ (4) any corrective action conducted under this Part (11) to address releases of hazardous waste or hazardous constituents that occur or are discovered after the date on which the Consent Order terminates; and (5) newly created SWMUs and AOCs from non-permitted operations. (*see* § 7.A~~III.W.1~~ of the Consent Order)	The Permittees propose to revise this section to add bullet number 5, which will make the permit language consistent with Section VII of the 2016 Consent Order.
11.3.1.1, Notification of Detections	~~(4) Detection of perchlorate in a spring or screened interval of a well at a concentration of 2 µg/L or greater if perchlorate at such concentration has not previously been detected in the spring or screened interval;~~ (~~5~~4) Detection of a hazardous constituent that is a metal or other inorganic compound in a spring or screened interval of a well at a concentration that exceeds two times the background level for the third consecutive sampling of the spring or screened interval; and (~~6~~5) Detection of a hazardous constituent in a spring or screened interval of a well at a concentration that exceeds one-half the cleanup level established in Permit Section 11.4.1 and that has increased for the third consecutive sampling of that spring or screened interval.	The Permittees propose deletion of the notification requirement for perchlorate language that was included per the 2005 Consent Order and is no longer included in the Consent Order. Renumbering of the remainder of the section is included as part of this proposed change.

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11.3.2, Groundwater Monitoring Reporting	The Permittees shall propose a schedule for such reporting to the Department for approval. Such reporting shall be coordinated with, and may be combined with, the reporting conducted under § ~~IV.A.6~~12 of the Consent Order.	The Permittees propose to revise this section to update the section regarding groundwater monitoring reporting in the Consent Order.
11.4.1.1, Groundwater Cleanup Level for Perchlorate	~~**11.4.1.1 Groundwater Cleanup Level for Perchlorate**~~ ~~If, during the term of this Permit, the WQCC adopts a groundwater quality standard for perchlorate, or EPA or the EIB adopts an MCL for perchlorate, such standard or MCL shall be the cleanup level in accordance with Permit Section 11.4.1. If perchlorate is detected, the Permittees shall evaluate the nature and extent of the perchlorate contamination. In the absence of a groundwater quality standard or MCL, if perchlorate is detected at concentrations at or greater than 4 µg/L, then the cleanup level shall be established using a HI of 1.0 in accordance with Permit Section 11.4.1 above.~~	The Permittees propose to remove the perchlorate language that was included per the 2005 Consent Order and is no longer included in the Consent Order.
11.8.6.7, Statement of Basis	Upon approval of the Corrective Measures Evaluation Report, the Department will select a remedy or remedies for the unit. The Department may, consistent with EPA's RCRA Corrective Action Plan, OSWER Directive 9902.3-2A (May 1994), choose a different remedy from that recommended by the Permittees. The Department will issue a Statement of Basis for selection of the remedy, and will receive public comment on the remedy. The Statement of Basis shall describe the basis for the Department's selection of a remedy, and the Statement of Basis shall be sufficiently detailed for Permittees and the public to understand and comment on the Department's recommended decision on the remedy, and the studies and conclusions leading up to the decision on the remedy. The public comment period will extend for at least 45 days from the date of the public notice of the Statement of Basis. The Department will provide an opportunity for a public hearing on the remedy, at which all interested persons will be given a reasonable chance to submit data, views or arguments orally or in writing and to examine witnesses testifying at the hearing. The comment period will automatically be extended to the close of the public hearing. The public hearing will follow the hearing requirements under section 20.4.1.901.F NMAC. The Department will select a final remedy and issue a response to public comments to all commenters, after the end of the public comment	

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	period. In selecting a remedy, the Department will follow the public participation requirements applicable to remedy selection under 40 CFR §§ 270.41 through 270.42 and 20.4.1.901 NMAC. The Department's decision on the final remedy or remedies shall follow the requirements under section 20.4.1.901 NMAC, Secretary's Decision. The Department will issue a response to public comments at the time of the Department's final decision. Permittees may appeal the Department's decision as provided by law.	
11.10.2.7.i, Groundwater Levels	Groundwater levels shall be measured in all wells at the facility (or the number of wells otherwise specified in a Department approved groundwater monitoring work plan) within 21~~14~~ days of the commencement of the monitoring activities. The Permittees shall conduct periodic measuring events, the schedule for which shall be provided in the groundwater monitoring work plans.	The Permittees propose to change this section based on the findings of the first triennial review for which the final report was issued on September 14, 2018, in accordance with the January 2016 Settlement Agreement and Stipulated Final Order. The Permittees propose the change to align with the LANL Interim Facility-wide Groundwater Monitoring Plan.

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Attachment A

Permit Attachment A has been modified to include proposed text changes as follows: (1) update section numbering and references to accommodate the proposed addition of open burning and open detonation units; (2) correct typographical errors within Permit Attachment A, including correction of the title of the attachment; (3) format headings and section numbering consistency; (4) remove redundant information that may be inconsistent or that may not be complete when compared to the other instances within the 2010 Permit; (5) update the description of security and access at Technical Area 50; (6) update the descriptions of the hazardous waste management units at Technical Area 55; and (7) conduct technical editing to formatting and consistency of unit references and other changes that are grammatical in nature and do not make technical changes to the document.

Permit Attachment Section	**Proposed modification**	**Justification**
Title of Attachment	**ATTACHMENT A** **TECHNICAL AREA ~~(TA) -~~ UNIT DESCRIPTIONS**	The Permittees propose correction of a typographical error. All of the mentions within Parts 1-11 of the Permit include the name as proposed.
Table of Contents	Please see revised Table of Contents within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The table of contents within the attachment has been updated to incorporate the changes within this attachment to the 2010 Permit.
Throughout document	Heading formatting and leveling have been updated to be consistent throughout the document. Formatting and other grammatical edits have been made for consistency. These changes do not make technical changes to the document. Revisions are included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	Permittees propose changes to improve the quality of the document and correct inconsistencies. Technical edits proposed are all reflected in the redline document, but may not be specifically highlighted in this table because formatting changes are difficult to highlight in table format.
Attachment A Introduction Paragraph	This attachment contains Technical Area (TA) ~~-~~specific unit descriptions, including the dimensions, materials of construction, and security procedures~~, and emergency equipment~~ of each unit provided by the Permittees in their permit application. Emergency equipment formerly described within this permit attachment is included and update in Permit Attachment D, Contingency Plan, Tables D-3 through D-16.	Permittees propose to remove "emergency equipment" language from this section. Emergency equipment is included within Permit Attachment D, *Contingency Plan that* is more concise and directive than the deletions proposed to the plan.

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A.1.2, Security and Access	~~Bilingual (*i.e.*, English and Spanish) warning signs are also posted at the entrances to each portion of the permitted unit within the building and can be seen from any approach to these locations. The legends on the signs indicate "Danger: Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." The signs are legible from a distance of at least 25 ft.~~	Permittees propose the removal of a duplicative permit condition that is included within Permit Section 2.5.1, *Warning Signs*. This language is deleted so that the requirement is included in only one area of the Permit.
A.1.3, Emergency Equipment	The Permittees propose this section for deletion. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	Permittees propose the removal of a duplication within the Permit. A listing of emergency equipment is included within Permit Attachment D, *Contingency Plan that* is more concise and directive than the deletions proposed to the plan.
A.2, TA-16 and Subsections	The Permittees propose to include the Technical Area-specific unit descriptions, including the dimensions, materials of construction, and security procedures for the open burning unit at Technical Area 16. Subsections include A.2.1 and A.2.2. Please see the revisions included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose these additions to incorporate the operations for an open burning treatment at LANL. Application requirements for this unit are described or included in Section 5 of this Permit Renewal Application.
A.3, TA-36 and Subsections	The Permittees propose to include the Technical Area-specific unit descriptions, including the dimensions, materials of construction, and security procedures for the open detonation unit at Technical Area 36. Subsections include A.3.1 and A.3.2. Please see the revisions included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose these additions to incorporate the operations for an open detonation treatment unit at TA-36 at LANL. Application requirements for these units are described or included in Section 4 of this Permit Renewal Application.

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A.4, TA-39 and Subsections	The Permittees propose to include the Technical Area-specific unit descriptions, including the dimensions, materials of construction, and security procedures for the open detonation unit at Technical Area 39. Subsections include A.4.1 and A.4.2. Please see the revisions included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	These additions have been proposed by the Permittees to incorporate the operations for an open detonation treatment unit at TA-39 at LANL. Application requirements for these units are described or included in Section 4 of this Permit Renewal Application.
Throughout remaining Attachment	Renumbered sections are reflected in the document included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	Permittees propose the changes because of the added sections.
A.5, TA-50 and A.5.2, TA-50-69 Outdoor Permitted Unit	Moved descriptive text from renumbered Section A.5.2, TA-50-69 Outdoor Permitted Unit. Changes are reflected in the document included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose correction of a typographical error in a road name at the beginning of the section. The Permittees propose the move because the descriptions of the unit are most appropriate within Section A.5, TA-50, not in a section associated with the TA-50-69 Outdoor Permitted Unit.

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
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Permit Attachment Section	Proposed modification	Justification
A.5.3, Security and Access	~~Bilingual (*i.e.*, English and Spanish) warning signs are posted on the fences at approximately 50 to 75 foot intervals. Warning signs are also posted at the entrances to each area that will manage hazardous and mixed waste and are visible from any approach to these areas. The legends on the posted signs indicate "Danger Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." Existing signs with a legend other than "Danger-Unauthorized Persons Keep Out" may be used if the legend on the sign indicates that only authorized personnel are allowed to enter the active portion, and that entry into the active portion can be dangerous. The signs are legible from a distance of 25 ft. Additionally, signs are posted at the entrance to each hazardous and mixed waste permitted unit to address requirements associated with entering and working in the area.~~	Permittees propose the removal of a duplicative permit condition that is included within Permit Section 2.5.1, *Warning Signs*. This language is being deleted so that the requirement is included in only one area of the Permit.

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A.5.3, Security and Access	~~There are four entry gates into TA-50. Two entry gates are located north of TA-50-1. During normal business hours, the easternmost of these two gates may remain open to receive deliveries. After normal business hours, this gate is padlocked. The westernmost of these two gates is the main access gate and remains open during normal business hours for personal and government-owned passenger vehicles. After normal business hours, access through this gate is by badge-reader only. The third gate~~ There is a fire access and shipping gate which is located west of TA-50-69 and is routinely kept closed and locked. When this gate is opened for shipments of materials or waste, facility personnel are present in the yard west of TA-50-69 to limit entry by unauthorized persons. When shipments are completed, the gate is re-closed and locked. Bollards prevent vehicle access to the area on both the north and south sides of Building 50-69. ~~A fourth gate to the south of TA-50-1 is locked except when authorized access is necessary.~~ ~~TA-50-69 is located in the southwest quadrant of TA-50. The TA-50-69 Indoor unit was constructed in 1979 to house the Waste Characterization, Reduction, and Repackaging Facility (WCRRF). The primary purpose of WCRRF was to size reduce and repackage large transuranic contaminated metallic items (*e.g.*, glove boxes, process equipment) into standard sized containers for transport to, and disposal at, the Waste Isolation Pilot Plant. The facility was first used to size reduce mixed transuranic waste in 1982. The original function of the WCRRF has since been expanded to include other activities related to hazardous and mixed waste management including waste characterization, transuranic and mixed transuranic waste prohibited item disposition and repackaging operations, and experimental process demonstration support.~~ ~~TA-50-69 is a single-story building constructed in two phases. The original structure (45ft by 52 ft) was built in 1979 to house the main process room (Room 102) and personnel change rooms. An unloading area (Room 103), a vehicle airlock entrance (Room 104), and a mezzanine over the western third of the main process room were added to the building in 1986.~~ ~~The exterior walls of TA-50-69 are load-bearing and constructed of structural steel framing with a plastic veneer finish on polystyrene insulation and gypsum wallboard. The interior walls are similarly constructed. The epoxy-painted floor of the building is a reinforced concrete slab on compacted fill.~~	Permittees propose the changes to the description of security and access at the TA-50 permitted units because the other information that was previously included in the applications that were drafted in the 1990s included additional units at TA-50 that made the additional discussion of fences and gate necessary. The information in this section is no longer relevant because of changes made to the configuration of TA-50. The information is also extraneous and does not need to be included as part of the Permit. The Permittees also propose to remove “emergency equipment” language from this section. The emergency equipment information is included within the Contingency Plan, Permit Attachment D, which is more concise and directive compared to the language proposed to be deleted from this section.

	~~A forklift or other manual, mechanical, and hydraulic drum handling equipment will be used to move containers stored at the permitted units at TA-50-69. Fiberglass-reinforced plywood boxes, oversized containers, and palletized drums will be handled with a forklift equipped with tines or other types of mechanical or hydraulic drum handling equipment. Individual drums of waste will be manipulated with a drum-grapple attachment on the forklift or other manual, mechanical, and hydraulic drum handling equipment. Small containers may be handled manually or with a dolly. Inside TA-50-69 two cranes are available to move heavy objects.~~ TA-50 is patrolled by security personnel during non-operational hours to ensure that unauthorized entry has not occurred. The locations of the security fences and entry gates at TA-50 are shown on Figure ~~6~~8 in Permit Attachment N (*Figures*). TA-50-69 access is controlled through a centralized Operations Center located in TA-50-84. The Indoor permitted unit is always locked and access is gained by a badge reader. Doors to the building and transportainers are locked. Keys to these doors are distributed to designated personnel only. A chain is installed at the east end of the operations area and adjacent to TA-50-84 and is posted with the bilingual hazardous waste sign. ~~All personnel involved in waste management activities at the TA-50-69 indoor and outdoor permitted units have immediate access to an internal alarm or emergency communication device. In the event of an emergency, this communication equipment allows personnel to contact the operating group management, the Emergency Management and Response personnel, or the Central Alarm Station operator.~~ ~~TA-50-69 is equipped with an audible alarm system to alert personnel to evacuate the area. The alarm system may be activated by one of the fire alarm pull stations located throughout the building. Personnel can also use phones to summon assistance from local emergency response teams in case of an emergency. Personnel may carry pagers, two-way radios, or cellular telephones so they can contact, or be contacted by, on-site and the Facility emergency support personnel at all times.~~ ~~TA-50-69 is equipped with fire extinguishers and fire suppression systems. Depending on the size of a fire and the fuel source, fire extinguishers may be used by on-site personnel. However, the Facility policy encourages immediate~~	

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	~~evacuation of the area and notification of appropriate emergency personnel. The fire alarm control panel continuously monitors all fire suppression and detection systems and transmits signals to the Los Alamos County Fire Department through the Facility's central alarm system.~~ ~~A fire hydrant installed according to National Fire Protection Association standards is located approximately 55 feet west of TA-50-69. Water is supplied to the fire hydrant by a municipal water system through eight inch pipes at an adequate volume and pressure (*i.e.*, 200 gallons per minute and 90 pounds per square inch static pressure) to supply a water hose in the event of a fire.~~ ~~TA-50-69 has an automatic wet-pipe sprinkler system in the main building and in the large glove box enclosure. The sprinkler system is heat-activated at 100°C (212°F). The TA-50-69 Outdoor permitted unit transportainers and weather protective structures are not equipped with automatic sprinkler systems; however, a fire extinguisher is located within 20 feet of the unit. Personnel may use the fire alarm pull station at TA-50-69 in the event of a fire at both the indoor and the outdoor permitted units.~~ ~~Two spill centers are located in TA-50-69 Room 102. They contain spill control equipment, personal protective equipment, and sorbents. Trained personnel may use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk. Depending on the size and severity of the spill, EM&R provides additional spill control equipment and assistance upon request. Available personnel decontamination equipment includes safety showers and eye wash stations located in the TA-50-69 indoor permitted unit.~~	

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A.5.3, Security and Access	The Permittees' proposed deletions to the end of this section are associated with emergency equipment and procedures. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	Permittees propose the removal of duplication within the Permit. A listing of emergency equipment is included within Permit Attachment D, *Contingency Plan*, that is more concise and the deletion removes duplication of emergency procedures.
A.6, TA-54	Waste containers are transported to the permitted units at Areas L, G, and West by flatbed trucks, closed-box trucks, or trailers. The permitted units have design features that promote safe unloading and handling of waste containers from these trucks and trailers. Ramps are typically located at vehicle entrances to the dome structures at the Area L and Area G permitted units. Shed 31 at Area L and Shed 8 at Area G have sloped entryways for container-handling equipment. The storage domes have roll-up or roll-away vehicle access doors. The loading dock at TA-54 West allows access from the transport vehicles to the loading dock platform. ~~These design features facilitate safe handling of containers in and out of the permitted units.~~	Permittees propose the removal of a duplicative sentence within this section.
A.6.1.3, Area L, Storage Shed 31	~~The total capacity of the three sumps is approximately 285 gallons, which exceeds the amount necessary to hold 10% of the total storage capacity of the shed (1,320 gallons).~~	Permittees propose the removal of a duplicative sentence within this section.
A.6.4, Security and Access Control	Resident personnel are required to badge in upon arrival and prior to leaving TA-54. Non-resident personnel and visitors are required to badge or sign in and out at an access control point at the facility operations center. The locations of the security fence, entry gates, and entry stations are shown on Figure 11 in Attachment N (*Figures*).	Permittees propose additional information for entry requirements to TA-54 West.
A.6.4, Security and Access Control	Access to any part of TA-54 before or after normal working hours or on weekends requires approval of the appropriate ~~Group Leader or Facility Manager~~ manager at TA-54.	The Permittees propose the changes to allow for variability to the specific title designation due to the separate contractors that have operational control at separate units.

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A.6.4, Security and Access Control	~~Bilingual (*i.e.*, English and Spanish) warning signs are posted on the fence at 50- to 75-ft intervals, are legible from a distance of 25 ft, and can be seen from any approach to this area. The legends on the signs indicate "Danger – Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out."~~	Permittees propose the removal of duplicative permit language that is included within Permit Section 2.5.1, *Warning Signs*. The proposed deletion addresses the fact that the requirement is included in Permit Section 2.5.1 and removal of the repetitive requirement will help maintain consistency.
Former A.4.4, Emergency Equipment	The Permittees propose deletion of this section associated with emergency equipment and procedures. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	Permittees propose the removal of duplication within the Permit. A listing of emergency equipment is included within Permit Attachment D, *Contingency Plan*, that is more concise and the deletion removes duplication of emergency procedures.
A.7, TA-55	The Permittees propose correction of the number of hazardous waste management units at TA-55. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose correction of the number of hazardous waste management units at TA-55.
A.7.1, B40	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.
A.7.2, B05	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.
A.7.3, K13	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.
A.7.4, B45	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.

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A.7.5, B13	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.
A.7.6, G12	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.
A.7.7, Vault	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.
A.7.8, Outdoor Storage Pad	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.
A.7.10, Mixed Waste Storage Tank System	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.
A.7.10.1, Evaporator Glovebox Tank Component	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.
A.7.10.2, Stabilization Unit Pencil Tanks Component	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.
A.7.10.3, Ancillary Equipment	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.
A.7.10.4, Secondary Containment	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.
A.7.11, Mixed Waste Stabilization Unit	The Permittees propose updates to facility descriptions for units at TA-55. Please see the revision included within Supplement 1-2, *Permittees Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to descriptions of units located at TA-55.

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A.7.12, Security and Access Control	~~Warning signs are posted on the perimeter fences at approximately 40 to 110 ft intervals and can be seen from any approach to TA-55. Warning signs are also posted at each access to the waste management units in sufficient numbers to be seen from any approach. The legends on the signs are bilingual (*i.e.*, English and Spanish) and indicate "No Trespassing by Order of the United States Department of Energy." The signs are legible from a distance of 25 ft.~~	Permittees propose the removal of duplicative permit language that is included within Permit Section 2.5.1, *Warning Signs*. The proposed deletion addresses the fact that the requirement is included in Permit Section 2.5.1 and removal of the repetitive requirement will help maintain consistency.
Former A.5.13, Emergency Equipment	The Permittees propose deletion of this section associated with emergency equipment and procedures. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	Permittees propose the removal of duplication within the Permit. A listing of emergency equipment is included within Permit Attachment D, *Contingency Plan*, that is more concise and the deletion removes duplication of emergency procedures.
A.8.1, Concrete Pad	~~The perimeter of the pad has a 15" to 18" gutter and 6" high curb to provide run-off control. A valley gutter isolates the northern portion of the pad. Storm water and potentially contaminated fire suppression water flow from the northern portion of the pad flows to the valley gutter that drains to the retention basin. This feature substitutes for berms, dikes, or sumps specific to each storage building. The southern portion of the pad, which is outside the hazardous waste management unit where waste is not stored, slopes to the southeast and drains off the pad toward the parking lot. Figure 55 provides details regarding the pad configuration.~~	Permittees propose removal of duplicative information presented in a later section of Permit Attachment A associated with containment at the hazardous waste management unit.
A.8.2, Storage Buildings	~~The building floors (i.e., mat slabs) are six inches higher than the outside surface of the concrete pad to prevent run-on, and are sloped toward the roll-up door at the building entrances for drainage, in accordance with 40 CFR §264.175(b)(2) and (c).~~	Permittees propose removal of duplicative information presented in a later section of Permit Attachment A associated with containment at the hazardous waste management unit.

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Permit Attachment Section	Proposed modification	Justification
A.8.7, Security and Access Control	~~Warning signs stating "Danger – Unauthorized Personnel Keep Out," are posted on the perimeter fences and gates in accordance with Permit Section 2.5.2, *Warning Signs*. The text on the signs are bilingual (i.e., English and Spanish) and indicate "No Trespassing by Order of the United States Department of Energy." The signs are legible from a distance of 25 feet.~~	Permittees propose the removal of duplication within the Permit. A listing of emergency equipment is included within Permit Attachment D, *Contingency Plan*, that is more concise and the deletion removes duplication of emergency procedures.
Former A.6.8, Required Equipment	The Permittees propose deletion of this section associated with emergency equipment and procedures. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	Permittees propose the removal of duplication within the Permit. A listing of emergency equipment is included within Permit Attachment D, *Contingency Plan*, that is more concise and the deletion removes duplication of emergency procedures.
A.8.9, Subsurface Vapor Monitoring	The Permittees propose deletion of this section associated with emergency equipment and procedures. Please see the revision included within Supplement 1-2, *Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions*.	The Permittees propose updates to this section to reflect that the soil vapor well monitoring network as required by the 2010 Permit is installed and regularly sampled.

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Permit Section	Proposed modification	Justification
Part A Form Parts 1 and 2	The updated form is provided within the Los Alamos National Laboratory General Part A Permit Application, Revision 10.0, provided concurrently with this Permit Renewal Application.	The Permittees have revised Form 8700-23 to include updates to names of managers and updated addresses. There were no substantive changes to the form and there were no additions or deletions proposed to the hazardous waste management units or the US Environmental Protection Agency Hazardous Waste Numbers treated or stored at each of the Technical Areas. The process code for the storage shaft unit at Technical Area 54, Area G was updated to be consistent with the 2010 Permit (from S01 in former Part A applications to S99).

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The waste analysis plan modification proposed text is as follows: (1) text has been added to support permit issuance of the interim status open burning unit and two open detonation units; (2) text in sections related to mixed transuranic waste have been updated and reorganized; (3) permit sections have been reorganized with minor text changes to improve clarity and readability, and to facilitate permit implementation; and (4) minor non-substantive editorial changes have been made that are grammatical or formatting in nature. Note, the majority of proposed text changes address the addition of the interim status open burning and open detonation units and the reorganization associated with the sections related to mixed transuranic waste.

Permit Attachment Section	**Proposed modification**	**Justification**
Table of Contents	Please see revised Table of Contents within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose updates to the table of contents within the attachment to include deleted sections as well as additions for treatment units that the Permittees propose to be added to the 2010 Permit.
List of Tables	Please see revised List of Tables within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees have revised the list of tables to reflect the rearrangement of tables and removal of reserved or outdated tables from the attachment for clarity.
Throughout document	Changes to heading formatting and leveling, as well as formatting and grammatical edits have been made in the attachment to be consistent throughout the document. Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	Permittees propose changes to improve the quality of the document and correct inconsistencies. Technical edits proposed are all reflected in the redline document, but may not be specifically highlighted in this table because formatting changes are difficult to highlight in table format.
Introduction	This Waste Analysis Plan (WAP) presents the characterization procedures used to determine the chemical and physical nature of ~~non-mixed~~ waste streams stored and treated at hazardous waste management units at the Los Alamos National Laboratory site (~~LANL or the~~ Facility) in accordance with 40 CFR § 264.13. The hazardous constituents discussed herein are the	The Permittees have proposed editorial changes throughout the introduction for a clearer presentation of information, to include explosives waste streams,

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	non-mixed (non-radioactive) portion of the waste that makes up hazardous waste, the hazardous component of mixed low-level waste ~~(MLLW)~~, and the hazardous component of mixed transuranic waste ~~(MTRUW) stored and treated at the Facility in accordance with 40 CFR § 264.13~~. The waste characterization requirements contained in this WAP are used for characterization of wastes stored in containers and tanks, and to support treatment processes covered by the ~~stabilization process~~LANL Hazardous Waste Facility Permit (Permit). Waste analysis regulatory requirements are specified in 40 CFR §§ 264.13, 270.14(b) and 268.7. The general overview of ~~Waste analysis~~ permit requirements for waste analysis is~~are~~ specified in Permit Section 2.4. This WAP discusses how the waste characterization ~~data prepared by generators are~~ information is obtained, reviewed, supplemented, and used by the Permittees to comply with 40 CFR Part 264 and Part 268 regulatory requirements. Section C.2 Waste Analysis Parameters: Includes a discussion of the ~~proposed~~ hazardous waste analytical parameters and methods used by the Permittees and the criteria/rationale for parameter selection. Section C.5 Special Procedural Requirements: Includes a discussion of the characterization procedures in place ~~for ignitable, reactive, and incompatible wastes; procedures~~ to ensure compliance with 40 CFR 268, Land Disposal Restrictions~~land disposal restrictions~~ (LDR); and procedures to ensure compliance with 40 CFR Part 264 Subpart CC requirements.	provide updated terminology, and remove abbreviations and acronyms wherever possible to improve understandability of the document.

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C.1, Facility Description	~~LANL (the *Facility*)~~ The Facility is the Los Alamos National Laboratory site. The Facility is more than the Los Alamos National Laboratory (LANL). The Facility is where the collective execution by separate entities of multiple and varied missions occurs. The Facility is located in Los Alamos County in north-central New Mexico. It is approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. The Facility and the associated residential and commercial areas of Los Alamos County are situated on the Pajarito Plateau. The Facility is owned by the U.S. Department of Energy (DOE)~~ and is operated jointly by DOE; Triad National Security, LLC, (Triad); and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) (collectively the *Permittees*)~~. The Los Alamos National Laboratory is a Federally Funded Research and Development Center and National Security Laboratory that executes work across numerous missions, including national security, science, and energy. Triad National Security, LLC (Triad), under contract with the DOE National Nuclear Security Administration (NNSA), manages and operates LANL. The hazardous waste management units (HWMU) that Triad operates in association with its Laboratory management and operational activities are clearly defined in the Permit. Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under contract with the DOE Office of Environmental Management (DOE-EM), executes DOE-EM's legacy environmental remediation mission at and off the LANL site. The HWMUs that N3B operates in association with its legacy environmental remediation activities are clearly defined in the Permit. –The permitted units used for storage and treatment of wastes addressed in this WAP are located within various Technical Areas (TAs) at the Facility. These units are listed in Attachment J (*Hazardous Waste Management Units)*. Detailed information on the permitted units is provided in Attachment A (*Technical Area Unit Descriptions*)~~A more complete Facility description is provided in Attachment A~~.	The Permittees propose consolidation of the locations of descriptions of hazardous waste management units at LANL within this plan.

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C.1.1, Facility Waste-Generating Processes and Activities	Wastes are primarily generated at the Facility ~~primarily~~ from research and development ~~(R&D)~~ activities, processing and recovery operations, decontamination and decommissioning ~~(D&D)~~ projects, and environmental restoration ~~(ER)~~ activities. Wastes generated from these types of processes and activities may also be received from off-site facilities (*see* Section C.4 and Permit Section 2.2.1~~Attachment L (*Listing of Off-Site Facilities*)~~). Tables C-12 through C-~~4~~5 present descriptive information on non-mixed hazardous wastes, mixed low-level waste, and mixed transuranic waste~~MLLW, and MTRUW~~ potentially generated at the Facility. ~~Wastes generated at off-site facilities that may be received at the Facility are described in Table C-8.~~ These tables include brief waste descriptions, brief descriptions of the waste-generating process or activity, the characterization basis for waste designation, potential U.S. Environmental Protection Agency (EPA) Hazardous Waste Number(s), the hazardous constituent(s) listed in Appendix VIII of 40 CFR Part 261 and/or the characteristic(s) defined at 40 CFR Part 261, Subpart C that make the waste hazardous, and the regulatory limits, as appropriate.	The Permittees propose the editorial changes within this section to clarify text to point to the correct Permit Section, spell out acronyms, update table references, and delete reference to a table that is not included in the plan.
C.1.2, Stored Waste	Non-mixed hazardous waste, ~~MLLW~~mixed low-level waste, and ~~MTRUW~~mixed transuranic waste are stored at various ~~container storage~~ hazardous waste management units throughout the Facility.	The Permittees propose the edits within this section for clarity and to remove abbreviations and acronyms wherever possible to improve understandability of the document.

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C.1.2.1, Non-Mixed Hazardous Waste	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose the edits to this section to make minor editorial changes to language within the section, to add information regarding explosives waste for the addition of open burning and open detonation units, and to remove abbreviations and acronyms wherever possible to improve understandability of the document.
C.1.2.2, Mixed Low-Level Waste	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	Permittees have proposed the edits to this section for clarity, to update relevant references, to add identification numbers to the mixed waste descriptions, to remove reference to a waste stream that is well documented within other waste streams, and to remove abbreviations and acronyms wherever possible to improve understandability of the document.
C.1.2.3, Mixed Transuranic Waste	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose the edits to this section to update the section overall, as this section was originally drafted prior to the Waste Isolation Pilot Plant's (WIPP) ability to accept waste. In the time since the operational start for the WIPP, descriptions, practices, characterization, and shipment to the WIPP have been updated from those terminologies and practices

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		originally utilized for transuranic waste. Information that appears to be deleted has been incorporated into the table representation of mixed transuranic waste in Table C-4, *Descriptions of Mixed Transuranic Waste Stored at the Facility*. Additionally, the section has been updated for clarity and to remove abbreviations and acronyms wherever possible to improve understandability of the document.
C.1.3, Treated Wastes and added subsections C.1.3.1, Open Burning/Open Detonation C.1.3.2, Macroencapsulation Wastes C.1.3.3, Stabilization in Containers C.1.3.4, Cementation Wastes	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose rearrangement of information and subsections to provide detailed information of the types of treatment processes including the addition of open burning and open detonation waste treatment units for the proposed addition of these units to the Permit; add information and references regarding waste treated by macroencapsulation; treatment by stabilization in containers; and cementation wastes. Additionally, the section and subsections have been updated for clarity and to remove abbreviations and acronyms wherever possible to improve understandability of the document.

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Former C.1.4, Description of Permitted Units	~~**C.1.4 Description of Permitted Units**~~ ~~The permitted units used for storage and treatment of wastes addressed in this WAP are located within various TAs at the Facility. These units are listed in Attachment J (*Hazardous Waste Management Units*). Detailed information on the permitted units is provided in Attachment A (*Technical Area Unit Descriptions*).~~	The Permittees propose to move this information to the plan in Section C.1 where it is more appropriate.
C.2, Waste Analysis Parameters	The Permittees shall conduct detailed chemical and physical characterization for~~on~~ non-mixed hazardous wastes, the hazardous component of ~~MLLW~~mixed low-level waste, and the hazardous component of ~~MTRUW~~mixed transuranic waste as required by 40 CFR § 264.13 and Permit Section 2.4.	The Permittees propose edits to the section for minor editorial changes and to remove abbreviations and acronyms wherever possible to improve understandability of the document.
C.2.1, Analytical Parameters and Methods	The Permittees shall use the characterization methods for non-mixed hazardous wastes, ~~MLLW~~mixed low-level waste, and ~~MTRUW~~mixed transuranic waste summarized in Tables C-6~~9~~ through C-~~11~~8 to quantify the waste characterization parameters in those tables. The Permittees shall comply with the sampling and analysis requirements of Permit Sections 2.4.1 through 2.4.9. The Permittees shall use the methods listed below, as necessary, for the wastes listed in ~~Attachment~~ Section C.1. 1. Acceptable Knowledge (AK); 2. Sampling and laboratory analysis to determine the presence and concentrations of: - RCRA-regulated metals, - RCRA-regulated volatile organic compounds (VOC), and	The Permittees propose edits to the section to include the revised table numbers and to remove abbreviations and acronyms wherever possible to improve understandability of the document.

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	- RCRA-regulated semivolatile organic compounds (SVOC) 3. Additional ~~MTRUW~~mixed transuranic waste characterization sampling methods~~:~~: - Headspace gas sampling to determine the presence of VOCs in container headspace, and - Physical waste form characterization through real-time radiography (RTR) and/or visual examination	
C.2.2, Criteria and Rationale for Characterization Methodology Selection	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose edits to the section to include the table revision numbers and to remove abbreviations and acronyms wherever possible to improve understandability of the document. Other minor editorial changes condense language and descriptions of laboratory test methods required by the Facility and removal of duplicative language that is covered in another section of the plan.
C.3, Characterization Methods	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose edits to move language around in section and provide clearer language; make minor editorial changes; change "permitted unit" to "hazardous waste management unit" for clarification; bullet a numbered list that does not describe steps; and to refer to

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		waste characterization documentation and not limit the language to "forms", an outdated practice.
C.3.1, Hazardous and Mixed Low-Level Waste Characterization	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose minor editorial changes for clarity, update references to tables, remove numbers from listed items that are not steps, and to remove abbreviations and acronyms wherever possible to improve understandability of the document.
C.3.1.1, Acceptable Knowledge	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose minor editorial changes for clarity, remove outdated references, adjust language regarding recordkeeping, remove numbering from a list that does not describe steps, update the types of acceptable knowledge that exist, update terminology, and remove abbreviations and acronyms wherever possible to improve understandability of the document.
C.3.1.1.1, Process Knowledge	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose edits to remove numbering from a list that does not describe steps, to spell out an acronym, and to remove outdated terminology for safety data sheets.
C.3.1.2, Sampling and Analysis	The Permittees shall, when it is necessary to conduct sampling and analysis to fully characterize a waste, utilize the analytical methods specified in Tables C-11~~9~~ through C-13~~18~~ for the identification of any hazardous	The Permittees propose updated references to tables.

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	constituents likely to be present based on the source of the waste stream and AK.	
Former C.3.1.2.1, Solid Waste Analysis renamed to Toxicity Characteristic Analysis and removal of former C.3.1.2.2, Liquid Waste Analysis	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*. Propose section name to change to *Toxicity Characteristic Analysis*.	The Permittees propose edits to change the name of the section and updates to the description of characterization for toxicity to include discussion of the applicable method in one location within the waste analysis plan. Additional changes include the removal of the 2nd part of the subsection because the same method is utilized for characterization of both solid and liquid waste.
Renumbered C.3.1.2.2, Sample Handling, Preservation, and Storage	Table C-10~~15~~ presents ~~requirements specified in~~ the most recent ~~version of~~ *SW-846* requirements for~~regarding~~ sample containers, preservation techniques, and holding times associated with sample collection. The Permittees shall adhere to these requirements to ensure that sampling and analysis meet quality objectives for data.	The Permittees propose editorial changes to clarify language and to update table references.
Renumbered C.3.1.2.3, Analytical Laboratory Selection and Analytical Methods	The Permittees shall ensure that analytical laboratories at the Facility and approved contractor laboratories conduct the detailed qualitative and quantitative chemical analyses specified in Tables C-11~~16~~ and C-12~~17~~.	The Permittees propose edits to update table references.
Renumbered C.3.1.3, Characterization of Waste to be Treated by Macroencapsulation	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose to change the subsection title to correct a typographical error. The remaining changes to the section provide a more detailed description of macroencapsulation.
Newly added C.3.1.4, Characterization of Waste to	Language added to incorporate waste streams for proposed permitted treatment.	The Permittees propose the added section to provide description of waste treated by open

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be Treated by Open Burning and Open Detonation	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	burning/open detonation since these units are proposed to be permitted in the Permit Renewal Application.
Renumbered C.3.1.5, Verification Frequencies	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose renumbering of the section based on the updated and added sections prior.
C.3.2, Mixed Transuranic Waste Characterization	Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose edits to update table references, to spell out acronyms, to provide clarification regarding the characterization process of acceptable knowledge and the WIPP certification procedures for waste acceptance, and minor editorial changes for clarity. Information regarding the WIPP certification procedures are moved from a later section to this section to consolidate the information. Additionally, the Permittees propose changes to emphasize that the waste characterization determination performed per Permit Section 2.4.1, *General Waste Characterization Requirements*, of the 2010 Permit will lead to the container management requirements associated with free liquids.

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Renumbered C.3.2.1, Real-Time Radiography	**C.3.2.1~~.1~~ Real-Time Radiography** ~~MTRUW~~Mixed transuranic waste containers generated after the effective date of the Permit and that are not wastes taken from retrievable storage after that date are not required to undergo RTR if associated AK documentation contains the information necessary to fully characterize the waste in accordance with Permit Section 2.4~~/~~.1 and the WIPP waste acceptance criteria. Otherwise, all ~~MTRUW~~mixed transuranic waste containers require RTR prior to storage at the Facility. RTR is a nondestructive, qualitative, and semi-quantitative characterization technique that involves x-ray scanning of waste containers to identify and verify the physical form(s) of waste container contents using appropriate equipment and qualified operators. The Permittees shall use RTR to verify the absence of free liquids, to confirm the physical form of containerized waste, and to document the materials present. The Permittees shall ensure that during RTR the waste container is scanned while the operator views and permanently records the image from the television screen on audio and videotape. The radiography image is examined for evidence of liquids by repetitively moving the container-handling system and searching for evidence of wave motion. The Permittees shall utilize a radiography data form to document the materials present and all other relevant characterization information about the containerized waste. The Permittees shall allow only properly trained personnel to operate radiography equipment. Standardized training requirements for radiography operators are based upon existing industry standard training requirements. Operators must requalify periodically, as required~~at least every two years~~.	The Permittees propose edits to renumber subsection, provide updated protocol for the real-time radiography process, provide additional description of how liquids are screened, as well as to allow frequency of requalification to be as needed.

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Renumbered C.3.2.2, Visual Examination	**C.3.2.~~1.~~2 Visual Examination** ~~The Permittees may use visual~~Visual examination (VE) or visual inspection (VI) is used to verify the contents of ~~MTRUW~~mixed transuranic waste containers as a substitute to RTR or during packaging of the waste. VE/VI is performed by physically examining the contents of a waste container to verify that the container is properly included in the appropriate waste stream, to verify the absence of free liquids, to confirm the physical form of containerized waste, and to document the materials present. The Permittees shall ensure that waste characterization determined through VE/VI is recorded in the associated waste's AK documentation. ~~Standardized training for VE shall be developed.~~ Visual examination operators shall be trained in the specific waste generating processes, typical packaging configurations, and waste material parameters expected to be found in each waste stream at the generator site. The training shall be site specific to include the various waste configurations generated at the site. Operators must requalify periodically, as required~~at least every two years~~.	Edit to spell out acronyms and add "visual inspection" wording to the section as well as a proposed change to allow frequency of requalification to be as needed.

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New C.3.2.3, Headspace Gas Analysis	**C.3.2.3 Headspace Gas Analysis** Headspace gas analysis is used to confirm the presence and concentration of flammable gas/VOCs, hydrogen, and methane in a mixed transuranic waste container intended for shipment to WIPP. A sample of headspace gas is taken through the vent assembly of a waste container at controlled temperatures and analyzed by gas chromatography and thermal conductivity. Waste characterization information collected through headspace gas analysis is recorded in the associated waste's AK documentation.	The Permittees propose insertion of a section to describe headspace gas screening characterization.
Renumbered C.3.2.4, Characterization to Meet LDR Requirements	**C.3.2.~~4~~2 Characterization to Meet LDR Requirements** ~~The Permittees shall characterize MTRUW~~Mixed transuranic waste is characterized to determine its land disposal restriction status in accordance with ~~Attachment~~ Section C.5.2.	The Permittees propose a renumbering of the section and an edit to spell out acronym.

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Former C.3.2.3, WIPP Characterization	~~**C.3.2.3 WIPP Characterization**~~ ~~Most MTRUW waste at the Facility is destined for disposal at the Waste Isolation Pilot Project (WIPP) in Carlsbad, New Mexico. Therefore, prior to shipment to WIPP, additional characterization to meet WIPP certification procedures will be implemented to meet requirements of the WIPP permit for these wastes. Waste information that is derived from the WIPP waste characterization will be used for Facility MTRUW characterization as additional information for AK.~~	The Permittees propose movement of this information to the introductory Section C.3.2, *Mixed Transuranic Waste Characterization,* to consolidate the information.
Renumbered and repurposed C.3.2.5, Characterization Procedures for Treatment of Mixed Transuranic Wastes by Stabilization (Cementation)	Description of stabilization treatment process at TA-55 and removal of text associated with process at TA-50-69. Please see specific revisions within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose edits to renumber the subsection and to discuss the characterization procedures specifically used at the cementation unit at TA-55. This would no longer combine the two distinctly separate processes in a single section and would organize the plan to discuss transuranic waste treatment processes separately.

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Renumbered and repurposed C.3.2.6, Characterization Procedures for Treatment of Mixed Transuranic Waste by Stabilization in Containers	Description of stabilization treatment process at TA-50-69 and removal of text associated with remediated and unremediated nitrate salt-bearing waste. Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees have proposed edits to this section to discuss the stabilization unit at TA-50-69 that is permitted for treatment of mixed transuranic waste by stabilization, spell out acronyms, and update references to the correct table as well as minor editorial changes for clarity. Removal of the nitrate salt-bearing waste text is proposed because these waste containers have been treated and all required verification testing has been conducted.
Former C.3.2.4.2, Characterization Procedures for Waste Treated by Stabilization	~~**C.3.2.4.2 Characterization Procedures for Waste Treated by Stabilization**~~ ~~The Permittees shall characterize waste treated by stabilization (*i.e.*, MTRUW) in accordance with Attachment Section C.3.2. For treatment at the TA-50-0069 Indoor Permitted Unit, samples will be collected from a minimum of 1% of treated waste containers from each waste stream and analyzed at an onsite laboratory to confirm chemical composition when compared to that of the surrogates tested.~~	The Permittees propose deletion of this section since more detailed information treated at the unit is proposed in previous subsection C.3.2.6.
Former C.3.2.5, Sample Handling, Preservation, And Storage	~~C.3.2.5 Sample Handling, Preservation, and Storage~~ ~~Table C-15 presents the most recent *SW-846* requirements regarding sample containers, preservation techniques, and holding times associated with sample collection. The Permittees shall adhere to these requirements to ensure that sampling and analysis meet quality objectives for data.~~	The Permittees propose deletion of this section since SW-846 is discussed in renumbered subsection C.3.1.2.2.

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C.5.2, Procedures to Ensure Compliance with LDR Requirements	Waste designated to be disposed of at the ~~Waste Isolation Pilot Plant (~~WIPP~~)~~ must undergo characterization to determine whether it is subject to the land disposal prohibitions, but it is not required to be characterized to determine all applicable underlying hazardous constituents listed in 40 CFR § 268.48. The Permittees shall analyze residues from wastes with concentration-based treatment standards by the appropriate methods described in ~~Attachment~~ Section C.3.1.2 to assure that the waste meets applicable treatment standards. The Permittees shall prepare new waste characterization documentation for the treated waste or residue, as appropriate, incorporating the treatment facility paperwork requirements of 40 CFR § 268.7(b) or the generator paperwork requirements of 40 CFR § 268.7(a), which is incorporated herein by reference, if the residue is considered a newly-generated waste.	The Permittees propose edits to correct typographical errors and improve understandability of the document.
C.5.4, Procedures to Ensure Compliance With Subpart CC Requirements	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose edits to update table numbers, correct typographical errors, and to encompass all permitted storage units.

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C.6, References	DOE, 2011~~1999~~, "Radioactive Waste Management," *DOE Order 435.1*, U.S. Department of Energy, Washington, D.C. DOE, 1995, "DOE Waste Treatability Groups Guidance," Revision 0.0, U.S. Department of Energy, Idaho Operations Office. EPA, 2015~~1994a~~, "Waste Analysis at Facilities that Generate Treat, Store, and Dispose of Hazardous Wastes, A Guidance Manual," *OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C. EPA, 1994~~b~~, "Use of Total Waste Analysis in Toxicity Characteristic Determinations," FAXBACK 13647, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.	The Permittees update the list of referenced documents to reflect other changes to the plan.
All Tables	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose the renumbering of tables so that there are no table names listed as "reserved" at permit renewal issuance. Additional tables are proposed to incorporate the open burning/open detonation units in Permit Renewal Application. Technical edits that include grammatical changes and formatting consistency are also proposed within the tables for consistency and readability.

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Table C-1	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose deletion of the reservation placeholder and moving former Table C-2 to Table C-1. Minor edits to title, formatting, and footnotes are proposed for consistency and readability.
Table C-2	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose movement of former Table C-3 to Table C-2. Minor edits to title, formatting, spelling out acronyms, and footnotes for consistency and readability.
Table C-3	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose movement of former Table C-4 to Table C-3. Minor edits to title and formatting for consistency and readability.
Table C-4	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose movement of former Table C-5 to Table C-4. A replacement table provides clearer summary information for mixed transuranic waste table. The replacement table provides newer information and correlation of TRUCON codes with LA waste description categories and waste generating facilities.
Table C-5	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan.*	The Permittees propose removal of the reservation placeholder and adding the table to accommodate open burning and open detonation treatment processes.

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Table C-6	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose the removal of the previous reservation placeholder for Tables C-7 and 8. The Permittees propose movement of former Table C-9 to Table C-6. Minor edits to title, formatting, spelling out acronyms, and footnotes for consistency and readability.
Table C-7	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose movement of former Table C-10 to Table C-7. Minor edits to title, formatting, defining an acronym, and updating the footnotes for consistency and readability.
Table C-8	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose movement of former Table C-11 to Table C-8. Minor edits to title and formatting for consistency and readability.
Table C-9	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose removal of the reservation placeholder and addition of a table to accommodate open burning and open detonation treatment processes.

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Table C-10	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose deletion of previous placeholder Tables C-13 and 14. The Permittees propose movement of former Table C-15 to Table C-10. Several edits have been proposed to incorporate updated sample holding time and temperature requirements from SW-846, Update VI, Rev. 6, December 2018. Minor edits to title and formatting for consistency and readability.
Table C-11	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose movement of former Table C-16 to Table C-11. Minor edits to title and formatting, and updates to U.S. Environmental Protection Agency method numbers for consistency and readability.
Table C-12	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose movement of former Table C-17 to Table C-12. Minor edits to title and formatting, and updates to U.S. Environmental Protection Agency method numbers for consistency and readability.
Table C-13	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose movement of former Table C-18 to Table C-13. Minor edits to title and formatting, and updates to U.S. Environmental Protection Agency method numbers for consistency and readability.

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Table C-14	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose movement of former Table C-19 to Table C-14. Minor edits to title and formatting for consistency and readability.
Table C-15	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose movement of former Table C-20 to Table C-15. Minor edits to title and formatting for consistency and readability.
Table C-16	Please see revised text within Supplement 1-3, *Permittees' Proposed Changes to Attachment C, Waste Analysis Plan*.	The Permittees propose movement of former Table C-21 to Table C-16. Minor edits to title, spelling out of acronyms, and formatting for consistency and readability.

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The contingency plan has been modified to include proposed text as follows: (1) text has been added to support permit issuance of the interim status open burning unit and two open detonation units; (2) permit sections have been reorganized by deleting introductory text for specific technical areas and consolidating this text in one location (with no text change); and (3) minor non-substantive editorial and/or clarifying text (e.g., substituting "hazardous" waste for "mixed" waste; consolidation of table numbers; removal of duplicative references; and correction of formatting and grammatical errors). Note, the vast majority of the proposed text changes address the addition of the interim status open burning and open detonation units and the reorganization and consolidation of permit sections associated with introductory text for specific technical areas.

Permit Attachment Section	**Proposed modification**	**Justification**
Table of Contents	Please see revision to the list of tables within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The table of contents for the attachment has been updated to incorporate the changes proposed within the attachment.
List of Tables	Please see revision to the list of tables within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose to revise the list of tables to reflect the rearrangement of tables and address the Permittees' proposal to remove duplicative tables from the attachment for clarity.
Throughout the document	All references to "or mixed" or "and mixed" when referring to "hazardous waste" are proposed to be removed. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose this change throughout the Permit where appropriate. The distinction between hazardous waste and mixed waste is a distinction that the Permittees previously included within permit applications and is now an outdated usage. The Permittees propose removal of "mixed waste" for clarity. It is understood that the term "hazardous waste" means both non-radioactive hazardous and mixed waste.

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Throughout the document	Numbering of paragraphs within most sections has been removed and formatting and other grammatical edits have been made for consistency. These changes do not make technical changes to the document. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose these edits in the cases where paragraphs do not require numbering as they are not instructions or steps that need to be followed in sequential order. Technical edits proposed are all reflected in the redline document, but may not be specifically highlighted in this table because formatting changes are difficult to highlight in table format.
Renamed D.1, Hazardous Waste Emergency Response Resources	**D.1 HAZARDOUS ~~AND MIXED~~ WASTE EMERGENCY RESPONSE RESOURCES** ~~1.~~ The management of hazardous and mixed waste emergency incidents at the Facility resides within the Permittees' emergency management and emergency response organizations. edits: Additional Facility resources that may provide assistance in an emergency include personnel from health physics, industrial hygiene, environment compliance, emergency response, and radiation protection ~~personnel~~ at the Facility. These personnel as well as other resources are discussed in Attachment Sections D.1.2, D.1.3, D.1.~~6~~4, and D.1.6~~D.5~~ of this Attachment.	The Permittees propose the renaming of the section and adding "emergency response" organization in addition to the emergency management organization for completeness. Proposal of additional technical edits and corrections are also included.
D.1.1, Emergency Management	The Incident Response Commander ~~will~~ responds to emergency incidents involving the release of hazardous ~~or mixed~~ waste to the environment, including spills, fires, and explosions.	The Permittees propose this change to reflect present tense, rather than future tense.

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D.1.1, Emergency Management	The Incident Response Commander responding to an emergency shall have access to various tools to include Emergency Actions Levels with prescribed protective actions and ~~ChemLog with~~ a current chemical inventory of the appropriate building(s) in the area in which the incident is occurring.	The Permittees propose the change because the database utilized for chemical inventory is no longer referred to as "Chemlog" and to remove unnecessary specificity within the Permit.
D.1.1, Emergency Management	The Permittees shall ensure that the names, addresses, and telephone numbers ~~listed below are~~ of the current Primary and Alternate Incident Response Commanders are kept up-to-date and provided to the New Mexico Environment Department – Hazardous Waste Bureau.	The Permittees propose to change to include information that the appropriate information will be provided to the department but is not appropriate for public dissemination.
D.1.2, Hazardous Materials Response	Hazardous Materials (HAZMAT) personnel are responsible for the aggressive mitigation of chemical, radiological, and hazardous waste~~, and mixed waste~~ emergencies, including field decontamination of responders and response equipment.	The Permittees propose to change the sentence structure to address the removal of "mixed waste" from the sentence.
D.1.6.2, Occupational Medicine Personnel	The locations of this and other emergency facilities are shown on Figure D-2, *Emergency Facilities at Los Alamos National Laboratory*~~49 in Attachment N (*Figures*)~~.	The Permittees propose the inclusion of this figure within the contingency plan rather than presenting it separately in Permit Attachment N, because it is more appropriate for the figure to be part of the contingency plan rather than reference a separate attachment of the Permit.

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Permit Attachment Section	Proposed modification	Justification
D.2.1, Emergency Equipment	Attachment Tables D-3 through D-16~~TA-3, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3; TA-55 Building 4 First Floor, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3; TA-55-0355 Pad, D-4; and TA-63 Transuranic Waste Facility, D-1~~.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity, to remove inconsistent and redundant information, and to remove subtitle pages within the attachment. The changes proposed in this section reflect proposed revisions later in the contingency plan.
D.4.1, Spill Control Procedures	Attachment Tables D-3 through D-16~~TA-3, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3; TA-55 Building 4 First Floor, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3; TA-55-0355 Pad, D-4; and TA-63 Transuranic Waste Facility, D-1~~ list emergency equipment available.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity, to remove inconsistent and redundant information, and to remove subtitle pages within the attachment. The changes proposed to this section reflect proposed revisions later in the contingency plan.
D.4.2, Decontamination Verification	Appropriate analytical method(s) given in the most recent version of the U.S. EPA's *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846) ~~Analytical method(s) given in Table D-3~~ will be utilized, as appropriate. If the spill is from other than an identifiable source, the spilled material will be analyzed for the appropriate parameters listed in ~~Table D-3~~40 CFR 261, Subpart C.	The Permittees propose updating the reference so that it cites the listing of test methods and the location in the regulations that list characteristic waste. The methods are kept up-to-date and this reduces the risk of the Permittees failing to update a table within the contingency plan when the methods are updated.

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D.4.2, Decontamination Verification	The baseline samples and final washwater/used sorbent samples will be analyzed for the applicable parameters within 40 CFR 261, Subpart C, and analyzed using the appropriate devices and methods as described in the most recent version of the SW-846. These and other approved methods approved by the Department will be used as necessary, to determine whether a waste stream is hazardous and to identify underlying hazardous constituents~~given in Attachment Table D-2~~. If the decontamination samples contain hazardous constituents that are not present in the baseline samples, the decontamination procedure shall be repeated. An alternative demonstration of decontamination may be proposed and justified to the Department, who will evaluate the proposed alternative in accordance with the standards and guidance currently in effect. If the proposed alternative is accepted, decontamination levels will meet the levels approved by the Department. ~~Each sample will be collected with an appropriate sampling device (*e.g.*, a thief or trier) as specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), and approved updates, as applicable.~~	The Permittees propose updated reference to the listing of test methods and the location of those methods according to the hazardous waste regulations. The methods are kept up-to-date and this reduces the risk of the Permittees failing to update a table within the contingency plan when the methods are updated.
D.6, Fire	Information related to the various fire alarms at the specific units is included in Attachment Tables D-3 through D-15~~TA-3, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3; TA-55 Building 4 First Floor, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3; TA-55-0355 Pad, D-4; and TA-63 Transuranic Waste Facility, D-1~~.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity, to remove inconsistent and redundant information, and to remove subtitle pages within the attachment. The changes proposed to this section reflect proposed revisions later in the contingency plan.
D.9.2, Evacuation Plan	Attachment Table D-2~~3~~ lists the criteria for evacuation, persons responsible for initiating evacuations, and reentry conditions.	The Permittees propose to update the table numbering based on the deletion of a table.

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D.11, Emergency Response Records and Reports	The Permittees shall ensure that any emergency that requires implementation of this Plan will be documented and reported in accordance with requirements of 40 CFR § 264.56 and Permit Sections 1.9.12, 1.9.13, and 2.11.6.3. This information will be maintained in the facility operating record.	The Permittees propose to add a reference to the regulation for completeness and correction of a typographical error.
D.13 References	~~**D.13 REFERENCES**~~ ~~EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *EPA-SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.~~ ~~LANL, 2014. *LANL Emergency Procedures and Protective Actions, P1201-4, R3.* Los Alamos National Laboratory, Security and Emergency Operations Division, Los Alamos, New Mexico~~ ~~LANL, 2002, "Los Alamos National Laboratory General Part B Permit Renewal Application", Revision 2.0, August 2002, LA-UR-03-5923, Los Alamos National Laboratory, Los Alamos, New Mexico.~~	The Permittees propose the removal of this section because the references are no longer relevant or are no longer included within this contingency plan.
Table D-1, Los Alamos National Laboratory-Wide Emergency Equipment	Formatting for the table has been corrected. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose formatting corrections within the table.

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Removed Table D-2, Waste Analysis Parameters and Test Methods	Deletion of the table. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose deletion of this table as it is more appropriate for waste analysis parameters and test methods to be referenced from a waste analysis plan or SW-846 as discussed in Section D.4.2 rather than included within a plan to be implemented in case of an emergency.
Renumbered and renamed Table D-2, Evacuation Determination and Reentry Conditions	Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose to update the table numbering based on the deletion of a table and to update the title of the table to match the content.
Figure D-1, General Hazardous Waste Emergency Notification Structure	Figure name updated and moved after tables within the attachment. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose to remove "and Mixed" from the title, and move the figures after the tables within the contingency plan to be consistent with other attachments of the Permit.
Former TA-3, Attachment D Contingency Plan	Removed subtitle page and the general information for TA-3 permitted unit. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the subtitle pages and general information for each of the Technical Areas be removed from the contingency plan to decrease redundancy within the plan and make the plan more concise to follow in case of an emergency.

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Renumbered Table D-3, TA-3, Building 29 Emergency Equipment	**Table D-~~3~~31** **~~T~~A-3, Building 29** Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity, to remove inconsistent and redundant information, and to remove subtitle pages within the attachment. Additionally, the building number was added to the table name for clarity.
Table D-4, TA-16 Emergency Equipment	Addition of table. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The addition of Table D-4 to the plan is proposed by the Permittees to incorporate the emergency equipment for an open burning treatment at LANL. Application requirements for this unit are described or included in Section 5 of this Permit Renewal Application.
Table D-5, TA-36 Emergency Equipment	Addition of table. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The addition of Table D-5 to the plan is proposed by the Permittees to incorporate the emergency equipment for an open detonation treatment at LANL. Application requirements for this unit are described or included in Section 4 of this Permit Renewal Application.

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Table D-6, TA-39 Emergency Equipment	Addition of table. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The addition of Table D-6 to the plan is proposed by the Permittees to incorporate the emergency equipment for an open detonation treatment at LANL. Application requirements for this unit are described or included in Section 4 of this Permit Renewal Application.
Former TA-50, Attachment D Contingency Plan	Removed subtitle page and the general information for TA-50 permitted units. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the subtitle pages and general information for each of the Technical Areas be removed from the contingency plan to decrease redundancy within the plan and make the plan more concise to follow in case of an emergency.
Renumbered Table D-7, TA-50 Emergency Equipment	**Table D-7~~1~~** Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity and to remove inconsistent and redundant information and subtitle pages within the attachment.
Former TA-54, Attachment D Contingency Plan	Removed subtitle page and the general information for TA-54 permitted units. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the subtitle pages and general information for each of the Technical Areas be removed from the contingency plan to decrease redundancy within the plan and make the plan more concise to follow in case of an emergency.

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Renumbered Table D-8, TA-54 Area L Emergency Equipment	**Table D-8~~1~~** Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity, to remove inconsistent and redundant information, and to remove subtitle pages within the attachment.
Renumbered Table D-9, TA-54 Area G Emergency Equipment	**Table D-9~~2~~** Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity and to remove inconsistent and redundant information and subtitle pages within the attachment.
Renumbered Table D-10, TA-54 West Emergency Equipment	**Table D-10~~3~~** Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity and to remove inconsistent and redundant information and subtitle pages within the attachment.
Former TA-55, Attachment D Contingency Plan	Removed subtitle page and the general information for TA-55 permitted units. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the subtitle pages and general information for each of the Technical Areas be removed from the contingency plan to decrease redundancy within the plan and make the plan more concise to follow in case of an emergency.

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Renumbered Table D-11, TA-55 Building 4, First Floor Emergency Equipment	**Table D-~~1~~11** Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity and to remove inconsistent and redundant information and subtitle pages within the attachment.
Renumbered Table D-12, TA-55 Building 4 Basement Emergency Equipment	**Table D-~~2~~12** Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity and to remove inconsistent and redundant information and subtitle pages within the attachment.
Renumbered and renamed Table D-13, TA-55 Outdoor Storage Pad Emergency Equipment	**Table D-13~~3~~** **TA-55 ~~Container~~ Outdoor Storage Pad** Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity and to remove inconsistent and redundant information and subtitle pages within the attachment. The Permittees also propose to correct the name of this unit within the table.

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Renumbered Table D-14, TA-55-0355 Pad Emergency Equipment	**Table D-144** Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity and to remove inconsistent and redundant information and subtitle pages within the attachment.
Former TA-63, Attachment D Contingency Plan	Removed subtitle page and the general information for TA-63 permitted unit. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the subtitle pages and general information for each of the Technical Areas be removed from the contingency plan to decrease redundancy within the plan and make the plan more concise to follow in case of an emergency.
Renumbered Table D-15, TA-60 Building 17, Container Storage Facility Emergency Equipment	**Table D-151** Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity and to remove inconsistent and redundant information and subtitle pages within the attachment.
Renumbered Table D-16, TA-63 Transuranic Waste Facility Emergency Equipment	**Table D-161** Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose the rearrangement and renaming of the tables of emergency equipment included within the contingency plan for clarity and to remove inconsistent and redundant information and subtitle pages within the attachment.

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Figure D-2, Emergency Facilities at Los Alamos National Laboratory	Figure moved to after tables within the attachment. Please see specific revisions within Supplement 1-4, *Permittees' Proposed Changes to Attachment D, Contingency Plan*.	The Permittees propose movement of this figure to the contingency plan from Figure 49 in Attachment N, *Figures*. It is more appropriate to include this figure within the contingency plan.

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The inspection plan has been modified to include proposed text as follows: (1) permit sections have been reorganized by moving text to a different section to improve clarity and readability and to facilitate permit implementation (with no text change); (2) minor editorial changes to improve clarity and readability and to facilitate permit implementation; and (3) formatting and grammatical changes are included to promote consistency.

Permit Attachment Section	Proposed modification	Justification
Table of Contents	Please see revised Table of Contents within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The table of contents within the permit has been updated to include deleted sections as well as additions for treatment units that the Permittees have proposed to be added.
List of Forms	FORM TITLE E-1 Hazardous Waste Facility Inspection Record Form E-2 Checklist for Detonation or TA-16-388 Flash Pad Treatment Operations E-3 Annual TA-50-69 Storm Water Drainage Inspection Form E-4 Monthly Area L, Dome 215 Holding Tank Inspection Form ~~FIGURE NO. TITLE~~ ~~E-1 Hazardous Waste Facility Inspection Record Form~~	The Permittees propose to update the list of figures within this Permit Attachment to a list of forms and include the four forms that are part of the attachment.
Throughout the document	All references to "or mixed" or "and mixed" when referring to "hazardous waste" are proposed to be removed. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose this change throughout the Permit where appropriate. The distinction between hazardous waste and mixed waste is a distinction that the

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		Permittees previously included within permit applications and is now outdated and is proposed for removal for clarity. It is understood that the term "hazardous waste" means both non-radioactive hazardous and mixed waste.
Throughout document	Please see revised Table of Contents within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	Throughout the document technical edits have been proposed to provide consistency with formatting, update and correct grammatical errors. Technical edits proposed are all reflected in the redline document, but may not be specifically highlighted in this table because formatting changes are difficult to highlight in table format.
Throughout document	Heading formatting and leveling have been updated to be consistent throughout the document. Revisions are included within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	Permittees propose changes to improve the quality of the document and correct inconsistencies.
Throughout the document	Numbering of paragraphs within most sections has been removed. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose these edits in the cases where paragraphs do not require numbering as they are not instructions or steps that need to be followed in sequential order.
Introduction	This Attachment presents inspection requirements applicable to ~~all~~ active hazardous ~~or mixed~~ waste management units (permitted units) at Los Alamos National Laboratory (LANL). Inspection schedules for the units have been developed to identify equipment malfunctions and deterioration, operator errors, and discharges	The Permittees propose editorial changes within the section for clearer language.

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	that ~~might~~ may cause or lead to a release of hazardous ~~or mixed~~ waste and pose a threat to human health and the environment. ~~The Permittees~~ Inspections~~,~~ shall be conducted ~~Inspections,~~ at the schedule specified herein to identify problems in time to correct them before they may adversely impact~~harm~~ human health or the environment. Inspection schedules or methods may differ at certain hazardous waste management units based upon worker safety issues or the nature of the safety and emergency equipment.	
E.1, General Inspection Schedules and Requirements	A copy of this Inspection Plan, which includes inspection schedules, shall be maintained by the Permittees' hazardous waste compliance personnel and by the site operator (i.e., the division or operating group that is responsible for or manages the permitted unit), as ~~required~~ outlined in Permit Section 2.6, *General Inspection Requirements*~~-~~. Hazardous waste management unit personnel ~~The Permittees~~ shall follow the inspection schedules outlining the items to be addressed on the Permittees' Hazardous Waste Facility Inspection Record Form (IRF)~~,~~) and inspection frequencies for the unit types are provided in ~~this Attachment's~~ Sections E.2 through E.8, and in Technical Area (TA)-~~-~~specific Attachment E sections. The IRF and instructions for its completion are provided ~~at the end of this Attachment Section~~as Form E-1; the form may be supplemented, changed, or otherwise replaced through a permit modification pursuant to 40 CFR § 270.42(a). The IRF lists the items to be inspected.	The Permittees propose the updates to reference the title of Permit Section, to distinguish that hazardous waste management unit personnel are responsible for following the inspection schedules, and to make minor editorial changes.
E.1.1, Inspection Records	Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose updates to the section to simplify the language regarding the inspection record form and update it, to clarify to

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	The Permittees shall ensure~~insure~~ that permitted unit personnel conduct inspections and record the information on IRFs or equivalent forms. The Permittees shall retain inspection records until closure of the associated permitted unit. The Permittees shall maintain an electronic version of the records through the closure or post-closure periods dependent upon the type of facility. The Permittees shall make inspection records available for review in the event that the Department or the U.S. Environmental Protection Agency inspects the facility for compliance with inspection requirements. The IRF encompasses requirements for permitted hazardous ~~and mixed~~ waste management units, and additional requirements directed by the Permittees' policy. Instructions included with the IRF provide specific guidance for each inspection item listed. The Permittees shall ensure~~complete~~ the IRF or equivalent form is completed according to the daily and/or weekly schedules provided in ~~Attachment~~ Sections E.2 through E.8. The Permittees shall conduct and record inspections in Parts I and II of the IRF for each working day or week that waste is opened, moved, received, stored, treated, removed, or remains open, as appropriate. The Permittees may use other records, such as a memo to file, to document a condition of "No Use" at a unit. For every item requiring inspection, the Permittees shall enter a response indicating the condition of each item in the column under the appropriate day of the week. Responses may include ~~"OK,"~~ "Yes," "No," "NA" (Not Applicable), or "AR" (Action Required), or "Comment". If the response is AR, the Permittees shall note the action required in Part II of the IRF. If more than one AR is listed, the Permittees shall number the ARs. The Permittees shall identify and number all ARs, even if corrected immediately by the	reflect the changes made to the form instructions, and to correct a typographical error.

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	inspector. If inspection results indicate that corrective measures are warranted, actions~~the Permittees~~ shall be recorded along with any and all actions taken (along with time, date, and other pertinent information) in Part II of the IRF and the ARs shall be noted~~note the AR~~ on all subsequent IRFs until corrective measures are completed. When corrective measures ~~have been~~are completed and recorded on an IRF, "Yes"~~the Permittees~~ shall be indicated~~enter an "OK"~~ in the appropriate~~"Condition"~~ column on the IRF. Comments may be noted on the IRF in the same fashion as ARs, designating a condition at the unit that should be noted or other activities that may be occurring at the unit that do not require corrective action. As appropriate for the hazardous waste management unit, fire protection maintenance specialists~~The Permittees~~ shall conduct and document ~~monthly~~ inspections ~~of the items listed below to ensure that the equipment is fully functional for its intended purpose:~~to verify evacuation alarms, ~~;~~ ventilation alarms, ~~;~~ fire alarms,~~;~~ and fire pumps are fully functional for the intended purpose(s).	
E.1.2, Actions Resulting from Inspections	Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*. The Permittees shall inspect hazardous waste management units utilized for container storage~~ units (CSU)~~ according to the schedule provided below.	The Permittees propose an editorial changes to the section.

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E.2, Inspection Schedule and Requirements for Container Storage Units	Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*. The Permittees shall inspect hazardous waste management units utilized for container storage ~~units (CSU)~~ according to the schedule provided below.	The Permittees propose edits to remove abbreviations and acronyms where ever possible to improve understandability of the document.
E.2.1, On Day(s) of Waste Handling	Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*. The Permittees shall conduct inspections every day of, or the day after, waste handling, with special attention placed on areas subject to spills, such as loading and unloading areas. The IRF will be filled out as appropriate for each specific unit or portion of a unit, as appropriate. Waste handling includes when waste is received at, moved or opened within, treated at, or removed from a ~~CSU~~unit. With respect to each container, the Permittees shall inspect and record the following items, as applicable: • General IRF information (Items 1-~~7~~6) • Secondary containment structures • (un)loading area(s) • Run-~~-~~on and run-off control • Covers and lids of containers • Labels (including accumulation • ~~Accumulation~~ start date) • Compatibility • Structural integrity of containers • ~~(Un)loading area(s)~~	The Permittees propose edits to reference the inspection record form, to remove abbreviations and acronyms wherever possible to improve understandability of the document, to remove numbering from the list, and to update the revised numbering on the inspection record form.

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	• Presence and condition of shaft cover	
E.2.2, Weekly	Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose edits to reference the inspection record form, to remove abbreviations and acronyms wherever possible to improve understandability of the document, to remove numbering from the list of inspection items, and to update the revised numbering on the inspection record form.

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Additional E.2.3, Special Inspection Requirements at Technical Area 55, and subsections E.2.3.1, Non-Intrusive Inspection Systems, and E.2.3.2, Intrusive Inspection Procedures	Movement of information from a different section of the plan to the container storage inspection section. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*. **E.2.3 Special Inspection Requirements at Technical Area 55** The Vault is a container storage hazardous waste management unit located in the basement at TA-55-4 and waste containers in the Vault shall only contain mixed waste. The following special inspection requirements are applicable to those rooms in the Vault that store mixed waste. **E.2.3.1 Non-Intrusive Inspection Systems** Inspection requirements are satisfied in part by the use of continuous air monitors (CAM) located in each individual storage room within the Vault to continuously monitor airborne radioactivity levels. If a problem with a container is identified by a CAM, the Permittees shall remove that container from the Vault and inspect it in an open-front hood. The Permittees shall ensure that information obtained during inspections and all container transfers are noted on the Vault Traffic Log Book maintained at TA-55. The Permittees shall inspect the Vault Traffic Log Book weekly to verify receipt or transfer of mixed waste from the Vault. If mixed waste is not currently being stored in the Vault and the weekly inspection indicates that no mixed waste has been received, the Permittees shall mark the Inspection Record Form (IRF) "No Use" and complete it according to the IRF instructions. **E.2.3.2 Intrusive Inspection Procedures**	The Permittees propose to move requirements from the TA-55-specific subsection of the Permit Attachment to the main portion for hazardous waste management units that are used for container storage. This move consolidates the requirements for these hazardous waste management units.

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	The Permittees shall ensure that the central hallway of the Vault is inspected weekly when mixed waste is in storage. The Permittees shall inspect and note the following items in weekly inspections: • Vault Traffic Log Book (inspected for receipt or transfer of waste) • Communications equipment • Warning signs • Security • Work surfaces and floors in central corridor and a visual inspection of storage rooms from hallway • Spill and fire equipment • Secondary containment • (Un)loading area • Confirm communication with Nuclear Materials Custodian that there are no alarms or problems at the unit When containers are placed into or removed from a storage room within the Vault, the Permittees shall inspect the following items in that storage room, as appropriate: • Vault Traffic Log Book (inspected for receipt or transfer of waste) • Communications equipment • Warning signs • Security • Work surfaces and floors • Spill and fire equipment • Secondary containment • (Un)loading area • Confirm communication with Nuclear Materials Custodian that there are no alarms or problems at the unit • Emergency equipment/lighting	

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	• Covers/lids of containers • Labels (including accumulation start date) • Compatibility • Structural integrity of containers • Aisle spacing/stacking • Pallets/raised containers The Permittees shall record inspection results on the IRF maintained at TA-55.	
E.3.1, Daily (During Operation)	Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose clarifying language within the section, clarifying language within inspection list, removing numbering from the list of inspection items, and updating the revised numbering on the inspection record form.
E.3.2, Weekly	Revision of inspection items to reflect currently permitted unit inspection requirements. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose updated language to remove inspection requirements that are not applicable for the currently permitted tank storage unit, to remove numbering from the list of inspection items, and to update the revised numbering on the inspection record form. Former tank systems at LANL drove additional inspection requirements that are no longer applicable.

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Newly added E.4, Inspection Schedule and Requirements for Open Burning and Open Detonation Units, and subsections E.4.1, On the Day of Treatment, and E.4.2, Weekly	Addition of sections associated with the inspection of open burning and open detonation treatment units. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*. **E.4 ~~(Reserved)~~ INSPECTION SCHEDULE AND REQUIREMENTS FOR OPEN BURNING AND OPEN DETONATION UNITS** The open burning and open detonation units will be inspected according to the schedule below. **E.4.1 On the Day of Treatment** Inspections will be conducted every day of operation (*i.e.*, every day that open burning treatment or open detonation occurs). For inspections conducted on the day of treatment, the following items will be inspected, as appropriate: • General IRF information (Items 1-6) • (Un)loading area • Open burning unit or open detonation unit area **E.4.2 Weekly** Weekly inspections of the active open burning or open detonation units will be conducted even if no treatment will occur during that week or when waste is present at the treatment unit and awaiting treatment. Weekly inspections will address the following items, as appropriate: • General IRF information (Items 1-6) • Communications equipment • Warning signs • Security • Work surfaces/floors/roads • Spill/fire equipment	The Permittees propose the added sections to provide inspection requirements for open burning/open detonation since these units are proposed to be permitted in Sections 4 and 5 of the Permit Renewal Application.

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	• Eyewashes/safety showers • Wind sock • (Un)loading area • Run-on/off control • Open burning unit or open detonation unit area **E.4.3 Open Burning/Open Detonation Treatment Inspection** Before treatment activities commence at the open burning and open detonation treatment units, an inspection shall be conducted to ensure that operational restrictions required by Permit Parts 5 and 6 are met. The inspection is documented on Form E-2 as included within this Attachment. After treatment has been completed, a final visual survey shall also be conducted and documented on Form E-2.	
E.5, Inspection Schedule and Requirements for Stabilization Units	Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose to correct the title of the section.
E.5.1, Daily (During Operation)	Removal of numbering from list, correction of numbering on IRF, editorial changes. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose clarifying language within the inspection list, removing numbering from the list of inspection items, and updating the revised numbering on the inspection record form.
E.5.2, Weekly	Removal of numbering from list, correction of numbering on list, editorial changes. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose clarifying language within the inspection list, removing numbering from the list of inspection items, and updating the revised numbering on the inspection record form.

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E.6, Inspection and Monitoring for Units Subject to Subpart AA Requirements	**E.6 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART AA REQUIREMENTS** Inspection and monitoring requirements for units subject to 40 CFR Part 264, Subpart AA, are currently not ~~addressed, if~~ applicable at any hazardous waste management units located at the Facility. If applicable requirements would be addressed~~, in the TA-specific Sections of this Attachment~~.	The Permittees propose clarification regarding the applicability of the inspection and monitoring requirements that currently exist at the Facility.
E.7, Inspection and Monitoring for Units Subject to Subpart BB Requirements	**E.7 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART BB REQUIREMENTS** The Permittees shall inspect units subject to 40 CFR Part 264, Subpart BB, according to the schedule and procedures provided below. There are currently no hazardous waste management units located at the Facility where these inspections are required.	The Permittees propose clarification regarding the applicability of the inspection and monitoring requirements that currently exist at the Facility.
E.7.1, Requirements for Pumps in Light Liquid Service	Replace numbered list with bulleted list. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose removing numbering from the list of inspection items.
E.7.2, Requirements for Pressure Relief Devices in Gas/Vapor Service	Replace numbered list with bulleted list. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose removing numbering from the list of inspection items and correcting the title of the section.
E.7.3, Requirements for Open-ended Valves or Lines	Replace numbered list with bulleted list. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose removing numbering from the list of inspection items.
E.8, Inspection and Monitoring for Units Subject to Subpart CC Requirements	Replace numbered list with bulleted list. Formatting and line spacing has been updated within the section. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose edits to reference the inspection record form, to remove abbreviations and acronyms wherever possible to

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Permit Attachment Section	Proposed modification	Justification
		improve understandability of the document, to remove numbering from the list.
E.9, Additional Inspections Required, and subsections E.9.1, Technical Area 50, Building 69 Storm Water Drainage, and E.9.2, Technical Area 54, Area L 215 Holding Tank	Movement of requirements for inspections that are required by sections of the Permit other than Permit Section 2.6, *General Inspection Requirements*. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*. **E.9 ADDITIONAL INSPECTIONS REQUIRED** This section outlines other inspections as required by Sections of the Permit other than Permit Section 2.6, *General Inspections*. **E.9.1 Technical Area 50, Building 69 Storm Water Drainage** The storm water drainage swales located in the vicinity of the TA-50-69 Outdoor hazardous waste management unit are utilized to divert storm water away from the TA-50-69 pad. One drainage swale is located just south of the permitted unit or between it and the Material Disposal Area (MDA) C. A second drainage swale is located on the west side of the permitted unit between Pecos Drive and the TA-50 fence line. The storm water drainage area is inspected annually for signs of deterioration to ensure that potential run-on is directed away from the facility for the following areas: • South of TA-50-69 between TA-50-69 and MDA C • West of TA-50-69 between Pecos Drive and the TA-50 fence line The form utilized to document this inspection is included as Form E-3 of this Attachment.	The Permittees propose the consolidation of these additional inspections into one section with appropriate subsections.

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	E.9.2 Technical Area 54, Area L Dome 215 Holding Tank The 10,000-gallon holding tank is located at Area L, Dome 215. The tank is used to collect liquid that may result from fire-suppression activities and that is in excess of the capacity inside the rind wall located around the dome to prevent run-on into the dome. The tank is inspected monthly for any detectable fluids. If any fluids are detected in the holding tank, the Waste Management Coordinator and the Shift Operations Manager will ensure that a chemical analysis of the fluid is performed and fluid is removed within 3 days. The inspection requirements should be applied to the monthly inspections conducted on the 10,000-gallon holding tank and documented on Form E-4 as included within this Attachment.	
Form E-1, Hazardous Waste Facility Inspection Record Form	Reorganization of the inspection record form to include a form number and revisions to the form and the instructions for the form. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees have updated the form and the instructions for clarity and because the examples of hazardous waste management units that are inspected utilizing the form require updating. The instructions to complete the inspection record form have been updated for clarity and to simplify the form to reduce the potential for error while filling out the form.
Form E-2, Annual TA-50-69 Storm Water Drainage Inspection Form	Reorganization of the plan to include no subtitled sections and describe inspection forms in appropriate sections. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose the reorganization of the plan to eliminate the confusion that comes with the utilization of the technical area-specific subtitled sections within the document. For clarity, description of the required

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Permit Attachment Section	Proposed modification	Justification
		inspection is included in the appropriate section of the plan and each inspection form has been assigned a number.
Form E-3, Monthly Area L, Dome 215 Holding Tank Inspection Form	Reorganization of the plan to include no subtitled sections and describe inspection forms in appropriate sections. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose the reorganization of the plan to eliminate the confusion that comes with the utilization of the technical area-specific subtitled sections within the document. For clarity, the description of the required inspections is included in the appropriate section of the plan and each inspection form has been assigned a number.
Removed subtitle sections for TA-50 Attachment E Inspection Plan, TA-54 Attachment E Inspection Plan, and TA-55 Attachment E Inspection Plan	Reorganization of the plan to include no subtitled sections and describe inspection forms in appropriate sections. Please see specific revisions within Supplement 1-5, *Permittees' Proposed Changes to Attachment E, Inspection Plan*.	The Permittees propose to eliminate the confusion that comes with the utilization of the technical area-specific subtitled sections within the plan and remove redundancy within the plan.

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The personnel training plan has been modified to include proposed text as follows: (1) permit sections have been reorganized by moving text to a different section to improve clarity and readability and to facilitate permit implementation (no text changes); and (2) minor editorial changes to improve clarity and readability and to facilitate implementation.

Permit Attachment Section	**Proposed modification**	**Justification**
Table of Contents	Please see revised Table of Contents within Supplement 1-6, *Permittees' Proposed Changes to Attachment F, Personnel Training Plan*.	The Permittees propose to revise the table of contents to incorporate the changes within this attachment.
List of Tables	~~F-2 Outline of Facility-Specific and On-the-Job Training for Treatment and Storage Facility Operations~~	The Permittees propose the deletion of the reference to a table removed from the plan.
Throughout document	Heading formatting and leveling have been updated to be consistent throughout the document. Revisions are included within Supplement 1-6, *Permittees' Proposed Changes to Attachment F, Personnel Training Plan*.	Permittees propose changes to improve the quality of the document and correct inconsistencies.
Throughout the document	All references to "or mixed" or "and mixed" when referring to "hazardous waste" are proposed to be removed. Please see specific revisions within Supplement 1-6, *Permittees' Proposed Changes to Attachment F, Personnel Training Plan*.	The Permittees propose this change throughout the Permit where appropriate. The difference between hazardous waste and mixed waste is a distinction that the Permittees previously included within permit applications and is now outdated and proposed for removal for clarity. It is understood that the term "hazardous waste" means both non-radioactive hazardous and mixed waste.

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Renamed F.1, Hazardous Waste Management Responsibilities	**F.1 HAZARDOUS ~~AND MIXED~~ WASTE MANAGEMENT ~~/~~RESPONSIBILITIES** Waste management activities and responsibilities at specific hazardous ~~and/or mixed~~ waste management units are handled by the appropriate organization~~LANL division or group. Waste management personnel within the Environmental Projects Associate Directorate are responsible for most centralized waste management activities~~ at LANL. Hazardous waste compliance personnel are responsible for providing waste management regulatory guidance to all ~~LANL~~ personnel regarding waste~~and~~ operations. Other personnel at LANL who may provide assistance in various waste management activities are discussed in the following paragraph and in Attachment D, ~~(~~*Contingency Plan*.~~).~~ Laboratory-contracted support services provide trained personnel to assist in waste-handling activities. The Permittees shall ensure that radiation protection, health physics, occupational medicine, industrial hygiene and safety, nuclear criticality safety, occurrence reporting, hazardous material response, meteorology and air quality, water quality and hydrology, ecology, and hazardous waste compliance personnel are trained in their respective specialties to provide emergency response support and that LANL security provides workers trained in traffic and site-access control. The emergency management organization provides emergency planning and response at LANL and ~~have~~ has the overall responsibility for LANL's Emergency Management Plan (EMP) training. Training~~Central training~~ personnel are responsible for the analysis, design, development, and delivery of LANL-wide environment, safety, and health ~~(ES&H)~~ training. Training~~Courses~~ on hazardous ~~and/or mixed~~ waste is~~are~~ designed with substantial input from hazardous waste compliance personnel, hazardous waste operations personnel, and other subject matter experts, as appropriate.	The Permittees propose changes to remove references to “mixed waste” and updates to reflect organizational and contractual changes.
Renamed F.2, Training Content,	Text revisions include changes to allow for two contracted co-operators and describe how training is conducted and tracked.	The Permittees propose updates within the section to be more specific regarding responsibility for

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Permit Attachment Section	**Proposed modification**	**Justification**
Frequency, and Implementation	Please see specific revisions within Supplement 1-6, *Permittees' Proposed Changes to Attachment F, Personnel Training Plan*.	training, to clearly reflect how training is conducted, to generalize tracking systems and naming conventions for units to allow for multiple contractors and differing title designations, and to update the terminology to indicate that not all personnel training would be conducted through "courses".
Renamed F.2.1, Facility-Wide Training	Text revisions include changes to allow for two contracted co-operators and describe the intent of the training and how training is conducted and tracked. Please see specific revisions within Supplement 1-6, *Permittees' Proposed Changes to Attachment F, Personnel Training Plan*.	The Permittees propose updates within the section to be more specific regarding responsibility for training, to clearly reflect how training is conducted, to generalize tracking systems and naming conventions for units to allow for multiple contractors and differing title designations, and to update the terminology to indicate that not all personnel training would be conducted through "courses". Text associated with the intent of the training provided was moved to this section for consolidation.

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Permit Attachment Section	Proposed modification	Justification
F.2.2, Unit-Specific Training	Waste-handling personnel shall participate in hazardous waste management~~permitted~~ unit-specific training at their particular work locations. Section ~~Table~~ F.~~-~~2.3 addresses program requirements that ensure that hazardous ~~and mixed~~ waste management and handling personnel know the specific requirements for their particular facilities and are able to respond effectively to emergencies. Personnel who work within hazardous waste management units shall be~~The Permittees shall ensure that personnel become~~ familiar with emergency procedures, equipment, and systems at their particular facility, including emergency and monitoring equipment use, inspection, repair, and replacement, as appropriate. The Permittees shall ensure that they also receive instruction on immediate emergency response actions~~contingency plan contents and implementation~~ (as they apply to their particular facility) including, but not limited to, communications or alarm systems, response to fires and explosions at their facility, key parameters for automatic waste-feed cutoff systems, shutdown of facility operations, and response to groundwater contamination incidents.	The Permittees propose updates to referenced sections and revision of text to reflect preferred terminology by the Permittees and for consistency throughout the Permit.
F.2.3, On-the-Job Training	Text revisions include updates in terminology, changes to allow for the two contracted operators, and movement of text from a removed section. Please see specific revisions within Supplement 1-6, *Permittees' Proposed Changes to Attachment F, Personnel Training Plan*.	The Permittees propose updates to include references to on-the-job training (OJT), updates to preferred terminology, addition of information regarding explosives, and inclusion of unit-specific training topics from a section later in the document that is proposed for deletion to consolidate information within the plan.

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Permit Attachment Section	Proposed modification	Justification
Renamed F.2.4, Training Coordination	**F.2.4 Training Coordination~~Coordinator~~** The Permittees' ~~institutional~~ training organization(s) shall implement ~~shall direct~~ the applicable Facility-wide hazardous waste~~ES&H~~ training program and provide training coordinator support~~that the Division Leader (or designee) serves as the Training Coordinator~~ for Facility-wide waste management training. ~~The~~ Training coordination~~Coordinator~~ shall support~~be trained in~~ the operation of hazardous ~~and mixed~~ waste management units~~facilities~~, waste management practices, and emergency procedures ~~and is responsible for coordinating training courses~~.	The Permittees propose changes to the description of training management at the Facility.
Renamed F.3, Training for Emergency Events	Text revisions include updates to terminology and generalization of title names to allow for the two contracted co-operators. Please see specific revisions within Supplement 1-6, *Permittees' Proposed Changes to Attachment F, Personnel Training Plan*.	The Permittees propose updates to revise titles for responsible positions and updates to preferred terminology.
Former F.4, Implementation of Training Programs	Removed section. Please see specific revisions within Supplement 1-6, *Permittees' Proposed Changes to Attachment F, Personnel Training Plan*.	The Permittees propose removing this section to decrease redundancy within the plan and because implementation requirements are better represented in previous sections of the plan.
Table F-1, Facility-Wide Training Program Outline	Edits to the table include formatting, updating of site worker titles, and updates to footnotes, and reflect changes to delivery of some training. Please see specific revisions within Supplement 1-6, *Permittees' Proposed Changes to Attachment F, Personnel Training Plan*.	The Permittees propose changes to update the table, the footnotes, and the titles of personnel referenced within the table.

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Permit Attachment Section	**Proposed modification**	**Justification**
Former Table F-2, Outline of Permitted Unit Specific on On-the-Job Training for Treatment and Storage Facility Operations	Removed table. Please see specific revisions within Supplement 1-6, *Permittees' Proposed Changes to Attachment F, Personnel Training Plan*.	The Permittees propose deletion of this table that includes information proposed for incorporation into previous sections within the plan.

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Permit Attachment Section	Proposed modification					Justification
Table J-1 (Active Portion of the Facility)	TA-16-388	X01*		Flash Pad Total square footage - 484 ~~Interim Status Unit~~	Outdoor (associated with an open burning unit)	The Permittees propose to permit the open burning unit at TA-16-388 and remove the "interim status unit" designation from the table.
	TA-36-8	X01**	2000 lbs/ detonation	Near Structure TA-36-8 ~~Interim Status Unit~~	NA	The Permittees propose to permit these open detonation units at TA-36-8 and TA-39-6 and remove the "interim status" designation from the table.
	TA-39-6	X01**	1000 lbs/ detonation	Near Structure TA-39-6 ~~Interim Status Unit~~	NA	
	TA-54 "G," unspecified pits, shafts, or trenches	D80	NA	Material Disposal Area Unit not permitted to receive hazardous waste	Regulated unit(s)	The Permittees propose the addition of language to the table of active hazardous waste management units as a result of the Settlement Agreement in *U.S. v. Curry* (*see* Section 6.1 of the Permit Renewal Application). The revisions to the descriptions of this unit were agreed upon among the parties to the settlement.

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Permit Attachment Section	Proposed modification					Justification
	TA-54 Area G Pad 3	S01 T04	213,840 gal 23,160 gal/day	Includes Storage Dome 48 Includes treatment process for macroencapsulation Approximately 17,000 square feet	Outdoor (associated with a regulated unit)	The Permittees propose a minor editorial change to correct the inadvertent omission of a T04 process code.
	TA-54 Area G Pad 5	S01 T04	623,480 gal 23,160 gal/day	Includes Storage Domes 49 and 224 and Storage Sheds 144, 145, 146, 177, 1027, 1028, 1030, and 1041 Pad 5 is a consolidation of former Pads 5, 7, and 8. Includes treatment process for macroencapsulation Total square footage – 59,900	Outdoor (associated with a regulated unit)	The Permittees propose a minor editorial change to add a return after macroencapsulation.
	TA-54 "H," unspecified pits, shafts, or trenches	D80	NA	Material Disposal Area H Unit not permitted to receive hazardous waste	Regulated unit(s)	The Permittees propose the addition of language to the table of active hazardous waste management units as the result of the Settlement Agreement in *U.S. v. Curry* (*see* Section 6.1 of the Permit Renewal Application). The revisions

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Permit Attachment Section	Proposed modification					Justification
	TA-54 "L," unspecified pits, shafts, or trenches	D80	NA	Material Disposal Area L Unit not permitted to receive hazardous waste	Regulated unit(s)	to the descriptions of these units were agreed upon among the parties.
	TA-55-4, B40	S01 T04	21,500 gal 3,441 gal/day	Located in basement ~~Referred to as Area 1~~ Includes treatment process for macroencapsulation Total square footage – 3,380	Indoor	The Permittees propose to remove area designations for TA-55-4, room B40, that are no longer valid.

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Permit Attachment Section	Proposed modification					Justification
Table J-1 (Active Portion of the Facility)	TA-55-4, K13	S01	2,500 gal	Located in basement ~~Referred to as Area 4~~ Total square footage - 208	Indoor	The Permittees propose to remove area designations for TA-55-4, rooms K13 and B05, that are no longer valid. Also, updating references to tank and stabilization unit.
	TA-55-4, B05	S01	3,600 gal	Located in basement ~~Referred to as Area 5~~ Non-liquid wastes only Total square footage - 260	Indoor	
	TA-55-4, Vault	S01	4,000 gal	Located in basement ~~Referred to as Area 6~~ Total square footage – 4,020	Indoor	
	TA-55 Mixed Waste Storage Tank System	S02	Storage - 137 gal	TA-55-4 Unit divided into two components (Evaporator Glovebox Storage Tank System and Cementation Storage Tank System) Ancillary equipment and secondary containment. Total square footage – 4,500	Indoor	
	TA-55 Mixed Waste Stabilization Unit	T04	Treatment - 150 gal / day	TA-55-4 Total square footage – 4,500	Indoor	

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Attachment K

This table describes changes proposed by Permittees to the figures within Attachment K of the Permit. Updates and consolidations have been proposed to Attachment K, *Listing of SWMUs and AOCs,* to consolidate and reduce redundancy within the attachment.

Permit Attachment Section	**Proposed modification**	**Justification**
Table K-1 (SWMUs and AOCs Requiring Corrective Action)	Removed the following SWMUs and AOCs from table: 00-018(a), 00-018(b), 00-030(d), 00-030(eN), 00-030(j), 00-030(n), 00-030(o), 00-030(p), 00-039, C-00-043, 19-001, 19-002, 19-003, 45-001, 45-002, 45-003, 45-004, C-45-001, 73-004(c).	The Permittees propose the removals and additions to the tables in support of a Class 3 permit modification request submitted by the Permittees on September 30, 2021, to represent 19 sites that were granted certificates of completion for corrective action complete without controls (*see* Section 6.2 of the Permit Renewal Application).

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Attachment N

This table describes changes proposed by Permittees to the figures within Attachment N of the Permit. Updates and consolidations have been proposed to Attachment N, *Figures,* to consolidate and reduce redundancy within the attachment.

New Figure Number	2010 Permit Figure Number(s)	Proposed Modification	Justification
Figure 1 Regional Location Map of Los Alamos National Laboratory (LANL)	Figure 1	Replace with an updated Figure 1 and update the title of the figure. Update the preferred name of pueblo. Update the legend to distinguish ownership boundaries. General updates to improve the old map.	The Permittees propose to update the contents of the figure to more clearly depict the property boundary of the Facility after consultation with the Pueblo de San Ildefonso Indian Reservation to update their name.
Figure 2 Facility Boundary and Location Map of Technical Areas (TAs)	Figure 2 Replaces Figures 11, 22, 24, 25, 38, & 54	Replace with updated Figure 2 and update the title of the figure. Update the preferred name of pueblo. Added main roads and approximate locations for the current hazardous waste management units so that multiple location figures are not necessary.	The Permittees propose to update the figure with newer content, to improve the old map, and to update the preferred name of the Pueblo. This figure replaces all current location figures within the Permit to reduce redundant figures and for ease in updating.
Figure 3 Facility Boundary with Details of Non-LANL Site Areas	Figure 3	Replace with updated Figure 3 and update the title of the figure. Update the preferred name of pueblo. Update the name of the trailer park from Royal Crest to Elk Ridge.	The Permittees propose to update the figure to provide new information regarding name changes.
Figure 4 TA-3 Location Map Showing Security Fences, Entry Gates, and Entry Station	Replaces Figure 4 and Figure 12	Update the title of the figure and replace figure with new version.	The Permittees propose an editorial change to the figure title and update to the figure.

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New Figure Number	2010 Permit Figure Number(s)	Proposed Modification	Justification
Figure 5 TA-16-388 Flash Pad Location Map Showing Security Fences and Entry Gate	New figure	Propose to insert new Figure 5 to depict the location and security at the TA-16-388 Flash Pad.	The Permittees propose to insert a new Figure 5 to depict the location and security features at the proposed TA-16-388 open burning unit.
Figure 6 TA-36-8 Open Detonation Location Map Showing Security Fences and Entry Gate	New figure	Insert figure to depict the location and security features of the proposed TA-36-8 open detonation unit.	The Permittees propose to move the current 2010 Permit Figure 6 to a new Figure 8 (TA-50 security features, see below). The Permittees propose to change Figure 6 to depict the security at the proposed TA-36-8 open detonation unit.
Figure 7 TA-39-6 Open Detonation Location Map Showing Security Fences and Entry Gate	New figure	Insert a new Figure 7 for the location and security at the proposed TA-39-6 open detonation unit.	Propose to move Figure 7 (TA-54, Area L, location and security features) in the current 2010 Permit, to new Figure 9 for consistency. The Permittees propose new Figure 7 to depict the location security features at the proposed open detonation unit TA-39-6.
Figure 8 TA-50 Location Map Showing Security Fences and Entry Gate	Replaces Figure 6 and Figure 23	Propose to renumber Figure 8 (TA-54, Area G, location and security) in the current 2010 Permit to new Figure 10 and replace with a new Figure 8 for the TA-50 location and security.	The Permittees propose to rearrange the order of figures to insert the proposed new units and for consistency. Former Figure 8 is now Figure 10. The figure has been updated to depict the one gate at TA-50 for security.
Figure 9 TA-54, Area L, Location Map Showing Security Fences, Entry Gates, and Entry Stations	Figure 7 and Figure 26	Propose to renumber Figure 7 in the current 2010 Permit to Figure 9 (Technical Area 54, Area L, Security Fences, Entry Gates, and Entry Stations). No changes were made to the figure, however, the title of the figure was updated for consistency. Removal of redundant Figure 26 in the current 2010 Permit is also proposed.	The Permittees propose to rearrange and renumber figures to align with proposed changes and place the TA-location maps and security figures in order.

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New Figure Number	2010 Permit Figure Number(s)	Proposed Modification	Justification
Figure 10 TA-54, Area G, Location Map Showing Security Fences, Entry Gates, and Entry Station	Figure 8	Propose to renumber Figure 8 in the current 2010 Permit to new Figure 10 (Technical Area 54, Area G, Security Fences, Entry Gates, and Entry Stations). No changes were made to the figure, however, the title of the figure was updated for consistency.	The Permittees propose to rearrange and renumber figures to align with proposed changes and place the TA-location maps and security figures in order.
Figure 11 TA-54 West Location Map Showing Security Fences, Entry Gates, and Entry Stations	Figure 9 and Figure 37	Propose to renumber Figure 9 in the current 2010 Permit to new Figure 11 (TA-54 West Location Map Showing Security Fences, Entry Gates, and Entry Stations). The figure has been updated to reflect the allowed treatment at the outdoor unit and the title of the figure has been updated for consistency. Removal of redundant Figure 37 in the current 2010 Permit is also proposed.	The Permittees propose to rearrange and renumber figures to align with proposed changes and place the TA-location maps and security figures in order.
Figure 12 TA-55 Location Map Showing Security Fences and Entry Gates	Figure 10 and Figure 39	Propose to renumber Figure 10 in the current 2010 Permit to new Figure 12 (TA-55 Location Map Showing Security Fences and Entry Gates). The figure has been updated to reflect the allowed treatment at several units and the title of the figure has been updated for consistency. Removal of redundant Figure 39 in the current 2010 Permit is also proposed.	The Permittees propose to rearrange and renumber figures to align with proposed changes and place the TA-location maps and security figures in order.
Figure 13 TA-60 Location Map Showing Security Fences and Entry Gates	Figure 52	Propose to renumber Figure 52 in the current 2010 Permit to new Figure 13 (TA-60 Location Map Showing Security Fences and Entry Gates). The figure has not been changed.	The Permittees propose to rearrange and renumber figures to align with proposed changes and place the TA-location maps and security figures in order.
Figure 14 TA-63 Transuranic Waste	Figure 55	Propose to renumber Figure 55 in the current 2010 Permit to new Figure 14 (TA-63 Transuranic Waste	The Permittees propose to rearrange and renumber figures to align with proposed changes

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New Figure Number	2010 Permit Figure Number(s)	Proposed Modification	Justification
Facility Location Map Showing Security Fences, Entry Gates, and Vehicle Barriers		Facility Location Map Showing Security Fences, Entry Gates, and Vehicle Barriers). The figure has been updated to reflect the allowed treatment at the unit and the title of the figure has been updated for consistency.	and place the TA-location maps and security figures in order.
Figure 15 TA-3 Chemistry Metallurgy Research (CMR) Building Basement Layout	Figure 13, Figure 14, and Figure 15	Propose to replace old Figures 13 through 15 with a single figure for the TA-3 Chemistry Metallurgy Research (CMR) building basement layout that depicts all of the units in one figure.	The Permittees also propose to insert an updated figure here for the CMR basement units figure.
Figure 16 Diagram of the TA-16-388 Flash Pad Showing Location of Burners and Retractable Metal Roof	New figure	Propose to insert new figure diagram of the TA-16-388 Flash Pad showing the location of the burners and the metal roof to depict the proposed open burning unit.	The Permittees propose a new figure to illustrate the design of the proposed open burning unit.
Figure 17 TA-54, Area G, Container Storage Units	Figure 27	Propose to renumber Figure 27 in the current 2010 Permit to new Figure 17 (Technical Area 54, Area G, Container Storage Unit). No changes were made to the figure, however, the title of the figure was updated for consistency.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.
Figure 18 TA-54, Area G, Pad 9 (Transuranic Waste Inspectable Storage Project (TWISP) Domes 229, 230, 231 & 232)	Figure 28	Propose to renumber Figure 28 in the current 2010 Permit to new Figure 18 (Technical Area (TA)-54, Area G, Pad 9 (TWISP Domes 229, 230, 231 & 232)). No changes were made to the figure, however, the title of the figure was updated for consistency.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
Attachment N

New Figure Number	2010 Permit Figure Number(s)	Proposed Modification	Justification
Figure 19 TA-54, Area G, Pad 1	Figure 29	Propose to renumber Figure 29 in the current 2010 Permit to new Figure 19 (TA-54, Area G, Pad 1) and propose to update the figure title.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.
Figure 20 TA-54, Area G, Pad 3	Figure 30	Propose to renumber Figure 30 in the current 2010 Permit to new Figure 20 (Technical Area (TA)-54, Area G, Pad 3) and propose to update the figure title.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.
Figure 21 TA-54, Area G, Pad 10	Figure 31	Propose to renumber Figure 31 in the current 2010 Permit to new Figure 21 (TA-54, Area G, Pad 10) and propose to update the figure title.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.
Figure 22 TA-54, Area G, Pad 5 (Domes 49 and 224; and Storage Sheds 114, 145, 146, 177, 1027, 1028, 1030, and 1041)	Figure 32	Propose to renumber Figure 32 in the current 2010 Permit to new Figure 22 (Technical Area (TA)-54, Area G, Pad 5 (Domes 49 and 224; and Storage Sheds 114, 145, 146, 177, 1027, 1028, 1030, and 1041)) and propose to update the figure title.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.
Figure 23 TA-54, Area G, Pad 6, Domes 153 & 283	Figure 33	Propose to renumber Figure 33 in the current 2010 Permit to new Figure 23 (TA-54, Area G, Pad 6, Domes 153 & 283) and propose to update the figure title.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.
Figure 24 TA-54, Area G, Storage Shed 8	Figure 34	Propose to renumber Figure 34 in the current 2010 Permit to new Figure 24 (TA-54, Area G, Storage Shed 8) and propose to update the figure title.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.
Figure 25 TA-54, Area G, Building 33	Figure 35	Propose to renumber Figure 35 in the current 2010 Permit to new Figure 25 (TA-54, Area G, Building 33) and propose to update the figure title.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
Attachment N

New Figure Number	2010 Permit Figure Number(s)	Proposed Modification	Justification
Figure 26 TA-54, Area G, Pad 11	Figure 36	Propose to renumber Figure 36 in the current 2010 Permit to new Figure 26 (TA-54, Area G, Pad 11) and propose to update the figure title.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.
Figure 27 TA 55, Basement Floor Plan	Figures 40, 41, 42, 43, 44, 57 and 58	Propose to replace Figures 40 through 44 and Figures 57 & 58 with a single figure depicting the Unclassified Controlled Nuclear Information (UCNI) regarding the TA-55 units	The Permittees propose to depict all of the TA-55 UCNI units all in one UCNI figure rather than have multiple UCNI files.
Figure 28 TA-55, Building 4, Outdoor Container Storage Pad	Figure 45	Propose to renumber Figure 45 in the current 2010 Permit to new Figure 28 (TA-55, Building 4, Outdoor Container Storage Pad). The figure has been updated for clarity.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.
Figure 29 TA-55-355 Container Storage Pad	Figure 59	Propose to renumber Figure 59 in the current 2010 Permit to new Figure 29 (TA-55-355 Container Storage Pad) and update the figure title.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.
Figure 30 TA-55, Building 4, Storage Tank System Process Flow Diagram	Figure 47	Propose to renumber Figure 47 in the current 2010 Permit to new Figure 30 (TA-55, Building 4 Storage Tank System Process Flow Diagram).	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.
Figure 31 TA-55, Building 4, Cementation Unit Process Flow Diagram	Figure 48	Propose to renumber Figure 48 in the current 2010 Permit to new Figure 31 (TA-55, Building 4, Cementation Unit Process Flow Diagram) and update the title of the figure.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.
Figure 32 TA-54, Material Disposal Area (MDA) H	Figure 50	Propose to renumber Figure 50 in the current 2010 Permit to new Figure 32 (TA-54, Material Disposal Area (MDA) H) and update the title of the figure.	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.

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New Figure Number	2010 Permit Figure Number(s)	Proposed Modification	Justification
Figure 33 TA-63 Transuranic Waste Facility Subsurface Vapor Monitoring Network	Figure 56	Propose to renumber Figure 56 in the current 2010 Permit to new Figure 33 (TA-63 Transuranic Waste Facility Subsurface Vapor Monitoring Network).	The Permittees propose to rearrange and renumber figures to align with proposed changes and reduce redundancy within the attachment.
	Figure 49	Propose to move the figure depicting emergency facilities to Figure D-2, within Attachment D, *Contingency Plan*.	The Permittees propose to include the figure within Attachment D, *Contingency Plan*, rather than include it in Attachment N. It is a more appropriate location and will be easier to locate in an emergency if it is within the contingency plan.

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
Attachment N – Text Changes

This table describes changes proposed by Permittees to text throughout the Permit Parts and Permit Attachments. Revisions are all necessary to accommodate the updates and consolidations proposed to Attachment N, *Figures,* to consolidate and reduce redundancy within Attachment N.

Permit or Attachment Section	Proposed Modification	Justification
Permit Parts 1-11		
2.5, Security	The Permittees shall maintain and ensure the effectiveness of all security fences, entry gates, and entry stations surrounding the permitted units as specified in Figures 4 through ~~10 and 55~~14 in Attachment N (*Figures)*.	Figures 4-14 are proposed to be updated to depict the location and security features of all of the Technical Areas.
2.8, Special Requirements for Ignitable, Reactive, or Incompatible Waste	The Permittees shall manage ignitable, reactive, and incompatible hazardous wastes in containers and tanks in compliance with the requirements of 40 CFR §§ 264.17, 264.176, 264.177, 264.198, and 264.199, which are incorporated herein by reference, and Permit Parts 3 and 4. The Permittees shall ensure that containers holding ignitable or reactive wastes are located at least 15 meters from the facility boundary defined as the technical area (TA) specific ~~boundary~~ boundaries identified in Figure~~s 11, 22, 24, and 38~~ 2 in Permit Attachment N (*Figures*). At TA-63, the Permittees shall ensure that containers holding ignitable or reactive waste are located at least 15 meters from the Transuranic Waste Facility (TWF) fence line, as shown in Figure ~~55~~14 in Permit ~~attachment~~Attachment N (*Figures*) (*see* 40 CFR §§ 264.176 and 270.32(b)(2)).	Figure 2 depicts all of the TAs at LANL; therefore, the Permittees propose to use Figure 2 as a reference for the location of all of the TA boundaries. Figure 2 includes the location of all of the hazardous waste management units as well. The Permittees propose to update the figure number for the figure that depicts the fence line at TA-63 TWF.
3.14.1, General Operating Conditions	(2) The Permittees shall not store containers with ignitable or reactive waste (E.P.A. Hazardous Waste Numbers D001 or D003) within 15 meters of the permitted unit's security barrier system shown in Figure ~~55~~14 (*see* 40 CFR §264.176 and §270.32(b)(2)).	The Permittees propose to update the figure number of the TA-63 TWF location and security figure.
3.14.3, Subsurface Vapor Monitoring	The subsurface vapor monitoring network is described in Permit Attachment A, Section ~~A-6-10~~A.8.9, and Figure ~~56~~33 in Attachment N (Figures).	The Permittees propose to update the figure number for the vapor monitoring network at the TA-63 TWF from Figure 56 to Figure 33 to account for other proposed changes to the figures in Attachment N.
Attachment A		
A.1.1, TA-3 Building 29	TA-3-29, the Chemistry Metallurgy Research Building (CMR), was established in 1952 as a research facility (*see* Figure ~~12-~~4 in Permit Attachment N (*Figures*)).	The Permittees propose to depict the location of all of the TA-3 units in one

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
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Permit or Attachment Section	Proposed Modification	Justification
A.1.1.1, TA-3-29 Room 9010	Room 9010 measures 21 feet by 8 inches wide by 106 feet, 9 inches (in) long (*see* Figure ~~13~~4 in Permit Attachment N (*Figures)*).	figure, Figure 4, rather than in individual figures.
A.1.1.3, TA-3-29 Portion of Room 9030	The permitted container storage area within Room 9030 measures approximately 30 feet long by 8 feet wide (*see* Figure ~~1~~54 in Permit Attachment N (*Figures)*) and is located in the southwest corner of the room.	
A.~~3~~ 5, TA-50	TA-50 is located at the northeast corner of the intersection of Pajarito Drive and Pecos Road, on the finger mesa bounded by Mortandad Canyon to the north and Two Mile Canyon to the south (*see* Figure ~~22~~ 2 in Attachment N (*Figures*)).	The Permittees propose to depict the location of all of the TAs in Figure 2 rather than in individual figures.
A.~~3~~5.1, TA-50-69 Indoor Permitted Unit	The TA-50-69 Indoor permitted unit consists of Rooms 102 and 103 as shown in Figure ~~23~~ 8 in Attachment N (*Figures*).	The Permittees propose to depict the units at TA-50 in one figure, Figure 8.
A.~~3~~5.2, TA-50-69 Outdoor Permitted Unit	It is located in the southwest corner of TA-50 (*see* Figure ~~23~~ 8 in Attachment N (*Figures*)).	
A.~~3~~5.3, Security and Access	The locations of the security fences and entry gates at TA-50 are shown on Figure ~~6~~ 8 in Permit Attachment N (*Figures*).	
A.~~4~~ 6, TA-54	TA-54 consists of 130 acres atop Mesita del Buey and is used for storage of hazardous and mixed waste generated throughout the Facility (*see* Figure ~~24~~ 2 in Attachment N (*Figures*)). A principal mission of TA-54 is to manage Facility waste safely and efficiently, consistent with federal and state regulations and U.S. Department of Energy (DOE) requirements. TA-54 has three separate areas where hazardous and mixed waste is stored; Area L, Area G, and TA-54 West (*see* Figures ~~25~~ 9, 10 and 11 in Attachment N (*Figures*)). There is one permitted unit at Area L, nine permitted units at Area G, and two permitted units at TA-54 West (*see* Attachment J (*Hazardous Waste Management Units*)).	Figure 2 depicts the location of all of the TAs and the Permittees propose to refer to Figure 2 rather than multiple, individual figures. The Permittees propose to depict the units at TA-54 in Figures 9 through 11.

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
Attachment N – Text Changes

Permit or Attachment Section	Proposed Modification	Justification
A.6.1 Area L	The Area L permitted unit is the area within the fence and is comprised of several storage structures: dome 215; concrete pad with canopy 32; concrete pads 35 and 36; storage sheds 68, 69, 70, 31; modular units 39 and 58 (*see* Figure ~~26~~ 9 in Attachment N (*Figures*)).	The Permittees propose to update the figure number from Figure 26 to Figure 9 to account for other proposed changes to Attachment N.
A.6.1.1, Storage Dome 215	Storage Dome 215 is 60 feet wide, approximately 266 feet long, and 26 feet high (*see* Figure ~~25~~ 9 in Attachment N (*Figures*)).	
A.6.1.2, Storage Sheds 68, 69, and 70	Storage sheds 68, 69, and 70 are prefabricated sheds constructed of steel (Safety Storage Building, Model 22) (*see* Figure ~~26~~9 in Attachment N (*Figures)*).	
A.6.1.3, Storage Shed 31	Storage Shed 31 is a prefabricated shed constructed of steel. It measures approximately 14 feet long, 13 feet wide, and 8 feet high (*see* Figure ~~26~~ 9 in Attachment N (*Figures*)).	
A.6.1.4, TA-54-32	TA-54-32 (*see* Figure ~~26~~ 9 in Attachment N (*Figures*)) consists of a concrete pad that is 116.5 feet long by 15.5 feet wide.	
A.6.1.5, TA-54-35	TA-54-35 (*see* Figure ~~26~~ 9 in Attachment N (*Figures*)) consists of a concrete pad that measures 31.5 feet long by 31.5 feet wide.	
A.6.1.6, TA-54-36	TA-54-36 (*see* Figure ~~26~~ 9 in Attachment N (*Figures*)) is a 33-feet-long by 31.5-feet-wide concrete pad.	
A.6.1.7, TA-54-58	TA-54-58 (*see* Figure ~~26~~ 9 in Attachment N (*Figures*)) is a pad that measures 33 ft long by 31.5 ft wide.	
A.6.1.8, TA-54-39 and Containment Pad	TA-54-39 measures 40 ft long by 40 ft wide (*see* Figure ~~26~~ 9 in Attachment N (*Figures*)).	
A.6.2, AREA G	The permitted units at Area G are used to store containers of hazardous, mixed low level, and mixed transuranic wastes in solid and liquid form (*see* Figure ~~27~~ 10 in Attachment N (*Figures*).	The Permittees propose to update the reference figures related to TA-54 from the figures originally referenced in these sections to the updated, proposed figures to account for proposed changes to Attachment N.
A.6.2.1, Pad 9	The 4 to 6 in thick asphalt pad is approximately 570 feet long and 275 feet wide (*see* Figure ~~28~~18 in Attachment N (*Figures)*).	
A.6.2.2, Pad 1	TA-54-412 is located on the pad in the northeastern portion of Area G (*see* Figure ~~29~~ 19 in Attachment N (*Figures)*).	
	TA-54-412 (*see* Figure ~~29~~19 in Attachment N (*Figures)*) is a one story building that is approximately 220 feet long by 60 feet wide (13,200 ft^2).	

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
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Permit or Attachment Section	Proposed Modification	Justification
	Waste treatment, storage, and repackaging are performed in a pre-engineered containment tent adjacent to the primary confinement structure located in the northwest bay of Building 412 (Attachment N, Figure ~~27~~19).	
A.6.2.3, Pad 3	Storage Dome 48, located at the eastern end of pad 3, is 285 feet long and 50 feet wide and has a peak height of 24 feet (*see* Figure ~~30~~20 in Attachment N (*Figures)*).	
A.6.2.4, Pad 10 (former Pads 2 and 4)	The asphalt pad measures approximately 350 feet long by 250 feet wide and is constructed of asphalt (*see* Figure ~~31~~21 in Attachment N (*Figures)*).	
A.6.2.5, Pad 5	This asphalt pad consists of former pads 5, 7, and 8, located on the south-central portion of Area G, has one dome and eight sheds (*see* Figure ~~32~~22 in Attachment N (*Figures)*) associated with it.	
	Storage dome 49, located on former Pad 5, is 440 feet long and 60 feet wide and has a peak height of approximately 26 feet (*see* Figure ~~32~~22 in Attachment N (*Figures)*).	
	Storage Dome 224, located on former pad 8, is approximately 110 feet long and 60 feet wide, with a peak height of 26 feet (*see* Figure ~~32~~22 in Attachment N (*Figures*)).	
	Sheds 1027, 1028, 1030, and 1041 contain a single compartment and sump within each shed (*see* Figure ~~32~~22 in Attachment N (*Figures)*).	
A.6.2.6, Pad 6	Storage domes 153 and 283 are located on Pad 6 (*see* Figure ~~33~~23 in Attachment N (*Figures)*) and the design and materials of construction for domes 153 and 283 are the same as the other domes at TA-54.	
	Dome 153 is approximately 326 ft long and 60 ft wide, with a peak height of 26 ft (*see* Figure ~~33~~23 in Attachment N (*Figures)*).	
	Dome 283 is approximately 260 ft long and 60 ft wide with a peak height of 26 ft (*see* Figure ~~33~~23 in Attachment N (*Figures)*).	
A.6.2.7, Storage Shed 8	Storage shed 8 is located in the north-central portion of Area G (*see* Figure ~~34~~24 in Attachment N (*Figures)*).	
A.6.2.8, TA-54-33	TA-54-33 is located in the north-central portion of Area G and consists of a dome attached to a concrete-block building (*see* Figure ~~35~~25 in Attachment N (*Figures)*).	

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
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Permit or Attachment Section	Proposed Modification	Justification
A.6.2.9, Pad 11	It measures approximately 300 ft long by 100 ft wide (*see* Figure ~~36~~26 in Attachment N (*Figures)*).	
	The pipe racks/pipe rollers are moved the CMP through room 124 and into room 123 where a hydraulic shear and gantry cranes cut the CMP into approximately 4-ft. sections and then place the cut sections into SWBs for shipment off-site (*see* Figure ~~36~~26 in Attachment N *(Figures)*).	
A.6.3, TA-54 West	The permitted units at TA-54 West are used to store solid mixed low level and mixed transuranic waste (*see* Figure ~~37~~ 11 in Attachment N (*Figures*)).	
A.6.3.1, TA-54 West Building (RANT)	The building is divided into several offices and houses the Indoor permitted unit which includes the low bay and the high bay (*see* Figure ~~37~~ 11 in Attachment N (*Figures*)).	
A.6.3.2, TA-54 West Outdoor Pad	The outdoor permitted asphalt pad (which is approximately 4 inches thick and slopes toward the curbed edges to allow for storm water runoff (*see* Figure ~~37~~ 11 in Attachment N (*Figures*)) consists of the loading dock at TA-54-38 and the storage pad located on the north, east, and south sides of TA-54-38.	
	The canopy located on the pad and approximate dimensions of the pad are shown on Figure ~~37~~11. Storage sheds for supplies and equipment are also located on the pad at the outdoor permitted unit (*see* Figure ~~37~~ 11 in Attachment N (*Figures*)).	
A.6.4, Security and Access Control	The locations of the security fence, entry gates, and entry stations for Area L and Area G are shown on Figures ~~7, 8 and 9~~9 and 10~~,~~ in Attachment N (*Figures)*.	
A.7, TA-55	TA-55 is located in the north central portion of Los Alamos National Laboratory on a mesa between a branch of Mortandad Canyon on the north and Two Mile Canyon on the south (*see* Figure ~~38~~ 2 in Attachment N (*Figures*)).	

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
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Permit or Attachment Section	Proposed Modification	Justification
A.7.8, Outdoor Storage Pad	The pad is located outside and south southwest of TA-55-4, as shown on Figures ~~39~~12 and ~~45~~28 in Attachment N (*Figures)*.	Figure 2 depicts the location of all of the TAs; the Permittees propose to refer to Figure 2 rather than multiple, individual figures.
A.7.9, TA-55-0355 Pad	The TA-55-0355 Pad is located outside and south of the Outdoor Storage Pad and TA-55-4, as shown in Figure ~~59~~29 in Attachment N (*Figures*).	The Permittees propose to update the figure references in these sections to refer to the new proposed numbering of figures in Attachment N.
A.7.12, Security and Access Control	The locations of the security fences, entry gates, and entry stations are shown on Figure ~~10~~ 12 in Attachment N (*Figures*).	
A.8, TA-63	The TWF is located at TA-63 on a mesa between Ten-Site Canyon, a tributary of Mortandad Canyon, on the north and Pajarito Canyon on the south in the central portion of the Facility (*see* Figure ~~54~~ 2 in Attachment N (*Figures*)).	
	The TWF permitted storage unit is constructed on 1.82 acres (79,239 square feet). The layout of the unit is depicted in Figure ~~55~~14.	Figure 2 depicts the location of all of the TAs and the Permittees propose to refer to Figure 2 rather than multiple, individual figures.
A.8.9, Subsurface Vapor Monitoring	Two of the monitoring wells must be located as close as possible to the building foundations that are adjacent to the unit boundary facing MDA C and the utility corridor on Puye Road as depicted by locations VMW-1 and VMW-2 on Figure ~~56~~33 in Attachment N (*Figures*). A third monitoring well must be located at a point on the western edge of the permitted unit as close as possible to the utility corridor on Pajarito Road as depicted by location VMW-3 on Figure ~~56~~33. Two monitoring wells must be located between MDA C and Puye Rd as depicted by locations VMW-4 and VMW-5 on Figure ~~56~~33.	The Permittees propose to update the figure references in these sections to refer to the new proposed numbering of figures in Attachment N.
A.9.2, Security and Access	The signs are legible from a distance of 25 ft. There is an entry gate through the fence (*see* Figure ~~52~~ 13 in Permit Attachment N (*Figures*)).	
Attachment D		
D.1.6.2, Occupational Medicine Personnel	The location of this and other emergency facilities are shown on Figure D-2, *Emergency Facilities at Los Alamos National Laboratory*~~49 in Attachment N (*Figures)*~~.	

Summary Table of Proposed Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit
Attachment N – Text Changes

Permit or Attachment Section	Proposed Modification	Justification
		The Permittees propose to include the figure within Attachment D, Contingency Plan, rather than include it in Attachment N. It is a more appropriate location and will be easier to locate in an emergency if it is within the contingency plan.

Supplement 1-1

Permittees' Proposed Changes to Permit Parts 1-11

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PART 1: GENERAL PERMIT CONDITIONS

1.1 AUTHORITY

This Permit is issued pursuant to the authority of the New Mexico Environment Department (Department) under the New Mexico Hazardous Waste Act (HWA), NMSA 1978, §§ 74-4-1 through 74-4-14, in accordance with the New Mexico Hazardous Waste Management Regulations (HWMR), 20.4.1 NMAC.

Pursuant to the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 to 6992k, and 40 CFR Part 271 and Part 272 Subpart GG, the State of New Mexico, through the Department, is authorized to administer and enforce the state hazardous waste management program under the HWA in lieu of the federal program.

This Permit contains terms and conditions that the Department has determined are necessary to protect human health and the environment (*see* 40 CFR § 270.32(b)(2)).

1.2 PERMITTEES AND PERMITTED ACTIVITY

The Secretary of the New Mexico Environment Department issues this Permit for hazardous waste management at the Los Alamos National Laboratory (LANL) site (EPA ID Number NM 0890010515). The LANL site is broader than the Los Alamos National Laboratory. LANL is a national security laboratory and a federally funded research and development center (FFRDC). LANL is owned by the United States Department of Energy (DOE). Triad National Security, LLC (Triad), under contract with the DOE National Nuclear Security Administration (NNSA), manages and operates LANL. The LANL site, which is more than LANL, is where the execution by separate entities of distinct missions occurs. LANL executes the national security, science, and energy missions at the LANL site. Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under contract with the DOE Office of Environmental Management (DOE-EM), executes the environmental remediation mission at the LANL site~~to the United States Department of Energy (DOE), the owner and co-operator of LANL (EPA ID Number NM 0890010515); and Triad National Security, LLC (Triad)and Newport News Nuclear BWXT-Los Alamos, LLC (N3B), co-operators of LANL~~.

This Permit authorizes DOE, Triad, and N3B (the Permittees) to manage, store, and treat hazardous waste at the LANL site, and establishes the general and specific standards for these activities, pursuant to the HWA and the HWMR. This Permit also establishes standards for closure and post-closure care of permitted units at the LANL site pursuant to the HWA and HWMR.

Triad and N3B manage and operate different permitted units (also known as "hazardous waste management units" or HWMUs) as identified below in Table 1.2.1, and detailed in Attachment J, *Hazardous Waste Management Units*, Table J-1. Triad and N3B are solely

responsible for operating their respective permitted units, and do not share management or operational authorities or responsibilities at these units. The Permittees have a duty to comply with this Permit and the conditions applicable to their respective permitted units identified in Table 1.2.1. Where this Permit addresses the duties or requirements of Permittees or the effects of noncompliance or Permit violations (including penalties), the duty or effect is solely on the Permittee with management or operational authority or responsibility for the permitted unit.

Table 1.2.1. List of Hazardous Waste Management Units and Co-Operators

Location	Type of Permitted Unit	Owner/Co-operator
TA-3	Storage and Treatment	DOE/Triad
TA-14	Interim Status Open Burning/Open Detonation	DOE/Triad
TA-16	~~Interim Status~~ Open Burning	DOE/Triad
TA-36	~~Interim Status~~ Open Detonation~~Denotation~~	DOE/Triad
TA-39	~~Interim Status~~ Open Detonation~~Denotation~~	DOE/Triad
TA-50	Storage and Treatment	DOE/Triad
TA-55	Storage and Treatment	DOE/Triad
TA-63	Storage and Treatment	DOE/Triad
TA-54-38 West	Storage and Treatment	DOE/Triad
TA-54 Areas G, H and L	Storage, Treatment, and Disposal (Including Units Undergoing Closure)	DOE/N3B
TA-60	Storage and Treatment	DOE/Triad

1.3 CITATIONS

Whenever this Permit incorporates by reference a provision of the 20.4.1 NMAC or Title 40 CFR, the Permit shall be deemed to incorporate the citation by reference, including all subordinate provisions of the cited provision, and make binding the full text of the cited provision.

Hazardous waste management regulations are cited throughout this Permit. The federal Hazardous Waste Management Regulations, 40 CFR Parts 260 through 273, are generally cited rather than the New Mexico Hazardous Waste Management Regulations, 20.4.1

NMAC. The federal regulations are cited because only the federal regulations set forth the detailed regulatory requirements; the State regulations incorporate by reference, with certain exceptions, the federal regulations in their entirety. Citing only the federal regulations also serves to avoid encumbering each citation with references to two sets of regulations. However, it is the State regulations that are legally applicable and enforceable. Therefore, for the purpose of this Permit, and enforcement of its terms and conditions, all references to provisions of federal regulations that have been incorporated into the State regulations shall be deemed to include the State incorporation of those provisions.

1.4 EFFECT OF PERMIT

As to those activities specifically authorized or otherwise specifically addressed under this Permit, compliance with this Permit during its term shall constitute compliance, for purposes of enforcement, with Subtitle C of RCRA and the HWA, and the implementing regulations at 40 CFR Parts 264, 266, and 268 except for those requirements that become effective by statute after the Permit has been issued (*see* 40 CFR § 270.4).

Compliance with this Permit shall not constitute a defense to any order issued or any action brought under: §§ 74-4-10, 74-4-10.1, or 74-4-13 of the HWA; §§ 3008(a), 3008(h), 3013, 7002(a)(1)(B), or 7003 of RCRA; §§ 104, 106(a), or 107, of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601 to 9675; or any other federal, state or local law providing for protection of public health or the environment.

This Permit does not convey any property rights of any sort or any exclusive privilege, nor authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local laws or regulations. Compliance with this Permit does not relieve Permittees from the responsibility of complying with all applicable state or federal laws and regulations (*see* 40 CFR §§ 270.4, 270.30(g) and 270.32(b)(1)).

1.4.1 Effect of this Permit on Interim Status Units

The Permittees have submitted a revised closure plan for~~For~~ the interim status units listed in Table J-1 that the Permittees have determined ~~do not choose to operate, the Permittees shall submit to the Department within 180 days of the effective date of this Permit either a notice of intent~~ to close ~~in accordance with a current closure plan, or a revised closure plan~~. ~~These documents shall indicate that t~~The closure of these interim status units shall be initiated in accordance with 40 CFR § 265.113(a) no later than 270 days after the approval of the individual plan~~effective date of this Permit~~.

~~For the interim status units listed in Table J-1 that the Permittees propose to permit, the Permittees shall submit to the Department 180 days of the effective date of this Permit a permit modification request in accordance with 40 CFR § 270.42 that includes all~~

~~applicable information required at 40 CFR §§ 270.10, 270.11, 270.14, and 270.23 for each unit.~~

1.4.2 Integration with Consent Order

1.4.2.1 MDAs G, H, and L

The Consent Order requires ~~the Permittees~~DOE to conduct corrective action for releases of hazardous waste, hazardous waste constituents, and contaminants as defined in Section 3 of the Consent Order, at all solid waste management units (SWMUs) and Areas of Concern (AOCs) and to fulfill, among other requirements, the requirements of 40 CFR § 264.101. TA-54 Material Disposal Areas (MDAs) G, H, and L, in their entirety, are undergoing corrective action under the Consent Order. The Department has determined that all corrective action for releases of hazardous waste and hazardous constituents from the "regulated units" at MDAs G, H, and L will be conducted solely under the Consent Order and not under this or any future Permit, with the exception of long-term monitoring and maintenance, which will be conducted under a future modified permit. MDAs G, H, and L include land disposal units that meet the definition of regulated units as defined in 40 CFR § 264.90(a)(2). These regulated units are situated among SWMUs or AOCs. Investigations performed under the Consent Order have found that releases have occurred at MDAs G, H, and L and that both SWMUs and regulated units have likely contributed to these releases. These regulated units meet the conditions in 40 CFR §§ 264.90(f) and 264.110(c) for the use of alternative requirements under the Consent Order in place of the closure, groundwater monitoring, and post-closure requirements in 40 CFR Part 264, Subparts F and G.

~~The Permittees~~DOE shall propose remedies in the Corrective Measures Evaluation Report under the Consent Order that achieves compliance with the closure performance standards at 40 CFR § 264.111. Fulfilling the requirements of the approved Corrective Measures Implementation Plan under the Consent Order shall also satisfy the requirements of 40 CFR Part 264, Subpart G.

1.4.2.2 Public Participation

Pursuant to Consent Order section 17~~XVII~~.B, statements of basis and remedies selected by the Department under Consent Order Section 17~~XVII~~ associated with MDAs G, H, and L will follow the public participation requirements applicable to remedy selection under sections 20.4.1.900 NMAC incorporating 40 C.F.R § 270.41, 20.4.1.901 NMAC, 20.4.1.902 NMAC, and 20.1.4 NMAC. This will include a public comment period that extends for at least 60 days, and an opportunity for a public hearing on the remedy.

1.5 EFFECT OF INACCURACIES IN PERMIT APPLICATION

This Permit is based on information submitted in the Permittees' Application. The Application has numerous iterations; however, this Permit is based on:

(1) the Part A Application dated ~~August 2018~~June 2025;

(2) the General Part B Permit Application dated August 2003;

(3) the TA-3-29 CMR Part B Application dated September 1999;

(4) the TA-50 Part B Permit Application dated August 2002;

(5) the TA-54 Part B Permit Application dated June 2003;

(6) the TA-55 Part B Permit Application dated September 2003;

(7) the TA-63 Permit Modification Request dated August 2011; ~~and~~

(8) the TA-60 Permit Modification Request dated March 2023;

(9) the Permit Modification Request for Open Detonation Units at TAs 36 and 39 (TA-36-8 & TA-39-6) dated July 2011;

(10) the Permit Modification Request for an Open Burning Unit at TA-16 dated September 2013;

(11) Request for Class 3 Permit Modification, Settlement Agreement Case No. 10-01251, Los Alamos National Laboratory Hazardous Waste Facility Permit, EPA I.D. #NM0890010515 dated July 2017;

(12) Class 3 Permit Modification Request for 19 Corrective-Action-Complete Sites in Pueblo Canyon Aggregate Area for the Los Alamos National Laboratory Hazardous Waste Facility Permit, EPA ID No. NM0890010515 dated September 2021; and

(13) the Los Alamos National Laboratory Part B Permit Application for Renewal of the LANL Hazardous Waste Facility Permit, Revision 1 dated July 2025.

Any inaccuracies found in the Application may be grounds for the termination, revocation and re-issuance, or modification of the Permit in accordance with 40 CFR §§ 270.41 through 270.43, which are incorporated herein by reference, and for enforcement action.

The Permittees shall inform the Department of any deviation from, or changes in, the information contained in the Application that would affect the Permittees' ability to comply with this Permit. Upon knowledge of such deviations, the Permittees shall, within 30 days, provide this information in writing to the Department in accordance with Permit Sections 1.9.14 and 1.9.15 and 40 CFR §§ 270.30(l)(11) and 270.43(a)(2), which are incorporated herein by reference.

~~1.1.5~~1.6.7 Permit Review by the Department

The Department will review the closure and post-closure requirements associated with the land disposal units addressed in this Permit five years after the effective date of Permit issuance and may modify this Permit as necessary pursuant to § 74-4-4.2 of the HWA and 40 CFR §§ 270.41 and 270.50(d). Such modification shall not extend the effective term of this Permit. Nothing shall preclude the Department from reviewing and modifying any portion of this Permit, in accordance with applicable requirements, at any time during its term.

~~1.2~~1.7 PERMIT CONSTRUCTION

~~1.2.1~~1.7.1 Severability

The provisions of this Permit are severable. If any provision of this Permit, or any application of any provision of this Permit, to any circumstance is held invalid the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby.

~~1.3~~1.8 DEFINITIONS

Terms used in this Permit shall have the same meanings as those in the HWA, RCRA, and their implementing regulations unless this Permit specifically provides otherwise. Where a term is not defined in the HWA, RCRA, implementing regulations, or this Permit, the meaning of the term shall be determined by a standard dictionary reference, EPA guidelines or publications, or the generally accepted scientific or industrial meaning of the term.

Acceptable Knowledge is defined at Permit Attachment C (*Waste Analysis Plan*), Section C.3.1.1.

Active Portion means that portion of a facility where treatment, storage, or disposal operations are being or have been conducted after the effective date of 40 CFR Part 261 and which is not a closed portion as defined in 40 CFR § 260.10.

Aquifer means a geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs.

Area of Concern (AOC) means any area that may have had a release of hazardous waste or hazardous constituents, which is not from a solid waste management unit.

Consent Order means the ~~March 1, 2005~~ June 2016 Compliance Order on Consent (Modified September 2024) issued to the DOE~~Permittees~~ pursuant to the HWA and the New Mexico Solid Waste Act requiring the DOE~~Permittees~~ to conduct Facility-wide investigations and cleanups of contaminants released to the environment.

Off-Site Waste means any hazardous waste transported to the Facility from off-site but does not include intra-Facility waste.

Partial Closure means the closure of a portion of a permitted hazardous waste management unit, in accordance with the applicable closure requirements of 40 CFR Part 264 at a facility that contains other active hazardous waste management units.

Permit means this document including all attachments hereto and all modifications to the Permit.

Permitted Unit means a hazardous waste management unit: 1) that is not an interim status unit; and 2) that is authorized by this Permit and listed in Attachment J (*Hazardous Waste Management Units*), Table J-1 (*Active Portion of the Facility*), or Table J-2 (*Permitted Units Undergoing Post-Closure Care*).

Regulated Unit means a surface impoundment, waste pile, land treatment unit, or landfill that accepted hazardous waste after July 26, 1982 (*see* 40 CFR 264.90(a)(2)).

Release means any accidental or intentional spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, or dumping of any hazardous waste or hazardous constituents inside a permitted unit or from a permitted unit to the environment, including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous waste or hazardous constituents.

Representative Sample means a sample of a universe or whole (*e.g.*, waste pile, lagoon, groundwater) which can be expected to exhibit the average properties of the universe or whole.

Secretary means the Secretary of the New Mexico Environment Department or his or her designee.

Solid Waste Management Unit (SWMU) means any discernable unit at which solid waste has been placed at any time and from which the Department determines there may be a risk of a release of hazardous waste or hazardous waste constituents, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at the Facility at which solid wastes have been routinely and systematically released; they do not include one-time spills (*see* 61 Fed. Reg. 19431, 19442-43 (May 1, 1996)).

Storage means the holding of hazardous waste for a temporary period, at the end of which the waste is treated, disposed of, or stored elsewhere.

Transuranic (TRU) Waste means waste of more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for: 1) high-level radioactive waste; 2) waste that the DOE Secretary has determined, with the concurrence of the EPA Administrator, does not need the degree of isolation required by

the disposal regulations; or 3) waste that the Nuclear Regulatory Commission (NRC) has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61 (*see* Pub. L. 102-579, § 2(18) (1992)).

Waste Stream means each waste material generated from a single process or from an activity that is similar in the materials from which it was generated, similar in its physical form and hazardous constituents, and distinguishable from other wastes by EPA Hazardous Waste Numbers or~~and~~ Land Disposal Restriction (LDR) status.

~~1.4~~1.9 DUTIES AND REQUIREMENTS

~~1.4.1~~1.9.1 Duty to Comply

The Permittees shall comply with all applicable conditions in this Permit except to the extent and for the duration such noncompliance is authorized in a temporary emergency permit pursuant to 40 CFR § 270.61. Any Permit noncompliance, except under the terms of an emergency permit, constitutes a violation of the HWA and RCRA and is grounds for enforcement or other Department action and may subject the Permittees to an administrative or civil enforcement action, including civil penalties and injunctive relief, as provided in Permit Sections 1.2 and 1.9.2, or permit modification, suspension, termination, or revocation, or denial of a permit application or modification request under § 74-4-4.2 of the HWA and 40 CFR §§ 270.41 and 270.43.

~~No delegation or assignment of the Permittees' responsibilities under this permit can be made to any person or entity, including a separately organized agency, without the expressed permission of the Department; this prohibition does not preclude the Permittees' use of contractors for remediation.~~

~~The Permittees shall not allow any person or entity which currently exists or may be created, including a separately organized agency, to interfere with the performance of their obligations or responsibilities under this Permit~~.

~~1.4.2~~1.9.2 Enforcement

Any violation of a condition in this Permit may subject the Permittees or their officers, employees, successors, and assigns to:

1) a compliance order under § 74-4-10 of the HWA or § 3008(a) of RCRA (42 U.S.C. § 6928(a));

2) an injunction under § 74-4-10 of the HWA or § 3008(a) of RCRA (42 U.S.C. § 6928(a)), or § 7002(a) of RCRA (42 U.S.C. § 6972(a));

3) civil penalties under § 74-4-10 of the HWA or §§ 3008(a) and (g) of RCRA (42 U.S.C. §§ 6928(a) and (g)), or § 7002(a) of RCRA (42 U.S.C. § 6972(a));

4) criminal penalties under § 74-4-11 of the HWA or §§ 3008(d), (e), and (f) of RCRA (42 U.S.C. §§ 6928(d), (e), and (f)); or

~~1.4.7~~1.9.7 Duty to Provide Information

The Permittees shall furnish to the Department, within a reasonable time as specified by the Department, any relevant information which the Department may request to determine whether cause exists for modifying, suspending, terminating, or revoking this Permit or to determine compliance with this Permit.

The Permittees shall also furnish to the Department, upon request, copies of records that are required to be kept by this Permit. Information and records requested by the Department pursuant to this condition shall be provided in a paper or an electronic format acceptable to the Department. In the event the requested information is not immediately available due to security restrictions, the Permittees shall provide the information as soon as reasonably possible (*see* 40 CFR § 270.30(h)).

This Permit condition shall not be construed to limit in any manner the Department's authority under § 74-4-4.3 of the HWA, § 3007(a) of RCRA, or other applicable law (*see* 40 CFR §§ 264.74(a) and 270.30(h)).

~~1.4.8~~1.9.8 Inspection and Entry

The Permittees shall allow authorized representatives of the Department, upon the presentation of credentials and at reasonable times, and under the conditions of this Permit, to:

(1) enter upon the Permittees' premises where the permitted unit or activity is located or conducted or where records must be kept;

(2) have access to and photograph any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required;

(3) inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required;

(4) have access to, and copy, at reasonable times, any records that must be kept; and

(5) sample or monitor, for the purposes of ensuring Permit compliance or as otherwise authorized by the HWA or RCRA, any substances or parameters at any location.

(*see* 40 CFR § 270.30(i))

In the event that the Permittees are~~entry, access, or the ability to photograph or sample is~~ not able to immediately provide inspection and entry as identified above in Permit Section 1.9.8(1) through (5) ~~available~~ due to security or safety restrictions, the Permittees shall provide needed inspection and entry~~, photographs, or samples~~ as soon as reasonably possible.

~~1.4.9~~1.9.9 Sampling and Records

~~1.4.9.1~~1.9.9.1 Representative Sampling

All samples and measurements taken by the Permittees under any condition in this Permit shall be representative of the medium, waste, or other material being sampled. To obtain a representative waste sample, the Permittees shall use an appropriate method from 40 CFR Part 261, Appendix I or an equivalent method approved by the Department. Laboratory methods must be those specified in the most current edition of *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846)*, or an equivalent method, as specified in Attachment C (*Waste Analysis Plan*) and Permit Section 2.4.

~~1.4.10~~1.9.10 Reporting Planned Changes

The Permittees shall give advance written notice to the Department as soon as possible, of any planned physical alterations or additions to any permitted unit at the Facility (*see* 40 CFR § 270.30(l)(1)).

~~1.4.11~~1.9.11 Reporting Anticipated Noncompliance

The Permittees shall give advance written notice to the Department of any planned changes to any permitted unit at the Facility or activity which may result in noncompliance with Permit requirements (*see* 40 CFR § 270.30(l)(2)).

~~1.4.12~~1.9.12 24 Hour and Subsequent Reporting

The Permittees shall report to the Department, both orally and in writing, any noncompliance that may endanger human health or the environment, ~~and~~ any incident that requires implementation of Attachment D (*Contingency Plan*) (*see* 40 CFR § 270.30(l)(6)), or any unexpected event as described in Permit Section 5.4(1) or 6.4(1). This report shall be submitted in accordance with Permit Sections 1.9.12.1 and 1.9.12.2.

~~1.4.12.1~~1.9.12.1 24 Hour Oral Report

The Permittees shall make an initial oral report within 24 hours after the time the Permittees become aware of the noncompliance or the incident specified in Permit Section 1.9.12. The oral report shall include, at a minimum, the following information:

(1) a description of the occurrence and its cause including:

a. name, address, and telephone number of the owner and operator;

b. name, address, and telephone number of the Facility;

c. date, time, and type of incident;

d. name and quantity of materials involved;

e. the extent of injuries, if any;

~~1.4.13~~1.9.13 Written Reporting of a Non-threatening Release

The Permittees shall report to the Department in the submittal referenced in Permit Section 1.9.14 any release from or at a permitted unit that the Permittees do not deem a threat to human health or the environment. The written report shall include a description of the occurrence and its cause including the following information:

(1) name, address, and telephone number of the owner and operator;

(2) name, address, and telephone number of the Facility;

(3) date, time, and type of incident;

(4) name and quantity of materials involved; and

(5) the estimated quantity and disposition of recovered material that resulted from the incident.

The Permittees shall include in the report a description of the spill response activities as required in Permit Section 2.10.4 (*see* 40 CFR § 270.32(b)(2)).

~~1.4.14~~1.9.14 Other Noncompliance

The Permittees shall report all instances of noncompliance not reported under Permit Section 1.9.11. This report shall be submitted to the Department annually by December ~~1~~ 15 for the year ending the previous September 30. These reports shall contain the information listed in Permit Section 1.9.12.2 and 40 CFR § 270.30(1)(10), which is incorporated herein by reference. The Permittees shall notify the Department in writing if there were no instances of noncompliance during the reporting period. This notice shall be submitted to the Department by December ~~1~~ 15 for the year ending the previous September 30.

~~1.4.15~~1.9.15 Omissions or Misstatements in Applications or Other Reports

Whenever the Permittees become aware that they have failed to submit any relevant facts in a permit application, or have submitted incorrect information in a permit application or a report to the Department, the Permittees shall promptly report such facts or information in compliance with 40 CFR § 270.30(1)(11), which is incorporated herein by reference.

~~1.4.16~~1.9.16 Signatory requirement

Solely for their respective permitted units, the Permittees shall sign and certify all applications, reports, or information submitted to the Department and required by this Permit in compliance with 40 CFR §§ 270.11 and 270.30(k), which are incorporated herein by reference.

~~1.4.20~~1.9.20 Confidential Information

The Permittees may claim that any information required by this Permit or otherwise submitted to the Department is confidential pursuant to the provisions of §§ 74-4-4.3(D) and (F) of the HWA and 40 CFR §§ 260.2 and 270.12.

~~1.4.21~~1.9.21 New or Modified Permitted Units

The Permittees may not treat or store hazardous waste at a new permitted unit or in a modified portion of an existing permitted unit except as provided in 40 CFR § 270.42 until the Permittees have complied with the requirements of 40 CFR §§ 270.30(l)(2)(i) and (ii).

~~1.5~~1.10 INFORMATION REPOSITORY

The Permittees shall establish both an electronic Information Repository (IR) accessible through the internet on the Permittees' environmental web site and a physical IR containing paper documents. (S*ee* 40 CFR § 124.33(d))

The Permittees shall ensure that the electronic and physical IRs contain, unless specified otherwise, the following documents:

(1) The Permittees' Part A and Part B Permit Applications associated with the permit renewal;

(2) A link to this Permit as it appears on the Department's website (electronic IR only);

(3) Permit modification requests associated with this Permit submitted pursuant to 40 CFR § 270.42 and any associated Department responses;

(4) The Waste Minimization Report submitted pursuant to Permit Section 2.9;

(5) The Biennial Report submitted pursuant to Permit Section 2.12.5;

(6) Corrective action documents submitted pursuant to Permit Part 11;

(7) Notices of deficiency or disapproval (NODs), NOD responses, final approval letters, and Department directions associated with the documents identified in Paragraphs 1, 3 and 6, above; and

(8) Notices of violation (NOV), administrative compliance orders, responses required by the Department, and Department directions associated with this Permit.

(*See* 40 CFR § 124.33(c))

Within 180 days of the effective date of this Permit, the Permittees shall establish the electronic IR, and inform the Department of the location, nature, and normal business hours of the physical IR. (*See* 40 CFR §§124.33 and 270.30(m))

The Permittees shall add new documents to the IR within ten days after the documents are submitted to, or received from, the Department. (*See* 40 CFR § 124.33(f))

The Permittees shall inform the public of the existence of each IR by the following methods:

(9) written notice to all individuals on the facility mailing list 30 days after the IR becomes operational;

(10) public notice in area newspapers, including the *Santa Fe New Mexican*, the ~~*Journal North*~~ *Albuquerque Journal*, the *Rio Grande Sun*, the *Taos News*, and the *Los Alamos Daily Post* when the IR becomes operational;

(11) continuous notice on the Permittees' environmental home page of the existence of the IRs; and

(12) in the public notice for any of the Permittees' requested permit modifications.

(*See* 40 CFR § 124.33(e))

The Permittees shall ensure that the electronic IR includes an electronic index of the documents contained in the IR that identifies each document by title, publication date, author, and any identification number, such as a Los Alamos Unrestricted Release (LAUR) number. The Permittees shall ensure that all documents maintained in the electronic IR are searchable by title, date, author, identification number, and individual words and phrases, and that all such documents are printable.

The Permittees shall conduct annual training to inform inexperienced computer users of how they can access and utilize the electronic IR. The Permittees shall inform the public of this training at least 30 days prior to the training by methods specified in Permit Section 1.10(9) through (11). The Permittees shall document the training content and all efforts to inform the public in the Facility Operating Record.

~~1.5.1~~1.10.1 PUBLIC ENVIRONMENTAL DATABASE

The Permittees shall provide data from environmental media (*i.e.*, soil, sediment, surface water, groundwater, air and biota) collected under this Permit and incorporated into LANL databases to the public database through updates on a no less than monthly basis.

~~1.6~~1.11GENERAL DOCUMENTS AND INFORMATION TO BE MAINTAINED AT THE FACILITY

The Permittees shall maintain at the Facility the following documents and all amendments, revisions, and modifications to these documents:

(1) this Permit, including all attachments;

The DOE shall consult on a government-to-government basis with the tribes and pueblos and Permittees shall communicate with and solicit comments from communities and interested members of the public when developing the CRP in an effort to ensure the program is responsive to their needs. The Permittees shall document in the Facility Operating Record all consultations, communications, agreements, and disagreements between the Permittees and all participating entities, with the approval of those entities, regarding the development of the CRP. The CRP shall specify how the DOE will consult on a government-to-government basis with the tribes and pueblos, and how the Permittees will solicit comments from communities and interested members of the public annually concerning how they may be made better informed of the issues related to this Permit. The CRP shall specify that the Permittees will, on or before September 1 of each year, post on the Permittees' web site a compilation of all such comments, including any statements of disagreement, with the approval of those entities in a manner set forth in the CRP.

The Permittees shall not document in the Facility Operating Record or post on the Permittees' web site consultations, communications, agreements, and disagreements between the DOE and tribes and pueblos unless those tribes and pueblos specifically request that the information be included in the Facility Operating Record or be posted on the Permittees' web site.

The Permittees shall implement and post the CRP on the Permittees' web site within 180 days of the effective date of this Permit (*see* Permit Attachment I (*Compliance Schedule*)). The Permittees shall maintain the CRP until the termination of this Permit.

~~1.8~~1.13PUBLIC NOTIFICATION VIA ELECTRONIC MAIL (E-MAIL)

The Permittees shall notify individuals by e-mail of submittals as specified in this Permit. The Permittees shall maintain a list of individuals who have requested e-mail notification and send such notices to persons on that list. The notice shall be sent within ~~seven~~fifteen days of the submittal date and shall include a direct link to the specific document to which it relates.

The Permittees shall provide a link on the internet on the Permittees' environmental home page (http://www.lanl.gov/environment) whereby members of the public may submit a request to be placed on the e-mail notification list. In the event that the environmental home page stops operation, the Permittees shall use their best efforts to fully restore the page and its operation as soon as possible.

~~1.9~~1.14DISPUTE RESOLUTION

In the event the Permittees disagree, in whole or in part, with a condition or disapproval of any submittal, the Permittees may seek dispute resolution.

Attachment I (*Compliance Schedule*) (*see* 40 CFR § 270.33(a)). If the action is not itself the submittal of a written document, the Permittees shall submit to the Department a written notification of their compliance with the schedule no later than 14 days following the scheduled date.

The Permittees shall give notice by e-mail to persons on the e-mail notification list in accordance with Permit Section 1.13 of any such submittal or notification under this Permit Section (1.15) and Attachment I as established on the effective date of this Permit.

Schedules required to be submitted by the conditions of this Permit are, upon approval of the Department, incorporated into this Compliance Schedule by reference and become an enforceable condition of this Permit. Such schedules are not subject to e-mail notification requirements under Permit Section 1.13.

~~1.11~~1.16 TRANSFER OF LAND OWNERSHIP

The provisions of this Permit Section shall apply to any transfer in fee of Facility property subject to the requirements of this Permit to another entity~~. This Section does not apply to Facility property subject to requirements of Section III.Y of the Consent Order~~.

DOE shall not transfer any land without submitting a notice to the Department. DOE shall submit the notice at least 120 days prior to the proposed effective date of transfer. At a minimum, the notice shall include an update of the Facility boundaries, as indicated in Figures 1, 2, and 3 in Attachment N (*Figures)*, at an appropriate scale to fully illustrate the boundaries of the transferred property and the modified Facility boundary.

The notice for transfer of land ownership for part of the Facility shall:

(1) identify the boundaries of the land proposed for transfer by providing the Department with a boundary survey certified by a registered professional surveyor;

(2) provide the new owner's name, address, telephone number, and status as a federal, state, private, public, or other entity;

(3) describe the location and identity of any unit subject to this permit including existing solid waste management units and areas of concern or permitted units, on the land proposed for transfer;

(4) describe any known or suspected presence of hazardous waste, hazardous constituents, or radioactive waste in soil, sediment, surface water, or groundwater at any depth within the boundaries of the land proposed for transfer;

(5) describe the status of any past, present, or planned investigations or remediation of contamination of soil or groundwater at any depth within the boundaries of the land proposed for transfer;

~~1.12.1~~1.17.1 Content and Format of Notice

The Notice under this Permit Section shall include a list in the form of a table that contains the following general information for each building or fixed structure that may contain hazardous material to be demolished, to the extent it is available at the time it is submitted:

(1) The Technical Area (TA) and building number;

(2) A brief statement of current and historic uses of the building or fixed structure;

(3) The approximate dates of operations of the building or fixed structure;

(4) A list of any solid waste management units (SWMU) or Areas of Concern (AOC) within 50 feet of the footprint of the building or fixed structure;

(5) The categories (*e.g.,* chemical residues, RCRA metals, asbestos, high explosives residues, mixed waste) of potential wastes expected to be present in the building or fixed structure;

(6) The date or the quarter in which the demolition is scheduled to begin or anticipated to begin; and

(7) Any buildings or fixed structures identified in the previous fiscal year that were not demolished.

The list shall be accompanied by an attachment that shall describe the processes or conditions that may result in the presence of hazardous material in each building or fixed structure.

~~1.12.2~~1.17.2 Demolition Activities Update

On or before ~~the last day of each quarter (December 31,~~ March ~~30~~31, ~~June 30, and September 30)~~every year, the Permittees shall update the list to include any additional buildings and fixed structures that may contain hazardous material scheduled for demolition, or shall notify the Department in writing that no such additional demolitions have been scheduled. In the event a demolition project is identified after the previous notice due date, but will occur prior to the next notice due date, the Permittees shall submit a supplemental notice conforming to Section 1.17.1 not less than 30 days prior to demolition.

~~1.12.3~~1.17.3 Actions

Based on the list, the Department may identify in writing those buildings or fixed structures for which it requires notice.

If a demolition completion report is prepared for any building or fixed structure identified by the Department, the Permittees shall provide to the Department a copy of the report within 30 days after such final report is written.

herein by reference. The Facility's on-site files shall include in this documentation a description of the process that generated the waste, the justification for its exemption or exclusion, and a description of the final disposition of the waste.

2.4 WASTE ANALYSIS

2.4.1 General Waste Characterization Requirements

The Permittees shall accept, store, treat, or otherwise manage at permitted units at the Facility only those hazardous waste streams that have been fully characterized in accordance with the requirements of 40 CFR § 264.13, which is incorporated herein by reference, the conditions in this Permit Part, and Attachment C (*Waste Analysis Plan*).

At a minimum, the Permittees shall obtain and document all of the information that must be known to treat, store, or otherwise manage a hazardous waste stream in accordance with 40 CFR Parts 264 and 268 including, but not limited to:

(1) all applicable EPA hazardous waste numbers;

(2) waste characterization necessary to determine whether the waste stream is prohibited from land disposal;

(3) waste characterization necessary to prevent the mixing or placing of incompatible wastes in the same container (*see* 40 CFR §§ 264.17 and 264.177) or tank system (*see* 40 CFR § 264.199), and to prevent the impairment of containers (*see* 40 CFR § 264.172), tanks, and secondary containment systems for tanks by incompatible wastes (*see* 40 CFR § 264.193(c)(1));

(4) waste characterization necessary to prevent accidental or spontaneous ignition or reaction of ignitable or reactive wastes, including, but not limited to, ignition or reaction in containers (*see* 40 CFR § 264.17) and tank systems (*see* 40 CFR § 264.198);

(5) whether the waste is a mixed waste (*see* 40 CFR § 270.32(b)(2));

(6) whether the waste contains free liquids;

(7) the waste stream name;

(8) the unique waste stream identifier;

(9) the waste stream generation location (*e.g.* building and room number); and

(10) a detailed description of the waste stream generation process that includes all relevant material inputs or other information that identifies the chemical content and physical form of the waste.

auditable form in the Facility Operating Record. The Permittees shall assign a traceable identifier to this documentation to facilitate both access to this information and its verification by the Permittees and the Department.

2.4.4 Waste Received from Off-Site

If a hazardous waste stream is received at the Facility from an off-site facility identified at Permit Section 2.2.1, the Permittees shall obtain from the facility a detailed characterization of a representative sample of the waste. If acceptable knowledge is used for the waste characterization, the Permittees shall require the facility to provide all acceptable knowledge documentation used to characterize the waste stream (*see* 40 CFR § 270.32(b)(2)). In addition, the Permittees shall ensure that all applicable waste characterization requirements specified in Permit Section 2.4 have been met and documented.

The Permittees shall ensure that the waste matches the identity of the waste designated on the accompanying manifest or shipping paper. If discrepancies between the waste received from an off-site treatment facility and the information on the manifest are found, the Permittees shall comply with the requirements of 40 CFR § 264.72, which is incorporated herein by reference, to resolve the discrepancies.

2.4.5 Treatment-Derived Waste

The Permittees shall characterize treatment-derived wastes generated both on-site and off-site by determining whether the treatment residues meet the applicable treatment standard in accordance with 40 CFR § 268.7(b), which is incorporated herein by reference, unless the Permittees have documented that the purpose of the treatment process is not to attain the applicable treatment standard. The Permittees shall ensure adherence to notification and recordkeeping requirements specified at 40 CFR § 268.7(b)(3)(ii). If the waste remains a hazardous waste, the Permittees shall further characterize it in compliance with the applicable requirements of Permit Section 2.4.1.

2.4.6 Reserved

2.4.7 Waste Characterization Review

The Permittees shall ensure that the initial characterization of any hazardous waste stream managed under this Permit is reviewed or repeated to verify that the characterization is accurate and up to date (*see* 40 CFR § 264.13(b)(4)). The Permittees shall document this review in the Facility Operating Record.

The Permittees shall perform the following:

(1) Annually reevaluate all hazardous waste streams generated to verify the accuracy of initial and subsequent characterization results. The annual reevaluation shall

be required no later than one year from the date of initial characterization of the hazardous waste stream or one year from the last annual revaluation;

(2) Recharacterize hazardous wastes whenever there is a change in the waste-generating processes which includes a change in the status of the waste for purposes of Land Disposal Restrictions or when analytical results indicate a change in the waste stream;

(3) Annually verify the waste characterization of one percent of hazardous waste streams characterized solely by acceptable knowledge (*see* 40 CFR §§ 264.13(b)(4) and 270.32(b)(2)). Such waste characterization verification shall be performed by quantitative chemical analyses appropriate for the waste as specified in Attachment C (*Waste Analysis Plan*). The one percent of wastes whose characterization is to be verified shall be determined in relation to the total number of unique waste streams characterized solely by acceptable knowledge and managed at TA-54 in the previous calendar year. The waste streams whose characterization is to be verified shall be chosen without further bias and the selection procedure shall be documented in the Facility Operating Record. Wastes not required to undergo this annual verification and not to be counted toward the total number of wastes managed in the previous year include mixed transuranic wastes, hazardous debris, and hazardous wastes that are hazardous only because they are listed at 40 CFR Part 261, Subpart D; and

(4) Recharacterize a hazardous waste stream whenever the Permittees are notified by a receiving off-site facility that the characterization of a hazardous waste they obtained from the Permittees' Facility does not match a pre-approved waste analysis certification or accompanying waste manifest or shipping paper. The Permittees shall notify the Department in writing within ~~three~~fifteen days of their receipt of the notice of the discrepancy from a receiving facility.

2.4.8 Waste Characterization for Compliance with RCRA Air Emission Requirements

The Permittees shall characterize hazardous wastes managed in containers and tanks to determine the average volatile organic compound (VOC) concentration relative to 500 parts per million by weight (ppmw) at the point of waste origination in compliance with 40 CFR Part 264, Subpart CC. The Permittees shall determine the average VOC concentration either by utilizing acceptable knowledge or by using the procedures specified in 40 CFR § 264.1083(a), which is incorporated herein by reference. The Permittees shall review and update this determination at least once every 12 months following the date of the initial determination in compliance with 40 CFR § 264.1082(c)(1), which is incorporated herein by reference.

specified in 40 CFR § 268.7(b)(3)(ii), *Treatment Facility Paperwork Requirements Table*, which is incorporated herein by reference.

The Permittees shall characterize treatment-derived wastes, including those wastes that are formerly characteristic and no longer hazardous or mixed waste, to determine whether the waste meets the applicable treatment standard specified at 40 CFR §§ 268.40, 268.45, 268.48, and 268.49, in compliance with 40 CFR § 268.7(b), which is incorporated herein by reference. Pursuant to 40 CFR § 268.7(b)(3)(ii), the Permittees shall characterize treatment-derived wastes to determine the presence of any constituents of concern for hazardous waste codes F001 through F005, F039, and the presence of underlying hazardous constituents in characteristic wastes as defined at 40 CFR § 268.2(i), which is incorporated herein by reference.

2.5 SECURITY

The Permittees shall prevent the unknowing entry and minimize the possibility for the unauthorized entry of persons or livestock onto the permitted units at the Facility (*see* 40 CFR § 264.14).

The Permittees shall ensure the permitted units' security by implementing the following measures:

(1) 24-hour surveillance system continuously monitoring and controlling entry into the permitted units at the Facility; or

(2) controlled entry into the permitted units at all times via gates, stations, or other means (*e.g.,* attendants, locks, prohibited or controlled roadway access).

The Permittees shall maintain and ensure the effectiveness of all security fences, entry gates, and entry stations surrounding the permitted units as specified in Figures 4 through ~~10 and 55~~14 in Attachment N (*Figures)*.

2.5.1 Warning Signs

The Permittees shall post bilingual warning signs (in English and Spanish) at all gates and perimeter fences, where present, around the permitted units (*see* 40 CFR § 264.14(c)). Signs shall be posted in sufficient numbers to be visible at all angles of approach as well as from a distance of at least 25 feet. The Permittees shall include on the signs the following or an equivalent warning:

DANGER – UNAUTHORIZED PERSONNEL KEEP OUT (PELIGRO – SE PROHIBE LA ENTRADA A PERSONAS NO AUTORIZADAS)

The Permittees shall post warning signs in the appropriate dialect of Tewa in a manner equivalent to the bilingual warning signs in English and Spanish along shared boundaries with the Facility's permitted units and the Pueblo of San Ildefonso (PO WHO GEH).

incorporated herein by reference, as well as the training requirements in Attachment F (*Personnel Training Plan*).

2.8 SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

The Permittees shall manage ignitable, reactive, and incompatible hazardous wastes in containers and tanks in compliance with the requirements of 40 CFR §§ 264.17, 264.176, 264.177, 264.198, and 264.199, which are incorporated herein by reference, and Permit Parts 3 and 4. The Permittees shall ensure that containers holding ignitable or reactive wastes are located at least 15 meters from the facility boundary defined as the technical area (TA) specific ~~boundary~~boundaries identified in Figure ~~s 11, 22, 24, and 38~~2 in Permit Attachment N (*Figures*). At TA-63, the Permittees shall ensure that containers holding ignitable or reactive waste are located at least 15 meters from the Transuranic Waste Facility (TWF) fence line, as shown in Figure 14~~55~~ in Permit ~~attachment~~Attachment N (*Figures*) (*see* 40 CFR §§ 264.176 and 270.32(b)(2)).

The Permittees shall take precautions during the treatment or storage of ignitable or reactive waste, the mixing of incompatible waste, or the mixing of incompatible wastes and other materials to prevent reactions that could lead to or cause the following:

(1) generation of extreme heat, pressure, fire, explosions, or violent reactions;

(2) production of uncontrolled toxic mist, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;

(3) production of uncontrolled inflammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

(4) damage to the structural integrity of the container, tank, permitted unit, or other structure associated with the permitted unit; and

(5) a threat to human health or the environment.

(*see* 40 CFR § 264.17(b))

2.8.1 Ignitable and Reactive Waste Precautions

The Permittees shall prevent accidental ignition or reaction of ignitable or reactive wastes by taking the following precautions:

(1) ensure there are no sources of open flames in, on, or around the container or tank;

(2) segregate and separate ignitable or reactive wastes and protect them from sources of ignition or reaction such as cutting and welding, frictional heat, sparks (*e.g.,* static, electrical, mechanical), spontaneous ignition, and radiant heat;

(3) maintain adequate clearance around fire hydrants at permitted units;

(4) use only non-sparking tools or non-sparking processes when managing hazardous waste containers that contain ignitable or reactive wastes;

(5) ensure appropriate lightning protection is provided for all storage and treatment units;

(6) perform ongoing inspection, testing, and maintenance of fire protection equipment to determine appropriate test criteria and preventative maintenance activities;

(7) confine smoking and open flames to designated areas that are a minimum of 50 feet from areas where ignitable or reactive wastes are handled;

(8) stack containers of ignitable and reactive wastes no more than 2 drums high to comply with the National Fire Protection Association's (NFPA) *Flammable and Combustible Liquids Code*; ~~and~~

(9) ensure that each permitted unit's fire suppression system is compatible with the hazardous waste being stored or treated at the permitted unit or that any waste containers stored within a unit that may hold waste incompatible with a fire suppression system discharge are stored in a manner that will prevent contact with fire suppression system discharges; and

(10) ensure "No Smoking" signs are conspicuously placed prior to entry at a permitted unit.

The Permittees shall assume that all drums with volume capacities between 55 and 110 gallons that hold mixed transuranic wastes and that are not vented, and standard waste boxes that hold mixed transuranic waste and are not vented, contain hydrogen gas and the associated wastes are subject to the conditions of this Permit Section (2.8.1).

2.8.2 Incompatible Waste Precautions

The Permittees shall ensure that a storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers must be separated from the other materials (or waste) or is protected from them by means of a dike, berm, wall, or other device not to include the container, in order to, in the event of leakage from containers under conditions normally incident to storage, prevent the commingling of the incompatible wastes or materials (*see* 40 CFR § 264.177(c)).

The Permittees shall ensure that incompatible wastes or materials are not stored within or on the same secondary containment structure.

The Permittees shall ensure that incompatible wastes or materials are not stored so that a release or spill of these wastes might commingle in a fire suppression water holding area or tank.

The Permittees shall ensure that all waste and materials are segregated and stored in accordance with the Department of Transportation's (DOT) compatibility groupings or classes contained in 49 CFR § 177.848 (*see* 40 CFR § 270.32(b)(2)).

The Permittees shall not store cyanides and cyanide mixtures or solutions with acids if a mixture of the materials could generate hydrogen cyanide. The Permittees shall not store Class 8 (corrosive) liquids above or adjacent to Class 4 (flammable) or Class 5 (oxidizing) wastes except when it is known that the mixture of the wastes could not cause a fire or a dangerous evolution of heat or gas.

The Permittees shall ensure that hazardous wastes are not placed in an unwashed container (*see* 40 CFR § 264.177(b)) or tank (*see* 40 CFR § 264.199(b)) that previously held an incompatible waste or material.

2.9 WASTE MINIMIZATION PROGRAM

The Permittees shall implement and maintain a waste minimization program to reduce the volume and toxicity of hazardous wastes generated at the Facility (*see* 40 CFR § 264.73(b)(9)). The waste minimization program shall include proposed, practicable methods of treatment and storage currently available to the Permittees to minimize the present and future threat to human health and the environment. The Waste Minimization Program shall include the following items:

(1) written policies or statements that outline goals, objectives, and methods for source reduction and recycling of hazardous waste at the Facility;

(2) employee training or incentive programs designed to identify and implement source reduction and recycling opportunities for all hazardous wastes;

(3) source reduction or recycling measures implemented in the last five years or planned for the next federal fiscal year;

(4) estimated dollar amounts of capital expenditures and operating costs devoted to source reduction and recycling of hazardous waste;

(5) factors which have prevented implementation of source reduction or recycling;

(6) summary of additional waste minimization efforts that could be implemented at the Facility that analyzes the potential for reducing the quantity and toxicity of each waste stream through production process changes, production reformulations, recycling, and all other appropriate means including an

assessment of the technical feasibility, cost, and potential waste reduction for each option;

(7) flow charts and/or tables summarizing all hazardous waste streams produced by the Facility by quantity, type, building or area, and program; and

(8) demonstration of the need to use those processes which produce a particular hazardous waste due to a lack of alternative processes, available technology, or available alternative processes that would produce less volume or less toxic waste.

The Permittees shall submit to the Department a report regarding progress made in the waste minimization program in the previous year. The report shall address items (1)-(8) above, shall show changes from the previous report, and shall be submitted annually by December ~~1~~ 15 for the year ending the previous September 30.

2.10 PREPAREDNESS AND PREVENTION

The Permittees shall maintain and operate each permitted unit in a manner that minimizes the possibility of fire, explosion or any unplanned sudden or non-sudden release of hazardous waste or hazardous constituent to the air, soil, or surface water that could threaten human health or the environment (*see* 40 CFR § 264.31). In addition to the general preparedness and prevention requirements identified here, the Permittees shall comply with the TA-specific preparedness and prevention requirements and shall maintain the equipment identified in Attachment A (*Technical Area Unit Descriptions*) and Attachment D (*Contingency Plan)*.

2.10.1 Required Equipment

At a minimum, the Permittees shall maintain at the Facility and at each permitted unit the internal communication and alarm system devices, fire control equipment, spill control equipment, and decontamination equipment listed in the tables in Attachment A (*Technical Area Unit Descriptions*) and Attachment D (*Contingency Plan*) (*see* 40 CFR § 264.32(b)(2)). The Permittees shall ensure that any changes to the emergency equipment lists adhere to the permit modification requirements at 40 CFR §§ 270.41 through 270.43.

The Permittees shall maintain spill kits at each permitted container storage and tank unit as specified in Attachment D (*Contingency Plan*). These spill kits shall be capable of mitigating small containable spills of acidic, caustic, inflammable, and otherwise hazardous waste present at the unit. For larger spills, the Permittees shall have plugging and diking equipment, siphon pumps, and loaders readily available at the Facility.

The Permittees shall ensure that there is adequate water pressure and volume available to each permitted unit to provide for fire suppression (*see* 40 CFR § 264.32(d)).

The Permittees shall operate and maintain the area-wide environmental monitoring network as specified in Section D.7.3 of Attachment D (*Contingency Plan*).

At permitted units where equipment is necessary to mitigate the effects of a power outage, the Permittees shall maintain batteries, generators, or some other form of backup power supply capable of operating equipment including evacuation alarms, emergency communication equipment, automatic fire suppression systems, and emergency lights. (*See* 40 CFR §§ 270.14(b)(8)(iv) and 270.32(b)(2))

The Permittees shall ensure that it is possible to provide fuel to backup generators under adverse conditions.

2.10.2 Testing and Maintenance of Equipment

The Permittees shall test the equipment listed in Section E.1.1 of Attachment E (*Inspection Plan*) in accordance with the schedule identified in Attachment E to ensure its functionality in the event of an emergency. The Permittees shall maintain the equipment specified in Permit Section 2.10.1 to ensure its proper operation in the event of an emergency (*see* 40 CFR § 264.33). This equipment shall undergo inspection in accordance with Attachment E (*Inspection Plan*). The Permittees shall document such inspections in the Facility Operating Record in accordance with this Permit Part.

If testing or inspections identify any missing or nonfunctioning communication equipment, alarm system, fire protection component, spill control, or decontamination equipment, the Permittees shall ensure it is promptly repaired or mitigated, provide substitute equipment, or provide other functionally equivalent measures and/or equipment (e.g., placement of fire watch and use of fire extinguishers, or limiting operations in the immediate area)~~provide substitute equipment~~. If applicable, the~~The~~ Permittees shall ensure that employees and contractors working in the area are notified of the presence of substitute equipment and, if necessary, provide them with training in its use (*see* 40 CFR § 270.32(b)(2)). The Permittees shall document in the Facility Operating Record instances of such notifications and trainings. The Permittees shall ensure that malfunctioning equipment is clearly marked as out of use and that the location of the substitute or functionally equivalent equipment and/or measures are~~is~~ clearly posted on or adjacent to the faulty equipment or that such equipment/measures are communicated to any personnel working within the area (*see* 40 CFR §§ 264.31 and 270.32(b)(2)).

2.10.3 Access to Communications or Alarm System

Whenever an employee is present at a permitted unit and the unit contains hazardous waste, the Permittees shall ensure that all personnel at the unit have immediate access to an internal alarm or emergency communication device either directly or through visual or voice contact with another employee (*see* 40 CFR § 264.34(a)). The Permittees shall ensure that communication devices are easily accessible without personnel having to enter another building (*see* 40 CFR § 270.32(b)(2)).

The Permittees shall ensure that any employee working alone at a permitted unit is capable of summoning external emergency assistance and shall have immediate access to

a device, such as a hand-held two-way radio, a cell phone, or a landline telephone (*see* 40 CFR § 264.34(b)). The Permittees shall ensure that communication devices are easily accessible without personnel having to enter another building (*see* 40 CFR § 270.32(b)(2)).

2.10.4 Spill Response

The Permittees shall ensure that spills of hazardous wastes, including small localized spills that can be managed without the assistance of emergency management personnel, are managed utilizing, at a minimum, the following procedures:

(1) isolate the immediate area and deny entry to all unauthorized personnel;

(2) contain the spill (*e.g.,* spreading sorbents, forming temporary dikes);

(3) define the nature and extent of the spilled waste;

(4) package the spilled waste and contaminated materials in containers; and

(5) decontaminate the area, all clean-up equipment, and personnel.

2.10.5 Arrangements with Local Authorities

The Permittees shall maintain its preparedness and prevention agreement with the Los Alamos County Emergency Services Division and support agreements with the Los Alamos Fire Department, the Los Alamos Police Department, and the Los Alamos Medical Center (*see* 40 CFR § 264.37).

The Permittees shall provide the Chief of the Los Alamos Fire Department (LAFD) with information that would ensure that emergency response personnel are at all times familiar with the potential hazards in performing their duties associated with the hazardous wastes at ~~LANL's~~the permitted hazardous waste management units. This information shall be specific to each permitted unit and at a minimum include:

(1) Waste types, *e.g.*, ignitable, reactive, corrosive;

(2) Waste names that identify principle hazardous chemical constituents;

(3) Approximate quantities of each waste type; and

(4) General location of waste types.

The Permittees' Emergency Management Division Leader and the Emergency Operations Group Leader shall annually sign a certification stating that the LAFD has been provided with this information to the satisfaction of the Chief of the LAFD. These certification statements shall be maintained in the Facility Operating Record.

(2) a description of all arrangements agreed upon by local police and fire departments, hospitals, federal, state, and local emergency response teams, and tribal governments to coordinate emergency services;

(3) a description of all contracts with emergency response contractors and equipment suppliers;

(4) the names and phone numbers (*i.e.,* office, home, cell, pager) of a primary and alternate individual assigned to act as Incident Response Commander;

(5) a list of all on-site emergency equipment associated with each permitted unit including fire control, spill control, communication, decontamination, and personal protective equipment including a description of where this equipment is located, and a physical description of each item; and

(6) an evacuation plan, including a description of the signal(s) to be used to begin evacuation as well as primary and alternate evacuation routes, for personnel at a permitted unit where there is a possibility that evacuation may be necessary.

2.11.3 Distribution

The Permittees shall maintain copies of the Contingency Plan, including all revisions and amendments, at or in the following locations:

(1) each permitted unit;

(2) the Emergency Operations Support Center; and

(3) the Facility Operating Record.

The Permittees shall distribute copies of the current Contingency Plan to all entities with which the Permittees have emergency Memorandums of Understanding or Mutual Assistance Agreements, including:

(4) the Los Alamos County Emergency Management Coordinator;

(5) the Los Alamos Fire Department;

(6) the Los Alamos County Police Department; and

(7) the Los Alamos Medical Center.

The Permittees shall also distribute copies of the current Contingency Plan to the State of New Mexico's Department of Homeland Security and Emergency Management (DHSEM) ~~Area 3 Emergency~~Local Preparedness Coordinator.

The Permittees shall distribute the Contingency Plan within ten days of the effective date of this Permit and within ten days of receipt of any Department approval to a modification of the Contingency Plan. The Permittees shall ensure that all copies of the Contingency Plan distributed outside the Facility are sent by certified mail with a return

2.12.2 Facility Operating Record

The Permittees shall maintain a written Facility Operating Record for the operations of each permitted unit at the Facility until the Department has approved either the closure certification statement or, if the unit enters post-closure care, the post-closure certification statement with respect to such unit as specified in Permit Sections 9.5 and 10.2.3 respectively (*see* 20.4.1.500 and 501 NMAC). For documents that address the entire Facility (*e.g.*, certifications of a Facility program to reduce the volume and toxicity of hazardous waste), the Permittees shall maintain these documents throughout the active life of the Facility including the post-closure care period.

Unless specifically prohibited by this Permit, an electronic record in a format acceptable to the Department and capable of producing a paper copy shall be deemed to be a written record (*see* 40 CFR § 270.32(b)(2)). Any substantive alterations made to the electronic record shall be documented, dated, and made part of the Facility Operating Record.

The Permittees shall incorporate, as soon as it becomes available, into the Facility Operating Record the following information:

(1) a description of the hazardous waste received and the methods and dates of treatment and storage at each permitted unit in accordance with Appendix I of 40 CFR Part 264, which is incorporated herein by reference;

(2) the location of each type of hazardous waste within each permitted unit and the total quantity of all wastes and waste types at each unit (the location shall be identified as one of the permitted units listed in Attachment J (*Hazardous Waste Management Units*) and any associated structure (*e.g.,* room, dome));

(3) records and results of waste analyses and waste determinations that are performed pursuant to Permit Section 2.4, Attachment C (*Waste Analysis Plan*), and 40 CFR §§ 264.1083, 268.7, and 268.9, which are incorporated herein by reference;

(4) incident reports and details of all incidents that required the implementation of Attachment D (*Contingency Plan*), any instance of fire, explosion, spill, or release from, or at, a permitted unit regardless of whether the incident required implementation of the Contingency Plan or Permit Part 11 (*see* 40 CFR § 270.32(b)(2));

(5) records and results of inspections as required in Permit Section 2.6 and Attachment E (*Inspection Plan*);

(6) monitoring, testing, analytical data, and response actions when required by 40 CFR §§ 264.191, 264.193, 264.195, 264.602, 264.1063(d) through 264.1063(i), 264.1064, and 264.1082 through 264.1090, which are incorporated herein by reference;

(7) notices to off-site generators as specified in 40 CFR § 264.12(b), which is incorporated herein by reference;

(8) (reserved);

(9) an annual certification stating a Facility program is in place to reduce the volume and toxicity of hazardous waste generated;

(10) for treated wastes, the information contained in the notice and certification required under 40 CFR § 268.7(b), which is incorporated herein by reference;

(11) if applicable, for hazardous wastes left in the ground after closure (*i.e.,* disposal units), the information required of a treatment facility under 40 CFR § 268.7(~~b~~c), which is incorporated herein by reference;

(12) for stored wastes, the notice (or information contained in the notice for wastes generated on-site) and certification required at 40 CFR § 268.7, which is incorporated herein by reference;

(13) all monitoring reports and records required by this Permit, including but not limited to:

a. records of all monitoring data used to complete Permit Application(s);

b. all data gathered or generated during the closure or post-closure process; and

c. all laboratory reports, drilling logs, bench-scale or pilot scale data;

(14) documentation demonstrating distribution of the Contingency Plan in accordance with Permit Section 2.11.3;

(15) documentation demonstrating the installation and maintenance of secondary containment system coatings or sealants as required at Permit Section 3.7.1(4) and 4.4(4);

(16) personnel training records including both introductory and continuing training programs used to prepare employees to safely operate and maintain a permitted unit in compliance with 40 CFR § 264.16(d), which is incorporated herein by reference, and this Permit;

(17) documentation of notifications and trainings associated with alternate emergency equipment as required at Permit Section 2.10.2; and

(18) documentation of all instances where an indoor fire suppression system has been activated resulting in fire suppressants contacting a waste storage pad.

3.3 ACCEPTABLE STORAGE CONTAINERS

The Permittees shall only use containers that comply with 40 CFR Part 264 Subpart I *(Use and Management of Containers*) for storage of hazardous waste at permitted units. Prior to shipment of hazardous waste, containers must comply with Department of Transportation (DOT) shipping container regulations (*see* 49 CFR § 173 - *Shippers - General Requirements for Shipment and Packaging,* and 49 CFR § 178 - *Specifications for Packaging*).

Solid, oversize items (*e.g.,* glovebox, glovebox parts, vacuum pumps, tanks, duct work, piping, HEPA filters) contaminated with hazardous wastes that cannot be containerized in the waste containers referenced in the previous paragraph shall be subject to this Permit Part. These items shall be wrapped in plastic with a minimum of two layers of plastic to prevent dispersion of contaminating material.

3.4 COMPATIBILITY OF WASTE WITH CONTAINERS

The Permittees shall use containers made of, or lined with, materials that are compatible with and will not react with the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired (*see* 40 CFR § 264.172).

3.5 MANAGEMENT OF CONTAINERS

(1) The Permittees shall ensure that all containers are kept closed during storage except when waste is added to or removed from the container or when a container's contents need to be repackaged (*see* 40 CFR § 264.173(a)). The Permittees shall not open, handle, or store a container holding hazardous waste in a manner that may rupture the container or cause the container to leak (*see* 40 CFR § 264.173(b)).

(2) The Permittees shall establish and maintain lines of demarcation which identify the boundaries of all permitted CSUs. The line may be identified by paint, tape, signs, or other permanent, visible marking on the floor or base material (*see* 40 CFR § 270.32(b)(2)). Permanent fences marking the unit boundary, or rooms or buildings whose walls constitute the boundary of the permitted units, satisfy this requirement.

(3) The Permittees shall ensure that drums stored in movable buildings (*e.g.,* modular buildings, transportainers) with non-grated floors are stored on wheeled drum dollies, steel pallets, or are otherwise elevated.

(4) The Permittees shall ensure that when waste containers are moved during storage, the location of each hazardous waste and the quantity at each location is documented in accordance with Permit Section 2.12 (*see* 40 CFR § 264.73(b)(2)).

3.10 TA-3 CONTAINER STORAGE REQUIREMENTS

The Permittees (DOE and Triad) co-operate hazardous waste management units at TA-3 and have a duty to meet the additional permit requirements in this Section.

3.10.1 General Operating Conditions

The Permittees shall ensure that storage of hazardous or mixed waste in containers at TA-3-29 occurs only in the CSU in Rooms 9010, and portions of Rooms 9020, and 9030 identified in Attachment A (*Technical Area Unit Descriptions*) and Attachment J (*Hazardous Waste Management Units*), Table J-1 (*Active Portion of the Facility*).

~~**3.10.2 Secondary Containment**~~

~~The Permittees shall paint the floors in Rooms 9010, 9020, and 9030 within the TA-3-29 permitted unit with an epoxy sealant. The sealant must be maintained in accordance with Permit Section 3.7.1 of this Part and the manufacturer's specifications.~~

3.11 TA-50 CONTAINER STORAGE REQUIREMENTS

The Permittees (DOE and Triad) co-operate hazardous waste management units at TA-50 and have a duty to meet the additional permit requirements in this Section.

3.11.1 General Operating Conditions

(1) The Permittees shall ensure that storage of hazardous or mixed waste in containers at TA-50 occurs only in two areas: 1) an indoor storage area located in Building 69 (TA-50-69), Rooms 102 and 103; and 2) an outdoor storage area (TA-50-69, Outdoor) located south/southeast of Building 69, comprised of an asphalt pad and modular transportainer units, as identified in Attachment A (*Technical Area Unit Descriptions)* and Attachment J (*Hazardous Waste Management Units*).

(2) The Permittees shall ensure that ignitable wastes will not be stored inside the glovebox located within the indoor permitted unit.

(3) The Permittees shall at all times maintain a fire access lane between the TA-50-69 Outdoor and Indoor permitted units (*see* 40 CFR § 270.32(b)(2)).

3.11.2 Preventing Hazards in Loading/Unloading

The Permittees shall not load or unload waste at TA-50 during severe weather conditions.

3.11.3 Preventing Run-on

The Permittees shall prevent surface water run-on from contacting stored waste containers at the TA-50 permitted units.

The Permittees shall annually inspect and when necessary maintain the drainage swales located south of the permitted unit between the permitted unit and Material Disposal Area (MDA) C, and located on the west side of the permitted unit between Pecos Drive and the TA-50 fence line, to ensure that potential run-on is directed away from the permitted units (*see* 40 CFR § 264.175(c)(1)).

3.12 TA-54 CONTAINER STORAGE REQUIREMENTS

3.12.1 General Operating Conditions

The Permittees shall ensure that storage of hazardous waste in containers at TA-54 occurs only in the permitted unit at Area L, the nine permitted units at Area G, the two permitted units at TA-54 West, and as identified in Attachment A (*Technical Area Unit Descriptions)* and Attachment J (*Hazardous Waste Management Units*). Permittees Triad and N3B co-operate different permitted units at TA-54. Triad co-operates two permitted units at TA-54 West and N3B co-operates ten permitted units at Areas G and L. The Permittees have a duty to meet the additional Permit requirements of this Section solely for their respective permitted units, as specified below.

Area G (N3B, co-operator)

(1) The Permittees shall remove all fluids above the HDPE liner at Area G, Dome 224 within 24 hours of discovery (*see* 40 CFR§ 270.32(b)(2)). The Permittees shall include a record of the evacuation in the Facility's Operating Record including a complete chemical analysis of the fluid.

(2) The Permittees shall ensure that at Area G, all containers storing hazardous waste with free liquids are stored on secondary containment pallets, except inside the following structures: Dome~~s~~ 230, and Sheds 144, 145, 146, 177, 1027, 1028, ~~1029~~1030, and 1041.

Area L (N3B, co-operator)

(1) The 10,000 gallon holding tank at Area L, Dome 215 shall be inspected monthly and any detected fluids shall be characterized and removed within 3 days. The Permittees shall include a record of all holding tank inspections and evacuations in the Facility's Operating Record, including a complete chemical analysis of the tank contents (*see* 40 CFR § 270.32(b)(2)).

(2) The Permittees shall ensure that at Area L, all containers storing hazardous waste with free liquids are stored on secondary containment pallets, except when inside the following structures: Sheds 31, 68, 69, 70; concrete pad with canopy TA-54-32; concrete pads TA-54-35, TA-54-36, TA-54-58; and building TA-54-39 (Room 101 and South Containment Pad).

in accordance with Permit Section 3.7.1 of this Permit Part and the manufacturer's specifications.

3.12.3.7 Dome 224

The Permittees shall not rely on the engineered high-density polyethylene (HDPE) liner in Dome 224 as a method of secondary containment and shall instead store all hazardous waste container holding free liquids on secondary containment pallets.

3.13 TA-55 CONTAINER STORAGE REQUIREMENTS

The Permittees (DOE and Triad) co-operate hazardous waste management units at TA-55 and have a duty to meet the additional permit requirements in this Section.

3.13.1 General Operating Conditions

The Permittees shall ensure that storage of hazardous or mixed waste in containers at TA-55 occurs only in the permitted units B13, B45, B40, B05, G12, K13, the vault located at TA-55-4, TA-55-0355 Pad and the outdoor container storage pad located northwest of TA-55-4, and as identified in Attachment A (*Technical Area Unit Descriptions*) and Attachment J (*Hazardous Waste Management Units*).

3.14 TA-63 CONTAINER STORAGE REQUIREMENTS

The Permittees (DOE and Triad) co-operate hazardous waste management units at TA-63 and have a duty to meet the additional permit requirements in this Section.

3.14.1 General Operating Conditions

The Permittees shall ensure that storage and characterization of hazardous waste in containers at the Transuranic Waste Facility (TWF) occurs only on the permitted unit pad at TA-63, and as identified in Attachment A (*Technical Area Unit Descriptions)* and Attachment J (*Hazardous Waste Management Units*). This includes five storage buildings, the storage and characterization building, the characterization trailers, and the outside areas of the concrete pad within the unit boundary subject to the provisions of Permit Section 3.5.1, *Storage Configuration and Minimum Aisle Space*.

(1) The Permittees shall store all hazardous waste containers known or suspected of holding free liquids on secondary containment pallets. If containers with free liquid are stored in the characterization trailer without secondary containment pallets for longer than 24 hours, the Permittees shall follow the reporting conditions of Permit Section 1.9.14, Other Noncompliance.

(2) The Permittees shall not store containers with ignitable or reactive waste (E.P.A. Hazardous Waste Numbers D001 or D003) within 15 meters of the permitted unit's security barrier system shown in Figure ~~55~~14 (*see* 40 CFR §264.176 and

3.14.2 Retention Basin

The Permittees shall inspect the retention basin as required by Permit Section 2.6, *General Inspection Requirements*, and in accordance with Permit Attachment E, *Inspection Plan*, for evidence of contamination and deterioration during each inspection. The Permittees shall record inspection results and any remediation in the Operating Record. Any decontamination of the retention basin will be subject to the provisions of Permit Attachment D, *Contingency Plan*.

(1) The Permittees shall control run-on and run-off as specified in Permit Attachment A, Section A.8.9~~6.9.~~, *Control of Run-on/Run-off*. Run-off collected in the retention basin shall be evaluated before discharge. If the run-off is known to be or potentially contaminated with hazardous waste constituents from a spill, leak, or other release, it shall be sampled.

If sampling and analysis are required due to known or suspected contamination, the Permittees shall collect a water sample within 24 hours of discovery of the known or suspected contamination. The analytical testing shall include all appropriate methods based on the composition of waste stored at the unit. If the run-off present in the retention basin is determined to be hazardous waste, the Permittees shall implement Attachment D, Contingency Plan, and manage the waste spill as required by Permit Section D.4. The Permittees shall use the analytical results, together with information from the Operating Record, to characterize the water in accordance with Permit Attachment C, *Waste Analysis Plan*. The Permittees shall record the type and quantity of waste water present in the retention basin, the date of the incident, and the date of removal of the waste water in the Operating Record.

If the Permittees determine that the storm water is not hazardous waste, but that it is contaminated with hazardous waste constituents, the Permittees shall ensure the storm water meets the applicable clean-up requirements in Permit Section 11.4.3, *Surface Water Clean-up Levels,* prior to discharge.

If the Permittees determine that the storm water is not contaminated with hazardous waste constituents, the Permittees shall manage the storm water in accordance with *The Multi-Sector General Permit For Stormwater Discharges Associated with Industrial Activity* (MSGP) for the facility.

(2) Within 24 hours of a fire event, the Permittees shall collect a sample of fire suppression water collected in the retention basin and analyze it for any hazardous waste constituents managed at the facility. If the fire suppression water present in the retention basin is determined to be hazardous waste, the Permittees shall manage the waste water as required by Attachment D, *Contingency Plan*. The Permittees shall use the analytical results, together with information from the Operating Record, to characterize the water in accordance with Permit

3.14.3 Subsurface Vapor Monitoring

The Permittees shall monitor subsurface vapors to evaluate for releases from Material Disposal Area (MDA) C at the TWF. If soil vapors are determined to present a potential risk to site workers, then the Permittees shall initiate corrective action as necessary to protect human health.

The subsurface vapor monitoring network is described in Permit Attachment A, Section ~~A-6-10~~A.8.9, and Figure ~~56~~33 in Attachment N (Figures). ~~Vapor monitoring well construction must be completed and at least one vapor sample collected from each well sampling port prior to the start of operations at the TWF~~Three shallow vapor monitoring wells with sample ports at 5 ft below the nominal depth of the building foundations vapor monitoring well [VMW]-1, VMW-2, and VMW-3 monitor subsurface vapors at the TWF. Two vapor monitoring wells VMW-4 and VMW-5 with sample ports at 25 ft and 60 ft below the ground surface monitor the edge of the vapor plume.

Vapor samples must ~~then~~ be collected twice a year from each well and each sample port~~quarterly during the first year of operation~~. ~~After the first year of sampling, the Permittees may propose an alternate sampling frequency for subsequent years, in a permit modification request, based on the evaluation of data from the pre-operational and quarterly samples, as well as relevant vapor monitoring data collected from nearby vapor-monitoring locations. All vapor samples shall be analyzed for volatile organic compounds (VOCs), and s~~Samples shall be collected in appropriate sample canisters ~~and submitted for analysis of VOCs~~ using EPA Method TO-15 per Permit Section 11.10.2.6. Subsurface Vapor-Phase Monitoring and Sampling and shall be analyzed for volatile organic compounds (VOCs) listed in Table 3.14.3.. ~~The Permittees must submit a vapor monitoring work plan to the Department for approval no less than 90 days after the effective date of this Permit~~.

The Permittees shall submit an annual report June 30 of each year detailing the sampling procedures, analytical results, and any deviations from the Department approved monitoring plan in accordance with Permit Section 11.12.4, Periodic Monitoring Report.

Analytical results from vapor monitoring wells VMW-1, VMW-2, and VMW-3 shall be compared to the Industrial Vapor Intrusion Screening Levels (VISLs) established in NMED's Risk Assessment Guidance for Site Investigations and Remediation Volume I Soil Screening Guidance for Human Health Risk Assessments, Table A-4 Vapor Intrusion Screening Levels (June 2022, as updated). For constituents not listed in Table A-4, the Permittees shall use the USEPA Regional Screening Level Generic Tables for a target hazard quotient of 1.0, adjusted to 1E-05 cancer risk. For constituents not listed in Table A-4 or the USEPA Generic Regional Screening Tables, an appropriate surrogate shall be used. The Permittees shall provide data trend figures and tables for analytical results from vapor monitoring wells VMW-4 and VMW-5~~are required to submit a letter report no later than 60 days following each sample collection event detailing the~~

~~sampling procedure, analytical results, and any deviations from the Department approved work plan.~~

~~The Department utilized the methodology described below to determine appropriate soil gas screening levels (SGSLs) for all vapor-phase hazardous constituents detected in the subsurface at MDA C. Required detection and action levels for analytical data are consistent with the lowest SGSLs.~~

~~The SGSL levels for constituents detected at MDA C are provided as action levels in Tables 3.14.3.1, 3.14.3.2 and 3.14.3.3 at the end of this Section (3.14.3). The SGSL values were calculated using a generalized equation derived from Equation 19 in the EPA's "User's Guide to Evaluating Subsurface Vapor Intrusion Into Buildings" (February 22, 2004, United States Environmental Protection Agency, Washington, DC), and the methodology outlined in "Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)" (October 2011, Department of Toxic Substances Control, California Environmental Protection Agency). The equation is as follows:~~

~~SGSL=IARL/∝~~
~~Where:~~
~~SGSL = Soil gas screening level~~
~~IARL = Risk-based screening level for industrial workers indoor air~~
~~α = Attenuation factor (ratio of indoor air concentration to soil gas concentration)~~

~~The industrial air screening level from the May 2013 EPA Regional Screening Level (RSL) Tables, adjusted to a 1e-05 cancer risk, was applied for the indoor air concentration (IARL) (http://www.epa.gov/region9/superfund/prg/rsl-table.html). The attenuation coefficients were derived via utilization of EPA advanced soil gas Johnson and Ettinger model for sampling depths of 5, 25, and 60 feet below ground surface. http://www.epa.gov/oswer/riskassessment/airmodel/johnson_ettinger.htm). If the IARLs change for any constituent in Tables 3.13.3.1, 3.14.3.2 and 3.14.3.3, the Permittees shall calculate a revised SGSL using the attenuation factors identified in the Table. The revised SGSLs will be included in the letter report required by this Section~~.

If sample results indicate that VOCs are present at concentrations above the Industrial VSLs in the 5-ft ports of VMW-1, VMW-2, or VMW-3~~, reported in accordance with Permit Section 11.10.3, indicate that volatile organic constituents are present at concentrations above soil gas screening levels at any port in any of the vapor detection network wells~~, the Permittees must:

(1) Notify NMED in writing within 24 hours of receipt of analytical results detection;

(2) Resample the well(s) as soon as is practicable within ten business days to confirm results, then~~. Confirmatory samples must be processed on a~~ rush

analysis by~~basis at~~ the analytical laboratory is required; and

(3) If the confirmatory analytical sample results verify the results of the initial sample results, then~~accuracy of the initial sample results,~~ the Permittees must notify NMED in writing within 24 hours of receipt of the results~~confirmation in order~~ to discuss whether ~~subsurface~~ mitigation ~~measures are~~ is required to protect human health.

The Permittees~~Respondents~~ shall notify the Department in writing within fifteen days after review of the analytical data if the data indicate any of the following:

(1) Newly detected constituent ~~Detection of a contaminant~~ in a vapor monitoring well ~~if that contaminant has not previously been detected in the well;~~.

(2) A constituent detected in VMW-1, VMW-2, or VMW-3 with a concentration that exceeds half of the Industrial VISL, if that constituent has not previously exceeded half of the Industrial VISL~~Detection of a contaminant in a vapor monitoring well at a concentration that exceeds one-half the soil gas screening level, if that contaminant has not previously exceeded one-half such screening level in the well;~~. and

(3) If a detected constituent concentration in VMW-1, VMW-2, or VMW-3 exceeds half of the Industrial VISL and increases over three consecutive sampling periods~~Detection of a contaminant in a vapor monitoring well at a concentration that exceeds one-half the soil gas screening level and that has increased for the third consecutive sampling of that well~~.

The fifteen day ~~written~~ notification shall include~~be submitted to the Department in a letter report that includes~~, at a minimum, in table format the specific requirement in this Section (3.14.3) that the report references, the date or dates of the sampling event, the well designation and port depth(s), the latitude and longitude of the vapor well ~~the~~ location ~~of the well~~, a list of the analytical data that triggered the reporting requirement, and any known issues with sample quality~~, and the specific category for which the data is reported under this Section (3.14.3)~~. The Permittees may submit a proposal for further sampling or investigation or, alternately, the Department may require further investigation. Any ~~further~~ sampling, ~~or~~ investigation, or ~~would be performed in accordance with the~~ corrective action ~~required~~ involving MDA C would be conducted solely under the ~~2005 Order on~~ Consent Order or Permit Part 11.

~~**3.15 TA-60 CONTAINER STORAGE REQUIREMENTS**~~

~~The Permittee (DOE and Triad) co-operate the hazardous waste management unit at TA-60 and have a duty to meet the additional permit requirements in this Section.~~

~~3.15.1 General Operating Conditions~~

~~The Permittee shall ensure that the storage of hazardous waste in container at TA-60 occurs only inside the permitted unit in the southern portion of Building 17 and as identified in Attachment A (*Technical Area Unit Descriptions*) and Attachment J (*Hazardous Waste Management Units*).~~

Table 3.14.3~~-1.~~ Constituents of Concern

Acetone
Benzene
Methyl bromide
Methyethylketone (2-butanone)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroform
Methyl chloride (chloromethane)
Dichlorodiflouromethane
1,1-Dichloroethane
1,1-Dichloroethylene
cis-1,2-Dichloroethylene
1,2-Dichloropropane
Ethylbenzene
4-Ethyltoluene[1]
2-Hexanone
Methylene chloride
Styrene
Tetrachloroethylene
Toluene
1,1,2-Trichloro-1,2,2-trifluoroethane
1,1,1-Trichloroethane
Trichloroethylene
Trichlorofluoromethane
1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
Vinyl chloride (chloroethene)
Xylenes (total)
o-Xylene
p-Xylene
m-Xylene

~~Current Soil Gas Screening Levels for Selected VOCs at sampling ports located 5 feet below ground surface (as amended)~~

Constituent	Infinite source building attenuation coefficient α at 5 ft bgs (unitless)[a]	USEPA Industrial Indoor Air RSL[b] (µg/m^3)	Soil-gas Screening Level for 5 ft bgs Sampling Depth[c] (µg/m^3)
Acetone	5.12E-04	1.40E+05	2.73E+08
Benzene	4.69E-04	1.60E+01	3.41E+04
Methyl bromide	4.43E-04	2.20E+01	4.97E+04
Methylethylketone (2-butanone)	4.57E-04	2.20E+04	4.81E+07
Carbon disulfide	4.91E-04	3.10E+03	6.31E+06
Carbon tetrachloride	4.52E-04	2.00E+01	4.42E+04
Chlorobenzene	4.43E-04	2.20E+02	4.97E+05
Chloroform	4.91E-04	5.30E+00	1.08E+04
Methyl chloride (chloromethane)	5.14E-04	3.90E+02	7.59E+05
Dichlorodifluoromethane	4.29E-04	4.40E+02	1.03E+06
1,1-Dichloroethane	4.45E-04	7.70E+01	1.73E+05
1,1-Dichloroethylene	4.72E-04	8.80E+02	1.86E+06
cis-1,2-Dichloroethylene[d]	4.44E-04	2.60E+02	5.85E+05
1,2-Dichloropropane	4.53E-04	1.20E+01	2.65E+04
Ethylbenzene	4.47E-04	4.90E+01	1.10E+05
4-Ethyltoluene[d]	4.68E-04	2.20E+04	4.70E+07
2-Hexanone	5.59E-04	1.30E+02	2.32E+05
Methylene chloride	4.87E-04	2.60E+03	5.34E+06
Styrene	4.39E-04	4.40E+03	1.00E+07
Tetrachloroethylene	4.41E-04	1.80E+02	4.08E+05
Toluene	4.68E-04	2.20E+04	4.70E+07
1,1,2-Trichloro-1,2,2-trifluoroethane	4.52E-04	1.30E+05	2.87E+08
1,1,1-Trichloroethane	4.52E-04	2.20E+04	4.86E+07
Trichloroethylene	4.54E-04	8.80E+00	1.94E+04
Trichlorofluoromethane	4.68E-04	3.10E+03	6.63E+06
1,2,4-Trimethylbenzene	4.15E-04	3.10E+01	7.47E+04
1,3,5-Trimethylbenzene[d]	4.14E-04	3.10E+01	7.49E+04
Vinyl chloride (chloroethene)	4.93E-04	2.80E+01	5.68E+04
Xylenes (total)	4.52E-04	4.40E+02	9.73E+05
o-Xylene	4.68E-04	4.40E+02	9.41E+05
p-Xylene	4.50E-04	4.40E+02	9.77E+05
m-Xylene	4.37E-04	4.40E+02	1.01E+06

~~[a] Attenuation coefficients were derived via utilization of USEPA (2004) advanced soil gas Johnson and Ettinger model for a sampling depth of 5 feet below ground surface (ft bgs).~~

~~[b] RSL = Regional Screening Level, USEPA Region 9, May 2013, adjusted to a 1E-05 cancer risk. µg/m3 = micrograms per cubic meter. More conservative of cancer or noncancer risk applied.~~

~~[c] Final soil gas screening levels were calculated by dividing the RSL by the attenuation coefficient (RSL/α). This methodology is derived from Equation 19 in USEPA's (2004) User's Guide to Evaluating Subsurface Vapor Intrusion Into Buildings.~~

~~[d] RSLs were not available for these constituents and the following surrogate values were applied: trans-1,2-dichloroethylene was used as a surrogate for cis-1,2-dichloroethylene; toluene was used as a surrogate for 4-ethyltoluene; 1,2,4-trimethylbenzene was used as a surrogate for 1,3,5-trimethylbenzene.~~

~~Table 3.14.3.2. Current Soil Gas Screening Levels for Selected VOCs at sampling ports located 25 feet below ground surface (as amended)~~

Constituent	Infinite source building attenuation coefficient α at 25 ft bgs (unitless)[a]	USEPA Industrial Indoor Air RSL[b] (µg/m^3)	Soil-gas Screening Level for 25 ft bgs Sampling Depth[c] (µg/m^3)
Acetone	2.57E-04	1.40E+05	5.44E+08
Benzene	2.06E-04	1.60E+01	7.76E+04
Methyl bromide	1.80E-04	2.20E+01	1.22E+05
Methylethylketone (2-butanone)	1.94E-04	2.20E+04	1.13E+08
Carbon disulfide	2.30E-04	3.10E+03	1.35E+07
Carbon tetrachloride	1.89E-04	2.00E+01	1.06E+05
Chlorobenzene	1.81E-04	2.20E+02	1.22E+06
Chloroform	2.30E-04	5.30E+00	2.30E+04
Methyl chloride (chloromethane)	2.60E-04	3.90E+02	1.50E+06
Dichlorodifluoromethane	1.69E-04	4.40E+02	2.61E+06
1,1-Dichloroethane	1.83E-04	7.70E+01	4.21E+05
1,1-Dichloroethylene	2.09E-04	8.80E+02	4.20E+06
cis-1,2-Dichloroethylene[d]	1.82E-04	2.60E+02	1.43E+06
1,2-Dichloropropane	1.90E-04	1.20E+01	6.32E+04
Ethylbenzene	1.84E-04	4.90E+01	2.66E+05
4-Ethyltoluene[d]	2.04E-04	2.20E+04	1.08E+08
2-Hexanone	3.35E-04	1.30E+02	3.88E+05
Methylene chloride	2.26E-04	1.20E+04	5.31E+07
Styrene	1.77E-04	4.40E+03	2.49E+07
Tetrachloroethylene	1.79E-04	4.70E+02	2.63E+06
Toluene	2.04E-04	2.20E+04	1.08E+08
1,1,2-Trichloro-1,2,2-trifluoroethane	1.89E-04	1.30E+05	6.86E+08
1,1,1-Trichloroethane	1.89E-04	2.20E+04	1.16E+08
Trichloroethylene	1.91E-04	3.00E+01	1.57E+05
Trichlorofluoromethane	2.04E-04	3.10E+03	1.52E+07
1,2,4-Trimethylbenzene	1.57E-04	3.10E+01	1.97E+05
1,3,5-Trimethylbenzene[d]	1.56E-04	3.10E+01	1.98E+05
Vinyl chloride (chloroethene)	2.33E-04	2.80E+01	1.20E+05
Xylenes (total)	1.89E-04	4.40E+02	2.33E+06
o-Xylene	2.04E-04	4.40E+02	2.15E+06
p-Xylene	1.87E-04	4.40E+02	2.35E+06
m-Xylene	1.75E-04	4.40E+02	2.51E+06

~~[a] Attenuation coefficients were derived via utilization of USEPA (2004) advanced soil gas Johnson and Ettinger model for a sampling depth of 25 feet below ground surface (ft bgs).~~

~~[b] RSL = Regional Screening Level, USEPA Region 9, May 2013, adjusted to a 1E-05 cancer risk. µg/m3 = micrograms per cubic meter. More conservative of cancer or noncancer risk applied.~~

~~[c] Final soil gas screening levels were calculated by dividing the RSL by the attenuation coefficient (RSL/α). This methodology is derived from Equation 19 in USEPA's (2004) User's Guide to Evaluating Subsurface Vapor Intrusion Into Buildings.~~

~~[d] RSLs were not available for these constituents and the following surrogate values were applied: trans-1,2-dichloroethylene was used as a surrogate for cis-1,2-dichloroethylene; toluene was used as a surrogate for 4-ethyltoluene; 1,2,4-trimethylbenzene was used as a surrogate for 1,3,5-trimethylbenzene.~~

~~Table 3.14.3.3. Current Soil Gas Screening Levels for Selected VOCs at sampling ports located 60 feet below ground surface (as amended)~~

Constituent	Infinite source building attenuation coefficient α at 60 ft bgs (unitless)[a]	USEPA Industrial Indoor Air RSL[b] (µg/m^3)	Soil-gas Screening Level for 60 ft bgs Sampling Depth[c] (µg/m^3)
Acetone	1.38E-04	1.40E+05	1.02E+09
Benzene	1.04E-04	1.60E+01	1.54E+05
Methyl bromide	8.85E-05	2.20E+01	2.49E+05
Methylethylketone (2-butanone)	9.68E-05	2.20E+04	2.27E+08
Carbon disulfide	1.19E-04	3.10E+03	2.59E+07
Carbon tetrachloride	9.39E-05	2.00E+01	2.13E+05
Chlorobenzene	8.87E-05	2.20E+02	2.48E+06
Chloroform	1.19E-04	5.30E+00	4.44E+04
Methyl chloride (chloromethane)	1.39E-04	3.90E+02	2.80E+06
Dichlorodifluoromethane	8.18E-05	4.40E+02	5.38E+06
1,1-Dichloroethane	8.99E-05	7.70E+01	8.56E+05
1,1-Dichloroethylene	1.06E-04	8.80E+02	8.30E+06
cis-1,2-Dichloroethylene[d]	8.93E-05	2.60E+02	2.91E+06
1,2-Dichloropropane	9.41E-05	1.20E+01	1.28E+05
Ethylbenzene	9.08E-05	4.90E+01	5.40E+05
4-Ethyltoluene[d]	1.03E-04	2.20E+04	2.14E+08
2-Hexanone	1.97E-04	1.30E+02	6.60E+05
Methylene chloride	1.17E-04	2.60E+03	2.23E+07
Styrene	8.66E-05	4.40E+03	5.08E+07
Tetrachloroethylene	8.76E-05	1.80E+02	2.05E+06
Toluene	1.03E-04	2.20E+04	2.14E+08
1,1,2-Trichloro-1,2,2-trifluoroethane	9.39E-05	1.30E+05	1.38E+09
1,1,1-Trichloroethane	9.39E-05	2.20E+04	2.34E+08
Trichloroethylene	9.49E-05	8.80E+00	9.27E+04
Trichlorofluoromethane	1.03E-04	3.10E+03	3.01E+07
1,2,4-Trimethylbenzene	7.53E-05	3.10E+01	4.12E+05
1,3,5-Trimethylbenzene[d]	7.49E-05	3.10E+01	4.14E+05
Vinyl chloride (chloroethene)	1.21E-04	2.80E+01	2.31E+05
Xylenes (total)	9.38E-05	4.40E+02	4.69E+06
o-Xylene	1.03E-04	4.40E+02	4.27E+06
p-Xylene	9.27E-05	4.40E+02	4.74E+06
m-Xylene	8.55E-05	4.40E+02	5.15E+06

~~[a] Attenuation coefficients were derived via utilization of USEPA (2004) advanced soil gas Johnson and Ettinger model for a sampling depth of 60 feet below ground surface (ft bgs).~~

~~[b] RSL = Regional Screening Level, USEPA Region 9, May 2013, adjusted to a 1E-05 cancer risk. µg/m3 = micrograms per cubic meter. More conservative of cancer or noncancer risk applied.~~

~~[c] Final soil gas screening levels were calculated by dividing the RSL by the attenuation coefficient (RSL/α). This methodology is derived from Equation 19 in USEPA's (2004) User's Guide to Evaluating Subsurface Vapor Intrusion Into Buildings.~~

~~[d] RSLs were not available for these constituents and the following surrogate values were applied: trans 1,2 dichloroethylene was used as a surrogate for cis 1,2 dichloroethylene; toluene was used as a surrogate for 4 ethyltoluene; 1,2,4 trimethylbenzene was used as a surrogate for 1,3,5 trimethylbenzene.~~

3.15 TA-60 CONTAINER STORAGE REQUIREMENTS

The Permittee (DOE and Triad) co-operate the hazardous waste management unit at TA-60 and have a duty to meet the additional permit requirements in this Section.

3.15.1 General Operating Conditions

The Permittee shall ensure that the storage of hazardous waste in container at TA-60 occurs only inside the permitted unit in the southern portion of Building 17 and as identified in Attachment A (*Technical Area Unit Descriptions*) and Attachment J (*Hazardous Waste Management Units*).

release to the environment, the Permittees shall submit a written report to the Department containing the information at 40 CFR § 264.196(d)(3), which is incorporated herein by reference.

(9) The Permittees shall give notice by e-mail to persons on the e-mail notification list of the written report under 40 CFR § 264.196(d)(3) in accordance with Permit Section 1.13.

4.5 IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES

The Permittees shall ensure that the mixed waste storage tank and stabilization units do not manage ignitable or reactive waste.

The Permittees shall ensure that incompatible wastes, or wastes and other materials that are incompatible, are not placed in the same tank system or stabilization unit (*see* 40 CFR § 264.199).

~~4.6 TA-50 RADIOACTIVE LIQUID WASTE TREATMENT FACILITY~~

~~The Permittees shall discharge all treated wastewater from the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF) through the outfall permitted under Section 402 of the federal Clean Water Act, or as otherwise authorized by the terms of an applicable Clean Water Act permit that regulates the treatment and use of wastewater. If the Permittees intentionally discharge through a location other than the permitted outfall or as otherwise authorized, they will fail to comply with this requirement, and as a consequence the wastewater treatment unit exemption under 40 CFR § 264.1(g)(6) will no longer apply to the RLWTF. The Permittees shall not accept listed hazardous wastes as specified at 40 CFR Part 261 Subpart D at the RLWTF.~~

PART 5: ~~(RESERVED)~~ TREATMENT BY OPEN DETONATION

5.1 MANAGEMENT OF OPEN DETONATION UNITS

The Permittees shall utilize only the two permitted open detonation units for the treatment of hazardous waste. The Permittees shall treat by open detonation to remove the characteristic of reactivity (D003). In addition to exhibiting reactivity, hazardous wastes may also exhibit other hazardous waste characteristics or be listed in 40 CFR part 261, Subpart D. All treatment open detonations are conducted above ground surface and by means of an explosion in which a chemical transformation passes through the material faster than the speed of sound.

The Permittees shall conduct open detonation operations in accordance with this Permit Part, Attachment A (*Technical Area Unit Descriptions*), 40 CFR 265, Subpart P, 40 CFR 264, Subpart X, 40 CFR§ 268.7(b) and 40 CFR Part 270, which are incorporated by reference. The Permittees shall ensure that open detonation waste treatment occurs only at the following two permitted units:

1) TA-36-8 (open detonation unit); and

2) TA-39-6 (open detonation unit)

(*see* Figures 2, 6 and 7 in Permit Attachment N (*Figures*)).

5.1.1 Maximum Quantity of Waste to be Treated

The Permittees shall not treat more than 2,000 pounds (lbs) of wastes per treatment event at the TA-36-8 open detonation unit or 1,000 lbs of waste per treatment event at the TA-39-6 open detonation unit. The Permittees shall not treat more than 15,000 lbs per calendar year, cumulatively, at the two permitted units or 150,000 lbs for the ten-year term of the Permit.

5.2 WASTE STREAMS TO BE TREATED AT THE OPEN DETONATION UNITS

The Permittees shall limit open detonation treatment activities to the explosives waste streams for open detonation identified in Attachment C (*Waste Analysis Plan*). The Permittees shall treat only those wastes identified by EPA Hazardous Waste Numbers (waste codes) listed in Attachment B (*Part A Application Form*) associated with TA-36 and TA-39 and identified as utilizing waste process code X01.

The Permittees shall not treat by open detonation any of the following wastes or materials (*see* 40 CFR § 270.32(b)(2)):

(1) wastes that do not meet the definition of waste explosives per 40 CFR § 265.382, *Open burning; waste explosives;*
(2) the hazardous component of mixed wastes;
(3) biologic or chemical warfare weaponry;
(4) small arms ammunition up to 50 calibers;
(5) materials containing beryllium;
(6) materials containing perchlorate-based propellants or explosives; or
(7) polychlorinated biphenyls (PCBs).

5.3 DESIGN CONSTRUCTION, OPERATION, AND MAINTENANCE

5.3.1 General Requirements

The Permittees shall design, construct, operate, and maintain the open detonation units in accordance with the requirements of this Permit to minimize the possibility of accidental fire, explosion, or any sudden or non-sudden release of hazardous waste or hazardous waste constituents into air, soil, sediment, surface water or groundwater which could threaten human health or the environment, as required by 40 CFR §§ 264.31 and 264.601.

The Permittees shall ensure that warning signs are posted at each of the open detonation units in accordance with Permit Part 2.5.1.

The Permittees shall document abnormal treatment events in the facility operating record and then report them in accordance with Permit Part 1.9.14.

The Permittees shall design, construct, operate, and maintain run-off control systems (protective berms) at the open detonation units to minimize precipitation run-off and prevent the migration of hazardous waste or hazardous waste constituents from the units (*see* 40 CFR § 264.601(b)).

5.3.2 Restrictions on Operations

5.3.2.1 Hours of Operation

The Permittees shall conduct routine treatment open detonation operations only during daylight hours (*i.e.*, between one hour after sunrise and one hour before sunset), except in an emergency (*see* 40 CFR § 264.1(g)(8)(i)(D)). If the Permittees conduct treatment operations in response to an emergency before sunrise or after sunset on a given day, the Permittee shall notify the Department of this fact in writing within five days of conducting such treatment.

5.3.2.2 Weather Conditions

Transportation of or routine operations with explosives waste at the open detonation units shall not be conducted during the following severe conditions:

(1) lightning is within a six-mile radius (9.6 kilometers) of the open detonation units;

(2) icy roads (for transport);

(3) any time winds are greater than 20 miles per hour;

(4) winds are greater than 10 miles per hour in drier weather conditions, such as in the spring and summer seasons when fire danger rating is deemed to be "Very High" or "Extreme"; or

(5) during precipitation events.

Should environmental conditions change rapidly and unexpectedly, the waste will remain at the unit under administrative control until treatment can be safely conducted.

5.3.2.3 Operational Restrictions

The Permittees shall comply with the following general requirements concerning operations at the open detonation units:

(1) The access gate at the entry to the firing site shall be closed for the treatment event.

(2) A minimum of 24 hours shall elapse between open detonation treatment events.

(3) Only non-sparking tools shall be utilized at the permitted unit when waste is present.

5.3.2.4 Other Restrictions

During normal treatment activities the explosives waste shall be treated promptly upon transport to and configuration of the shot at the unit; provided abnormal conditions do not arise.

The Permittees shall cease treatment operations immediately upon the discovery of an unsafe situation including but not limited to an aircraft in dangerous proximity to the hazardous waste management unit.

The firing site leader or explosives safety personnel shall remain on site at the control building for the duration of the treatment operation.

The maximum extent of hazardous waste treatment operations at the open detonation shall be confined to the hazardous waste management unit.

Treatment of waste shall be conducted using a non-continuous (batch) thermal process (40 CFR § 265.373).

5.3.3 Operational Safety

5.3.3.1 Safety Precautions

When escorted visitors are present to observe treatment operations, there shall be at least one firing site leader or qualified explosives personnel present.

In addition to the security requirements set forth in Permit Part 2.5, the qualified personnel shall ensure that the firing area at the open detonation unit has been cleared and all personnel have entered the control building, or have been accounted for outside the clearance area. The Permittees shall not conduct treatment operations if unauthorized personnel are within the clearance area.

The Permittees shall conduct all treatment operations in accordance with all safety precautions required by this Permit.

Initiation of all waste treatment operations shall be performed remotely from inside the control building. After detonation is complete personnel shall inspect the site to ensure that the high explosives are expended. If the inspection confirms the shot fired completely an "All Clear" is signaled. Personnel must remain in the bunker or outside the clearance area until "All Clear" is signaled.

5.3.4 Maintenance

The Permittees shall ensure that all industrial equipment is maintained and repaired to avoid situations that may result in leaks, spills, and other releases of pollutants in storm water discharges to receiving waters. The Permittees shall ensure that all control measures used to mitigate the flow of storm water are maintained in an effective operating condition. The Permittees shall ensure that all nonstructural control measures have also been maintained (*e.g.*, spill response supplies are available and personnel were trained). If control measures require repair or replacement, the Permittees shall ensure that necessary repairs or modifications are made as expeditiously as practicable. The unit shall be inspected in accordance with the requirements of Part 2.6.

5.3.4.1 Untreated Waste and Treatment Residues

Within 24 hours after each treatment operation, the Permittees shall inspect the entire hazardous waste management unit area for untreated reactive waste. Non-reactive waste residues (such as wood or metal fragments) originating from treatment operations shall be removed from the unit as part of good housekeeping practices and will be managed in accordance with appropriate waste management procedures.

5.4 RELEASES AT THE PERMITTED UNIT

The Permittees shall conduct the following notifications in the event of an unexpected event at the permitted unit.

(1) Provide notification via telephone to the Department within 24 hours of an unexpected event at a treatment unit that results in the Permittees calling in emergency services.

(2) Any unexpected release at a permitted treatment unit that the Permittees do not deem a threat to human health or the environment must be reported to the Department in accordance with Permit Section 1.9.13.

(3) The Permittees shall ensure that any unexpected release of waste to the environment (e.g., soil, surface water, groundwater, atmosphere) that may endanger human health or the environment from a permitted treatment unit is reported to the Department within 24 hours of its detection in accordance with Permit Section 1.9.12. Within 5 days of detection of a release to the environment, the Permittees shall submit a written report to the Department containing the information required by Permit Section 1.9.12.2.

5.5 MONITORING REQUIREMENTS

5.5.1 Soil Monitoring Requirements

The Permittees shall conduct a soil sampling and analysis program to monitor for hazardous constituents released to soils during treatment events, and to ensure that any releases do not have an adverse effect on human health or the environment as required in 40 CFR § 264.602. All sampling events shall commence within one year of the effective date of the inclusion of the open detonation hazardous waste management units within the Permit. The Permittees shall collect soil samples at a frequency of one, four and seven years after the inclusion of the unit within the Permit. The Permittees shall submit a sampling plan to the Department at least 30 days prior to commencing sampling. The plan shall include locations for surface soil sample collection and analysis. Samples shall be analyzed for total metals, explosives compounds, and semi volatile organic compounds utilizing the analytical methods identified within the Attachment C (Waste Analysis Plan).

The Permittees shall submit to the Department a sampling and analysis report for each sampling event summarizing all sampling activities and the results of the sample analyses by October 1 of each sampling year. The Permittees shall identify in the report any sample analytical results that exceed either the baseline sampling event or any soil cleanup levels established in Permit Section 11.4.2.1, as applicable. Upon review of the report, the Department will determine if further action is needed.

5.6 ASSESSMENT OF ALTERNATIVE TECHNOLOGIES

The Permittees shall submit an open detonation alternative treatment technology assessment report to the Department no later than the 6th anniversary of the effective date of this Permit.

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PART 6: ~~(RESERVED)~~ TREATMENT BY OPEN BURNING

6.1 MANAGEMENT OF OPEN BURNING UNIT

The Permittees shall utilize the open burning unit at TA-16 only for the treatment of explosives waste streams. The Permittees shall treat by open burning only those hazardous wastes that would result in detonation or deflagration to remove the characteristics of reactivity (D003) and ignitability (D001). Waste shall be treated by open burning only at the permitted unit, known as the TA-16-388 Flash Pad, identified with process code X01 in Attachment J (*Hazardous Waste Management Units*), Table J-1(Active Portion of the Facility). The permitted unit at the TA-16-388 Flash Pad (*see* Figures 2 and 5 in Permit Attachment N (*Figures*)) shall not treat waste in quantities that exceed the operating capacities identified in Table J-1.

The Permittees shall conduct open burning operations in accordance with this Permit Part; 40 CFR part 265, subpart P; 40 CFR part 264, subpart X; 40 CFR § 268.7(b); and 40 CFR Part 270, which are incorporated by reference.

6.1.1 Maximum Quantity of Waste to be Treated

The Permittees shall treat no more than 6,000 pounds via open burning per year and no more than 200 pounds per individual treatment event at the TA-16-388 Flash Pad (*see* 40 CFR § 270.32(b)(2)). The weight of any metal equipment or piping that will be recycled after treatment shall not be included in the waste-treated quantity.

6.2 WASTE STREAMS TO BE TREATED AT THE OPEN BURNING UNIT

The Permittees shall limit open burning treatment activities to the explosives waste streams for open burning identified in Attachment C (*Waste Analysis Plan*). The Permittees shall treat only those wastes identified by EPA Hazardous Waste Numbers (waste codes) listed in Attachment B (*Part A Application*) associated with TA-16 and identified as utilizing waste process code X01.

For certain waste streams, the following general provisions should be considered prior to acceptance of waste for treatment at the permitted unit (*see* 40 CFR §§ 265.382 and 270.32(b)(2)):

(1) Only excess explosives, explosives machining waste, explosives-contaminated combustible debris, explosives-contaminated noncombustible debris, and explosives-contaminated solvent waste may be treated by open burning.

(2) Explosives-contaminated equipment containing asbestos shall not be treated, unless the asbestos concentrations are in de minimis quantities.

(3) Liquids (*e.g.*, water or dimethyl sulfoxide [DMSO]) shall have a minimum of 25% by volume of explosives content to be considered detonable.

(4) Solvents, other than DMSO or water, shall be treated only in de minimis quantities and associated only with explosives-contaminated debris.

The Permittees shall not treat by open burning any of the following wastes or materials (*see* 40 CFR § 270.32(b)(2)):

(1) the hazardous component of mixed wastes;

(2) biologic or chemical warfare weaponry;

(3) small arms ammunition up to 50 calibers;

(4) beryllium;

(5) ammonium perchlorate;

(6) polyvinyl chloride (PVC);

(7) small control boxes or electronic equipment; and

(8) blasting caps, electric detonators, explosives units containing electric detonators, or mild detonating fuse arrays.

6.3 DESIGN, CONSTRUCTION, OPERATION, AND ROUTINE MAINTENANCE REQUIREMENTS

The Permittees shall operate and maintain the TA-16-388 Flash Pad in accordance with the requirements of this Permit to minimize the possibility of accidental fire, explosion, or any sudden or non-sudden release of hazardous waste or hazardous waste constituents into air, soil, sediment, surface water or groundwater which could threaten human health or the environment, as required by 40 CFR §§ 264.31 and 264.601.

6.3.1 General Requirements

The Permittees shall comply with the following requirements for treatment at the TA-16-388 Flash Pad (*see* 40 CFR § 270.32(b)(2)).

(1) No fuel other than propane shall support open burning treatment operations.

(2) Wastes shall be placed on the Flash Pad only if treatment is planned within four hours of such placement. However, if oversized equipment requires complex staging, the Permittees may stage the equipment at the TA-16-388 Flash Pad for 48 hours; the Department will not consider this staging inappropriate storage. The equipment and the unit must be covered during staging.

(3) All explosives-contaminated combustible debris shall be covered with a screen prior to treatment.

(4) The Permittees shall place containers holding explosives-contaminated solvent (*i.e.* DMSO) in steel trays, or some other form of secondary containment (*e.g.*, additional pan, tray) for the duration of the treatment.

(5) Explosives-contaminated equipment to be treated shall be disassembled to the extent practicable prior to treatment.

6.3.2 Operational Restrictions

The Permittees shall comply with the following general requirements concerning operations at the open burning unit:

(4) The access gate at the TA-16-389 control building shall be closed for the duration of treatment.
(5) The gate in front of the unloading area at the TA-16-388 Flash Pad shall be kept closed for the duration of treatment and for the cool-down period after treatment to prevent the entry of unauthorized personnel into the area.
(6) The Permittees shall observe from the control building each treatment event using a computer, video display, or periscope for the duration of the treatment.
(7) A minimum of 24 hours shall elapse between open burning treatment events.
(8) Only non-sparking tools shall be utilized at the permitted unit when waste is present.
(9) Open burning treatments shall be conducted only during the time period beginning 1 hour after sunrise and ending 1 hour before sunset.

6.3.3 Environmental Factors

The Permittees shall comply with the following requirements and restrictions with respect to environmental factors. Transportation of or routine operations with explosives waste at the permitted unit shall not be conducted during the following severe conditions:

(1) when lightning is detected within a six mile radius (9.6 kilometers) of the unit;

(2) during precipitation, or if storms are forecasted to occur within 3 hours at the location of the unit;

(3) when roads are icy (for transport);

(4) when wind speeds at the TA-16-389 control building exceed 20 miles per hour; or

(5) winds are greater than 10 miles per hour in drier weather conditions, such as in the spring and summer seasons when the fire danger rating is deemed to be “Very High” or “Extreme”.

6.3.4 Run-On and Run Off Controls

The Permittees shall design, construct, operate, and maintain run-off control systems (protective berms and check dams) at the permitted unit to minimize precipitation run-off and prevent the migration of hazardous waste or hazardous waste constituents from the unit (*see* 40 CFR § 264.601(b)). The permitted unit's containment devices (*e.g.*, pans, trays, pads) shall be covered within 10 hours after use and will remain covered when not in use to prevent precipitation collection and runoff.

6.3.5 Routine Maintenance

The Permittees shall conduct the following maintenance and inspection activities prior to treatment events at the TA-16-388 Flash Pad:

(1) Notify TA-16 Access Control Center at the start and end of each treatment event;

(2) Inspect the permitted unit and its associated equipment within 24 hours of a treatment event;

(3) Inspect the video display or periscope (whichever will be used to view the treatment operations) located in the TA-16-389 control building to ensure it is functional before waste is staged for treatment;

(4) Test the propane burners at the permitted unit prior to staging waste. The Permittees shall cancel the planned open burn treatment if the burner's firing test fails; and

(5) Patrol the area in the immediate vicinity of the permitted unit prior to unloading the waste for a scheduled burn to ensure that no large wildlife or unauthorized personnel are present at or around the unit.

6.4 RELEASES AT THE PERMITTED UNIT

The Permittees shall conduct the following notifications in the event of an unexpected event at the permitted unit.

(1) Provide notification via telephone to the Department within 24 hours of an unexpected event at a treatment unit that results in the Permittees calling in emergency services.

(2) Any unexpected release at a permitted treatment unit that the Permittees do not deem a threat to human health or the environment must be reported to the Department in accordance with Permit Section 1.9.13.

(3) The Permittees shall ensure that any unexpected release of waste to the environment (*e.g.*, soil, surface water, groundwater, atmosphere) that may

endanger human health or the environment from a permitted treatment unit is reported to the Department within 24 hours of its detection in accordance with Permit Section 1.9.12. Within 5 days of detection of a release to the environment, the Permittees shall submit a written report to the Department containing the information required by Permit Section 1.9.12.2.

6.5 TREATMENT RESIDUES

The Permittees shall inspect the unit and clean the waste containment devices of any treatment residues as close to 24 hours after a treatment event as possible. If the Permittees find any untreated explosives waste remaining in the residue during inspection of the unit after treatment, the Permittees shall re-treat the waste on that day subject to the restrictions of this Permit Part. If lightning occurs within 3 miles of the unit during residue collection, the Permittees shall cease collection, and resume no more than 4 hours after the storm passes. The residues shall be managed as waste and characterized in accordance with Attachment C (Waste Analysis Plan) Section C.3.1.2.5.

6.6 MONITORING REQUIREMENTS

6.6.1 Soil Monitoring Requirements

The Permittees shall implement a soil sampling and analysis program to monitor for hazardous constituents released to soils during open burning treatment events and to ensure that any releases do not have an adverse effect on human health or the environment (*see* 40 CFR § 264.602). All sampling events as described in this section shall commence no later than July 1 of the designated sampling year. Samples shall be collected and analyzed 2, 5, and 8 years after the effective date of this Permit. The Permittees shall provide oral and written notification to the Department of the scheduled sampling activities at least 15 days prior to commencing sampling activity.

The Permittees shall analyze the soil samples collected during each monitoring event for total metals, explosive compounds, semi-volatile organic compounds, perchlorate, and dioxins/furans. Sampling events shall include at a minimum the 0 to 2 inch depth interval at the locations that are determined by the Department and the Permittees to be representative of drainage locations and potential deposition areas around the unit. These locations will be sampled for all three monitoring events. If no treatment was conducted at the open burning unit between sampling events, the Permittees may propose an alternative sampling schedule. The Permittees shall certify in writing no later than July 31 of the scheduled sampling year that treatment was not conducted since the preceding sampling event.

The Permittees shall submit to the Department a sampling and analysis report for each sampling event summarizing all sampling activities and the results of sample analyses by December 15 of each sampling year. The Permittees shall identify in the report any sample analytical results that exceed concentrations detected in previous analyses of soil samples collected at the site.

6.7 ASSESSMENT OF ALTERNATIVE TECHNOLOGIES

The Permittees shall submit an open burning alternative treatment technology assessment report to the Department no later than the 6th anniversary of the effective date of this Permit.

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PART 9: CLOSURE

9.1 INTRODUCTION

This Permit Part addresses the three categories of permitted units at the Facility. They are identified as follows:

(1) regulated units ~~(*i.e.*, material disposal areas G, H, L)~~;

(2) indoor units (structures and related equipment); and

(3) outdoor units (asphalt or concrete pads and related structures and equipment):

a. co-located with a regulated unit; and
b. not co-located with a regulated unit.

Attachment J (*Hazardous Waste Management Units*), Table J-1 (*Active Portion of the Facility*), identifies the category of each permitted unit in the column titled *Type of Unit*.

This Permit does not address the closure of interim status units.

The Permittees shall adhere to the closure performance standards in Permit Section 9.2 for all the permitted units addressed in this Permit Section.

The Permittees shall close the permitted storage and treatment units in accordance with the requirements in 40 CFR §§ 264.110 through 264.116, 264.178, and 264.197 (which are incorporated herein by reference), this Permit Part (9), and the procedures described in the permitted unit-specific closure plans in Attachment G (*Closure Plans*).

9.1.1 Regulated Units

The closure requirements for regulated units within MDAs G, H, and L shall be addressed under the Consent Order (*see* Permit Section 1.4.2.1)~~not accept hazardous or mixed waste and shall undergo closure. The Permittees shall adhere to the closure performance standards in Permit Section 9.2 and the closure requirements in Permit Sections 9.3 and 9.5 for the closure of these units~~.

9.1.2 Indoor Units

Indoor units are buildings (*e.g.*, TA-54-412 DVRS), structures (*e.g.,* storage sheds, domes, transportainers, canopies, trailers, and permacons), or rooms within a building (*e.g.,* TA-3 Room 9010). The Permittees shall comply with the specific closure requirements in Permit Sections 9.4 and 9.5 for these units and comply with the closure performance standards in Permit Section 9.2.

performance standards at Permit Sections 9.2.2(1) through (3), and a post-closure plan, if necessary, to maintain the measures. The Permittees shall conduct any post-closure care in accordance with Permit Part 10 (*Post-Closure Care*).

The Permittees shall give notice by e-mail to persons on the e-mail notification list, in accordance with Permit Section 1.13, of the notice to the Department under this Permit Section (9.2.2.3).

9.3 RESERVED~~CLOSURE REQUIREMENTS FOR REGULATED UNITS~~

~~Closure of the regulated units must meet the corrective action requirements of the March 1, 2005 Compliance Order on Consent (Consent Order). The Consent Order is an enforceable document that sets forth alternative closure requirements in accordance with 40 CFR § 264.110(c). The Permittees shall propose remedies in the Corrective Measures Evaluation Report under the Consent Order that achieve compliance with the closure performance standards at 40 CFR § 264.111. Fulfilling the requirements of the approved Corrective Measures Implementation Plan under the Consent Order shall also satisfy the requirements of 40 CFR Part 264, Subpart G.~~

9.4 CLOSURE REQUIREMENTS FOR INDOOR AND OUTDOOR UNITS

This section specifies the closure requirements for indoor and outdoor (asphalt and concrete pad) permitted units.

9.4.1 Closure Schedule

The Permittees shall notify the Department in writing at least 45 days prior to the date on which they expect to begin closure of a permitted unit in accordance with 40 CFR § 264.112(d)(1), which is incorporated herein by reference. The beginning of closure is marked by initiating removal of waste from a permitted unit for the purpose of closure. In accordance with 40 CFR § 264.112(d)(2), incorporated herein by reference, the date when the Permittees begin closure shall be no later than 30 days after the date on which a permitted unit receives the known final volume of hazardous wastes, or if there is a reasonable possibility that the permitted unit will receive additional hazardous wastes, no later than one year after the date on which the unit received the most recent volume of hazardous wastes. In accordance with 40 CFR § 264.113(a), within 90 days after receiving the permitted unit's final volume of hazardous waste, the Permittees shall remove or treat, as applicable, in accordance with the approved closure plan, all hazardous waste from a permitted unit.

The Permittees shall give notice by e-mail to persons on the e-mail notification list, in accordance with Permit Section 1.13, of the notice to the Department provided under this Permit Section (9.4.1).

PART 11: CORRECTIVE ACTION

11.1 CORRECTIVE ACTION REQUIREMENTS UNDER THE CONSENT ORDER

The Department and the Permittees have agreed to a Compliance Order on Consent (Consent Order) ~~dated March 1, 2005~~modified September 2024, which requires the ~~Permittees~~ DOE to conduct corrective action at all solid waste management units (SWMUs) and Areas of Concern (AOCs), at the Facility to fulfill the requirements of 40 CFR § 264.101. The Consent Order is an enforceable document pursuant to 40 CFR §§ 264.90(f), 264.110(c), and as defined in 40 CFR § 270.1(c)(7). Nothing in this Permit Part shall be construed to constitute a change to the Consent Order.

11.2 CORRECTIVE ACTION REQUIREMENTS UNDER THE PERMIT

The Permittees shall conduct corrective action under this Permit (or other enforceable document) rather than under the Consent Order, in the following circumstances:

(1) new releases and newly discovered releases of hazardous waste or hazardous constituents from hazardous waste management units at the Facility;

(2) the closure and post-closure care requirements of 40 CFR Part 264, Subpart G, as they apply to hazardous waste management units at the Facility;

(3) implementation of the controls, including long-term monitoring, for any SWMUs or AOCs listed in the Permit in~~on~~ Attachment K (*Listing of SWMUs and AOCs*), Table K-2 (*Corrective Action Complete with Controls*); ~~and~~

(4) any corrective action conducted under this Part (11) to address releases of hazardous waste or hazardous constituents that occur or are discovered after the date on which the Consent Order terminates; and

(5) newly created SWMUs and AOCs from non-permitted operations.

(*see* § 7.A~~III.W.1~~ of the Consent Order)

In circumstances where Corrective Action is required under the Permit, the Permittees shall conduct corrective action pursuant to this Permit in accordance with §§ 74-4-4(A)(5)(h) and (i) and 74-4-4.2(B) of the HWA. The Permittees shall coordinate all corrective action conducted under this Permit with corrective action conducted under the Consent Order. Corrective action for releases from hazardous waste management units that commingle with releases originating from other sources shall be conducted under the Consent Order. Any SWMU or AOC for which corrective action is required that is not subject to corrective action under the Consent Order shall be subject to corrective action under this Permit Part and 40 CFR §§ 264.100 and 264.101, which are incorporated herein by reference.

11.3.1.1 Notification of Detections

By the fifteenth day of each month, the Permittees shall review the analytical data from all groundwater monitoring conducted under this Permit that was received during the previous month, and shall record the date of such review in the Operating Record. If the fifteenth day of a month is a non-business day, then the review shall be conducted by the next business day.

The Permittees shall notify the Department orally within one business day after review of the analytical data if such data show detection of a contaminant in a well screen interval or spring at a concentration that exceeds the groundwater cleanup levels established in Permit Section 11.4.1 if that contaminant has not previously exceeded such water quality standard or cleanup level in such well screen interval or spring.

The Permittees shall notify the Department in writing within fifteen days after review of the analytical data if the data show any of the following:

(1) Detection of a hazardous constituent that is an organic compound in a spring or screened interval of a well if that hazardous constituent has not previously been detected in the spring or screened interval;

(2) Detection of a hazardous constituent that is a metal or other inorganic compound at a concentration above the background level in a spring or screened interval of a well if that hazardous constituent has not previously exceeded the background level in the spring or screened interval;

(3) Detection of a hazardous constituent in a spring or screened interval of a well at a concentration that exceeds one-half the cleanup level established in Permit Section 11.4.1, if that hazardous constituent has not previously exceeded one-half such standard or screening level in the spring or screened interval;

~~(4) Detection of perchlorate in a spring or screened interval of a well at a concentration of 2 µg/L or greater if perchlorate at such concentration has not previously been detected in the spring or screened interval;~~

(~~5~~4) Detection of a hazardous constituent that is a metal or other inorganic compound in a spring or screened interval of a well at a concentration that exceeds two times the background level for the third consecutive sampling of the spring or screened interval; and

(~~6~~5) Detection of a hazardous constituent in a spring or screened interval of a well at a concentration that exceeds one-half the cleanup level established in Permit Section 11.4.1 and that has increased for the third consecutive sampling of that spring or screened interval.

The written notification shall be submitted to the Department in a letter report in table format that includes, but is not limited to, the date or dates of the sampling event, an identification of the well or spring, the location of the well or spring, the depth of the screened interval of the well or zone sampled, a list of the analytical data that triggered

the reporting requirement, any known issues with sample quality, and the specific category for which the data is reported under this Permit Section (11.3.1.1).

Previous data to be evaluated under this Permit Section (11.3.1.1) to determine whether specified levels have been exceeded, or to determine trends in data for three consecutive samples shall include only data acquired after September 30, 2009. For the purpose of the notice requirements of this Permit Section (11.3.1.1), the background level of a contaminant shall be the most recent Department-approved 95 percent upper tolerance limit for the background for that contaminant set forth in the *Groundwater Background Investigation Report* approved by the Department, including any approved revisions, as it may be revised or replaced with another document.

The Permittees shall give notice by e-mail to persons on the e-mail notification list of groundwater analytical data reported under this Permit Section (11.3.1.1) in accordance with Permit Section 1.13.

11.3.1.2 Source Identification and Corrective Action

The Permittees shall provide written notification to the Department if a detected concentration exceeds the cleanup levels established in Permit Section 11.4.1, within seven business days of discovery of the exceedance in accordance with 40 CFR § 264.99(h)(1). The Permittees shall include in the notification whether or not they intend to attempt to make a determination that the source of the detected hazardous constituent is not the regulated unit, in accordance with 40 CFR § 264.99(i)(1). The Permittees shall submit a report to the Department within 90 days of such determination that demonstrates that the source of the detected hazardous constituent is not the regulated unit, in accordance with 40 CFR § 264.99(i)(2).

If the source of the detection is the regulated unit, the Permittees shall determine the nature and extent of the release in accordance with Permit Section 11.8.5, and take all steps necessary to contain and otherwise mitigate the release. The Permittees shall conduct a corrective measures evaluation (CME) in accordance with the procedures included in Permit Section 11.8.6 (*Corrective Measures Evaluation*), if the Department determines that such evaluation is necessary in order to select a remedy to achieve the cleanup levels included in Permit Section 11.4.1.

11.3.2 Groundwater Monitoring Reporting

The Permittees shall submit to the Department periodic monitoring reports in accordance with the schedule in the Interim Facility Wide Groundwater Monitoring Plan (IFGMP) or the Department-approved Long-term Groundwater Monitoring Plans. The reports shall be prepared in accordance with Permit Section 11.12. The Permittees shall submit to the Department periodic groundwater monitoring reports for all groundwater monitoring data generated pursuant to this Permit. The Permittees shall propose a schedule for such reporting to the Department for approval. Such reporting shall be coordinated with, and may be combined with, the reporting conducted under § 12~~IV.A.6~~ of the Consent Order.

proposing a cleanup level for the contaminant. If the background concentration of an inorganic constituent, as established in accordance with Permit Section 11.10.6, exceeds the standard then the cleanup level is the background concentration for that specific substance. Any cleanup level based on a risk assessment must be submitted to the Department for its review and approval.

The Permittees shall give notice by e-mail to persons on the e-mail notification list in accordance with Permit Section 1.13 of a submittal to the Department under this Permit Section (11.4.1).

~~**11.4.1.1 Groundwater Cleanup Level for Perchlorate**~~

~~If, during the term of this Permit, the WQCC adopts a groundwater quality standard for perchlorate, or EPA or the EIB adopts an MCL for perchlorate, such standard or MCL shall be the cleanup level in accordance with Permit Section 11.4.1. If perchlorate is detected, the Permittees shall evaluate the nature and extent of the perchlorate contamination. In the absence of a groundwater quality standard or MCL, if perchlorate is detected at concentrations at or greater than 4 µg/L, then the cleanup level shall be established using a HI of 1.0 in accordance with Permit Section 11.4.1 above.~~

11.4.2 Soil and Sediment

The cleanup levels for soil and sediments shall be the cleanup levels for soil set forth in this Permit Section (11.4.2). Should the Permittees be unable to achieve the Soil Cleanup Levels established under Permit Section 11.4.2.1, they shall conduct risk assessments in accordance with Permit Sections 11.10.4 and 11.10.5. Any cleanup level based on a risk assessment must be submitted to the Department for its review and approval.

11.4.2.1 Soil Cleanup Levels

The Department has specified soil-screening levels that are based on a target total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target HI of 1.0 for residential, industrial land use, and the construction worker scenarios. If the potential for migration to groundwater is applicable for a site, the Department may determine that a dilution attenuation factor (DAF) of one or greater, as calculated using the Department-approved methods, for contaminated soils is appropriate to achieve clean closure. This approach may apply at sites where the migration of contaminants through the soil column to groundwater has occurred or when the Department determines that the potential exists for migration of contaminants through the soil column to groundwater. Soil cleanup levels shall be the target soil screening levels listed in the Department's *Technical Background Document for Development of Soil Screening Levels* (as updated). If a Department soil screening level has not been established for a substance for which toxicological information is published, the soil cleanup level shall be established using the most recent version of the EPA RSL for residential and industrial soil for compounds designated as "n" (non-carcinogen effects) or ten times the EPA RSL for compounds designated "c" (carcinogen effects). The cumulative risk shall not exceed a total excess

11.8.6.4.vii Cost

The remedy shall be evaluated for its cost. This factor includes a consideration of both capital costs, and operation and maintenance costs. Capital costs shall include, without limitation, construction and installation costs; equipment costs; land development costs; and indirect costs including engineering costs, legal fees, permitting fees, startup and shakedown costs, and contingency allowances. Operation and maintenance costs shall include, without limitation, operating labor and materials costs; maintenance labor and materials costs; replacement costs; utilities; monitoring and reporting costs; administrative costs; indirect costs; and contingency allowances for the entire anticipated post-closure care or long term monitoring period. All costs shall be calculated based on their net present value. Permittees shall give preference to a remedy that is less costly, but does not sacrifice protection of health and the environment.

11.8.6.5 Approval of Corrective Measures Evaluation Report

The Department will review and approve the Corrective Measures Evaluation Report in accordance with Permit Section 11.9. If the Department disapproves the Corrective Measures Evaluation Report, the Department will notify the Permittees in writing of the Corrective Measures Evaluation Report's deficiencies and specify a due date for submission of a revised Corrective Measures Evaluation Report. Upon receipt of such notification of disapproval, the Permittees shall submit to the Department, within the specified time, a revised Corrective Measures Evaluation Report that corrects the deficiencies. If the Department approves the Corrective Measures Evaluation Report, the Department will notify the Permittees in writing.

11.8.6.6 Relationship to Corrective Action Requirements

The Corrective Measures Evaluation shall serve as a Corrective Measures Study for the purposes of RCRA compliance [*see* 55 Fed. Reg. 30875-77 (July 27, 1990) (proposed 40 CFR §§ 264.520 through 264.524)].

11.8.6.7 Statement of Basis

Upon approval of the Corrective Measures Evaluation Report, the Department will select a remedy or remedies for the unit. The Department may, consistent with EPA's RCRA Corrective Action Plan, OSWER Directive 9902.3-2A (May 1994), choose a different remedy from that recommended by the Permittees. The Department will issue a Statement of Basis for selection of the remedy, and will receive public comment on the remedy. The Statement of Basis shall describe the basis for the Department's selection of a remedy, and the Statement of Basis shall be sufficiently detailed for Permittees and the public to understand and comment on the Department's recommended decision on the remedy, and the studies and conclusions leading up to the decision on the remedy. The public comment period will extend for at least 45 days from the date of the public notice of the Statement of Basis. The Department will provide an opportunity for a public hearing on the remedy, at which all interested persons will be given a reasonable chance to submit data, views or arguments orally or in writing and to examine witnesses

testifying at the hearing. The comment period will automatically be extended to the close of the public hearing. The public hearing will follow the hearing requirements under section 20.4.1.901.F NMAC. The Department will select a final remedy and issue a response to public comments to all commenters, after the end of the public comment period. In selecting a remedy, the Department will follow the public participation requirements applicable to remedy selection under 40 CFR §§ 270.41 through 270.42 and 20.4.1.901 NMAC.

The administrative record for the Facility will be made available to the public for review at the Department's offices in Santa Fe, New Mexico. All significant written and signed comments, including e-mailed comments, will be considered by the Department prior to approving a final remedy or remedies.

The Department's decision on the final remedy or remedies shall follow the requirements under section 20.4.1.901 NMAC, Secretary's Decision. The Department will issue a response to public comments at the time of the Department's final decision. Permittees may appeal the Department's decision as provided by law.

11.8.7 Corrective Measures Implementation

11.8.7.1 General

The Permittees shall implement the final remedy selected by the Department.

11.8.7.2 Corrective Measures Implementation Plan

Within 90 days after the Department's selection of a final remedy, or as otherwise specified by the schedule contained in the approved Corrective Measure Evaluation Report or as specified by a schedule required by the Department in the written approval notification, the Permittees shall submit to the Department for approval a Corrective Measures Implementation Plan outlining the design, construction, operation, maintenance, and performance monitoring for the selected remedy, and a schedule for its implementation. The implementation plan shall be submitted to the Department for review in accordance with the procedures in Permit Section 11.9. The Corrective Measures Implementation Plan shall, at a minimum, include the following elements:

(1) a description of the selected final remedy;

(2) a description of the cleanup goals and remediation system objectives;

(3) an identification and description of the qualifications of all persons, consultants, and contractors that will be implementing the remedy;

(4) detailed engineering design drawings and systems specifications for all elements of the remedy;

(5) a construction work plan;

(6) an operation and maintenance plan;

(7) the results of any remedy pilot tests;

(1) percent oxygen;

(2) organic vapors (using a photo-ionization detector with an 11.7 eV (electron volt) lamp, a combustible vapor indicator or other method approved by the Department);

(3) percent carbon dioxide;

(4) static subsurface pressure; and

(5) other parameters (such as carbon monoxide and hydrogen sulfide) as required by the Department.

The Permittees also shall collect vapor samples for laboratory analysis of the following as required:

(6) percent moisture;

(7) VOCs; and

(8) other analytes required by the Department.

Vapor samples analyzed by the laboratory for percent moisture and VOCs shall be collected using SUMMA canisters or other sample collection method approved by the Department. The samples shall be analyzed for VOC concentrations by EPA Method TO-15, as it may be updated or equivalent VOC analytical method.

Field vapor measurements, the date and time of each measurement, and the instrument used shall be recorded on a vapor monitoring data sheet. The instruments used for field measurements shall be calibrated daily in accordance with the manufacturer's specifications and as described in Permit Section 11.10.2.12. The methods used to obtain vapor-phase field measurements and samples shall be approved by the Department in writing prior to the start of air monitoring at each Facility site where vapor-phase monitoring is conducted.

11.10.2.7 Groundwater Monitoring

11.10.2.7.i Groundwater Levels

Groundwater level measurements shall be obtained at intervals required by the Department. Groundwater levels also shall be obtained prior to purging in preparation for a sampling event. Measurement data and the date and time of each measurement shall be recorded on a site monitoring data sheet. The depth to groundwater shall be measured to the nearest 0.01 feet. The depth to groundwater shall be recorded relative to the surveyed well casing rim or other surveyed datum.

Groundwater levels shall be measured in all wells at the facility (or the number of wells otherwise specified in a Department approved groundwater monitoring work plan) within 21 ~~14~~ days of the commencement of the monitoring activities. The Permittees shall conduct periodic measuring events, the schedule for which shall be provided in the groundwater monitoring work plans.

Supplement 1-2

Permittees' Proposed Changes to Attachment A, Technical Area Unit Descriptions

ATTACHMENT A

TECHNICAL AREA ~~(TA)~~ - UNIT DESCRIPTIONS

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ATTACHMENT A

This attachment contains Technical Area (TA) -specific unit descriptions, including the dimensions, materials of construction, and security procedures~~, and emergency equipment~~ of each unit provided by the Permittees in their permit application. Emergency equipment formerly described within this permit attachment is included and update in Permit Attachment D, Contingency Plan, Tables D-3 through D-16.

A.1 TA-3

TA-3 is located in the northern portion of the Facility on South Mesa between Los Alamos Canyon on the north and Two Mile Canyon on the south. Sandia and Mortandad Canyons head on the east margin of TA-3 forming steep cliffs at the top of canyon walls.

A.1.1 TA-3 Building 29

TA-3-29, the Chemistry Metallurgy Research Building (CMR), was established in 1952 as a research facility (*see* Figure 4~~12~~ in Permit Attachment N (*Figures*)). It is a three story structure containing offices, laboratories, and one permitted container storage unit located in the basement at TA-3 ~~building~~, Building 29, ~~of~~ Wing 9 (TA-3-29). The TA-3-29 permitted unit consists of a room (9010) and portions of two other rooms (9020 and 9030) where storage of hazardous and mixed waste occurs. The following provides a description of the permitted unit.

A.1.1.1 TA-3-29 Room 9010

Room 9010 measures 21 feet (ft) by 8 inches (in.) wide by 106 ~~feet~~ft., 9 ~~inches (~~in.~~)~~ long (*see* Figure 4~~13~~ in Permit Attachment N (*Figures)*). The floor is concrete and is painted with an epoxy sealant. Waste storage takes place in the lower-~~-~~level portion of Room 9010 but may also take place in or near the two room enclosures 9010A and 9010B.

The northern enclosure is approximately 10 ft. wide by 24 ft. long; the southern enclosure measures approximately 17 ft. wide by 54 ft. long. The enclosures have ceilings, walls with windows, and doors for entry through airlocks; the enclosures are anchored to the floor. The wall to floor joints are sealed with grout. Floors and the lower six inches of the interior enclosure walls are coated with an epoxy sealant. Each enclosure includes emergency and communication equipment as well as ventilation, fire sprinkler, water, and electrical support functions connected to the main building systems. The enclosures are kept at negative pressure by the building's exhaust system via exhaust ports in the enclosures which are ducted through high-efficiency particulate air filters to provide radioactive material air release protection.

A.1.1.2 TA-3-29 Portion of Room 9020

Room 9020 is approximately 27 ~~feet~~ft. wide by 141 ~~feet~~ft. long. The permitted container storage area measures 19 ~~feet~~ft. wide by 25 ~~feet~~ft. long (*see* Figure 14 in Permit Attachment N

(*Figures)*) and is located in the northeast side of the room. The floor is concrete and painted with an epoxy sealant.

A.1.1.3 **TA-3-29 Portion of Room 9030**

Room 9030 is approximately 62 ~~feet~~ft. wide by 141 ~~feet~~ft. long. The permitted container storage area within Room 9030 measures approximately 30 ~~feet~~ft. long by 8 ~~feet~~ft. wide (*see* Figure ~~4~~15 in Permit Attachment N (*Figures)*) and is located in the southwest corner of the room. The floor is concrete and has been painted with an epoxy sealant. Hand trucks, dollies, or casters will be used to move waste containers from the loading area to the storage portions of the permitted unit. Should a spill occur during waste handling activities, management of the spill and residual material will be performed in accordance with Attachment D (*Contingency Plan*). Drums on dollies will be moved manually and a pallet jack will be used to move standard waste boxes.

A.1.2 Security and Access

Security at TA-3-29 is maintained with physical and administratively-controlled barriers. These barriers prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock into the areas. Eight-~~foot~~ft.-high chain-link security fences with barbed wire at the top surround the entire perimeter of the building. ~~Bilingual (*i.e.*, English and Spanish) warning signs are also posted at the entrances to each portion of the permitted unit within the building and can be seen from any approach to these locations. The legends on the signs indicate "Danger: Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." The signs are legible from a distance of at least 25 ft.~~ There are four entry gates through the security fence at TA-3-29 (*see* Figure 4 in Permit Attachment N (*Figures)*). A fire access and shipping gate is located south of TA-3-29 and is routinely closed and locked. When the gate is opened for shipments of material or waste, personnel are present at the gate to restrict the entry and exit of unauthorized persons. The northwest entrance is an open gate ~~which~~that allows vehicular and pedestrian entry. Access is controlled through a manned gate at the western entrance to the TA-3 Security Area. Another unmanned badge reader entry pedestrian gate is located at the southeast corner of the building‘s fence line. This gate is combined with a double vehicular gate ~~which~~that allows access from the parking area south of the building. Security personnel are present at each of these gates during operational hours to restrict the entry and exit of unauthorized persons. Outside doors to the main wings of TA-3-29 are always locked. Access for visitors to the operational portion of the building is controlled by turnstiles located in the east side lobby and another on the west side of the building. Roll-up doors to the building can only be opened from inside the building and are also locked; opening these doors must be coordinated with security personnel. The building site is patrolled by security personnel during nonoperational hours to ensure that the gates are locked and that unauthorized entry has not occurred.

~~A.1.3 Emergency Equipment~~

~~TA-3-29 is equipped with an audible alarm system to alert personnel to evacuate the area. The evacuation alarm system may be activated by facility personnel pushing one of the evacuation buttons located throughout TA-3-29. The building also contains a fire alarm system which~~

~~may be activated by manual pull stations, heat and smoke detectors, and sprinkler system flow valves found throughout TA-3-29. Rooms 9010, 9020, and 9030 contain wet-pipe sprinkler systems that are equipped with fusible-link heads that actuate at 212 degrees Fahrenheit. Wing 9 of TA-3-29 contains gamma alarms that monitor for the presence of gamma radioactive contamination. Continuous air monitors are utilized throughout TA-3-29 to detect airborne radioactive contamination and, when detected, sound an alarm. The building also has a public address system for announcing fires or evacuations. Telephones with paging capabilities are located throughout TA-3-29. Paging telephones are used to page on-site personnel and may be used in the event of an emergency to communicate the location and nature of hazardous conditions to personnel in the area. Personnel working in Rooms 9010, 9020, and 9030 can also use these phones to summons assistance from local emergency response teams in case of emergency. Rooms 9010, 9020, and 9030 are equipped with fire extinguishers and pull stations. Depending on the size of a fire and the fuel source, fire extinguishers may be used by on-site personnel. However, the Facility policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. The fire alarm control panel continuously monitors all fire-suppression and detection systems and transmits signals to the Los Alamos Fire Department through the Facility's central alarm system.~~

~~Fire hydrants installed according to National Fire Protection Association standards are located around the outside of TA-3-29. Water is supplied to the fire hydrants by a municipal water system through 8-in. pipes at an adequate volume and pressure (*i.e.*, 200 gallons per minute and 90 pounds per square inch static pressure) to supply a water hose in the event of a fire. Spill kits, which contain sorbent pillows, safety glasses, and gloves, are located at the south end of Room 9010 in enclosures 9010a and 9010b. Trained personnel may use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk. Available personnel decontamination equipment includes safety showers and emergency eyewashes in enclosures 9010a and 9010b.~~

~~Personnel working in Room 9020 have access to the eyewashes in enclosures 9010a and 9010b and a safety shower and emergency eyewash in Room 9030. The buddy system will always be employed when containers are actively managed in Rooms 9010, 9020, and 9030 to assure that safety showers and eyewashes can be reached in an emergency. Safety Data Sheets (SDS) (formerly Material Safety Data Sheets (MSDS)) provide useful exposure information and are available in Rooms 9010, Room 9030, and outside Room 9030.~~

A.2 ~~RESERVED~~TA-16

TA-16 is located in the southwestern portion of the LANL site (*see* Figure 2 in Permit Attachment N (*Figures*)). It is situated on a broad mesa that is bounded on the north by Cañon de Valle, on the south by State Road 4 and Bandelier National Monument, and on the west by West Jemez Road (State Road 501) and the Santa Fe National Forest. Elevation ranges from approximately 7,700 ft. at the west end of the TA to approximately 6,800 ft. at the lower east end. Topography is varied, ranging from steep precipitous canyon walls to sloping mesa tops. The open burning unit at the LANL site is located at the TA-16 Burn Ground in the northeast corner of TA-16. It is located on a mesa that drains to the east and south, and that is bordered on the northern side by Cañon de Valle and on the southern side by Water Canyon. The location coordinates of the TA-16-388 Flash

Pad in Universal Trans Mercator (UTM) Zone 13, North American Datum 1983 (NAD83), are X-Coordinate-379670.0 and Y-Coordinate-3967821.0.

A.2.1 Description of Open Burning Treatment Unit

The open burning unit, known as the TA-16-388 Flash Pad (*see* Figures 5 & 15 in Permit Attachment N (*Figures*)), consists of a 22-ft. by 22-ft. concrete pad set on a secondary containment area. The base of the pad is 12 in. thick. The entire concrete pad is on a 45-mil Hypalon liner, which is 6 in. below the bottom of the pad and curved up to ground level on all 4 sides, extending out 2 ft. from the pad perimeter. Inset one foot from the edge of the concrete pad along the two sides and back is a 3-ft.-high, 8-in.-thick, integrally poured concrete wall. The pad is slanted down toward the back concrete wall. The TA-16-388 Flash Pad is also equipped with a retractable steel roof that covers the entire unit when not in use. A chain-link fence and brick retaining wall surround the TA-16-388 Flash Pad.

Three 5-ft.-long forced air propane burners with adjustable mounts are mounted on the concrete wall. These propane burners provide the heat source for treatment activities at the unit. A burner is mounted outside the wall on each side and on the back of the pad. One, two, or three burners can be used, depending on the amount and configuration of the material to be treated. Most treatment events utilize the two side burners. The total capacity of the propane supply system is approximately 7 million British thermal units per hour (BTU/hr). Therefore, the output of each burner is dependent on how many are used for a burn. Usually, the burners are operated at approximately 2.5 million BTU/hr. This provides adequate heat to bring the material being flashed to a temperature sufficient to destroy explosives, and to maintain it at a level sufficient to avoid formation of incomplete combustion products for the duration of the treatment event. The burners and other components are maintained, modified, and/or replaced as needed to ensure proper operation and treatment effectiveness.

The TA-16-388 Flash Pad is used exclusively for open burning treatment of explosives waste streams that are generated at LANL. Following waste placement at the unit, open burning operations are controlled and monitored remotely from Building 16-389 (the control building). Operations at the unit require visual surveys and post-burn covering of the unit. This practice minimizes the potential for precipitation contacting untreated hazardous or residual waste if any exists.

A.2.2 Security and Access

Access to the isolated and security-controlled location of the TA-16-388 Flash Pad is maintained through both administrative controls and physical barriers. Access into the security area can only be gained through controlled entry stations by persons possessing an appropriate security clearance and site-specific training. Entry into the secured area is controlled via an entry station that is manned by security personnel or by badge readers 24 hours per day. In addition, entry into each of the firing sites or high-explosives exclusion areas is controlled through an industrial fence with access granted through an access control station or a locked access gate. To gain access to the area, visitors must check in at the appropriate access control station to be added to the site-specific badge reader system. Unescorted access to the appropriate firing site or high-explosives exclusion area is granted only to persons possessing appropriate security clearance

and meeting site-specific training requirements. A chain-link fence and brick retaining wall surround the TA-16-388 Flash Pad. An entry gate is located directly in front of the loading area. This gate is kept closed when loading and unloading operations are not being conducted at the unit.

A.3 TA-36

TA-36 is located in the east-central portion of the LANL site (*see* Figure 2 in Permit Attachment N (*Figures*)) and is spread over several mesa tops between a branch of Pajarito Canyon to the north and Water Canyon to the south. Mesa-top elevations at TA-36 range from approximately 6,380 to 7,120 ft. AMSL. TA-36 contains an open detonation unit, several other firing sites, and supporting offices where research is conducted with various types of explosives.

A.3.1 TA-36-8 Open Detonation Unit

The TA-36-8 open detonation unit is located in the southern portion of TA-36. The unit consists of an irregularly shaped area near Building TA-36-8 (the control building), as shown on Figure 6 in Permit Attachment N (*Figures*). The TA-36-8 open detonation unit is a sand- and grass-covered area that measures approximately 500 ft. east to west and 300 ft. north to south. The western portion is relatively flat; the eastern portion is concave to minimize fragment dispersion. Because the unit consists simply of an area on soil-covered tuff, an engineering drawing cannot be developed for the unit. The unit is used primarily for non-treatment-related experimental test detonations and is occasionally used for treatment of explosives waste. Operations at the unit require post-detonation visual surveys as soon as practical for any materials not consumed by the detonation. This practice minimizes the potential for precipitation contacting untreated hazardous waste, if any.

A.3.2 Security and Access

Access to the isolated and security-controlled locations of the open detonation unit at TA-36 is maintained through both administrative controls and physical barriers. Access into the security area can only be gained through controlled entry stations by persons possessing an appropriate security clearance and site-specific training. Entry into the secured area is controlled via an entry station that is manned by security personnel or by badge readers 24 hours per day. In addition, entry into each of the firing sites or high-explosives exclusion areas is controlled through an industrial fence with access granted through an access control station or a locked access gate. To gain access to the area, visitors must check in at the appropriate access control station to be added to the site-specific badge reader system. Unescorted access to the appropriate firing site or high-explosives exclusion area is granted only to persons possessing appropriate security clearance and meeting site-specific training requirements.

A.4 TA-39

TA-39 is located in the southern portion of the LANL site (*see* Figure 2 in Permit Attachment N (*Figures*)) and includes much of the mesa between Water Canyon to the north and Ancho Canyon to the south. Mesa-top elevations at TA-39 range from approximately 6,500 to 7,000 ft. AMSL. The area was established in 1959 for testing of explosive materials and has been used continuously for that purpose. TA-39 contains a number of structures located in the north fork of

Ancho Canyon; however, these structures are not routinely occupied and are only used during firing site operations or maintenance activities.

A.4.1 TA-39-6 Open Detonation Unit

The TA-39-6 open detonation unit is associated with Building TA-39-6 (the control building). The location of the unit is shown on Figure 7 in Permit Attachment N (*Figures*). The TA-39-6 open detonation unit is a relatively flat, sand-covered area and measures approximately 40 ft. by 40 ft., and is located near the canyon bottom. The area has recently been reconfigured to have a retaining wall in front of the steep canyon walls that rise to heights of 100 ft. or more in the immediate vicinity of the TA-39-6 open detonation unit, roughly forming a semicircle around the unit. The canyon walls serve to attenuate the force of the detonations. Building TA-39-6 (the control building) is a reinforced concrete structure extending partially beneath the detonation area. An engineering drawing cannot be developed for the unit because it consists simply of an area on sand-covered tuff. The topography and aerial extent of the unit are shown on the figure included in the LANL General Part A Application, Revision 10 (LANL 2020). The TA-39-6 open detonation unit has a maximum waste treatment capacity of 1,000 pounds of explosive waste per detonation and an annual treatment limit of 15,000 pounds. The unit is used primarily for non-treatment-related experimental test detonations and is also occasionally used for treatment of explosives waste. Operations require post-detonation visual surveys as soon as practical for any materials not consumed by the detonation. This practice minimizes the potential for precipitation contacting untreated hazardous waste, if any.

A.4.2 Security and Access

~~A.2~~ Access to the isolated and security-controlled locations of the open detonation unit at TA-39 is maintained through both administrative controls and physical barriers. Access into the security area can only be gained through controlled entry stations by persons possessing an appropriate security clearance and site-specific training. Entry into the secured area is controlled via an entry station that is manned by security personnel or by badge readers 24 hours per day. In addition, entry into each of the firing sites or high-explosives exclusion areas is controlled through an industrial fence with access granted through an access control station or a locked access gate. To gain access to the area, visitors must check in at the appropriate access control station to be added to the site-specific badge reader system. Unescorted access to the appropriate firing site or high-explosives exclusion area is granted only to persons possessing appropriate security clearance and meeting site-specific training requirements.

~~A.3~~A.5 TA-50

TA-50 is located at the northeast corner of the intersection of Pajarito Road~~Drive~~ and Pecos Road, on the finger mesa bounded by Mortandad Canyon to the north and Two-Mile Canyon to the south (*see* Figure 2~~22~~ in Attachment N (*Figures)*). The container storage units at TA-50 include the TA-50-69 Indoor unit (Rooms 102 and 103) and the TA-50-69 Outdoor unit.

The northern and eastern portions of TA-50 drain mainly to an unlined channel on the boundary between TA-50 and TA-35 (east of TA-50), although some flow diverges into a shallow channel running southward between TA-50-37 and TA-50-1.

TA-50-69 is located in the southwest quadrant of TA-50. The TA-50-69 Indoor unit was constructed in 1979 to house the Waste Characterization, Reduction, and Repackaging Facility (WCRRF). The primary purpose of WCRRF was to size reduce and repackage large transuranic (TRU) contaminated metallic items (*e.g.*, glove boxes, process equipment) into standard sized containers for transport to, and disposal at, the Waste Isolation Pilot Plant. The facility was first used to size reduce mixed transuranic waste (MTRU) in 1982. ~~The original function of the~~ WCRRF has since been expanded to include other activities related to hazardous and mixed waste management including waste characterization, transuranic and mixed transuranic waste prohibited item disposition and repackaging operations, and experimental process demonstration support.

TA-50-69 is a single-story building constructed in two phases. The original structure (45 ft. by 52 ft.) was built in 1979 to house the main process room (Room 102) and personnel change rooms. An unloading area (Room 103), a vehicle airlock entrance (Room 104), and a mezzanine over the western third of the main process room were added to the building in 1986.

The exterior walls of TA-50-69 are load-bearing and constructed of structural steel framing with a plastic veneer finish on polystyrene insulation and gypsum wallboard. The interior walls are similarly constructed. The epoxy-painted floor of the building is a reinforced concrete slab on compacted fill.

A forklift or other manual, mechanical, and hydraulic drum handling equipment will be used to move containers stored at the permitted units at TA-50-69. Fiberglass-reinforced plywood boxes, oversized containers, and palletized drums will be handled with a forklift equipped with tines or other types of mechanical or hydraulic drum handling equipment. Individual drums of waste will be manipulated with a drum-grapple attachment on the forklift or other manual, mechanical, and hydraulic drum handling equipment. Small containers may be handled manually or with a dolly. Inside TA-50-69 two cranes are available to move heavy objects.

~~A.3.1~~A.5.1 TA-50-69 Indoor Permitted Unit

The TA-50-69 Indoor permitted unit consists of Rooms 102 and 103 as shown in Figure ~~23~~8 in Attachment N (*Figures)*. Room 102, the main process room, measures approximately 45 ~~feet~~ft. wide and 52 ~~feet~~ft. long. Room 103, the unloading area, measures approximately 18 ~~feet~~ft. wide and 19 ~~feet~~ft. long and is located adjacent to and southeast of Room 102. A 12 ~~foot~~ft. by 20-~~foot~~ft. roll-up vehicle access door is located at the southernmost end of Room 103 separating the unloading area (Room 103) from the vehicle airlock entrance (Room 104). This design allows for unobstructed transport of oversized fiberglass-reinforced plywood boxes from outside the facility, through the vehicle airlock entrance, into the unloading area, and into the glove box cutting enclosure. A smaller glovebox, designed for mounting of a single parent container and multiple daughter containers at one time is also located within Room 102.

Items will be brought into the large glovebox through the air lock. The items will then be placed in a process area of the glovebox enclosure where they will be visually inspected/examined and processed. This process may include sorting, segregation, size reduction, decontamination, and repackaging of the waste. The size reduction will be conducted in the process area of the glovebox enclosure through the use of powered tools (e.g., sawzall, circular saw, drills, etc.). Other hand tools that may be utilized include box cutters, scissors, drill bits, torque wrenches, etc. The items will be packaged in the process area into approved containers (e.g., 55- or 85-gallon drums and standard waste boxes).

The small glovebox located in Room 102 is used for sorting, segregation, resizing, and treatment of transuranic mixed waste. The glovebox was designed in 1994 and installed in the mid-1990s. It has two 55-gallon daughter drum bag out ports, a 14-inch diameter bag-out port, and a single 55-gallon drum waste bag-on port. The box is 11 feet long, 3 feet wide, and 30 inches high. The box has seven work stations, three on the front side and four on the back. The waste drum is attached straight on from the front side of the glovebox and accessed from the back of the box. A liquid catch basin is located below the parent bag-on port to collect liquid from the parent drum. The glovebox is equipped with a water fire sprinkler for fire suppression. Ventilation for the glovebox is pulled in from the room and exhausted through high-efficiency particulate air (HEPA) filters on the glovebox and then through the facility HEPA filters.

Mixers and blender will be used to provide mixing to ensure the waste being treated is well blended; first with water to aid in processing (by reducing the viscosity and dissolving the nitrate salts, in the case of solids), and then with zeolite to absorb the nitrate solution and provide an inorganic matrix. Volumetric containers will be used to measure the ingredients (water, waste, and zeolite). Waste removed from the parent container will be collected in a container to move to the mixers for processing. Water will be delivered to the mixer via piping through the glovebox patch panel, and/or from a container mounted to a glovebox opening via a pump. Zeolite will be loaded into the glovebox. All contents of a single waste container will be treated with in a single shift, or the waste containers (parent and daughter) will be closed using a vented, rigid cover if the waste must be left unattended mid treatment.

The liquid contents of the nitrate salt-bearing waste containers will be decanted from the parent waste container, captured in a container, added to the mixer and then blended with zeolite. A waste liquid-to-zeolite volume ratio of at least 1:3 will be utilized, followed by blending using a mixer until the mixture is combined. If liquid enters the catchment basing within the glovebox, it will be absorbed in the catchment basin using zeolite and then moved to the mixer and zeolite will be added and blended to combine until the mixture is stabilized. Stabilized liquids will be placed into a daughter container. All three subsets of nitrate salt-bearing waste streams require this treatment process for liquids within the parent container. In the case of cemented nitrate salt-bearing waste, no further treatment is necessary for the cemented solids within the container.

Waste treatment of the solids (for remediated and unremediated nitrate salt-bearing waste) will occur by first adding a premeasured amount of water to the mixing bowl if the waste is not already wet. A premeasured quantity of waste will then be added to the mixing bowl and

mixed to decrease the viscosity to aid with the final blending step. The waste and water mixture will then be blended with zeolite until absorbed. Blending of the waste will occur using mixers, pre-sized measuring containers, and a container for the movement of waste. Size reduction of the solids may require the use of hand tools (such as a masher, hammer and sieve) or the use of a blender.

The volumetric blend ratios are the guiding requirements for the process. These then drive the treatment process to be used based upon the size of the batch to be prepared. The blend ratios are:

- waste-to-water:1.0:0<volume ratio<1.0:1.0
- blended waste and water mixture-to-zeolite: 1.0:2.0<volume ratio<1.0:5.0

Using the volumetric ratios, the waste process steps arecf (1) add water, if necessary, (2) blend with nitrate salt-bearing waste, and then (3) add zeolite and blend until mixed. The ~~Operator~~ operator will first add a quantity of water and waste within the mixing bowl and blend until combined. A premeasured quantity of zeolite will be added to the mixer bowl and blended until stabilized.

Most debris within the waste containers ~~do~~does not require additional treatment and will either be placed back into the parent container or placed directly into the daughter container with the treated waste. Excess salt or salt-organic absorbent mixtures stuck to the debris waste will be removed from the debris using glovebox gloves, a brush, or a non-sparking brush as necessary. Debris may be stored temporarily in a container that will be attached to a glovebox opening and resized as necessary to be packaged in a waste container. Resizing of debris may include tearing or crumpling the debris using shears or other cutting tools utilizing non-sparking tools or processes. Any additional cellulosic material (*e.g.,*Kimwipes or Wypalls) found within the parent container will require additional treatment and will be macerated with water using a high speed blender and then mixed with zeolite in a least a 1:3 blended waste-water mixture to zeolite ratio.

~~A.3.2~~A.5.2 TA-50-69 Outdoor Permitted Unit

The TA-50-69 Outdoor permitted unit was constructed before 1980 and was first used to store mixed waste in 1982. It is located in the southwest corner of TA-50 (*see* Figure ~~23~~8 in Attachment N (*Figures)*). The TA-50-69 Outdoor unit is comprised of an unlined and non-coated asphalt pad measuring 24 ~~feet~~ft. in width and 90 ~~feet~~ft. in length. The entire pad is approximately 4 ~~inches~~in. thick and slopes gently (approximately one to five percent) from west to east and up to 2.5 percent toward the centerline. Transportainers and other weather protective structures (*i.e.*, containers covered with tarps, containers inside standard waste boxes (SWBs)) in the permitted unit provide weather protection for containers of various sizes. Painted lines are used to visually delineate the TA-50-69 Outdoor unit boundary. Drainage swales located in the vicinity divert storm water away from the pad. One drainage swale is located just south of the unit; between it and the ~~material disposal area~~Material Disposal Area C. A second drainage swale is located on the west side of the permitted unit between Pecos Drive and the TA-50 fence line.

~~A.3.3~~A.5.3 Security and Access

Security at TA-50 is predominantly maintained with artificial barriers. These barriers prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock into the area.

An 8ft high chain-link security fence surrounds the entire perimeter of TA-50. ~~Bilingual (*i.e.*, English and Spanish) warning signs are posted on the fences at approximately 50 to 75 foot intervals. Warning signs are also posted at the entrances to each area that will manage hazardous and mixed waste and are visible from any approach to these areas. The legends on the posted signs indicate "Danger – Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." Existing signs with a legend other than "Danger-Unauthorized Persons Keep Out" may be used if the legend on the sign indicates that only authorized personnel are allowed to enter the active portion, and that entry into the active portion can be dangerous. The signs are legible from a distance of 25 ft. Additionally, signs are posted at the entrance to each hazardous and mixed waste permitted unit to address requirements associated with entering and working in the area.~~

~~There are four entry gates into TA-50. Two entry gates are located north of TA-50-1. During normal business hours, the easternmost of these two gates may remain open to receive deliveries. After normal business hours, this gate is padlocked. The westernmost of these two gates is the main access gate and remains open during normal business hours for personal and government-owned passenger vehicles. After normal business hours, access through this gate is by badge reader only. The third gate~~ There is a fire access and shipping gate which is located west of TA-50-69 and is routinely kept closed and locked. When this gate is opened for shipments of materials or waste, facility personnel are present in the yard west of TA-50-69 to limit entry by unauthorized persons. When shipments are completed, the gate is re-closed and locked. Bollards prevent vehicle access to the area on both the north and south sides of Building 50-69. ~~A fourth gate to the south of TA-50-1 is locked except when authorized access is necessary.~~

~~TA-50-69 is located in the southwest quadrant of TA-50. The TA-50-69 Indoor unit was constructed in 1979 to house the Waste Characterization, Reduction, and Repackaging Facility (WCRRF). The primary purpose of WCRRF was to size reduce and repackage large transuranic contaminated metallic items (*e.g.*, glove boxes, process equipment) into standard sized containers for transport to, and disposal at, the Waste Isolation Pilot Plant. The facility was first used to size reduce mixed transuranic waste in 1982. The original function of the WCRRF has since been expanded to include other activities related to hazardous and mixed waste management including waste characterization, transuranic and mixed transuranic waste prohibited item disposition and repackaging operations, and experimental process demonstration support.~~

~~TA-50-69 is a single-story building constructed in two phases. The original structure (45ft by 52 ft) was built in 1979 to house the main process room (Room 102) and personnel change rooms. An unloading area (Room 103), a vehicle airlock entrance (Room 104), and a mezzanine over the western third of the main process room were added to the building in 1986.~~

~~The exterior walls of TA-50-69 are load-bearing and constructed of structural steel framing with a plastic veneer finish on polystyrene insulation and gypsum wallboard. The interior walls are similarly constructed. The epoxy-painted floor of the building is a reinforced concrete slab on compacted fill.~~

~~A forklift or other manual, mechanical, and hydraulic drum handling equipment will be used to move containers stored at the permitted units at TA-50-69. Fiberglass-reinforced plywood boxes, oversized containers, and palletized drums will be handled with a forklift equipped with tines or other types of mechanical or hydraulic drum handling equipment. Individual drums of waste will be manipulated with a drum-grapple attachment on the forklift or other manual, mechanical, and hydraulic drum handling equipment. Small containers may be handled manually or with a dolly. Inside TA-50-69 two cranes are available to move heavy objects.~~

TA-50 is patrolled by security personnel during non-operational hours to ensure that unauthorized entry has not occurred. The locations of the security fences and entry gates at TA-50 are shown on Figure ~~6~~8 in Permit Attachment N (*Figures*).

TA-50-69 access is controlled through a centralized Operations Center located in TA-50-84. The Indoor permitted unit is always locked and access is gained by a badge reader. Doors to the building and transportainers are locked. Keys to these doors are distributed to designated personnel only. A chain is installed at the east end of the operations area and adjacent to TA-50-84 and is posted with the bilingual hazardous waste sign.

~~All personnel involved in waste management activities at the TA-50-69 indoor and outdoor permitted units have immediate access to an internal alarm or emergency communication device. In the event of an emergency, this communication equipment allows personnel to contact the operating group management, the Emergency Management and Response personnel, or the Central Alarm Station operator.~~

~~TA-50-69 is equipped with an audible alarm system to alert personnel to evacuate the area. The alarm system may be activated by one of the fire alarm pull stations located throughout the building. Personnel can also use phones to summon assistance from local emergency response teams in case of an emergency. Personnel may carry pagers, two-way radios, or cellular telephones so they can contact, or be contacted by, on-site and the Facility emergency support personnel at all times.~~

~~TA-50-69 is equipped with fire extinguishers and fire suppression systems. Depending on the size of a fire and the fuel source, fire extinguishers may be used by on-site personnel. However, the Facility policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. The fire alarm control panel continuously monitors all fire suppression and detection systems and transmits signals to the Los Alamos County Fire Department through the Facility's central alarm system.~~

~~A fire hydrant installed according to National Fire Protection Association standards is located approximately 55 feet west of TA-50-69. Water is supplied to the fire hydrant by a municipal water system through eight inch pipes at an adequate volume and pressure (*i.e.*, 200 gallons~~

~~per minute and 90 pounds per square inch static pressure) to supply a water hose in the event of a fire.~~

~~TA-50-69 has an automatic wet-pipe sprinkler system in the main building and in the large glove box enclosure. The sprinkler system is heat-activated at 100°C (212°F). The TA-50-69 Outdoor permitted unit transportainers and weather protective structures are not equipped with automatic sprinkler systems; however, a fire extinguisher is located within 20 feet of the unit. Personnel may use the fire alarm pull station at TA-50-69 in the event of a fire at both the indoor and the outdoor permitted units.~~

~~Two spill centers are located in TA-50-69 Room 102. They contain spill control equipment, personal protective equipment, and sorbents. Trained personnel may use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk. Depending on the size and severity of the spill, EM&R provides additional spill control equipment and assistance upon request. Available personnel decontamination equipment includes safety showers and eye wash stations located in the TA-50-69 indoor permitted unit.~~

~~A.4~~A.6TA-54

TA-54 consists of 130 acres atop Mesita del Buey and is used for treatment and storage of hazardous and mixed waste generated throughout the Facility (*see* Figure ~~24~~2 in Attachment N (*Figures)*). A principal mission of TA-54 is to manage Facility waste safely and efficiently, consistent with federal and state regulations and U.S. Department of Energy (DOE) requirements. TA-54 has three separate areas where hazardous and mixed waste is stored and treated; Area L, Area G, and TA-54 West (*see* ~~Figure 25~~ Figures 9, 10, and 11 in Attachment N (*Figures)*). There ~~is~~are one permitted unit at Area L, nine permitted units at Area G, and two permitted units at TA-54 West (*see* Attachment J (*Hazardous Waste Management Units*)).

Waste containers are transported to the permitted units at Areas L, G, and West by flatbed trucks, closed-box trucks, or trailers. The permitted units have design features that promote safe unloading and handling of waste containers from these trucks and trailers. Ramps are typically located at vehicle entrances to the dome structures at the Area L and Area G permitted units. Shed 31 at Area L and Shed 8 at Area G have sloped entryways for container-handling equipment. The storage domes have roll-up or roll-away vehicle access doors. The loading dock at TA-54 West allows access from the transport vehicles to the loading dock platform. ~~These design features facilitate safe handling of containers in and out of the permitted units.~~

All waste containers at the TA-54 permitted units are handled in a manner that will not cause them to rupture or leak. Most containers are handled with forklifts (using drum grapplers, when appropriate) and are placed directly in the appropriate permitted unit. For larger containers, personnel can use a boom or, at TA-54 West and in portions of Area L, a bridge crane or mobile crane, respectively. At TA-54-412, waste containers (*e.g.*, fiberglass reinforced plywood crates, drums, large boxes) are generally handled with forklifts, overhead

cranes, or frictionless air pallets. Smaller containers are generally handled manually or with drum dollies. The use of proper handling equipment, appropriate to a container's size and weight, helps to prevent hazards while moving containers (*e.g.*, when loading and unloading containers).

A.6.1 ~~A.4.1 AREA~~Area L

The Area L permitted unit is the area within the fence and is comprised of several storage structures: dome 215; concrete pad with canopy 32; concrete pads 35 and 36; storage sheds 68, 69, 70, 31; modular units 39 and 58 (*see* Figure ~~26~~9 in Attachment N (*Figures*)).

The permitted unit stores containers of hazardous and mixed low level waste in solid and liquid form. Liquid wastes are stored primarily in structures that are designed for secondary containment; however, secondary containment pallets are also used. Secondary containment pallets are typically constructed of polyethylene or metal painted with a chemical-resistant coating. Polyethylene secondary containment pallets used at TA-54 are generally 50 ~~inches~~in. long by 50 ~~inches~~in. wide by 17 ~~inches~~in. deep, with a designed capacity of 83 gallons. Currently, two sizes of metal secondary containment pallets are used at TA-54. One is 52 ~~inches~~in. long by 52 ~~inches~~in. wide by 6.5 ~~inches~~in. deep, with a designed capacity of 57 gallons; the other is 60 ~~inches~~in. wide by 60 ~~inches~~in. long by 6.5 ~~inches~~in. deep, with a designed capacity of 77 gallons. The metal secondary containment pallets are coated with chemically-resistant urethane. The stressed- or tensioned-membrane fabric used on Storage Dome 215 at the aboveground permitted unit within the fence at Area L is coated with ultraviolet (UV)-stabilized plasticized polyvinyl chloride (PVC). It is fungus-resistant and certified flame-retardant (*i.e.*, self-extinguishing).

~~A.4.1.1~~A.6.1.1 Storage Dome 215

Storage Dome 215 is 60 feet wide, approximately 266 feet long, and 26 feet high (*see* Figure 9~~25~~ in Attachment N (*Figures)*). It is an arch frame-supported stressed-membrane structure. The dome is of modular construction and uses light construction materials (*i.e.*, aluminum framework with membrane or fabric covering). It is equipped with 14 personnel doors and two roll-up doors. The dome's pad is equipped with a 6-inch-high, 8-inch-wide concrete ring wall that surrounds the perimeter of the dome, and the dome is anchored to the concrete ring wall with anchor bolts. A ramp is located at the vehicle entrance to the dome and allows vehicles and container handling equipment to pass safely over the ring wall. The ring wall and the ramp prevent run-on into the dome. Any liquid that might accumulate within the storage dome (*e.g.*, liquids resulting from fire-suppression activities) is contained within the ring-walled area. Liquid that may result from fire-suppression activities and that is in excess of the capacity inside the ring wall is collected in a double-walled holding tank connected to dome 215 by a double-walled pipe.

~~**A.4.1.2 Reserved**~~

~~A.4.1.3~~A.6.1.2 Storage Sheds 68, 69, and 70

Storage sheds 68, 69, and 70 are prefabricated sheds constructed of steel (Safety Storage Building, Model 22) (*see* Figure ~~26~~9 in Attachment N (*Figures)*. Each shed measures approximately 23 ~~feet~~ft. long, 9 ~~feet~~ft. wide and 8.5 ~~feet~~ft. high. Access to these storage sheds is obtained through one of three sets of double doors. Storage Shed 68 has three separate compartments with one door leading to each compartment. Storage Sheds 69 and 70 each have two separate compartments with one door leading to the smaller compartment and two doors leading to the larger compartment. The sheds are elevated by design which prevents run-on. Each shed is constructed with liquid-tight sumps to ensure containment of any potential leaks or spills and to prevent runoff. The floor of each shed consists of a metal grate that covers the sump areas. Containers are placed directly on the metal grates which prevent contact with liquids that may have accumulated in the sumps. The sump of each shed is lined with high-density polyethylene liners. The designed sump storage capacity of each shed is 750 gallons, which exceeds the amount necessary to hold 10% of the total storage capacity of each shed (1,760 gallons).

Shed 68 has three separate compartments each having its own sump with individual capacities of 250 gallons. Sheds 69 and 70 have two separate compartments, each having its own sump. One compartment consists of two thirds of the surface area (and capacity) of Sheds 69 and 70. The capacity of this compartment's sump is 500 gallons; the smaller compartment's sump capacity is 250 gallons. The designed sump storage capacity of each shed is 750 gallons which exceeds the amount necessary to hold 10% of the total storage capacity of each shed (1,760 gallons).

~~A.4.1.4~~A.6.1.3 Storage Shed 31

Storage Shed 31 is a prefabricated shed constructed of steel. It measures approximately 14 feet long, 13 ~~feet~~ft. wide, and 8 ~~feet~~ft. high (*see* Figure 9~~26~~ in Attachment N (*Figures)*). The shed sits on a concrete foundation that has a raised edge and is surrounded by asphalt that is sloped away from the shed to prevent run-on. The shed has three separate liquid-tight recessed sumps in the concrete foundation that are each covered with a steel grate. Containers are stored on the steel grates, which prevent contact with liquids that may have accumulated in the sumps. The sumps and the concrete foundation are coated with chemically-resistant paint. Two of the sumps are approximately 6 ~~feet~~ft. long by 4 ~~feet~~ft. wide; the third sump is approximately 7 ~~feet~~ft. long by 6 ~~feet~~ft. wide. All three sumps are 5 ~~inches~~in. deep. The total capacity of the three sumps is approximately 285 gallons, which exceeds the amount necessary to hold 10% of the total storage capacity of the shed (1,320 gallons). ~~The total capacity of the three sumps is approximately 285 gallons, which exceeds the amount necessary to hold 10% of the total storage capacity of the shed (1,320 gallons).~~

~~A.4.1.5~~A.6.1.4 TA-54-32

TA-54-32 (*see* Figure ~~26~~9 in Attachment N (*Figures)*) consists of a concrete pad that is 116.5 ~~feet~~ft. long by 15.5 ~~feet~~ft. wide. The structure is covered by a 117.75 ~~feet~~ft.-long by 25.75 ~~feet~~ft.-wide canopy. The canopy provides protection from the weather. The concrete pad is bermed by a 1-~~feet~~ft.-wide, 6- to 8-~~inch~~in.-high concrete curb. This curbed area is divided into six separate containment cells to segregate wastes with different hazard classes. The curb prevents run-on of storm water. Each containment cell consists of a recessed sump covered with grate flooring on which containers are stored; this prevents contact with liquids that may have accumulated in the sumps. The cells are separated by metal partitions above the flooring. The concrete sumps are treated with chemical-resistant epoxy filler-sealer and protective coating, providing an impervious seal to contain any potential leaks, spills, or accumulation of precipitation. Cells 1 and 6 are approximately 26.5 ~~feet~~ft. long by 13.5 ~~feet~~ft. wide by 1 ~~feet~~ft. deep, with a sump capacity of 2,675 gallons each. Cells 3 and 5 are approximately 16.8 ~~feet~~ft. long by 13.5 ~~feet~~ft. wide by 1 ~~feet~~ft. deep, with a sump capacity of 1,700 gallons each. Cells 2 and 4 are approximately 13.5 ~~feet~~ft. long by 11.2 ~~feet~~ft. wide by 1 ~~foot~~ft. deep, with a sump capacity of approximately 1,130 gallons each. These sump capacities exceed the amount necessary to hold 10% of the maximum storage capacity for TA-54-32.

~~A.4.1.6~~A.6.1.5 TA-54-35

TA-54-35 (*see* Figure ~~26~~9 in Attachment N (*Figures)*) consists of a concrete pad that measures 31.5 ~~feet~~ft. long by 31.5 ~~feet~~ft. wide. The area is covered by a 136 ft.-long, 48 ~~feet~~ft.-wide canopy that provides protection from the weather. The pad has a 6-~~inch~~in.-high concrete berm that prevents run-on and runoff of liquids. The bermed area has an elevated ramp on one side to allow access for equipment to move waste containers. The ramp also helps to prevent run-on of precipitation and runoff of any accumulated liquids. The bermed secondary containment area of the pad is approximately 29.5 ~~feet~~ft. long by 24.5 ~~feet~~ft. wide by 8 ~~inches~~in. deep. Stored waste containers are elevated on pallets to prevent contact with any potential accumulated liquids. The secondary containment capacity of the bermed area is approximately 3,570 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity for TA-54-35 (15,840 gallons)

~~A.4.1.7~~A.6.1.6 TA-54-36

TA-54-36 (*see* Figure ~~26~~9 in Attachment N (*Figures)*) is a 33-~~feet~~ft.-long by 31.5-~~feet~~ft.-wide concrete pad. It is covered by a 136 ~~feet~~ft.-long, 48 ~~feet~~ft.-wide canopy that provides protection from the weather. The pad is surrounded by a 1-~~feet~~ft.-wide berm that varies from 6 ~~inches~~in. to 1 ft. in height. The berm prevents run-on and runoff of liquids. The bermed secondary containment area of the pad is approximately 30.5 ~~feet~~ft. long by 30 ~~feet~~ft. wide by 9 ~~inches~~in. deep. The pad also contained a Perma-Con® structure which has been removed and disposed. The secondary containment capacity of the bermed area is approximately 4,595 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity for TA-54-36 (13,200 gallons).

~~A.4.1.8~~A.6.1.7 TA-54-58

TA-54-58 (*see* Figure ~~26~~9 in Attachment N (*Figures)*) is a pad that measures 33 ft. long by 31.5 ft. wide. It is covered by a 136 ft.-long, 48 ft.-wide canopy that provides protection from the weather. The pad has a 1-ft.-wide berm that varies from 6 in. to 1 ft. in height. The berm prevents run-on and runoff of liquids. The bermed area has an elevated ramp on one side to allow access for equipment to move waste containers. The ramp also helps to prevent run-on of precipitation and runoff of any accumulated liquids. The bermed secondary containment area of the pad is approximately 30.5 ft. long by 25 ft. wide by 6 in. deep. The secondary containment capacity of the bermed area is approximately 2,850 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity for TA-54-58 (15,840 gallons).

~~A.4.1.9~~A.6.1.8 TA-54-39 and Containment Pad

TA-54-39 measures 40 ft.-long by 40 ft.-wide (*see* Figure ~~26~~9 in Attachment N (*Figures)*). It is a metal panel building set on a concrete foundation with a metal canopy attached to the south side of the building. The rectangular metal canopy measures 83 ft. long by 46 ft. wide. There are two areas associated with TA-54-39 that provide secondary containment. These areas include Room 101, located inside the building, and a containment pad located at the south end of the building. Room 101 inside TA-54-39 has a 6-in.-high concrete curb that surrounds the room. The containment pad at the south end of TA-54-39 consists of two sections. The pad is covered by a metal canopy, which provides protection from the weather. The eastern section of the containment pad is constructed of asphaltic concrete and measures 83 ft.-long by 23 ft.-wide. The western section of the containment pad is approximately 58 ft.-long by 16 ft.-wide and is surrounded by a 1-~~feet~~ft.-high concrete curb, which prevents run-on and runoff of liquids. The secondary containment capacity for Room 101 is approximately 3,280 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity of the room (9,900 gallons). The secondary containment capacity for the western section of the TA-54-39 containment pad is approximately 7,120 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity of this section of the containment pad (15,180 gallons).

~~A.4.2~~A.6.2 AREA G

The permitted units at Area G are used to store and treat containers of hazardous, mixed low level, and mixed transuranic wastes in solid and liquid form (*see* Figure ~~27~~10 in Attachment N (*Figures)*. Liquid wastes are stored primarily in structures that are designed for secondary containment. However, secondary containment pallets are also used.

Secondary containment pallets are typically constructed of polyethylene or metal painted with a chemical-resistant coating. Polyethylene secondary containment pallets used at TA-54 Area G are generally 50 in. long by 50 in. wide by 17 in. deep with a designed capacity of 83 gallons. Two sizes of metal secondary containment pallets are typically used at TA-54 Area G. One size is 52 in. long by 52 in. wide by 6.5 in. deep with a designed capacity of 57

gallons. The other is 60 in. long by 60 in. wide by 6.5 in. deep with a designed capacity of 77 gallons.

~~A.4.2.1~~A.6.2.1 Pad 9

The 4 to 6 in. thick asphalt pad is approximately 570 ~~feet~~ft. long and 275 ~~feet~~ft. wide (*see* Figure ~~28~~18 in Attachment N (*Figures)*). Transuranic Waste Inspectable Storage Project (TWISP) domes 229, 230, 231, and 232 are located on Pad 9 at the east end of Area G. Each dome is approximately 246 ft. long, by 89 ~~feet~~ft. wide by ~~-~~35 ~~feet~~ft. high, and consist of a rigid aluminum frame that supports a tensioned membrane. A series of aluminum I-beam trusses spanning the width of the structures comprise the dome framework. The membrane material is a polyester fabric coated with UV-stabilized plasticized PVC. The material is fungus-resistant and fire-retardant (*i.e.*, self-extinguishing). The membrane is integrally connected to the frame to provide a fully tensioned fit. Each dome is equipped with personnel doors and a roll-up door for vehicle access and is anchored to a concrete ring-wall with anchor bolts. Under Pad 9 is a fire water collection system that collects water from Domes 232 and 231 and transports it to a sump system in Dome 229 at the south end of Pad 9. The system is not intended for, nor was it designed to provide, secondary containment of liquid waste releases. It was designed to provide an augmented fire water collection capability to prevent fire water running off the pad if any fire suppression activities exceeded the capacity contained in the upstream domes. Domes 231 and 232 have three drain inlets apiece in the southeast portion of the domes. The drains in each dome are connected and drain to a collection pipe-line that runs down the east side of Pad 9. The line terminates in the collection sump in the east end of Dome 229. The floor of Dome 230 is designed for secondary containment of liquids. The asphalt pad floor is sloped (1%) towards a concrete sump at the east end of the dome. The asphalt floor and curbs in Dome 230 are lined with a double layer of 40 mil high-density polyethylene (HDPE), and the sump is lined with a single layer of 40 mil HDPE, creating an impervious layer to contain any liquids that might accumulate. The secondary containment capacity for Dome 230, which includes the sump and curbed area, is approximately 48,255 gallons which exceeds the amount necessary to hold 10% of the total storage capacity of the dome (330,000 gallons). The TWISP domes on Pad 9 are unheated; the storage of waste within the transportainer is for the purpose of temperature equilibration of the waste for characterization procedures (*i.e.*, real-time radiography and headspace gas sampling associated with the transuranic waste characterization program).

Additionally, there is a conex box (54-0627) southwest of Dome 229 used for storage of radioactive calibration sources used for waste characterization activities. The conex box is approximately 20 ~~feet~~ft. long by 8 ~~feet~~ft. wide.

Dome 231

The building is an aluminum A-frame truss design, anchored to a concrete ring wall. The dome is of modular construction using a membrane or fabric covering. It is equipped with personnel doors and two roll-up doors, each along the eastern and western ends of the dome. Inside the dome is a Perma-Con that is approximately 16 ft. high by 68 ft. long by 28 ft. wide. A radiological buffer area (RBA) tent is attached to the Perma-Con's western side. The RBA tent is 16 ft. high, 36 ft. long and 28 ft. wide. The Perma-Con is divided into three main areas;

cell 1 and cell 2 are designated for sort, segregate, size reduction, and repackaging activities and a control room is located along the eastern-most side. The Perma-Con has six personnel doors between the cells; control room, the RBA, and the dome itself; one metal roll-up door between cell 1 and cell 2; and two plastic roll-up doors along the northern and eastern walls of the RBA. Ramped entrances allow for safe movement of container-handling equipment and vehicle access. Hazardous wastes will be characterized, sorted, segregated, and resized. Prohibited items (*e.g.,* aerosol cans) will be removed and repackaged. Some liquids and cemented sludge waste will require treatment before shipment to the Waste Isolation Pilot Plant (WIPP) for disposal.

The following pieces of mobile equipment are used in the treatment and repacking processes: gantry cranes, fume hoods, glove bags, dedicated ventilation units, high-efficiency particulate air (HEPA) filters, vacuums, and drums lifts. Emergency and safety equipment located in TA-54-0231 include a HEPA filtration system, a fire detection system, fire extinguishers, a fire alarm pull station, and an emergency notification system that supplements safety requirements and controls potential contaminant releases. Additionally, a cargo container (connex) will provide a localized point source exit from the permitted treatment unit. The connex will house a personnel contamination monitor (PCM) and will be as close to the area as possible. The PCM must be installed in a connex to provide shielding from low-gamma radiation.

Waste containers transported from permitted storage units at TA-54, Area G, will be moved into the RBA of the TA-54-0231 Perma-Con. Waste removed from the parent container will be repackaged into certifiable 55-~~gal.~~gallon drums. All contents of a single waste container will be treated within a single shift, or the waste containers (parent and daughter) will be closed using a vented rigid cover, if waste must be left unattended mid-treatment. Waste will not be stored in the glove bag.

Treatment processes include neutralizing and then stabilizing liquids with zeolite (*i.e.,* absorption). Waste containers that meet a specific decision criterion for waste matrix complexity will be processed outside of the glove bag but within the Perma-Con.

The Permittees will evaluate the waste matrix complexity, which in this instance refers to the ability of the Permittees to treat, process, and repackage waste with or without manipulation of the waste inside the drum. When manipulation of the waste inside the drum is not needed for the retrieval of a prohibited item, then the waste consolidation, and/or sort, segregate, and size reduction activities will be processed outside of the glove bag but inside the confines of the Permacon. If the Permittees determine that the retrieval or resolution of a prohibited item will require the manipulation of the waste inside the drum, this retrieval, resolution or treatment, will take place inside a glove bag. The Permittees will utilize Real-Time Radiography (RTR) informational scans to make the determination if a prohibited item removal or if waste consolidation is possible. If a prohibited item is present, then it will be removed and necessary activities such as: sort, segregate, or size reduction will be conducted as necessary for repacking or waste consolidation purposes inside of the glove bag or outside of the glove bag but inside of the Perma-Con.

Treatment of cemented sludge waste must occur within glove bags inside the designated portion of the Perma-Con. The glove bags are well configured to safely accommodate the stabilization (including absorption) and pH adjustment processes. Workers will be operating in cells 1 and 2 in the protective equipment required by radiological work permit and the operating procedures.

Within the Perma-Con unit, glove bags will be used to enclose a contaminated item and form a small work area to confine the spread of contamination. Glove bags will allow work to be performed on potentially contaminated items, provide protection to personnel, and will allow access to waste within the containment using gloved sleeves, which will enable repackaging or manipulations without directly contacting contaminated surfaces.

The neutralization process will consist of verifying pH and adding hydrochloric acid (HCl) or sodium hydroxide (NaOH) incrementally and iteratively to aqueous waste to bring the waste to within a 3-10 pH range. Pourable liquids in the waste drums will have their pH measured using a calibrated pH meter prior to the neutralization process. –The Permittees will generally follow EPA method 9040C (as updated) for pH Electrometric Measurement of pH testing. However, because of the need for "real-time" pH screening results at the time of waste processing, strict adherence to all aspects of EPA method 9040C or an equivalent method, if approved in advance by NMED will be followed. The liquids will be neutralized, if necessary, and stabilized with zeolite in a minimum ratio of 3:1 (three parts zeolite to one-part liquid waste). The treated waste will be repackaged into a new certified 55-~~gal.~~gallon daughter drum and characterized by Central Characterization Program (CCP) personnel in accordance with the WIPP Waste Acceptance Criteria (WAC). All measuring tools used in stabilization processes (*i.e.,* glass/plastic pipettes, graduated cylinders, beakers, etc.) will be resistant to a wide variety of reagents.

In cases where there is insufficient volume of liquid waste, the neutralization step of the treatment process will not be performed and these minute quantities of liquids will only be stabilized with zeolite or a WIPP-approved absorbent.

Drill and drain operations will be located in the cell separate from where glove bag operations are taking place. The drum liner will be de-nested and punctured, and the sludge or liquid will be suctioned and drained out. The collected liquid will be characterized, neutralized (if necessary), and treated with zeolite or a WIPP-approved absorbent. For free liquids observed between the liner and the existing parent drum, de-nesting operations will take place via gantry crane and the liquid will be collected, characterized, neutralized (if necessary), and stabilized with zeolite or a WIPP-approved absorbent.

~~A.4.2.2~~A.6.2.2 Pad 1

The 4 to 6 inch thick asphalt pad is approximately 358 ~~feet~~ft. long and 213 ~~feet~~ft. wide. TA-54-412 is located on the pad in the northeastern portion of Area G (*see* Figure ~~29~~19 in Attachment N (*Figures)*).

TA-54-412 (*see* Figure ~~29~~19 in Attachment N (*Figures)*) is a one story building that is approximately 220 ~~feet~~ft. long by 60 ~~feet~~ft. wide (13,200 ft^2). It consists of two structures, an internal primary confinement structure that houses the DVRS processing operations and an external secondary confinement structure which surrounds the primary confinement structure. The external secondary confinement structure (hereinafter referred to as "building") provides protection from the elements and a temperature-controlled space for the internal structures and associated process equipment. A 16 ft. by 16 ft. roll-up vehicle-access door is located on the north end of the building. The roll-up vehicle access door opens to the secondary confinement structure area and serves as a pass-through for moving DVRS feed-stock waste into the primary confinement structure. There is also vehicle access on the south end of the building for removal of compacted waste from DVRS operations. The concrete slab provides a structural foundation for the building and the shearer and baler system and provides a direct working surface for movement of fiberglass reinforced plywood boxes and processing equipment. The concrete slab is above grade to direct potential run-on away from the building. The floor in the building is sloped to a sump that has a grating cover to provide traction and a level working surface. The sump is treated with chemical-resistant epoxy filler-sealer and protective coating.

The primary confinement structure is housed entirely within the building and consists of five interconnected enclosures or cells. The system is approximately 150 ~~feet~~ft. long by 50 ~~feet~~ft. wide by 16 ~~feet~~ft. high and sits directly on the sealed concrete floor. The primary confinement structure is constructed of 6-~~inch~~in.-thick, two-hour fire-rated sandwich panels made of 16-gauge steel and gypsum wallboard measuring 40 ~~feet~~ft. wide by 4 or 8 ~~feet~~ft. long. The structure interlocks in a self-supporting steel framework that can be assembled into multiple configurations. The primary confinement structure has five cells each of which is used for a specific function of the DVRS process. The cells are equipped with both personnel and large roll-up doors so that personnel, equipment, and material can access the structure and move from one cell to the next. A cell is used to sort and segregate transuranic and mixed transuranic waste and contains various tools used to dismantle the fiberglass reinforced plywood boxes. Other cells are used for decontamination and packaging and a final cell contains the shearer and baler used to compact waste items. The shearing and baling process takes place within a tightly sealed compartment. Waste containers that need to be dismantled are processed using circular saws, reciprocating saws, hammers, pry bars, and other tools, as needed. Waste containers are moved with trucks, forklifts, air pallets, and hand dollies. The primary and secondary confinement structures are built to meet criteria specified in DOE-STD-1020-92, "*Natural Phenomena Hazards Design and Evaluation Criteria for DOE Facilities"* (DOE, 1992) for Performance Criteria 2 structures. Performance Criteria 2 structures include active fire suppression, emergency communications, and confinement systems that provide important safety functions related to emergency handling or hazard recovery and are designed to protect the health and safety of workers and visitors during active operations. The building contains fire protection piping and heating, ventilation, and air conditioning ducting and is a two-hour code-compliant fire-rated building. Panels in the primary confinement structure are the same material as the two-hour fire-rated wall construction with additional supports. A dry-pipe fire-protection system provides coverage for the primary confinement structure. A water collection area in the south end of the building provides for containment of any potential leaks, spills, or accumulated water resulting from the activation of the fire protection system.

Northwest Bay of Building 412

Waste treatment, storage, and repackaging are performed in a pre-engineered containment tent adjacent to the primary confinement structure located in the northwest bay of Building 412 (Attachment N, Figure ~~27~~19). The containment tent measures approximately 30 ft. long by 27 ft. wide by 15 ft. high. The containment tent is equipped with a HEPA filtration system and a fire-detection system. Additional emergency and safety equipment for Building 412 are listed in Attachment D, Contingency Plan. Attached to the containment tent are a radiological buffer area (RBA), dress-out room, and control room. The RBA measures 15 ft. long by 10 ft. wide. The RBA entrance allows safe transport of containers into the containment tent. Waste-handling activities do not take place within the dress-out room or the control room. The dress-out room measures approximately 10 ft. wide by 20 ft. long. The control room measures approximately 10 ft. wide by 17 ft. long.

Mobile equipment such as gantry cranes, fume hoods, dedicated ventilation units, drum shakers and drum lifts are used in the treatment and repackaging processes. Containers holding hazardous or mixed waste with free liquids will be stored on portable spill pallets or pans which meet the secondary container requirements of 40 CFR 264.175. Containers vary in size and will determine the quantity of waste to be treated. These include 55-gallon drums, 85-gallon drums, and standard waste boxes (SWBs).

Waste characterization data shall be used to determine whether waste is amenable to stabilization and whether pretreatment via neutralization is necessary-. Neutralization may be performed as pre-treatment option via pH adjustment to facilitate subsequent treatment via stabilization with zeolite.

When deemed necessary, neutralization will be performed in containers in the containment tent within TA-54-0412. Whenever possible, treatment will take place within the existing fume hoods to protect human health and the environment. The neutralization step will consist of verifying pH and adding hydrochloric acid (HCl) or sodium hydroxide (NaOH) to bring the waste within a pH range of 3-10 to ensure that waste is amenable to stabilize with zeolite. The liquids will then be stabilized with a minimum ratio of 3:1 (three parts zeolite to one-part liquid waste). In cases where there is insufficient volume of liquid waste, the neutralization step of the treatment process will not be performed, and these minute quantities of liquids will only be stabilized with zeolite or a WIPP-approved absorbent.

Debris waste (i.e., waste containing no liquids) does not require additional treatment and will either be placed back into the parent container or placed directly into the daughter container with the treated waste.

~~A.4.2.3~~A.6.2.3 Pad 3

The 4 in.~~inch~~ thick asphalt pad 3 is approximately 339 ~~feet~~ft. long and 50 ~~feet~~ft. wide. Storage Dome 48, located at the eastern end of pad 3, is 285 ~~feet~~ft. long and 50 ~~feet~~ft. wide and has a peak height of 24 ~~feet~~ft (*see* Figure ~~30~~20 in Attachment N (*Figures)*). The design and materials of construction for dome 48 are the same as the other domes at TA-54. The dome is equipped with a double-panel rolling door at the south end of the dome and eight personnel doors located approximately every 80 ~~feet~~ft. along the dome's length mainly to allow for

adequate access both by vehicles and personnel. The interior perimeter of the dome is surrounded by a 6-~~inch~~in.-high, 8-~~inch~~in.-wide asphalt curb which helps prevent run-on into, and runoff from, the dome. An asphalt ramp located at the vehicle entrance allows vehicles and container handling equipment to pass safely over the curb. The dome is anchored to Pad 3 with standard drift pins.

~~A.4.2.4~~A.6.2.4 Pad 10 (former Pads 2 and 4)

Pad 10 is constructed at the location of former Pads 2 and 4. The asphalt pad measures approximately 350 ~~feet~~ft. long by 250 ~~feet~~ft. wide and is constructed of asphalt (*see* Figure ~~3~~121 in Attachment N (*Figures)*). The transuranic waste characterization facilities and container storage area are located on this pad. The transuranic waste characterization facilities consist of mobile and modular units equipped with instruments and equipment for waste characterization and repackaging. The transuranic waste characterization facilities include the following: drum-loading or receiving unit(s); equilibration units(s); gas mobile characterization unit(s); and mobile repack units. External containment is provided by the trailers and transportainers because waste characterization activities take place inside the structures. Activities at Pad 10 include the following:

TA 54-0498, LANL HENC

The Canberra Facility High Efficiency Neutron Counter (HENC) is designed to provide a passive neutron and gamma measurement of transuranic waste drums in 55-~~gal~~gallon containers. The trailer housing the HENC is Structure #498. The HENC supported the Facility's TWCP and Project 2010 and subsequently CCP operations beginning in 2004 to the present.

TA 54-0547, Super High Efficiency Neutron Coincidence (SuperHENC) counter

Trailer TA-0547 houses a high efficiency neutron counter designed to handle large waste containers. It is designed to provide a passive neutron and gamma measurement of large transuranic waste containers like standard waste boxes. The SuperHENC ~~will~~ supports the Facility's TWCP and the CCP operations ~~beginning in 2010~~.

TA 54-0545, Storage

Heated transportainer for transuranic and mixed transuranic waste storage prior to characterization.

TA 54-0546, Storage

Heated transportainer for transuranic and mixed transuranic waste storage prior to characterization.

TA 54-0628, Storage

Heated conex box (e.g., transportainer) for transuranic and mixed transuranic waste storage prior to characterization.

TA 54-0629, Storage

Heated conex box (e.g., transportainer) for transuranic and mixed transuranic waste storage prior to characterization.

Pad 10 Asphalt

Pad 10 is primarily used for storage of feed stock and empty drums for the transuranic waste characterization activities. Additionally, storage of oversized mixed wastes in transportainers and metal boxes can occur on the pad.

~~A.4.2.5~~A.6.2.5 Pad 5

This asphalt pad consists of former pads 5, 7, and 8, located on the south-central portion of Area G, and has one dome and eight sheds (*see* Figure ~~32~~22 in Attachment N (*Figures)*) associated with it. Former Pad 5 is approximately 500 ~~feet~~ft. long, 65 ~~feet~~ft.-wide, and 4 ~~inches~~in. thick. It is sloped approximately 2% from north to south. Former Pad 8 is approximately 150 ~~feet~~ft. long, 95 ~~feet~~ft.-wide, and 3 ~~inches~~in. thick. It is sloped approximately 1% from west to east. Former Pad 7 is approximately 200 ~~feet~~ft. long, 64 ~~feet~~ft.-wide, and 4 ~~inches~~in. thick. It is sloped approximately 1% from west to east.

Dome 49

Storage dome 49, located on former Pad 5, is 440 ~~feet~~ft. long and 60 ~~feet~~ft. wide and has a peak height of approximately 26 ~~feet~~ft. (*see* Figure ~~32~~22 in Attachment N (*Figures)*). The design and materials of construction for Dome 49 are the same as the other domes at TA-54. The dome is equipped with a double-panel rolling door at the north end of the dome and six personnel doors to allow for adequate access both by vehicles and by personnel. The interior perimeter of the dome is surrounded by a 6-~~inch~~in.-high, 8-~~inch~~in.-wide asphalt curb which helps prevent run-on into and runoff from the dome. An asphalt ramp located at the vehicle entrance to Dome 49 allows vehicles and container handling equipment to pass safely over the curb. The dome is anchored to Pad 5 with standard drift pins.

A maintenance gate is located along the fence-line west of Dome 49. The gate is not used for general access to the area, but is used by authorized personnel to access areas outside of the Area G fence-line to clear vegetation necessary to minimize fire hazards. The gate is chain-link and approximately eight ~~feet~~ft. tall with razor wire on the top. The gate is not equipped with a badge reader and is locked at all times unless used by authorized personnel for maintenance purposes.

Dome 224

Storage Dome 224, located on former pad 8, is approximately 110 ~~feet~~ft. long and 60 ~~feet~~ft. wide, with a peak height of 26 ~~feet~~ft. (*see* Figure ~~32~~22 in Attachment N (*Figures*)). The design and materials of construction for Dome 224 are the same as other domes at TA-54. This dome is anchored to Pad 8 with anchor bolts. It is equipped with a single-panel roll-up door at the north end and four personnel doors to allow adequate access by vehicles and by personnel. A 1-ft~~foot~~, 8-~~inch~~in. wide by 2-~~feet~~ft., 4-~~inch~~in. deep concrete ring wall surrounds the interior of Dome 224. A high-density polyethylene (HDPE) liner exists below the asphaltic pad within the dome.

Storage Sheds

Storage sheds 144, 145, 146, and 177 are prefabricated sheds constructed of steel. Each shed measures 6 ~~feet~~ft. long, 5 ~~feet~~ft.-wide, and 9 ~~feet~~ft. high. Access to each shed is obtained through a single door. The sheds are elevated by design, which prevents run-on and each shed is constructed with a liquid-tight sump to ensure containment of any potential leaks or spills and to prevent runoff. The floor of each shed is constructed of steel and has a metal grate that covers the entire sump area. Containers are placed directly on the metal grates, which prevent contact with liquids that may have accumulated in the sumps. The designed sump storage capacity of each shed is 120 gallons which exceeds the amount necessary to hold 10% of the total storage capacity of each shed (330 gallons).

Storage sheds 1027, 1028, 1030, and 1041 are equipped with three sets of double doors on one side of the shed for ease of access. Sheds 1027, 1028, 1030, and 1041 contain a single compartment and sump within each shed (*see* Figure ~~32~~22 in Attachment N (*Figures)*). The designed storage capacity of each sump is 750 gallons which exceeds the amount necessary to hold 10% of the total capacity of each shed (1,760 gallons).

~~A.4.2.6~~A.6.2.6 Pad 6

This permitted asphalt pad, approximately 633 ft. long, 99 ft. wide and 4 ~~inches~~in. thick, is sloped approximately 1.2% from west to east and is located in the north-central portion of Area G. Storage domes 153 and 283 are located on Pad 6 (*see* Figure ~~33~~23 in Attachment N (*Figures)*) and the design and materials of construction for domes 153 and 283 are the same as the other domes at TA-54.

Dome 153

Dome 153 is approximately 326 ft. long and 60 ft. wide, with a peak height of 26 ft. (*see* Figure ~~33~~23 in Attachment N (*Figures)*). A double-panel rolling door is located at the west end of the dome and 10 personnel doors are located approximately every 40 to 125 ft. along the dome's length. Dome 153 is equipped with a fire detection and alarm system.

Dome 283

Dome 283 is approximately 260 ft. long and 60 ft. wide with a peak height of 26 ft. (*see* Figure ~~33~~23 in Attachment N (*Figures)*). A double-panel rolling door is located at the east end of the dome and 10 personnel doors are located approximately every 50 ft. along the

dome's length. These accesses allow adequate traffic flow of vehicles and personnel into and out of the dome. An asphalt or concrete ramp is located at the vehicle entrance of each dome to allow vehicles and container-handling equipment to pass safely over the curb. Domes 153 and 283 are anchored to Pad 6 with standard drift pins. A control room is located within Dome 283. The control room is approximately 20 ft. long and 8 ft. wide with a height of 8 ft.

Transportainer 491

Structure 491 is a transportainer located on the south side of the pad. This transportainer is used to store hazardous waste.

~~A.4.2.7~~A.6.2.7 Storage Shed 8

Storage shed 8 is located in the north-central portion of Area G (*see* Figure ~~34~~24 in Attachment N (*Figures)*). The shed is 40 ft. long and 16 ft. wide and has a 14-ft.-high galvanized steel roof that slopes to the north. The siding of Shed 8 is constructed of galvanized steel and the foundation is constructed of concrete. Two overhead doors and one personnel door on the south side of the shed allow both vehicles and personnel to access the shed.

~~A.4.2.8~~A.6.2.8 TA-54-33

TA-54-33 is located in the north-central portion of Area G and consists of a dome attached to a concrete-block building (*see* Figure ~~35~~25 in Attachment N (*Figures)*). This permitted unit is used for waste storage and potential or future waste characterization activities. The dome and building are located on a concrete foundation surrounded by an asphalt pad. The concrete foundation is 8 ~~inches~~in. thick and overlies 6 ~~inches~~in. of base course. The concrete-block building attached to the dome is approximately 40 ft. long and 34 ft. wide. The dome is 157 ft. long and 50 ft. wide with a peak height of 24 ft. A double-panel rolling door is located at the west end of the dome for vehicle access. A single-panel rolling door is located at the southeast end of the dome for container-handling access. Two personnel doors are located approximately 40 ft. apart along the north wall of the dome. Two additional personnel doors are located in the concrete-block building; one on the west side, and one on the east side. In addition, two overhead doors are located on the north side of the building to allow free movement of personnel and container-handling equipment between the building and the dome.

The design and materials of construction for the TA-54-33 dome are the same as the other domes at TA-54. The dome's aluminum frame is directly connected to the building which extends approximately 5 ft. into the dome. Inside the dome the concrete foundation is sloped to a 6-~~inch~~in.-wide centralized concrete drainage trench that is covered with 12-~~inch~~in.-wide steel grating. The trench slopes toward a steel sump located at the east end of the dome. Two additional trenches, located in Rooms 100A and 100B, are perpendicular to and feed into the main trench. A floor drain in Room 105 connects with the trench in Room 100A.

The steel sump is located within a concrete basin that has 8-~~inch~~in.-thick walls, a 9-~~inch~~in.-thick base and measures approximately 15 ft. long by 7 ft. wide by 6 ft. deep. The sump is approximately 14 ft. long by 6.5 ft. wide by 5 ft. deep and has a capacity of 3,473 gallons. A

primary holding tank associated with the sump is located in a concrete basin that is 15 ft. long by 12 ft. wide by 5.5 ft. deep and has a capacity of approximately 7,405 gallons. A secondary holding tank associated with the sump is located in a separate concrete basin that is 12 ft. long by 12 ft. wide by 5.5 ft. deep and has a capacity of approximately 5,924 gallons. These basins have the capacity to contain any spills or leaks resulting from a potential overflow or breach of the holding tanks.

A maintenance gate is located along the fence-line north of the TA-54-33 dome. The gate is not used for general access to the area, but is used by authorized personnel to access areas outside of the Area G fence-line to clear vegetation necessary to minimize fire hazards. The gate is chain-link and approximately eight feet tall with razor wire on the top. The gate is not equipped with a badge reader and is locked at all times unless used by authorized personnel for maintenance purposes.

~~A.4.2.9~~A.6.2.9 Pad 11

This asphalt pad is approximately 4 in.~~inches~~ thick, measures approximately 478 ft. long by 137 ft. wide, and is sloped approximately 1 to 2% to the southeast. Storage Dome 375 is located on the western portion of pad 11 and is used for storage of hazardous, mixed low level, and mixed transuranic waste. It measures approximately 300 ft. long by 100 ft. wide (*see* Figure ~~36~~26 in Attachment N (*Figures)*). The building is an aluminum A-frame truss design that is anchored to a concrete ring wall. The dome is of modular construction utilizing a membrane or fabric covering. It is equipped with 14 personnel doors and two roll-up doors, one each at the east and west ends of the building. Ramped entrances allow for safe movement of container handling equipment and vehicle access. Dome 375 contains a modular panel containment structure or Perma-Con® (approximately 120 ~~feet~~. long x 60 ~~feet~~. wide) used for size reduction, decontamination, segregation, waste assay, reclassification activities, and repackaging of transuranic waste prior to shipment offsite.

Dome 375 and the Perma-Con® is used for size reduction and repackaging of the corrugated metal pipes (CMPs). During the size reduction and repackaging, one CMP at a time is removed from a flatbed truck or from storage within Dome 375 with a forklift or another lifting device. The forklift moves the CMP into Dome 375 and places it on a pipe racks and pipe rollers at the loading dock of the Perma-Con®. The pipe racks/pipe rollers and a winch system is used to move the CMP into the Perma-Con® via room 124. The pipe racks/pipe rollers are moved the CMP through room 124 and into room 123 where a hydraulic shear and gantry cranes cut the CMP into approximately 4-ft. sections and then place the cut sections into SWBs for shipment off-site (*see* Figure ~~36~~26 in Attachment N *(Figures)*). A containment tray, equipped with localized HEPA-filtered ventilation equipment, is installed under the shear and under the cutting location on the CMP to collect the small amounts of debris and dust that may result from the shearing operation. Room 121 is used to temporarily stage SWBs for shipment to permitted on-site storage where they await characterization prior to shipment for off-site disposal. This process is repeated for all 158 CMPs.

Dome 375 also contains four structures that serve as an office area, a control area, and rooms for donning and doffing anti-contamination clothing. These structures are support structures and will not be used to store hazardous waste.

Waste treatment, storage and repackaging are performed in the Perma-Con® within Dome 375. The Perma-Con® is equipped with a HEPA filtration system and a fire detection system. Additional emergency and safety equipment for Dome 375 can be found in Attachment D, Contingency Plan.

Mobile equipment such as gantry cranes, fume hoods, dedicated ventilation units, drum shakers and drum lifts are used in the treatment and repackaging processes. Containers holding hazardous or mixed waste with free liquids is stored on portable spill pallets or pans. Containers vary in size and determine the quantity of waste to be treated. These include 55- gallon drums, 85-gallon drums and SWBs.

Waste characterization data is used to determine whether waste is amenable to stabilization and whether pretreatment via neutralization is necessary. Neutralization may be performed as a pre-treatment option via pH adjustment to facilitate subsequent treatment via stabilization with zeolite.

When deemed necessary, neutralization is performed in containers within the Perma-Con® in TA-54-0375. The neutralization step consists of verifying pH and adding HCl or NaOH to bring the waste within a 3 to 10 pH range to ensure waste is amenable to stabilization with zeolite. The liquids are stabilized with zeolite in a minimum ratio of 3:1 (three-parts zeolite to one-part liquid waste). In cases where there is insufficient volume of liquid waste, the neutralization step of the treatment process is performed, and these minute quantities of liquids are stabilized with zeolite or a WIPP-approved absorbent.

Debris waste (i.e., waste containing no liquids) which do not require additional treatment are either be placed back into the parent container or placed directly into the daughter container with the treated waste.

A hydraulic power supply (HPS) unit (i.e., diesel engine) is housed in a prefabricated steel shed on the southwest corner of Pad 11. The HPS will power the hydraulic shear used to cut the corrugated metal pipes (CMPs) in the PermaCon® in TA-54, Area G, Dome 54-0375.

~~A.4.3~~A.6.3 TA-54 West

The two permitted units at TA-54 West include the indoor low bay and the high bay at TA-54-38 and the outdoor storage pad which surrounds the north, east, and south sides of TA-54-38 and the loading dock at TA-54-38. The permitted units at TA-54 West are used to store solid mixed low level and mixed transuranic waste (*see* Figure ~~37~~11 in Attachment N (*Figures)*).

The permitted units at TA-54-38 West may receive any container that may be stored at the units in accordance with Permit Section 3.3 (e.g. 85-gallon drums, 100-gallon drums, and ten-drum overpacks); however, most often the units receive WIPP-ready 55-gallon drums and

SWBs for final preparation and packaging. All waste containers are handled in a manner that will not cause them to rupture.

Waste is generally brought into the TA-54-38 West Outdoor Pad through the south-eastern vehicle gate and placed in storage on the northern portion of the TA-54-38 West Outdoor Pad. No paved or unpaved roadways are located within 5 feet of the waste storage area. From the outdoor permitted unit, containers are generally moved into the Low Bay at TA-54-38 West and made amenable for placement in a WIPP-compliant shipping container. Normal operations for making the individual waste containers ready for shipment include stretch wrapping 14 drum configurations (or drum payloads) and ratchet strapping SWBs one on top of the other. Generally, these Type A container configurations are then moved by forklift into the High Bay where they are loaded into TRUPACT II Type B shipping containers using a bridge crane.

Empty TRUPACT II containers that are received from WIPP are usually moved into the High Bay using the western bay door and are opened and inspected prior to waste being placed within the High Bay. After the containers are opened, the drum payloads or SWBs are placed into the containers. The TRUPACT II containers are then closed. Metal loading platforms allow for personnel access to the top of the TRUPACT II containers so that the TRUPACT II containers can be opened or closed, and to ensure that there is no issue while placing the shipping containers within the TRUPACT II containers.

After the TRUPACT II containers are loaded and the trailer is prepared for shipment, the trailer is moved via trailer jockey or other approved vehicle through the eastern bay door and to the TA-54-38 West Outdoor Storage Pad for storage prior to shipment to WIPP or out the southeastern gate of the TA-54-38 West Outdoor Pad to a staging area to await inspection and shipment to WIPP. When a loaded trailer of TRUPACT II containers is stored at the TA-54-38 West Outdoor Pad, the trailer is not placed in front of a gate and is not stored within 10 ~~feet~~ft. of the fence line. Gates at the TA-54-38 West Outdoor Pad are locked when not in use.

Containers are handled with forklifts (using drum grapplers, when appropriate) or drum dollies while present at TA-54-38 West and are placed directly in the appropriate permitted unit when active packaging is not underway. The bridge crane is utilized in the High Bay to place drum payloads directly into the TRUPACT II containers. A second bridge crane provides redundancy and ensures that a back-up crane is available while the original is undergoing maintenance activities. A switch mechanism ensures that only a single crane will be used at one time.

~~A.4.3.1~~A.6.3.1 TA-54 West Building (RANT)

TA-54-38 is a building constructed of 36-ft-high pre-cast concrete panel walls topped by pre-stressed double-T concrete roof sections. Its foundation consists of a 6-~~inch~~in. reinforced concrete slab on compacted fill. The building is divided into several offices and houses the Indoor permitted unit which includes the low bay and the high bay (*see* Figure ~~37~~11 in Attachment N (*Figures)*). The low bay is approximately 40 ft.-wide and 34 ft. long. An 8 ft.-wide by 12 ft.-high roll-up door is located at the east end and opens to an outdoor loading dock. A second 8-ft.-wide by 12-ft.-high roll-up door is located in the southeast corner and

opens into the high bay. The walls and floor of the low bay are coated with industrial grade enamel paint. The high bay, approximately 40 ft. wide and 80 ft. long, is used for loading transuranic and mixed transuranic waste into Transuranic Package Transporter-II containers. It is equipped with 14-ft.-wide by 18-ft.-high roll-up doors on the east and west ends to allow convenient, indoor loading of the tractor-trailers that transport shipments of waste to the Waste Isolation Pilot Plant. The high bay floor is not painted and slopes at an angle of 1.5 degrees toward a central trench (which is 5 ~~inches~~in. wide, 6 ~~inches~~in. deep and 50 ft. long) and a sump. The entire length of the trench is covered with a metal grate and is designed to hold precipitation and snow melt from tractor-trailers.

Outside the perimeter of TA-54-38 is a fire water collection system that collects water from TA-54-38 and transports it to a fire

water retention pond. The system is not intended for, nor was it designed to provide secondary containment of liquid waste releases. It was designed to capture fire water releases from the building and convey the fire water in an underground pipe that discharges into the fire water retention pond.

Within 24 hours of a fire event, the Permittees shall collect a sample of fire suppression water collected in the retention basin and analyze it for any hazardous waste constituents managed at the facility. If the fire suppression water present in the retention basin is determined to be hazardous waste, the Permittees shall manage the waste water as required by Attachment D, *Contingency Plan*. The Permittees shall use the analytical results, together with information from the Operating Record, to characterize the water in accordance with Permit Attachment C, *Waste Analysis Plan*. The Permittees shall record the type and quantity of waste water present in the retention basin, the date of the incident, and the date of removal of the waste water in the Operating Record. If the Permittees determine that the fire suppression water is not a hazardous waste, the Permittees shall ensure the water meets the applicable clean-up requirements in Permit Section 11.4.3, *Surface Water Clean-up Levels*, prior to discharge.

~~A.4.3.2~~A.6.3.2 TA-54 West Outdoor Pad

The outdoor permitted asphalt pad (which is approximately 4 ~~inches~~in. thick and slopes toward the curbed edges to allow for storm water runoff (*see* Figure ~~37~~11 in Attachment N (*Figures)*) consists of the loading dock at TA-54-38 and the storage pad located on the north, east, and south sides of TA-54-38. The loading dock is 16 ft. wide by 38 ft., 10 ~~inches~~in. long and is covered by a metal awning. The loading dock is constructed of 6-~~inch~~in. cast-in-place concrete and is located approximately 4 ~~inches~~in. above grade. The boundary of the storage pad is delineated by the fence surrounding the pad. The canopy located on the pad and approximate dimensions of the pad are shown on Figure ~~37~~11**.** Storage sheds for supplies and equipment are also located on the pad at the outdoor permitted unit (*see* Figure ~~37~~11 in Attachment N (*Figures)*).

The Permittees shall coordinate shipments with WIPP in an attempt to minimize the use of excess storage capacity at the outdoor pad. However, the Permittees may utilize excess storage capacity for up to 59 days as specified in Attachment J, Table J-1, when at least one of the

following unexpected events occur that impacts the Permittees' ability to transport waste to WIPP:

- Unexpected delays or shutdowns at WIPP;
- Storm events;
- Security concerns; or
- Other transportation issues (e.g., transuranic [TRU] waste shipping containers unavailable)

The Permittees must notify the Secretary and those on the e-mail notification list (as specified in Permit Sections 1.13 and 3.12.1) upon using the excess storage capacity and provide justification for its use (see 40 CFR § 270.32(b)(2)).

~~A.4.4~~A.6.4 Security and Access Control

The permitted units at TA-54 are provided security by both their locations on top of Mesita del Buey and by 8-~~foot~~ft. industrial chain-link fences topped by razor wire or barbed wire. Additional security is provided by a system of facility access controls to ensure that only authorized personnel are granted access. These access controls also ensure that all facility personnel can be identified and located in an emergency. Depending on national security conditions a guard station will be manned west of the TA-54 timed vehicle-access control gate. Guard stations control public access on Pajarito Road east and west of TA-54; only properly identified Facility employees or individuals under their escort will have access to TA-54. During times of low national security, any access to the TA-54 administrative area for Areas L and G is limited by a timed vehicle-access control gate on the entrance road to TA-54. This gate is open during normal working hours from 6:00 a.m. to 6:30 p.m., Monday through Friday (except holidays). Gate hours are subject to change.

Access to TA-54 West is by a manually operated gate on the west side of the facility. The gate is also open during normal working hours. Resident personnel are required to badge in upon arrival and prior to leaving TA-54. Non-resident personnel and visitors are required to badge or sign in and out at an access control point at the facility operations center. The locations of the security fence, entry gates, and entry stations are shown on Figure 11 in Attachment N (*Figures)*.

Access to any part of TA-54 before or after normal working hours or on weekends requires approval of the appropriate ~~Group Leader or Facility Manager~~ manager at TA-54. TA-54 is patrolled by security personnel during non-operational hours to ensure that the gates are locked and that unauthorized entry has not occurred.

Anyone entering the fenced Area L and Area G waste management areas from the TA-54 administrative area is "badged in" before proceeding. Badging in is the process of identifying the person, assessing his or her security and training status using DOE security badges, and determining the need for an escort. Authorized personnel may enter the fenced portions of

Areas L and G only after negotiating additional access controls in the form of walk-through turnstiles and motorized vehicle gates. Each turnstile and vehicle gate is equipped with a badge reader to ensure authorized access only. Resident personnel are required to badge in upon arrival and prior to leaving TA-54. Non-resident personnel and visitors are required to badge or sign in and out at an access control point at the facility operations center. Depending on their level of training, non-resident personnel may be required to be escorted in order to access TA-54 Areas L and G and TA-54 West. Access to the Area L and, Area G, and TA-54 West permitted units requires additional controls. Bilingual (*i.e.*, English and Spanish) warning signs are posted on the fence at 50- to 75-ft intervals, are legible from a distance of 25 ft, and can be seen from any approach to this area. The legends on the signs indicate "Danger – Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." The security fence is inspected by on-site personnel and repairs are made as necessary. The locations of the security fence, entry gates, and entry stations for Area L and Area G are shown on Figures 7, 8, and 9 and 10, in Attachment N (*Figures)*.

A.4.5 Emergency Equipment

Emergency equipment is located throughout TA-54 and includes internal communications, alarm systems, fire alarms, spill kits, and decontamination equipment. The fire alarm pull boxes are located in Dome 215 and are connected to the Los Alamos Fire Department (LAFD) through the Facility's central alarm system at all times. Cellular telephones, and/or two-way radios are also distributed to workers at Area L. Employees can be notified of an emergency situation and appropriate response actions through the use of a text message sent on cellular telephones, or by two-way radio. The emergency notification system can be utilized to alert workers of an emergency situation as well as appropriate response actions. Windsocks are also located at strategic locations to indicate wind direction and strength. Fire control equipment at Area L includes fire extinguishers (*e.g.*, ABC-rated, water, carbon dioxide, dry chemical), a dry-pipe sprinkler system, and dry chemical systems. The fire extinguishers are available at or near most structures within Area L for use by on-site personnel depending on the size and fuel source of a fire. Dome 215 has an automatic dry-pipe sprinkler system that is heat activated in the event of a fire. Storage sheds 68, 69, and 70 have dry chemical systems. Fire hydrants are located near TA-54-37 and the southeast corner of TA-54-62. Personal decontamination equipment at Area L includes emergency eyewash stations and showers. This equipment is for use by personnel in emergencies involving chemical or radiological materials. These stations are generally located near or inside structures where waste is being handled. Emergency shower and eyewash stations are located at or near TA-54-39, TA-54-31, and TA-54-215. Waste characterization documentation and SDS are also available in the event of a chemical exposure. There are several spill kits available at Area L to mitigate small containable spills. These kits typically contain sorbents, neutralizers, PPE, and other equipment essential for containment of small spills. In addition to the spill kits, shovels for cleanup are stored in TA-54-46. Oversized drums and sorbents are also stored at various locations throughout Area L. For larger spills or other unusual hazardous situations, a variety of equipment is available to emergency personnel. This equipment includes forklifts, self-propelled loaders, and other heavy equipment from Area G.

Fire alarms are in place at strategic locations to alert personnel of emergency conditions. The fire alarms are located throughout Area G and are connected to the LAFD through the

~~Facility's central alarm system at all times. Flame or smoke detection equipment is located within structures TA-54-229, TA-54-230, TA-54-231, and TA-54-232. Security personnel and LAFD are notified upon activation of the flame or smoke detectors. Fire control equipment is located throughout Area G. This equipment includes ABC-rated or BC-rated fire extinguishers, dry-chemical fire suppression systems, and several fire hydrants. Trained personnel can use the fire extinguishers to extinguish small, non-chemical fires. For larger fires, security personnel and the LAFD are alerted. Personnel working in Area G carry cellular phones, or two-way radios as the main form of communication. This equipment ensures that personnel can contact on-site and Facility emergency personnel at all times. Windsocks are at strategic locations to indicate wind direction and strength. PPE and emergency equipment supplies are stored a various locations throughout Area G. There are different types of monitoring equipment located at the Area G CSUs that are used to qualitatively and quantitatively evaluate airborne contaminants. Alarms and strobe lights warn personnel when airborne concentrations exceed preset limits. They are for use by personnel in emergencies involving chemical or radiological materials. Waste characterization documentation and SDS are available in the event of a chemical exposure. First aid equipment can be used to treat injuries until trained medical personnel arrive at the scene. Spill control equipment is maintained at various structures within Area G. Trained personnel use this equipment to mitigate small, containable spills if they know what has been spilled and are sure their actions will not put themselves or others at risk. PPE is also maintained at various structures within Area G and is available for use during routine and non-routine operations to protect personnel from exposure to chemical and radiological contaminants. Warning tapes and barricades are used to post areas and prevent unauthorized entry into restricted areas. Heavy equipment is also available at Area G to move heavy objects.~~

~~TA-54-38 at TA-54 West is equipped with separate local alarm systems to alert personnel of fire or the need to evacuate the area. Fire alarm pull stations are located throughout the building and can be activated in the event of an emergency. The alarm system can also be activated by using evacuation alarm buttons located near the entrances to the building. Upon activation of the evacuation alarm system, horns sound to alert personnel of emergency conditions. The building's manual fire alarm pull stations at TA-54 West are connected to the LAFD through the Facility's central alarm system at all times. The evacuation alarm system is a local system that notifies occupants in TA-54-38 of a local emergency. Additionally, a roll-up door exists between the high and low bay areas. The roll-up door is fire rated but does not automatically close upon activation of a fire alarm.~~

~~Personnel at TA-54-38 are also equipped with cellular telephones and pagers to provide adequate communication and to summon external emergency assistance, if necessary. Paging telephones are located throughout the building and are used to contact on-site personnel. Paging telephones are also used in the event of an emergency to communicate the nature and location of hazardous conditions to personnel in the area. The alarm system is interrupted when the paging telephone system is activated to allow personnel to hear the announcement. Additionally, an emergency telephone is located outside the main entry area. Personnel working within the building can also use these telephones to summon assistance from local emergency response teams in case of emergency.~~

~~Fire control equipment is available for use within TA-54-38 and at the outdoor permitted unit. Portable ABC-rated fire extinguishers are located in the high bay, low bay, and at the outdoor permitted unit. The fire extinguisher located by the east personnel entrance door in the low bay can also be used at the loading dock. Depending on the size of the fire and the fuel source, fire extinguishers can be used by on-site personnel. TA-54-38 is equipped with a pre-action sprinkler system activated by loss of compressed air pressure (*e.g.*, an open sprinkler) anywhere in the building or by heat detection (high bay and loading dock) or smoke detection (balance of building). A fire hydrant installed according to National Fire Protection Association standards is located approximately 220 ft west of TA-54-38 near the west entrance to TA-54 West.~~

~~A portable chemical spill center is maintained within TA-54-38. It contains sorbents and PPE. Personnel working anywhere within the building have access to this spill center. Trained personnel use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk. Personnel decontamination equipment available includes a safety shower and eyewash located in the high bay and a safety shower and eyewash on the loading dock.~~

~~A.4.6~~A.6.5 Preventing Run-on and Runoff

At TA-54, controlling run-on and runoff at the locations where waste management operations regularly occur is accomplished by appropriate contouring of surface areas and the use of control structures such as drainage channels, berms, and culverts. Canopies, dome structures, and other buildings are used to eliminate or minimize contact between run-on and waste containers. In addition, all stored waste containers are elevated or are placed in areas with sloped floors and sumps to provide protection from liquids that could be introduced through fire-suppression activities. Existing operational controls include inspecting run-on and runoff controls in accordance with Attachment E (*Inspection Plan*) and maintaining the structural run-on and runoff controls, as necessary. Run-on and runoff management methods specific to the Area L, Area G, and TA-54 West permitted units are discussed below.

~~A.4.6.1~~A.6.5.1 Area L

The Area L permitted unit is maintained so that structural and operational controls divert storm water to a single outfall. These include asphalt channels, a 12-~~inch~~in. corrugated pipe storm drain to convey storm water to a single outfall at the northeast corner of Area L, and a contoured paved surface to direct storm water to the conveyances. Snow removal is performed to minimize run-on and runoff.

~~A.4.6.2~~A.6.5.2 Area G

In certain drainage areas at Area G, structures are maintained to efficiently channel storm water to the ephemeral streams draining the mesa. These structures include asphalt and concrete drainage channels, a weir, riprap-lined channels, retention dam, berms, and culverts. Roads and drive pads are configured, by grading and paving, to carry storm water away from the areas of active vehicular and loading operations. Silt fences and other erosion control

structures are maintained throughout the drainage areas in locations prone to erosion or affected by heavy runoff during storm events.

~~A.4.6.3~~A.6.5.3 TA-54 West

The foundation at TA-54-38 is above grade to prevent run-on of storm water. Storm drains and trenches are maintained to collect any precipitation or snowmelt that may enter the Facility through the loading bays. The outdoor permitted unit is maintained to be sloped away from TA-54-38 towards the edges of the pad allowing storm water to flow to the edges of the pad. All containers of waste stored at the TA-54 West permitted units are located in areas with sloped floors and sumps or are elevated by design, on dollies, or on pallets. This prevents the containers from coming into contact with liquids. Positive surface drainage throughout TA-54 West directs potential run-on away from the TA-54 West permitted units. A drainage swale and curbing direct storm water runoff toward an outfall on the northeast side of the storage pad.

~~A.5~~A.7 TA-55

TA-55 is located in the north central portion of Los Alamos National Laboratory on a mesa between a branch of Mortandad Canyon on the north and Two Mile Canyon on the south (*see* Figure ~~38~~2 in Attachment N (*Figures)*. TA-55 is a plutonium processing facility, which began operating in 1978. Hazardous and mixed waste container storage at TA-55 is conducted at 9~~seven~~ permitted units. These permitted units are identified as B40, B05, K13, B45, B13 and G12, the Vault, the Outdoor~~Container~~ Storage Pad and the 55-0355 Pad. ~~The B05 and, B45~~ Most of these permitted units ~~are used to store containers with only non-liquid bearing waste (*i.e.*, solid form). These permitted units all reside~~ in a building; therefore, run-on and run-off from storm events are not applicable. In the event of a water leak from facility systems, the TA-55-4 basement has sumps to contain the liquid. The Outdoor Storage Pad and the 55-0355 Pad are outdoor units, ~~no free liquids will be stored at these units and~~ containers will be stored in accordance with Permit Section 3.5.1.

A.7.1 B40

The B40 hazardous waste management unit is used to store containers of hazardous waste that may contain liquids. The hazardous waste management unit is L-shaped and has long dimensions of 61.5 by 55 ft. as shown on Figure 27 in Attachment N (*Figures*). The maximum storage capacity of this unit is 21,500 gallons, the equivalent of 391 55-gallon drums.

A.7.2 B05

The B05 hazardous waste management unit is used to store containers of hazardous and mixed waste that do not contain liquids; therefore, no secondary containment or safety showers are present in B05. The hazardous waste management unit is rectangular shaped and is 26 ft. long by 10 ft. wide as shown on Figure 27 in Attachment N (*Figures*). The maximum storage capacity of this unit is 3,600 gallons, the equivalent of 66 55-galllon drums.

A.7.3 K13

The K13 hazardous waste management unit is used to store containers of hazardous waste that may contain liquids. The hazardous waste management unit is rectangular shaped and is 12 ft. long by 13 ft. wide as shown on Figure 27 in Attachment N (*Figures*). The maximum storage capacity of this unit is 2,500 gallons, the equivalent of 46 55-gallon drums.

A.7.4 B45

The B45 hazardous waste management unit is used to store containers of hazardous waste that do not contain liquids; therefore, no secondary containment or safety showers are present in B45. The hazardous waste management unit is rectangular shaped and is 45 ft. long by 17.5 ft. wide as shown on Figure 27 in Attachment N (*Figures*). The maximum storage capacity of this unit is 11,000 gallons, the equivalent of 200 55-gallon drums.

A.7.5 B13

The B13 hazardous waste management unit is used to store containers of hazardous waste that do not contain liquids; therefore, no secondary containment or safety showers are present in B13. This hazardous waste management unit is approximately 8 ft. high, 17 ft., 6 in. wide, and 28 ft., 4 in. long as shown in Figure 27 in Attachment N (*Figures*). The maximum storage capacity of this unit is 4,950 gallons, the equivalent of 90 55-gallon drums.

A.7.6 G12

The G12 hazardous waste management unit is used to store containers of hazardous waste that do not contain liquids; therefore, no secondary containment or safety showers are present in G12. This hazardous waste management unit is irregularly shaped (dimensions shown on Figure 27 in Attachment N (*Figures*)) with walls and ceilings that consist of chain-link fencing. The maximum storage capacity of this unit is 5,225 gallons, the equivalent of 95 55-galllon drums.

A.7.7 Vault

The Vault hazardous waste management unit is used to store containers of hazardous waste that may contain liquids. The Vault is as shown on Figure 27 in Attachment N (*Figures*) and is approximately 79.5 ft. long by 50.5 ft. wide. The maximum storage capacity of this unit is 4,000 gallons, the equivalent of approximately 73 55-gallon drums.

~~A.5.1~~A.7.8 Outdoor Storage Pad

The ~~Container~~ Outdoor Storage Pad is used to store containers of hazardous and mixed waste that may contain liquids. The pad is located outside and south southwest of TA-55-4, as shown on Figures ~~39~~12 and ~~45~~28 in Attachment N (*Figures)*. It was installed in the mid-1980s and is constructed of asphaltic-concrete with a variable thickness of 4 to 6 ~~inches (~~in.~~)~~. The ~~Container~~ Outdoor Storage Pad permitted unit is shaped like a trapezoid and measures 102 ft., 86 ft., 156 ft., and 105 ft. The pad is sloped, is elevated 2 to 4 in. above ground level, and has a culvert beneath the pad running from the northwest side to the southeast corner to minimize run-on of precipitation. The storage capacity of this area is 135,000 ~~gal~~gallons, the equivalent of approximately 2,455 55-~~gal~~gallon drums. The types of waste containers holding hazardous or mixed waste that will be stored on the container storage pad include: 0.25-, 0.5-, 0.75-, 1-, 2-, 4-, and 6-liter/quart containers; 30-, 55-, and 85-~~gal~~gallons drums; SWBs; large waste boxes; and 5-, 10-, 12-, and 15-~~gal~~gallon containers.

~~A.5.2~~A.7.9 TA-55-0355 Pad

The TA-55-0355 Pad will be used to store containers of hazardous and mixed waste that do not contain liquids. The TA-55-0355 Pad is located outside and south of the Outdoor Storage Pad and TA-55-4, as shown in Figure ~~59~~29 in Attachment N (*Figures*). It is a concrete pad with a variable thickness of 4 to 6 inches and dimensions of 130 ft. long and 115 ft. wide. The pad also includes a steel roof structure (canopy) with dimensions of approximately 93 ft. long and 63 ft. wide. The pad has a slope of 1/8 inch per ft., sloping from north to south. The apron around the pad gently slopes away from the concrete pad that is under the canopy. Site drainage allows rain water to flow away from the pad. The unit boundary is approximately 130 ft. long and 103 ft. wide. Two walls with roll-up doors for wind prevention are located on the south and west sides of the canopy. The maximum storage capacity on the pad will be 84,370 gal, the equivalent of approximately 1,534 55-~~gal~~gallon drums. A mobile HENC system, three safes for the storage of calibration sources, and miscellaneous support equipment are currently located on the pad.

The TA-55-0355 Pad consists of one waste management unit that will provide storage in containers for hazardous or mixed waste. The types of waste containers holding hazardous or mixed waste will be stored on the container storage pad includes: 30-, 55-, 85-~~gal~~gallon drums; ~~standard waste boxes (~~SWBs~~)~~, and large waste boxes.

A.7.10 Mixed Waste Storage Tank System

There is one storage tank unit at TA-55 that is composed of two tank components, the evaporator glovebox tank and the stabilization unit pencil tanks. The two tank components share a common piping and pumping system.

The evaporator glovebox tank was constructed in 1986. The stabilization unit pencil tanks were constructed in 1985, installed from 1987-88, and were considered existing tanks until new components were installed in 1996. These new components were determined to be a major, non-routine modification; therefore, the stabilization unit pencil tanks are subject to the

new tank system regulations and are addressed as new tanks in accordance with the requirements of 40 CFR § 264.192, which is incorporated herein by reference.

The TA-55 storage tank unit is located at TA-55, Building 4 and has a maximum capacity of 297 liters (L) (78.5 gal.). The storage tank system consists of two components, with six tanks, that are used to store evaporator bottoms solutions prior to stabilization.

Liquid waste comes primarily from the evaporator as evaporator bottoms in approximately 25-L batches. Unrecyclable evaporator distillate waste (corrosive only) is also cemented when there is a small volume and when the low-level acid waste line to the TA-50 Radioactive Liquid Waste Treatment Facility is closed. Liquid waste generated from a source other than the evaporator (such as C-AAC analytical residues) is transferred to the Cementation Unit glovebox in plastic bottles up to 2 L in volume via the trolley system.

The evaporator bottoms solutions are initially stored in the evaporator glovebox tank component, where they are sampled for radionuclides, oxides, and metals. They remain in the evaporator glovebox tank component until the radionuclide content is known. If the sampling results show radionuclide concentrations below the discard limit, the solutions are transferred to the stabilization unit pencil tanks component for storage pending the remaining analytical results. Upon completion of any remaining analyses, the solutions are transferred directly to the stabilization unit for treatment. If the sampling results show concentrations above the discard limit, the solutions are recirculated. Figure 30 in Attachment N (*Figures*) provides a general arrangement diagram and a process flow diagram for the TA-55 storage tank system.

The storage tank unit is connected to three main piping systems, which include the solution feed, ventilation, and vacuum piping systems. Each tank component has a separate header that connects to each of the piping systems. The wet-vacuum piping system is used for all transfers; and the vent-piping system is used to break vacuum. The wet-vacuum and vent-piping systems use vacuum traps to capture carryover liquid and prevent contamination of the lines downstream. The system also serves the storage tank system for liquid transfers and for vacuum sparging. The following Attachment subsections provide descriptions of each of the tank system components and associated ancillary equipment.

A.7.10.1 Evaporator Glovebox Tank Component

The evaporator glovebox tank component is located in TA-55-4. It is approximately 8 ft. high, 4 ft. wide, and 13 ft. long and consists of two welded-steel trays, eight glass columns, and associated ancillary equipment. The overall capacity of the evaporator glovebox tank component is approximately 270 L (71 gal.). The evaporator glovebox tank component is fabricated from 0.1875-in., 316 stainless steel with a 2B finish conforming to the American Society for Testing and Materials (ASTM) "A240-Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels," hereinafter referred to as ASTM A240 (ASTM, 1998). The lower half of the tank is fabricated with additional layers of materials welded to the outside of the 0.1875-in.-thick stainless steel enclosure. These materials consist of 0.25-in.-thick lead shielding, conforming to ASTM "B29-Standard Specification for Refined Lead" (ASTM, 1997a), and an outer layer of 0.0625-

in. 316 stainless steel cladding. The tank component is of welded construction with all welds blended, ground, and polished to blend with adjacent material. All joints are vacuum tight.

The support frame and legs of the evaporator glovebox tank component are constructed of carbon steel and conform to ASTM "A36-Standard Specification for Structural Steel for Welding" (ASTM, 1987). The support frame is bolted to the base of the tank component for stabilization. In addition, the legs of the tank component are bolted to the support frame and secured to the 10-in.-thick concrete floor of the room with anchor bolts. The 10-in.-thick concrete floor was constructed to conform to the reinforced concrete building code requirements of the American Concrete Institute (ACI) "318-71-Building Code Requirements for Structural Concrete and Commentary," hereinafter referred to as ACI 318-71 (ACI, 1995). The reinforcing steel was detailed and fabricated in accordance with ACI "315-Details and Detailing of Concrete Reinforcement," hereinafter referred to as ACI 315 (ACI, 1992). The design construction and tolerance of the framework around the concrete is in accordance with ACI "347-Guide to Formwork for Concrete," hereinafter referred to as ACI 347 (ACI, 1994). The window portions of the evaporator glovebox tank component are constructed of 0.25-in. leaded glass, laminated on both sides with 0.125-in. clear glass, and installed with a neoprene gasket. Additionally, each window is backed with 0.25-in. safety glass installed with a neoprene gasket/seal that provides airtight containment. The dual glass configuration is secured to the tank component with a welded frame consisting of a 0.25-in.-thick lead shielding and a 0.0625-in. 316 stainless steel cladding similar to the additional layers of materials welded to the outside of the lower half of the tank component. The welded window frames are bolted to the tank component. Replacement windows and gaskets, if and when needed, shall be made of the same or similar materials.

The glove portions of the evaporator glovebox tank component are constructed of neoprene and Hypalon®. Each glove is tested for material continuity by the manufacturer before acceptance and installation in the evaporator glovebox tank component. Each glove is selected for its resistance to nitric acid. Replacement gloves, when needed, are made of the same or similar materials.

The evaporator bottoms solutions are vacuum-transferred from the steel trays to the glass columns. Each glass column is individually filled and visually monitored during transfer from the steel trays to a glass column. To prevent overfill, the evaporator bottoms are automatically directed to a vacuum trap when the maximum capacity of a column is reached. The maximum capacity of the vacuum trap is approximately 5.5 L. The glass columns and the vacuum trap are constructed of PYREX® glass, manufactured by Corning, with stainless steel end plates. Replacement parts for the columns and vacuum trap will be of the same or similar materials. The glass columns are equipped with a vacuum sparging system designed to homogeneously mix the evaporator bottoms prior to sampling or transfer.

The piping associated with the evaporator glovebox tank component includes the transfer line from the evaporator, the wet-vacuum line, the lean-residue transfer line, and the ventilation lines entering and exiting the evaporator glovebox tank component. All piping and associated valves are constructed of single-walled, 316 stainless steel. The transfer line from the evaporator is 1.0-in. pipe, the wet-vacuum line and the lean-residue transfer line are 0.75-in. pipe, and the ventilation lines are 2.0-in. pipe. Pipe diameters may change in the event that a

portion of the piping requires replacement. The evaporator glovebox tank component's ancillary equipment is supported by a steel channel Uni-strut® support frame. The Uni-strut® support frame is secured to the concrete ceiling with anchor bolts and provides the component's ancillary equipment with support and protection against physical damage and excessive stress that could potentially result from settlement, vibration, expansion, or contraction. Replacement supports are made of the same or similar materials.

The evaporator glovebox tank component does not operate under pressure; therefore, excessive stress due to expansion and contraction is not anticipated.

A helium leak-test using a mass spectrometer was performed on the evaporator glovebox tank component upon fabrication at Silver Engineering and again after it was installed and made operational at its present location in TA-55-4. Because secondary containment is provided for this tank, the requirements in 40 CFR § 264.193(i), incorporated herein by reference, are not applicable.

A.7.10.2 Stabilization Unit Pencil Tanks Component

The waste stabilization unit pencil tanks component consists of five vertical tanks located south of the glovebox tank component. Each of the pencil tanks has a working capacity of 50 L (13 gal.), an outside diameter of 6.625 in., a straight side height of 10 ft., a wall thickness of 0.28 in., and a conical bottom. The pencil tanks are constructed of 316 stainless steel. The stainless steel materials are corrosion-resistant and are compatible with the liquid waste stored in the tanks. The vent trap and the vacuum trap operating within the stabilization unit pencil tanks component have an outside diameter of 6.625 in. The vent trap has a straight side height of 9 in. and a maximum capacity of approximately 4 L. The vacuum trap has a straight side height of 37 in., a conical bottom, and a maximum capacity of approximately 17 L. The vent trap and the vacuum trap are constructed of 316 stainless steel for corrosion resistance and materials compatibility with the waste. All of the pencil tanks were designed in accordance with the standards applicable at the time of construction, including American Society of Mechanical Engineers (ASME) "Boiler and Pressure Vessel Code" (BPVC) (ASME, 1998), hereinafter referred to as ASME BPVC, Section VIII, Division 1. The pencil tanks are installed such that, if necessary, they can be replaced.

A.7.10.3 Ancillary Equipment

The piping associated with the stabilization unit pencil tanks component includes the header/manifold, vacuum manifold, and lower manifold for the stabilization unit pencil tanks component; the vent trap, vent line, and drain line; the transfer line from the evaporator glovebox tank component to the stabilization unit pencil tanks component header/manifold; and the transfer line from the lower manifold to the stabilization unit. All inter-tank piping and transfer piping is single-walled 0.75-in., Schedule 40, stainless steel pipe. All tank-to-piping connections are flanged.

The stabilization unit pencil tanks component is equipped with a vacuum trap that is designed to collect any mists or carryover liquid that might accumulate in the vacuum or vent lines.

The vacuum trap is equipped with a sight glass for local level indication and is normally empty. Each stabilization unit pencil tank is equipped with three sight glasses located on the side of each tank for overfill protection.

The stabilization unit pencil tanks component is erected upon a 10-in.-thick concrete floor in TA-55-4. The 10-in.-thick concrete floor provides a foundation that will maintain the load of the tank component when full. The concrete floor and ceiling were constructed to conform to the building code requirements of ACI 318-71 for reinforced concrete (ACI, 1995). The reinforcing steel was detailed and fabricated in accordance with ACI 315 (ACI, 1992). The design, construction, and tolerance of the framework around the concrete is in accordance with ACI 347 (ACI, 1994). The stabilization unit pencil tanks component and its ancillary equipment are elevated and supported by a steel channel, Uni-strut® support frame. The Uni-strut® support frame is secured to the concrete floor with anchor bolts and provides the ancillary equipment with support and protection against physical damage and excessive stress due to settlement and vibration.

In accordance with 40 CFR § 264.192(a), incorporated herein by reference, a written assessment has been prepared attesting that the stabilization unit pencil tanks component has sufficient structural integrity and is acceptable for handling mixed waste. The written assessment was reviewed and certified by an independent, qualified, registered professional engineer.

A.7.10.4 Secondary Containment

The storage tank unit is located at TA-55-4. The room has a floor and walls that completely surround the tank system and serve as secondary containment; therefore, the secondary containment meets the requirements of 40 CFR § 264.193(e)(1)(iv), incorporated herein by reference, for an external liner system. The walls and floor of the room prevent the migration of wastes or accumulated liquids to any soil, groundwater, or surface water and are capable of collecting releases and accumulated liquids until the material is removed. Because the storage tank system and secondary containment are inside a building, run-on or precipitation will not affect the containment capacity. The capacity of the containment area is sufficient to contain 100 percent of the capacity of the largest liquid-bearing tank within its boundary.

The floor of the entire room consists of a 10-in.-thick reinforced concrete slab that is compatible with the wastes stored in the storage tank system and will effectively prevent migration of waste. The concrete in the room is sealed with an epoxy or similar coating to aid in decontamination should a spill occur. In addition, tertiary containment is provided by the floor of the basement level of TA-55-4, which also consists of 10 in. of concrete. The construction joints in the floor slab and exterior walls are all constructed with chemical-resistant water stops in place. The conduit piping penetrating the floor of the room is secured with rubber boots, bushings, and flanges. All penetrations (*i.e.*, holes for conduit) in the floor have been sealed to prevent liquids from entering the penetrations.

Additional leak detection will be provided by continuous air monitors (CAM) at various locations throughout the room. CAMs will detect any airborne alpha contamination that would be present

if a leak were to occur at any point in the system. Additionally, radiological control technicians periodically monitor for radioactive contamination and would detect any leaks during monitoring.

A.7.11 Mixed Waste Stabilization Unit

The stabilization unit treats homogeneous liquid and solid mixed waste generated primarily from R&D and processing and recovery operations at TA-55 and at the Chemistry and Metallurgy Research Building at TA-3. The liquid wastes (Summary Category Group L1000) generally consist of evaporator bottoms solutions and laboratory solutions that may exhibit the hazardous characteristics of corrosivity and toxicity for metals (including arsenic, barium, cadmium, chromium, lead, mercury, and silver), as defined in 40 CFR §§ 261.22 and 261.24, respectively. The homogeneous solid process wastes (Summary Category Group S3000) generally consist of process residue from the evaporator, process leached solids, filter cake, and other miscellaneous solids. This waste stream typically exhibits the hazardous characteristics of toxic metals. These waste streams are mixed with cement in 55-gal. drums and allowed to cure into a non-corrosive solid matrix.

Prior to the addition of the cement, the pH of the waste is adjusted. A representative aliquot of the waste is drawn into a glass pH adjustment column located inside the stabilization unit glovebox. Sodium hydroxide solution is added to the pH adjustment column until the pH is between 9.5 and 11.5. This process determines the ratio of waste to sodium hydroxide for treatment process. The waste is then transferred into the drum with the required volume of sodium hydroxide. Another pH measurement is collected for confirmation. Water may be added if there is insufficient volume for mixing and then Portland cement powder is added to the drum. The contents are mixed for another several minutes and then the mixer is withdrawn. The drum will be left to cure until it has hardened sufficiently, and the drum is removed from the glovebox and closed.

The stabilization unit is located in TA-55-4. The unit has been in operation since 1991 and has a maximum capacity of 568 liters (L) (approximately 150 gal.). It consists of a pH adjustment column, a vacuum trap, two motor-driven mixers, four impellers, associated support structures, a glovebox, and piping.

The pH column has a straight side height of 5 ft. and an outside diameter of 6.66 in. The maximum capacity of the column is approximately 27 L. The column is raised above the glovebox floor approximately 3 in. by three steel legs and is secured to one wall of the glovebox with a steel bracket that binds the column approximately 3 ft. up from the base of the column. The vacuum trap associated with the column has a straight side height of 2 ft. and an inside diameter of 6 in. The maximum capacity of the vacuum trap is approximately 11 L. The pH column and the vacuum trap are constructed of PYREX® glass with stainless steel end plates similar to the glass columns in the evaporator glovebox tank component. The glass and stainless steel materials are corrosion-resistant and compatible with the waste received in the column. The pH column is used to adjust the pH of approximately 5 L of waste to ensure compatibility with the cement used for solidification. A compressed-air line enters the glovebox and is connected to two pressurized air tanks outside of the glovebox. The compressed-air line is used for remote valve operation and to push liquid out of the pH column into the drum.

The two mixers within the unit are high-flow, gear-driven, fixed-mount mixers. All couplings, shafts, and impellers are constructed of 316 stainless steel. The shafts are 5 ft. long. Two impellers are mounted to each shaft. Each impeller has a diameter of approximately 11 in. The mixers are driven by 3.5-horsepower motors encased within the mixer housing. The mixer housing is approximately 2.5 ft. long. The maximum weight of each mixer is 225 pounds. Each mixer is mounted on steel plates and supported by two steel guides on either side of each mixer. Each guide is bolted to a 6-in. steel flange at either end and is secured to the glovebox floor and ceiling. Each motor is mounted to a center screw drive that allows the mixers to be independently raised and lowered within the glovebox.

The glovebox is constructed of two layers of materials welded to the outside of the 0.1875-in.-thick panels of the stainless steel enclosure. These materials consist of 0.25-in.-thick lead shielding, conforming to ASTM "B29-Standard Specification for Refined Lead" (ASTM 1997a), and an outer layer of 0.0625-in. 316 stainless steel cladding. The floor of the glovebox contains two circular openings with removable covers that allow the shafts and impellers of each mixer to be lowered into drums attached beneath the glovebox.

During stabilization operations, two 55-gal. steel drums are positioned under the glovebox directly under the openings in the floor of the glovebox. A "bag-out" bag extends from the glovebox into each drum between the drum and the drum liner. This liner is fastened at the bottom of the glovebox with an elastic cord and clamped into place to prevent hazardous constituents from escaping the confinement of the glovebox and the drums during treatment operations. The cement and the waste to be solidified are transferred into the drums and homogeneously mixed inside the drums. Each drum is positioned on a steel platform/scale that is secured in a steel track. The platform allows the drums to be safely and easily removed from the unit after the cement has hardened.

The majority of the piping associated with the stabilization unit is 316 stainless steel. Tygon® tubing is used to transfer sodium hydroxide and the contents of the pH column to the drums. The cement is transferred into the glovebox and drums from a hopper/screw feeder through rubber tubing.

The homogeneous solid process wastes generated at TA-55 are delivered to the Cementation Unit in a closed container from the generator glovebox through a trolley system. The generator is instructed to size-reduce the waste to minus 8 mesh. The Stabilization Unit personnel confirm this and do the size reduction if necessary. The particulate waste is poured into the waste drum just before or during the addition of cement to the drum and homogeneously mixed with the cement paste.

The stabilization unit is located in a vacuum-pressurized glovebox at TA-55-4. The room provides secondary containment for the stabilization unit. The floor of the room is recessed approximately 2.5 in. The room itself is approximately 60 ft. long by 75 ft. wide. The capacity of the secondary containment area is greater than 100 percent of the volume of waste that is treated in the stabilization unit at any one time. The entire floor is constructed of a 10-in.-thick reinforced concrete slab. Five continuous air monitors installed at various locations throughout the room within TA-55-4, detect any airborne alpha contamination that would be present if a leak were to occur resulting in a release outside of the stabilization unit glovebox.

The stabilization unit is located within a negative pressure glovebox that is connected to the TA-55-4 facility ventilation system. The high-efficiency particulate air filters on the glovebox are on the air intake side of the ventilation and are designed to prevent escape of contamination from the glovebox in the event of a power failure. TA-55-4 is equipped with a back-up generator that re-establishes power to all vital systems, providing exhaust to the glovebox. The unit is a batch waste treatment system. If a power failure occurs, all operations cease inside the glovebox until power is restored. In addition, the glovebox is located within three succeedingly greater pressure zones. These zones are (in order of increasing pressure) the glovebox, the room, and the main corridor outside of the room. These pressure zones are designed to create airflow into the room and the glovebox and limit the potential for hazardous constituents to migrate to the atmosphere. Figure 31 in Permit Attachment N (*Figures*) provides a general arrangement diagram and a process flow diagram for the TA-55 stabilization unit.

~~A.5.3~~A.7.12 Security and Access Control

Security at TA-55 is maintained with both manmade and natural barriers. These barriers prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock into TA-55. Two 12-~~foot (~~ft.~~)~~ high chain-link security fences with razor wire at the top surround the entire perimeter of TA-55. Three entry gates allow access to TA-55. One entry gate is located at the main entrance to TA-55 on the southeast side of the facility, one entry gate is located on the road to TA-48 at the northwest end of TA-55, and one entry gate is located at the northeast corner of TA-55 (for access to TA-55, Building 28 [TA-55-28] only). An entry station is located adjacent to the entry gate at the main entrance to the facility. The entry station is manned 24 hours a day by security personnel. Unescorted access to TA-55 is granted only to persons possessing appropriate security clearance and meeting specific training requirements.

TA-55 is patrolled by security personnel during both operational and nonoperational hours to ensure that the gates are locked and that unauthorized entry has not occurred. The entire length of both security fences is also inspected several times each day by on-site security personnel. The locations of the security fences, entry gates, and entry stations are shown on Figure ~~10~~12 in Attachment N (*Figures)*.

In addition to the fence and entry gates, cliffs and canyons surrounding TA-55 provide natural barriers to discourage unauthorized entry.

~~Warning signs are posted on the perimeter fences at approximately 40 to 110 ft intervals and can be seen from any approach to TA-55. Warning signs are also posted at each access to the waste management units in sufficient numbers to be seen from any approach. The legends on the signs are bilingual (*i.e.*, English and Spanish) and indicate "No Trespassing by Order of the United States Department of Energy." The signs are legible from a distance of 25 ft.~~

~~A.5.4 Emergency Equipment~~

~~Buildings at TA-55 are equipped with multiple audible and visual safety-alarm systems to alert personnel in the event of an emergency and to evacuate the area. These alarm systems are located both inside and outside buildings at TA-55 and are monitored and controlled by the facility monitor and control system (FMCS). The FMCS is in operation 24 hours a day and is located in the Operations Center at TA-55-4 with access through TA-55-3. Specific FMCS alarm systems at TA-55 are discussed below.~~

~~A TA-55 computer system monitors the smoke and heat sensors, fire-alarm pull boxes, and drop box push-button alarms located throughout TA-55. Fire-alarm pull boxes and/or drop box push-button alarms are located in the vicinity of the waste management units addressed in this permit. Fire-alarm pull boxes may be used by personnel to activate a local fire alarm when a fire or other emergency is discovered. Fire-alarm pull boxes are located in TA-55-4, Room 401, and throughout the basement in the vicinity of the container storage management units. The equipment includes portable eyewash stations and safety showers. Eyewash stations and safety showers are located in Room 401 and throughout the basement of TA-55-4. Eyewash stations are also located on the Container Storage Pad and outside on the south side of TA-55-4 near TA-55-185. Safety showers are readily available in the following locations: TA-55-4, Room 401; in the basement of TA-55-4; on the Container Storage Pad; and outside on the south side of TA-55-4. SDS provide useful exposure information and are available in Room 401 and in the basement of TA-55-4.~~

~~A.6~~A.8 TA-63

The following section describes the Transuranic Waste Facility (TWF). Detailed descriptions of the unit's structures are included in the subsections. The TWF is located at TA-63 on a mesa between Ten-Site Canyon, a tributary of Mortandad Canyon, on the north and Pajarito Canyon on the south in the central portion of the Facility (*see* Figure ~~54~~42 in Attachment N (*Figures*)). The unit is built at the intersection of Pajarito Road and Puye Road, within the triangle formed by Building 63-111 to the east, Puye Road to the north, and Pajarito Road to the southwest.

The TWF consists of one hazardous waste management unit that is used to store containers of newly generated hazardous, mixed low-level, and mixed TRU waste. Waste containers may be characterized at the TWF, as described in Permit Sections A.~~6.4~~8.3 and A.~~6.5~~8.4, and in applicable sections of Permit Attachment C, *Waste Analysis Plan*. Characterization activities at the TWF include review of generator acceptable knowledge (AK) documentation, head-space and flammable gas sampling, non-destructive assay (NDA), and non-destructive examination (NDE). Waste containers will be accepted at the TWF only if they are closed and equipped with Waste Isolation Pilot Plant (WIPP) approved filter vents. Waste containers are not opened during storage or characterization at the TWF, although their filter vents may be replaced if necessary. Remote-handled TRU waste is not managed at the TWF.

The types of waste containers holding hazardous or mixed waste that are stored at the TWF include: 55- and 85-gallon drums; 55-gallon pipe overpack containers (POCs); ~~Standard Waste Boxes (~~SWBs~~)~~; ~~Oversize Waste Boxes (~~OWBs~~)~~; and ~~Standard Large Box~~ standard large box 2s (SLB2s).

Some TRU waste containers are determined through final waste characterization not to meet the WIPP requirements for TRU waste. Depending on the presence of hazardous constituents, these waste containers are reclassified as either low-level waste or mixed low-level waste and stored at the TWF until they are dispositioned appropriately.

Waste shipments are made from the LANL waste generating facilities to the TWF for storage and characterization. TRU waste is then shipped to the RCRA permitted ~~Radioactive Assay and Nondestructive Testing (~~RANT~~)~~ Facility at TA-54-38 West. The RANT Facility is used to load the TRU waste containers into TRUPACTs (steel shipment containers) required for off-site shipment to the WIPP. TRU waste may also be shipped from TWF to the RCRA permitted TA-50-0069 Waste Characterization, Reduction, and Repackaging Facility (WCRRF) for repackaging and/or remediation of prohibited items if necessary. Low-level waste may be shipped from TWF to other LANL facilities or to off-site treatment or disposal facilities.

The TWF permitted storage unit is constructed on 1.82 acres (79,239 square ~~feet~~ft.). The layout of the unit is depicted in Figure ~~55~~14. The main structure for the unit is a concrete pad providing a physical base for six waste storage buildings, a waste characterization trailer, and outside storage of waste containers that are too large for placement in the buildings. The pad is surrounded by a security barrier system fence. The boundary of the hazardous waste management unit is limited to the northern portion of the concrete pad defined by those areas that drain to a retention basin. Along the northern and western sides of the unit, this is the edge of the concrete pad along the bottom of the retaining walls. On the east side, the edge of the curbing for the concrete pad is the boundary. The southern side of the boundary is defined by a painted line in compliance with Permit Section 3.5(2), *Management of Containers.* The line is situated approximately between the south east corner of the retention basin and the curb and gutter at the opposite corner of the fence line along the eastern side of the unit. This is defined by the limits of the catchment that drains to the retention basin.

The retention basin is designed to capture storm water run-off and fire suppression water released in the event of a fire at the TWF, as described in Permit Section A.~~6~~8.5.

The unit also includes a small storage building for calibration sources used for waste characterization activities. Outside the boundary of the unit, other site structures include an operations support building, a fire water storage tank, an associated utility building, a covered forklift charging station, and an equipment storage shed.

~~A.6.1~~A.8.1 Concrete Pad

The TWF pad consists of 8-inch thick reinforced concrete to provide support for the site structures and vehicle movement. The pad rests on leveled gravel base course and is nominally 8 inches thick. The existing ground at the site slopes from the northwest to the southeast. There is a significant grade difference from the northwest corner to the southwest corner of the site. Portions are lower in elevation than Pajarito Road and Puye Road. Given the elevation difference on the site, retaining walls were constructed along the northwest portion of the site. The pad is sloped in a range from 1.1% to 2.5% to drain storm water and potential fire suppression water to the retention pond.

~~The perimeter of the pad has a 15" to 18" gutter and 6" high curb to provide run-off control. A valley gutter isolates the northern portion of the pad. Storm water and potentially contaminated fire suppression water flow from the northern portion of the pad flows to the valley gutter that drains to the retention basin. This feature substitutes for berms, dikes, or sumps specific to each storage building. The southern portion of the pad, which is outside the hazardous waste management unit where waste is not stored, slopes to the southeast and drains off the pad toward the parking lot. Figure 55 provides details regarding the pad configuration.~~

~~A.6.2~~A.8.2 Storage Buildings

The TWF includes six storage buildings, five of which are functionally identical and are described in this section. The remaining storage building is described in section A.~~6~~8.3. The five buildings measure 33 x 64 ft. or approximately 2112 square ~~feet~~ft., and are 15 ft. high. The storage buildings provide covered storage for hazardous, mixed low-level, and mixed TRU waste containers generated during current Facility operations. Multiple buildings are used to minimize the radioactive material content in individual storage buildings and to reduce the potential impact from accidents relative to a single larger building. These five storage buildings are designated 63-0149, 63-0150, 63-0151, 63-0152, and 63-0153.

The storage buildings are constructed as covered single-story structural steel frames. Each of the storage buildings and its structural members are designed to exceed the snow load for roof design, the design wind force for buildings, and the seismic loading for structural components, as described in American Society of Civil Engineers specification ASCE 7-05, *Minimum Design Loads for Buildings and Other Structures.* The steel frame is an ordinary moment frame with joists to attach roof panels and girts to attach wall panels. The walls of the facility are rigid to provide protection from the elements and external forces. Gypsum board on light gauge metal studs with industrial coating finish the interior walls. The roof is a high quality metal standing seam. Batt insulation in the ceiling and on the inside of the walls reduces heat loss and gain inside the buildings. Electric heaters heat the interior to prevent fire suppression systems and eyewash stations from freezing. Cooling is provided by venting fans. In order to drain the building in the event of a fire, the floors are constructed to provide a shallow slope (1/8 in.~~inch~~ to 1 foot) from the back end of the building towards the front, and then out the roll-up door opening and a loading ramp to the concrete pad outside the building.

~~The building floors (i.e., mat slabs) are six inches higher than the outside surface of the concrete pad to prevent run-on, and are sloped toward the roll-up door at the building entrances for drainage, in accordance with 40 CFR §264.175(b)(2) and (c).~~

The concrete floors are coated to provide a sealed surface and chemical resistance, although secondary containment pallets are used to meet the containment requirements of the Permit for potential liquid containing waste containers in the storage buildings and in compliance with 40 CFR §264.175(b)(1). The floor coating standards include:

- Minimum Class B per National Fire Protection Association (NFPA);
- Radiation resistant as determined by American Society for Testing and Materials, International specification ASTM D 4082; and

- Decontaminable to at least 95 percent of total activity removed and certified for Nuclear Coating Service level II.

~~A.6.3~~A.8.3 Storage and Characterization Building

The sixth storage building is divided into a storage area, a staging room used for the thermal equilibrium of containers to prepare for head space gas sampling, and additional support and analytical equipment rooms. The storage area in this building is used for a variety of containers including SWBs and SLB2s. In order to accurately analyze headspace gas, the container temperature must be allowed to equilibrate to a minimum of 64 degrees Fahrenheit for 72 hours. Sampling equipment is stored in the building for use in obtaining headspace gas samples and flammable gas samples from waste containers. Gas chromatography and mass spectrometry on the flammable gas sample occurs in an adjacent room.

The building dimensions are 80 ~~x~~ by 33 ft (approximately 2640 square ~~feet~~ft.) and 15 ~~feet~~ft. high. The building is constructed to the same standards as the other storage buildings. The building is numbered 63-0154.

~~A.6.4~~A.8.4 Characterization Trailer

The TWF facility includes pads with utility hook-ups for the characterization trailers used to certify containers as meeting DOE WIPP waste acceptance criteria (WAC). The NDE and NDA equipment, when installed is provided for the TWF in mobile modified commercial trailers brought to the facility. The characterization trailers will house the following characterization equipment:

- Real Time Radiography (RTR) unit. The NDE equipment in the trailer is designed to provide X-ray examination of the contents of TRU waste drums.
- High-Efficiency Neutron Counter (HENC) unit. The NDA equipment in the trailer is designed to provide a passive neutron and gamma measurement of 55-gallon TRU waste drums.
- SuperHENC unit. The NDA equipment in the trailer is similar to the HENC but includes a high efficiency neutron counter and a gamma counter that are both designed to handle SWBs.

The RTR is a self-contained, non-intrusive X-ray unit, physically housed in a trailer 48 ft.~~feet~~ in length by 8 ~~feet~~ft. wide used to X-ray waste containers up to 85 gallons in volume. Radiography is a nondestructive qualitative and semi-quantitative technique that involves X-ray scanning of waste containers to identify and verify waste container contents. Radiography is used to examine the waste container to verify its physical form. This technique can detect prohibited items such as liquid wastes and gas cylinders, which are prohibited for WIPP disposal. Radiography examination must achieve the following to meet the WIPP WAC:

- Verify and document the physical form of each waste container.
- Identify any prohibited items in the waste container.
- Confirm that the physical form of the waste matches its waste stream description (i.e., homogeneous solids, soil/gravel, or debris waste [including uncategorized metals]).

The HENC is a self-contained, non-intrusive, passive assay unit, physically housed in a trailer 48 ~~feet~~ft. in length by 8 ½ ~~feet~~ft. wide by 12 ¾ ~~feet~~ft. high. The HENC is designed to assay 55-gallon (208 liter) drums containing fissionable radionuclides. The system simultaneously performs passive neutron counts and gamma spectrometry to detect gamma-emitting radionuclides for the purpose of determining quantitative concentrations of TRU constituents. The equipment and mobile container only require electrical power to operate. Approximately 10 to 13 drums a day can be processed through the HENC, with each drum taking approximately 45 minutes for examination. The HENC is a large rectangular-shaped neutron counter that is specifically designed to assay the container in a fixed geometry. The HENC system uses passive and add-a-source neutron analysis methods to assay the nuclide mass contained in 55-~~gal~~gallon drums of TRU waste. Waste containers to be assayed are placed on a conveyor that feeds them into the system.

The SuperHENC operates on the same principle as the HENC, within a similar tractor trailer. The process however, is applicable to the assay of TRU radionuclides in waste packages such as SWBs. Data from this process is used to assay the radioactive content of SWBs containing TRU waste, sorting SWBs based on the 100 nanocurie per gram (nCi/g) TRU limit, and confirming radioisotopes identified using acceptable knowledge (AK).

The trailer is numbered 63-0157 at TA-63, and is HENC. Additional trailers may be needed as characterization needs for the facility change. If additional trailers are needed or existing trailers are proposed to be moved at the unit, a request for a Permit modification must be submitted in accordance with Permit Section 3.1(3).

~~A.6.5~~A.8.5 Retention Basin

The retention basin is located south of the storage buildings and characterization trailers in the south-western corner of the permitted unit. The retention basin is designed to collect surface storm water or melt water run-off from the concrete pavement via the slope (ranging from 1.1% to 2.5%) of the concrete pad, and in the event of a fire at the unit, fire suppression water that could flow out of the storage buildings or from other unit structures to the concrete pad.

The designed volume capacity for the retention basin includes the potential for a combination of both events. This includes run-off from a projected 25 year frequency and 2 hour duration precipitation event (1.94 in.~~inches~~ of precipitation resulting in approximately 95,400 gallons (12,750 cubic ft.) from 1.82 acres). For a fire suppression event, an estimate of suppression water needed is calculated from NFPA 13 factors (380 gpm for 30 min. of sprinkler demand and 500 gpm for 30 min. fire hose stream allowance), for a total of approximately 26,400 gallons (3,530 cubic ft.). Volume from both events results in a total capacity of approximately 121,800 gallons (approximately 16,300 cubic ft.). The designed total retention basin volume also includes a minimum of 0.5 ft. of freeboard, resulting in a total capacity of 137,450 gallons (18,375 cubic ft.). The dimensions of the basin are 125 ft. by 42 ft. by 5.5 ft. deep. The retention basin is equipped with a manual release valve that may be used to discharge collected water that meets appropriate surface water discharge standards, as required by Permit Section 3.14.2. The concrete mixture used for construction of the retention basin is coated with a penetrating sealant to improve the concrete's water resistance.

Routine inspections of the retention basin pursuant to Permit Section 2.6, *General Inspection Requirements* and subsequent repairs as required by Permit Section 2.6.2, *Repair of Equipment and Structures* are conducted to ensure that the integrity of the retention basin is maintained.

~~A.6.6~~A.8.6 Other Project Structures

Other project structures are present at the TWF to provide support for the hazardous waste management activities at the unit. These structures are either located outside the boundary of the hazardous waste management unit or are not used to store or manage hazardous waste.

The Operations Support Building provides offices and services for operations personnel and management. Personnel are housed in the separate building to ensure that radiological exposures are as low as reasonably achievable (ALARA) by increasing distance from the waste management activities. The Operations Support Building is approximately 75 ft. by 80 ft. Operations and characterization personnel are housed in this building, although it will not be occupied continuously. However, it provides storage of waste container data and monitoring of key operational parameters (e.g., fire alarm systems, safety equipment status indicators, and communication systems including the public address system) and specific safety structure, system, and component status. The building is located outside the security control fence; windows provide visual observation of the control area.

Vehicle access to the hazardous waste management unit is through a gated driveway located east of the concrete pad. Gates are kept closed and vehicle access to the controlled area within the unit fence line requires check-in at the Operations Support Building. Pedestrian access to the controlled area also requires check-in through the Operations Support Building.

A fire water supply tank and a utility building that houses two fire water pumps and instrumentation needed to ensure operation of the fire suppression system are located to the north of the Operations Support Building outside the controlled area fence. Two seismic power cutoff system enclosures are also present north of the building. A back-up power generator is located east of the Operations Support Building.

Regional aquifer monitoring well R-46 is located outside of the hazardous waste management unit north of the site.

An equipment storage shed used to store items such as metal pallets, containers used to over-pack waste containers, and snow removal equipment is located on the west side of the TWF. There is no fire protection in this building. A separate building designated the Characterization Source and Matrix Management (CSMM) Building will house radioactive sealed sources for calibration of RTR and HENC sensors sources.

~~A.6.7~~A.8.7 Security and Access Control

The DOE restricts access to the entire Facility through a variety of methods. Guard stations control public access to Pajarito Road east and west of TA-63. Therefore, only properly identified Triad National Security, LLC (Triad) and DOE employees authorized to enter the facility or individuals under their escort have access to the TWF. The TWF is enclosed by a security barrier system with controlled access gates. This includes a continuous section of

prefabricated steel vehicle barriers and an 8 ft.~~eight foot~~ high chain link fence. Two vehicle access gates are integrated into the fence line. Controlled entry to the unit is provided by a system of access controls (badge readers and administrative controls are required prior to entrance) to ensure that only authorized personnel are granted access. Three emergency personnel one-way exit gates are also present in the fence. These access controls also ensure that all facility personnel can be identified and located in an emergency.

The TWF is patrolled by facility security personnel to prevent unauthorized entry. ~~Warning signs stating "Danger – Unauthorized Personnel Keep Out," are posted on the perimeter fences and gates in accordance with Permit Section 2.5.2, *Warning Signs*. The text on the signs are bilingual (i.e., English and Spanish) and indicate "No Trespassing by Order of the United States Department of Energy." The signs are legible from a distance of 25 feet.~~

~~A.6.8 Required Equipment~~

~~In accordance with Permit Attachment D, *Contingency Plan*, emergency equipment is located throughout the TWF and includes fire alarms, fire response systems, alarm systems, internal communications, spill kits, and decontamination equipment.~~

~~The TWF is equipped with safety-alarm systems to alert personnel in the event of an emergency and to evacuate the area. These alarm systems are located both inside and outside the unit and are continuously monitored. The facility monitor/control system is located in the access control station at the TWF; the system is also connected to the Los Alamos County Consolidated Dispatch Center. Specific facility monitor/control system equipment located at the TWF is discussed below. Emergency equipment is located throughout the TWF and includes fire alarms, fire response systems, alarm systems, internal communications, spill kits, and decontamination equipment.~~

~~Fire-alarm pull boxes and/or drop box push-button alarms are located pursuant to NFPA standards in the TWF where waste management activities are conducted. Fire-alarm pull boxes can be used by personnel to activate a local fire alarm when a fire or other emergency is discovered. Once manually activated, an alarm will sound in the TWF access control station and at the LAFD through Los Alamos County Consolidated Dispatch Center. The TWF is also equipped with automatic fire suppression alarm systems. The fire-suppression alarms will be activated when water flow is detected in the sprinkler pipes of the fire-suppression system. Upon activation of the fire-alarm system, an alarm will sound and lights will flash to alert personnel of emergency conditions. All fire-alarm pull boxes and automatic fire-suppression systems located at the TWF are connected to the LAFD through Los Alamos County Consolidated Dispatch Center.~~

~~In addition to the alarms described above, a public address (PA) system is available to announce emergency conditions or to initiate an evacuation at the TWF. The PA system is audible throughout the TWF and is activated from the access control station in the Operations Support Building.~~

~~Personnel working at the TWF have the ability to communicate the location and nature of hazardous conditions using 2-way radios, conventional telephones, or cellular telephones to call~~

~~the access control station. This type of call will summon assistance from the EO-EM, local police and fire departments, and state emergency response teams, as necessary.~~

~~Fire control equipment is readily available in the hazardous waste management unit. Portable fire extinguishers are available and may be used by trained on-site personnel depending on the size of the fire and the fuel source. However, LANL policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. Fire hydrants are located in accordance with NFPA standards on the west and east sides of the TWF pad and near the Operations Building. Water is supplied to the fire hydrants by a municipal water system which can provide adequate volume and pressure (i.e., greater than 1,000 gal per minute and 90 pounds per square inch static pressure) to multiple water hoses in the event of a fire. The LAFD will supply all water hoses needed in the event of a fire at the TWF. Fire protection systems for the TWF storage buildings, including the Storage and Characterization Building 63-0154, include a dry-pipe sprinkler system for fire suppression. Water will be supplied via the 196,000 gallon tank north of the Operations Support Building with electric powered fire-water pumps, backed-up with a diesel generator to distribute water to automatic sprinkler systems in the buildings.~~

~~Spill response kits are available at the TWF in the storage areas to mitigate containable spills. These kits typically contain sorbents, neutralizers, personal protective equipment (PPE), and other equipment essential for containment of spills. Trained personnel will use the spill kits only if the composition of the release is known and they are sure their actions will not put themselves or others at risk. In addition to the spill kits, cleanup equipment such as shovels, bags and drums are available at the TWF. Overpack drums and sorbents are also stored in an equipment storage shed on the west side of the TWF. Emergency personnel can also provide additional spill control equipment and assistance upon request depending on the size and severity of the spill. Personnel decontamination equipment at the TWF includes safety showers and eye wash stations located inside each of the storage buildings. These are situated in all waste storage buildings in accordance with OSHA requirements. Additional decontamination equipment may be provided by emergency personnel. SDS (e.g., for cleaners, solvents, used on site) are available at the Operations Support Building to provide exposure information in accordance with OSHA requirements.~~

~~A.6.9~~A.8.8 Control of Run-on/Run-off

Controlling run-on and run-off at the TWF locations where waste management operations occur is accomplished by the design of the buildings and the use of control structures with appropriate contouring of surface areas. Run-on of storm water into the storage buildings is prevented by walls that enclose raised floors and surface contouring that slopes away from the building to prevent storm water from pooling against the foundations, doors, and loading areas. The internal floors of the buildings are sloped toward the front doors to prevent flooding by precipitation or storm water in addition to providing internal drainage to the outside.

The concrete pad within the permitted unit at the TWF site is sloped in a range from 1.1% to 2.5% to drain storm water to the retention pond. A retention wall prevents slope failure between the surrounding roads and the site. The site is surfaced in concrete and includes a retention basin for collection and management of storm water and fire suppression water as described in Section A.8~~6~~.5 above.

The secondary containment provided by secondary containment pallets has sufficient capacity to contain at least 10 % of the volume of containers or the volume of the largest container stored in the system, whichever is greater, pursuant to the requirements of 40 CFR §264.175(b)(3) and Permit Section 3.7, *Containment Systems*.

~~A.6.10~~A.8.9 Subsurface Vapor Monitoring

The Permittees ~~shall install~~installed a subsurface vapor monitoring network that consists~~consisting~~ of a minimum of five vapor monitoring wells in the vicinity of the buildings located within the TWF facility to evaluate for vapor-phase contaminants that may migrate from Material Disposal Area C (MDA C). Two of the monitoring wells ~~must be~~are located as close as possible to the building foundations that are adjacent to the unit boundary facing MDA C and the utility corridor on Puye Road as depicted by locations VMW-1 and VMW-2 on Figure ~~56~~33 in Attachment N (Figures). A third monitoring well ~~must be~~is located at a point on the western edge of the permitted unit as close as possible to the utility corridor on Pajarito Road as depicted by location VMW-3 on Figure ~~56~~33. Two monitoring wells are~~must be~~ located between MDA C and Puye Road~~Rd~~ as depicted by locations VMW-4 and VMW-5 on Figure ~~56~~33. The borehole is centered in the 5-ft. sampling intervals and clean sand filter pack was added as the auger(s) were withdrawn to create a vapor permeable medium in the intervals from 62.5 ft. to 57.5 ft. below ground surface (bgs) and 22.5 ft. to 27.5 ft. bgs. Bentonite chips fill the borehole between sampling interval hydrated bentonite plugs and from the top of the 25 ft. sampling interval to 5.5 ft. bgs and overlain by a 5 ft. bentonite cement grout surface seal~~These five wells must be installed and operational within 90 days of completion of construction of the TWF buildings~~.

Vapor monitoring wells VMW-1, VMW-2, and VMW-3 shall be constructed with a single vapor monitoring port located in the center of a sampling interval between 5 ft and 10 ft below ground surface (bgs). Vapor monitoring wells VMW-4 and VMW-5 shall be constructed with two vapor monitoring ports located at 25 ft and 60 ft below ground surface (bgs). Boreholes will be advanced using hollow stem auger drilling methods. The vapor monitoring wells shall be constructed utilizing the same type of stainless steel (SS) tubing sampling system used at Vapor Monitoring Well 50-613183 at MDA C.

~~Well boreholes for VMW-1, VMW-2, and VMW-3 must be advanced to the design depth of 10 ft bgs. A continuous 0.25 inch stainless steel sampling tube with a screened end opening must then be placed in the borehole centered in the sampling interval (5 ft to 10 ft bgs) depth and clean sand filter pack added as the auger(s) are withdrawn to create a vapor permeable medium in the interval 5 ft to 10 ft bgs. The vapor monitoring wells must then be sealed with 2.5 ft of hydrated bentonite clay overlain by 2 ft of bentonite-cement grout.~~

~~Well boreholes for VMW-4 and VMW-5 must be advanced to the design depth of 67.5 ft bgs. A minimum 5 ft hydrated bentonite clay plug must be placed above and below each sampling interval. A continuous 0.25 inch stainless steel sampling tube with a screened end opening must be placed in the borehole centered in the 5-foot sampling intervals and clean sand filter pack added as the auger(s) are withdrawn to create a vapor permeable medium in the intervals from 62.5 ft to 57.5 ft bgs and 22.5 ft to 27.5 ft bgs. Bentonite chips shall fill the borehole between sampling~~

~~interval hydrated bentonite plugs and from the top of the 25-ft sampling interval to 5.5 ft bgs and overlain by a 5-ft bentonite cement grout surface seal.~~

~~Final construction of the vapor monitoring wells requires the installation of~~ The vapor monitoring wells have above ground steel protective casings to protect the wells. The Permittees shall take measures to ensure that the surface monuments will not be damaged by snow removal or other maintenance equipment. ~~The well surface seals must be allowed to cure for at least 24 hr before collecting vapor samples.~~ Sampling will be performed by extracting formation air through the sand layer and into the ~~SS~~stainless steel tubing.

~~A.7~~A.9 TA-60

TA-60 sits atop Sigma Mesa between Sandia and Mortandad Canyons in the north-central part of the LANL site. Sandia and Mortandad Canyons head on the west margin of TA-60 forming steep cliffs at the top of the canyon walls. TA-60 Building 0017 (TA-60-0017) is located approximately 0.8 miles east of the intersection of Diamond and Enewetok Drives and adjacent to the *Roads and Grounds* area.

~~A.7.1~~A.9.1 TA-60 Building 0017

The TA-60-0017 facility was constructed in 1986 to support atomic tests conducted at the Nevada Test Site. It is a unique pre-engineered steel-frame structure consisting of two wings connected by a small control room and stairwell enclosure. The building has concrete footings, slabs, and stem walls with the south portion (permitted storage and treatment area_ being 120 ft. long ~~b~~by 29 ft wide and 23 ft. high. The permitted unit store containers of hazardous and mixed low-level waste in solid and liquid form. Secondary containment is used for storage of liquid wastes. Raised pallets, wheeled drum dollies, and/or other appropriate methods are used to elevate the 55-gallon drums off of the floor. The containers may be stacked two (2) or three (3) high as determined appropriate, and stacked container greater than or equal to 30 gallons of hazardous waste shall be palletized and each layer bound together consistent with Permit Part 3.5.1 (*Storage Configuration and Minimum Aisle Space*).

~~A.7.2~~A.9.2 Security and Access

Security is maintained through ~~LANL-wide~~ physical and administratively controlled barriers along with building restrictions. These barriers prevent unknowing entry and minimize the possibility of unauthorized entry of persons or livestock in the areas. Eight-foot-high chain-link industrial fences surround the entire perimeter of the area. Bilingual (i.e., English and Spanish) warning signs are also posted at the entrances to each portion of the permitted unit within the building and can be seen from any approach to these locations. The legends on the signs indicate “Danger: Hazardous Waste Storage Area” and “Unauthorized Persons Keep Out”. The signs are legible from a distance of 25 ft. There is an entry gate through the fence (*see* Figure ~~52~~13 in Permit Attachment N (*Figures*)). Outside doors to the building include two electric roll-up doors and 5-man doors with locks. Roll-up doors to the building can only be opened from inside the building; opening these doors must be coordinated with facility personnel. When roll-up doors are opened for shipment of material or waste, personnel are present to restrict the entry and exit of

unauthorized persons. In addition to the fence and secure doors, canyons surrounding TA 60 provide natural barriers and discourage unauthorized entry.

~~A.7.3~~A.9.3 Emergency Equipment

TA-60-0017 is equipped with a fire alarm system to alert~~alter~~ personnel to evacuate the area. The evacuation alarm system may be activated by manual pull stations. The facility is also equipped with a sprinkler system. Personnel use cellular telephones in the event of an emergency.

Fire hydrants (TA-60-0909 and -0910) are installed according to National Fire Protection Association standards and located within required distance of TA-60-0017. Water is supplied to the fire hydrants by a municipal water system through a 6-in. line that in turn is fed from a 12-in. line coming off the main water line; at an adequate volume and pressure (i.e., approximately 1,000 gallons per minute and 120 pounds per square inch static pressure) in accord with NFPA guidelines to supply a water hose in the event of a fire. Spill kits, which contain sorbent pillows, safety glasses, and gloves, are located in facility. Trained personnel may use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk. Available personnel decontamination equipment includes safety showers and emergency eyewashes.

The buddy system will always be employed when containers are actively managed to assure that safety showers and eyewashes can be reached in an emergency. Safety Data Sheets (SDS) (formerly Material Safety Data Sheets (MSDS)) provide useful exposure information and are available onsite.

Supplement 1-3

Permittees' Proposed Changes to Attachment C, Waste Analysis Plan

ATTACHMENT C

WASTE ANALYSIS PLAN

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~~TABLE NO. TITLE~~

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ATTACHMENT C
WASTE ANALYSIS PLAN

This Waste Analysis Plan (WAP) presents the characterization procedures used to determine the chemical and physical nature of ~~non-mixed~~ waste streams stored and treated at hazardous waste management units at the Los Alamos National Laboratory site (~~LANL or the~~ Facility) in accordance with 40 CFR § 264.13. The hazardous constituents discussed herein are the non-mixed (non-radioactive) portion of the waste that makes up hazardous waste, the hazardous component of mixed low-level waste ~~(MLLW)~~, and the hazardous component of mixed transuranic waste ~~(MTRUW) stored and treated at the Facility in accordance with 40 CFR § 264.13~~. The waste characterization requirements contained in this WAP are used for characterization of wastes stored in containers and tanks, and to support treatment processes covered by the ~~stabilization process~~LANL Hazardous Waste Facility Permit (Permit). Waste analysis regulatory requirements are specified in 40 CFR §§ 264.13, 270.14(b) and 268.7. The general overview of ~~Waste analysis~~ permit requirements for waste analysis is~~are~~ specified in Permit Section 2.4. This WAP discusses how the waste characterization ~~data prepared by generators are~~ information is obtained, reviewed, supplemented, and used by the Permittees to comply with 40 CFR Part 264 and Part 268 regulatory requirements.

This WAP is organized as follows:

Section C.1 Facility Description: Includes a general description of the Facility; general descriptions of the wastes stored and treated and the activities that generate waste.

Section C.2 Waste Analysis Parameters: Includes a discussion of the ~~proposed~~ hazardous waste analytical parameters and methods used by the Permittees and the criteria/rationale for parameter selection.

Section C.3 Characterization Procedures: Includes the characterization approach (*e.g.*, acceptable knowledge, sampling and analysis) for each waste classification stored and treated at the Facility.

Section C.4 Off-Site Waste: Includes a discussion of procedures in place for acceptance of waste from off-site facilities.

Section C.5 Special Procedural Requirements: Includes a discussion of the characterization procedures in place ~~for ignitable, reactive, and incompatible wastes; procedures~~ to ensure compliance with 40 CFR 268, Land Disposal Restrictions~~land disposal restrictions~~ (LDR); and procedures to ensure compliance with 40 CFR Part 264 Subpart CC requirements.

Section C.6 References.

C.1 FACILITY DESCRIPTION

~~LANL (the *Facility*)~~ The Facility is the Los Alamos National Laboratory site. The Facility is more than the Los Alamos National Laboratory (LANL). The Facility is where the collective execution by separate entities of multiple and varied missions occurs. The Facility is located in Los Alamos County in north-central New Mexico. It is approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. The Facility and the associated residential and commercial areas of Los Alamos County are situated on the Pajarito Plateau. The Facility is owned by the U.S. Department of Energy (DOE) ~~and is operated jointly by DOE; Triad National Security, LLC, (Triad); and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) (collectively the *Permittees*)~~.

The Los Alamos National Laboratory is a Federally Funded Research and Development Center and National Security Laboratory that executes work across numerous missions, including national security, science, and energy. Triad National Security, LLC (Triad), under contract with the DOE National Nuclear Security Administration (NNSA), manages and operates LANL. The hazardous waste management units (HWMU) that Triad operates in association with its Laboratory management and operational activities are clearly defined in the Permit. Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under contract with the DOE Office of Environmental Management (DOE-EM), executes DOE-EM's legacy environmental remediation mission at and off the LANL site. The HWMUs that N3B operates in association with its legacy environmental remediation activities are clearly defined in the Permit.

The permitted units used for storage and treatment of wastes addressed in this WAP are located within various Technical Areas (TAs) at the Facility. These units are listed in Attachment J (*Hazardous Waste Management Units)*. Detailed information on the permitted units is provided in Attachment A (*Technical Area Unit Descriptions*)~~A more complete Facility description is provided in Attachment A~~.

C.1.1 Facility Waste-Generating Processes and Activities

Wastes are primarily generated at the Facility ~~primarily~~ from research and development ~~(R&D)~~ activities, processing and recovery operations, decontamination and decommissioning ~~(D&D)~~ projects, and environmental restoration ~~(ER)~~ activities. Wastes generated from these types of processes and activities may also be received from off-site facilities (*see* Section C.4 and Permit Section 2.2.1~~Attachment L (*Listing of Off-Site Facilities*)~~). Tables C-1~~2~~ through C-4~~5~~ present descriptive information on non-mixed hazardous wastes, mixed low-level waste, and mixed transuranic waste~~MLLW, and MTRUW~~ potentially generated at the Facility. ~~Wastes generated at off-site facilities that may be received at the Facility are described in Table C-8.~~ These tables include brief waste descriptions, brief descriptions of the waste-generating process or activity, the characterization basis for waste designation, potential U.S. Environmental Protection Agency (EPA) Hazardous Waste Number(s), the hazardous constituent(s) listed in Appendix VIII of 40 CFR Part 261 and/or the characteristic(s) defined at 40 CFR Part 261, Subpart C that make the waste hazardous, and the regulatory limits, as appropriate.

C.1.2 Stored Waste

Non-mixed hazardous waste, ~~MLLW~~mixed low-level waste, and ~~MTRUW~~mixed transuranic waste are stored at various ~~container storage~~ hazardous waste management units throughout the Facility. The following sections contain general descriptions of these wastes and the processes that generate them.

C.1.2.1 Non-Mixed Hazardous Waste

Non-mixed hazardous wastes are generated at the Facility primarily from ~~R&D~~research and development activities, general facility operations, ~~D&D~~decontamination and decommissioning projects, ~~and ER~~environmental restoration activities, and explosives materials programs. Non-mixed hazardous waste streams may be of uniform physical composition (*i.e.*, homogeneous) or of diverse composition (*i.e.*, heterogeneous). Homogeneous waste is defined as waste that contains only one material or substance or waste that has its components mixed so that representative samples can be drawn throughout. Homogeneous waste streams can be either solids or liquids.

Heterogeneous waste is defined as waste that contains multiple components that are separate because of density or specific gravity, are located in different places within the mixture, or are discrete and different articles. Heterogeneous wastes (*e.g.*, debris) do not lend themselves to representative sampling and analysis.

Description of routinely~~Routinely~~ managed non-mixed hazardous wastes and their waste-generating processes are provided below and summarized in Table C-2.

Spent Solvents

Spent solvents and spent solvent mixtures may contain organic or inorganic compounds, heavy metals, oils, and other contaminants. Waste-generating activities include ~~R&D~~research and development, laser research, organic and inorganic chemistry research, cleaning, and degreasing.

Contaminated Solid Wastes

Contaminated solid wastes (*i.e.*, wastes of a solid physical form) include mixtures of rags, spill cleanup materials, Kimwipes™, gloves, filters, plastic and paper products, and personal protective equipment. These wastes may also consist of disposable equipment contaminated with organic or inorganic compounds, heavy metals, oils, and other contaminants. Waste-generating activities include machining operations, chemistry research, ~~D&D~~decontamination and decommissioning projects, metal finishing operations, and general maintenance operations.

Paint and Related Wastes

Paint and paint-related wastes consist of excess paint, paint strippers and thinners, and sludges of paints and thinners. Possible contaminants include heavy metals used as paint pigments and solvents contained in thinners and lacquers. Waste-generating activities include painting and finishing operations and general facility maintenance.

Photographic and Photocopier Wastes

Photographic wastes include spent or excess film developers, fixer solutions, and bleach solutions that may be contaminated with heavy metals. Photocopier wastes include kerosene-based toners and dispersants. These wastes are generated from photographic processing and photocopier operations.

Corrosive Liquid Wastes

These wastes consist of acidic or alkaline solutions that may contain organics, inorganics, metals, oils, and other contaminants. Waste-generating activities include analytical chemistry research, electro-etching, and electro-polishing.

Solid Metals and Metallic Compounds

These wastes consist of metal chips and turnings from machining and cutting operations. They also consist of metal powders; metal salts; metal sheets; reactive metals used in synthesis reactions; solders from electronic manufacturing, repair, and brazing operations; and grinding operations. Other solid metals and metallic compounds include lead shot, bricks, plate, and shielding.

Contaminated Non-Corrosive Aqueous and Non-Aqueous Solutions and Sludges

These wastes are non-corrosive aqueous and non-aqueous solutions and sludges ~~that are~~ contaminated with non-mixed hazardous wastes or hazardous residues. Waste-generating activities include vacuum pump maintenance, analytical spectrometry, equipment cleaning and maintenance, vehicle maintenance, synthesis reactions, metal-polishing operations, and chemical research.

Mercury Wastes

Mercury wastes include free elemental mercury, mercuric compounds, articles and instruments containing mercury, fluorescent light fixtures, and gels containing mercuric compounds. Waste-generating activities include lamp replacement, chemical research, mercury spill cleanup, and equipment cleaning and maintenance.

Used Batteries and Battery Fluids

Used batteries and battery fluids contain heavy metals such as cadmium, lead, mercury, and silver. Waste-generating activities include routine equipment maintenance.

Unused and Off-Specification Commercial Chemical Products

These wastes consist of discarded solid and liquid chemical reagents that are off-specification, unused, or outdated or are spill residues.

Gas Cylinder Waste

These wastes include pressurized gas cylinders, including aerosol cans, which may contain regulated hazardous metals, or organic compounds, or exhibit the hazardous characteristics of ignitability, corrosivity, and reactivity.

Soils and Sludges

These wastes consist of environmental media and sludges generated through various activities, including site decommissioning, site characterization, ~~and~~ site remediation, and treatment. Waste-generating activities include septic tank and detention basin closure, removal actions, and other remedial actions and site closures.

Aqueous Liquids

These wastes consist of liquids generated during various activities, including decontamination of remedial action equipment, drilling fluids and well development fluids, septic tank liquids, and contaminated stormwater runoff.

Debris

These wastes consist of debris (such as concrete, vitrified clay pipe, steel baffles, and building materials) generated through various activities, including site decommissioning, site characterization, and site remediation. Waste-generating activities include septic tank and detention basin closure, removal actions, and other remedial actions and site closures.

Explosives Waste Streams

Explosives-contaminated waste and explosives waste are generated at the Facility from firing site operations, explosives processing operations, such as machining and pressing; research and development activities, including pilot-scale explosives production; ~~D&D~~decontamination and decomissioning activities; and environmental restoration activities. The waste streams identified in Table C-5 are waste streams that may be treated by open burning and open detonation. The waste streams include homogenous and heterogeneous wastes and are described in the following paragraphs.

Explosive-contaminated waste and explosives waste may consist of off-specification explosive wastes, excess explosive waste, and other explosives-contaminated solid wastes (*e.g.*, rags, glass, metals, and wood). These wastes are characteristic for reactivity, as defined in 40 CFR § 261.23. Explosives waste and explosives-contaminated waste meet the definition of reactive provided in 40 CFR § 261.23, because they are capable of detonation or explosive reaction if subjected to a strong initiating source or if heated under confinement.

Explosives machining waste
This waste stream consists of explosives machining chips or cuttings, water, filters, and filter solids that result primarily from the filtration of water used during the machining of explosives. Cloth filters, plastic bags, and wrapping are sometimes present in the waste.

Excess explosives
This waste stream includes large and small pieces of excess conventional -explosives. Explosives may be in the form of flakes, granules, crystals, powders, pressings, plastic bonded, putties, rubberized solids, or extrudable solids. This waste stream can include waste generated from inventory reduction efforts, off-specification explosives, damaged explosives, and salvaged explosives. Other materials that may be present in this waste stream include plastic bags, wrapping, and casings; cardboard and paper; and fiberboard containers. A small fraction

of the waste stream may contain metals such as aluminum, brass, barium, steel, stainless steel, and copper.

Explosives-contaminated combustible debris
This waste stream includes detonable explosives-contaminated debris generated in research laboratories, processing areas, and prep rooms. Debris may include filters removed from laboratory equipment or may contain trace amounts of solvents. Other materials that may be present in this waste stream include plastic pieces, bags, fiber cloth, wrapping, and tubing; weigh boats; latex or nitrile gloves; glass or plastic vials; cardboard and paper; fiberboard containers; paper cleaning wipes, rags, and swabs; as well as noncombustible materials such as glassware and metal as minor components. Metal constituents may include aluminum, stainless steel, steel, brass, and copper. Small quantities of solvents such as ethanol, acetone methanol, ethyl acetate, and toluene may also be present in this waste stream.

Explosives-contaminated solvent waste
This waste stream consists of dimethyl sulfoxide (DMSO) that contains dissolved explosives. It is generated primarily by dissolving of explosives and polymers in support of research and development activities.

Explosives-contaminated noncombustible debris
This waste stream consists of explosives-contaminated equipment that includes discarded, noncombustible equipment, debris from firing sites, noncombustible material from decommissioning and demolition activities, and material from explosives processing areas. Materials in this waste stream include glass, metals, and ceramics. This waste stream is typically recycled after treatment when treated by open burning. Most often this waste stream consists of metal equipment or sand/carbon from water filtration activities or maintenance and decommissioning and demolition activities.

Detonators, initiators, mild detonating fuses, and blasting caps
This waste stream includes detonators, initiators, mild detonating fuses, and blasting caps containing conventional explosives. Explosives may be in metal or plastic casings and may contain lead-based primaries or be in metal sheaths. This waste stream includes manufactured articles (detonators) removed from fire protection systems. Other materials that may be present in this waste stream include plastic bags and wrapping; cardboard and paper; and fiberboard containers. This waste stream will include metals such as aluminum, lead, brass, stainless steel, steel, nickel, and copper.

Shaped charges and test assemblies
This waste stream includes shaped charges consisting of cores of explosives with metal sheaths or metal liners, or high-explosives test assemblies consisting of explosives in plastic or metal holders. Assemblies may contain metal including lead, aluminum, copper, brass, steel, tantalum, and stainless steel. Other materials that may be present in this waste stream include plastic components, bags, or wrapping; cardboard or paper; and fiberboard containers.

Projectiles and munitions larger than 0.50 caliber
This waste stream includes military munitions such as projectiles and munitions larger than 0.50 caliber. Other materials that may be present in this waste stream include plastic bags and wrapping; cardboard and paper; fiberboard drums; and metal such as lead, brass, steel, stainless steel, copper, and aluminum.

Pressing molds
This waste stream includes urethane rubber pressing molds contaminated with detonable quantities of explosives. Other materials that may be present in this waste stream include plastic bags, plastic wrapping, cardboard, and paper.

C.1.2.2 Mixed Low-Level Waste

Low-level waste is defined in DOE Order 435.1, "Radioactive Waste Management" (DOE, 1999), as "radioactive waste that is not classified as high-level waste, spent nuclear fuel, transuranic waste, by-product material ~~[~~(as defined in § 11(e)(2) of the Atomic Energy Act, as amended~~],~~), or naturally occurring radioactive material". ~~MLLW~~Mixed low-level waste is any low-level waste that has a hazardous waste component.

~~MLLW~~Mixed low-level waste is generated at the Facility primarily from ~~R&D~~research and development activities, processing and recovery operations, ~~D&D~~decontamination and decommissioning projects, and ~~ER~~environmental restoration activities. ~~MLLW~~Mixed low-level waste streams may be homogeneous or heterogeneous, as defined in ~~Attachment~~ Section C.1.2.1. Descriptions of the ~~MLLW~~mixed low-level waste and ~~their~~the waste-generating processes are provided below and summarized in Table C-2~~3~~. Mixed Waste Inventory Report (MWIR) Waste Identification numbers are included with each category as reference to Los Alamos Federal Facility Compliance Order (NMED, 1995) waste documentation where applicable.

Soils with Heavy Metals

Soil waste contaminated with heavy metals is generated during ~~D&D~~decontamination and decommissioning and ~~ER~~environmental restoration activities. This waste consists of soils contaminated with varying concentrations of lead or other heavy metals.

Environmental Restoration Soils, LA-W905

This waste consists of soils contaminated with heavy metals and organic compounds. They are generated by activities such as the remediation of spill and release sites and ~~D&D~~decontamination and decommissioning activities.

Inorganic Solid Oxidizers, LA-W923

These wastes are discarded reagent powders and crystalline materials. Most of these items are in the original manufacturer's containers, some of which may be hydrated. Many of these containers are unopened but are suspected to have radioactive surface contamination. Waste-generating activities include ~~D&D~~decontamination and decommissioning of research laboratories and ~~R&D~~research and development.

Lead Waste, LA-W903, LA-W921, LA-W924, LA-W930, and LA-W931

Lead waste consists of contaminated and activated lead shielding used as radiation shielding, inseparable lead, lead blankets, and lead requiring sorting. It is generated primarily from radioisotope experiments and other reactor, accelerator, laser, and x-ray activities. The lead may be in the form of sheets, pigs, bricks, shot, shavings, slag, dross, and other shapes.

Noncombustible Debris, LA-W922

Noncombustible debris consists of discarded hazardous and contaminated scrap metals that are generated by maintenance, ~~D&D~~decontamination and decommissioning of research laboratories or equipment, ~~R&D~~research and development, and ~~ER~~environmental restoration activities. Additionally, discarded bricks and glass are generated through dismantling of Facility buildings, including plating shops and machine sheds. The waste may be considered hazardous due to the metal content or by virtue of contamination during use.

Combustible Debris, LA-W912

Maintenance, ~~D&D~~decontamination and decommissioning, ~~R&D~~research and development, and ~~ER~~environmental restoration activities generate rags and combustible debris with heavy metals and possibly organics, some of which contain residual liquids. Examples include solvents and lubricants that are used in metal-cutting operations. Much of this waste is generated during the processing of lead and barium resulting in heavy metal contamination.

Organic-Contaminated Noncombustible Solids, LA-W919

These wastes include absorbed oils, laboratory trash, and discarded equipment. Absorbed oil waste is composed~~comprised~~ of drums containing vermiculite or other inorganic sorbents used to absorb oil from spills and routine maintenance operations. Some of the oil originates from vacuum pumps and may be contaminated by mercury, lead, or cadmium. Laboratory trash consists of noncombustible solid materials with residual solvent contamination. The laboratory debris includes reagent bottles, broken glassware, and disposable lab ware. Large quantities of chemicals are not placed in this trash; however, residual liquids or powders may have remained on some of the discarded material. Discarded equipment may have contained residual solvents.

Organic-Contaminated Combustible Solids, LA-W911

These wastes are similar to combustible debris waste and include rags, cardboard, protective clothing, and paint-stripper trash. They are potentially contaminated with methyl ethyl ketone and other solvents. Waste-generating activities include maintenance, ~~D&D~~decontamination and decommissioning, and ~~ER~~environmental restoration activities.

Water-Reactive Wastes, LA-W916

Water-reactive wastes consist of reactive metal debris generated through the cleanup of HE firing-site debris and from machining and disassembly of test components. They include calcium, lithium hydride, lithium metal, and magnesium.

Mercury Wastes, LA-W920 and LA-W925

Mercury-contaminated instruments and equipment consist of discarded or broken equipment containing liquid mercury such as broken thermometers, vacuum tubes, vacuum pumps with residual mercury, activated or contaminated fluorescent light bulbs, and mercury absorbed into a paper or solid matrix. Most of this waste is generated by cleanup operations.

Unused Solid Reagent Chemical Wastes

Many different types of discardable off-specification or unused solid reagent chemical wastes are generated at the Facility by ~~R&D~~research and development programs. Most of these items are in their original containers.

Spent Solvents and Contaminated Solvent Mixtures

These are spent solvents and spent solvent mixtures that contain organic or inorganic compounds, heavy metals, oils, and other contaminants. Waste-generating activities include a wide variety of maintenance, cleaning and degreasing, ~~R&D~~research and development, and processing operations, such as extraction, bench-scale experimental inorganic chemistry, environmental analysis, and radiochemistry.

Corrosive Liquid Wastes, LA-W914

These wastes are acidic or alkaline solutions that contain organics, inorganics, metals, oils, and/or other contaminants. Waste-generating activities include radiochemistry research, plutonium processing, and analytical chemistry.

Aqueous and Non-aqueous Liquids Contaminated with Heavy Metals and/or Organics, LA-W902, LA-W906, LA-W908, and LA-W913

These wastes consist of aqueous and non-aqueous solutions that contain heavy metals and possibly organics. Waste-generating activities include metal-polishing operations, radiochemistry research, and ~~ER~~environmental restoration activities.

Oil Wastes, LA-W909

Oil wastes at the Facility are generated during equipment maintenance operations. Possible contaminants include heavy metals and solvents.

Unused Liquid Reagent Chemical Wastes

Many different types of discarded off-specification unused liquid reagent chemical wastes are generated at the Facility by ~~R&D~~research and development programs. Most of these items are in their original containers.

Gas Cylinder Waste, LA-W917 and LA-W918

These wastes consist of pressurized gas cylinders, including aerosol cans, which contain regulated hazardous metals, organic compounds, or exhibit the hazardous characteristics of ignitability, corrosivity, and reactivity.

~~Radioactive Lead Solids~~

~~These lead solids include, but are not limited to, all forms of lead shielding and other elemental forms of lead. These lead solids do not include treatment residuals such as hydroxide sludges, other~~

~~wastewater treatment residuals, or incinerator ashes that can undergo conventional pozzolanic stabilization, nor do they include organolead materials that can be incinerated and stabilized as ash.~~

C.1.2.3 Mixed Transuranic Waste

Transuranic waste is defined in DOE M435.1-1, Radioactive Waste Management Manual (DOE, 2011), as "radioactive waste containing more than 100 nanocuries (3700 becquerels) of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for: (1) high-level radioactive waste; (2) waste that the Secretary of Energy has determined, with the concurrence of the Administrator of the Environmental Protection Agency, does not need the degree of isolation required by the 40 CFR Part 191 disposal regulations; or (3) waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61."

Transuranic isotopes are those with atomic numbers greater than 92. ~~MTRUW~~Mixed transuranic waste contains both a hazardous waste component and a ~~TRU~~ transuranic waste component.

~~MTRUW~~Mixed transuranic waste is generated at the Facility primarily from ~~R&D~~research and development activities, processing and recovery operations, and ~~D&D~~decontamination and decommissioning projects. Limited quantities of ~~MTRUW~~mixed transuranic waste from off-site facilities will be accepted at LANL for additional characterization and management. (*see* Table C-8). ~~MTRUW~~Mixed transuranic waste at the Facility includes four broad categories that can be described by a Summary Category Group, which is further subdivided into Waste Matrix Codes.

Summary Category Groups are used to define waste characterization groupings for the Federal Facility Compliance Order (Los Alamos National Laboratory) (New Mexico Environment Department [NMED], 1995) requirements and are based on the physical and chemical forms of the waste. Complete descriptions of the Summary Category Groups are contained in DOE Waste Treatability Groups Guidance (DOE, 1995).

The Summary Category Groups applicable to the ~~MTRUW~~mixed transuranic waste stored and treated at the Facility are listed as follows:

1. *Summary Category Group S3000 (Homogeneous Solids)*: defined as solid waste materials, excluding soil and gravel, that do not meet the ~~EPA~~ LDR criteria for classification as debris.~~;~~
2. *Summary Category Group S4000 (Soil/Gravel)*: defined as solid waste materials that are at least 50 percent by volume soil and gravel~~;~~.
3. *Summary Category Group S5000 (Debris)*: defined as heterogeneous waste materials that are at least 50 percent by volume solid materials exceeding a 2.36-inch particle size that are intended for disposal and include manufactured objects, plant or animal matter, or natural geologic material. Particle sizes smaller than 2.36 inches in size may be considered debris if the debris is a manufactured object and if it is not a particle of S3000 or S4000 material~~; and~~.

4. *Summary Category Group L1000 (Aqueous Liquids/Slurries)*: defined as aqueous liquids and slurries that meet the ~~EPA~~ LDR criteria for wastewaters (*i.e.*, <1 percent total suspended solids).

Summary Category Groups are applied to ~~MTRUW~~mixed transuranic waste streams to distinguish between waste types. More specific waste identification systems (*i.e.*, Waste Matrix Codes [WMC] and Facility Transuranic~~TRU~~ Waste Stream ID numbers) are used for supplementary purposes as part of waste management operations. The ~~WMCs~~general WMC series that are applicable to the solid ~~MTRUW~~mixed transuranic waste stored at the Facility are:

1. *WMC S3100 (Inorganic Homogeneous Solid Waste)*: includes mixed inorganic homogeneous waste (cemented inorganics, organics on vermiculite, non-cemented, salts, and cemented organics);
2. *WMC S4200~~S4100~~ (Soil)*: consists of radioactive contaminated solid waste materials that are at least 50 percent by volume soil/gravel;
3. *WMC S5100 (Inorganic Debris Waste)*: consists of mixed non-combustible debris waste (scrap metal, concrete, brick, and glass) and up to approximately 10% of incidental organic waste forms; and
4. ~~*WMC S5300 (Organic Debris Waste)*: consists of mixed combustible debris waste (plastic, cellulosics, and rubber); and~~
5. ~~5.~~4. *WMC S5400 (Heterogeneous Debris Waste)*: includes mixed heterogeneous debris waste (varying amounts of combustible and noncombustible debris, with a small amount of homogeneous waste present).

Solid ~~MTRUW~~mixed transuranic waste is assigned a WMC and is further identified with a Facility transuranic waste stream identification ~~TRU Waste Stream ID~~ number. Using the WMC, waste streams are further delineated based on the following prioritized criteria: 1) waste-generating process (to the degree to which waste has been segregated by process); 2) Summary Category Group (*i.e.*, homogeneous or debris waste); 3) waste matrix; and 4) hazardous chemical content (*i.e.*, organics and/or inorganics).

The following are general descriptions of types of ~~MTRUW~~mixed transuranic waste streams:

Homogeneous Solids, Solidified Inorganics
This waste stream consists of mixed inorganic homogeneous waste generated by plutonium recovery, research and development processes, facility and equipment operations and maintenance, and liquid waste treatment operations. The waste includes cemented sludge, solidified aqueous waste, solidified inorganic process solids, leached process residues, evaporator bottoms/salts, and/or cement paste.

Homogeneous Solids Salt Waste
A portion of the waste stream that requires treatment for off-site disposition includes evaporator bottom solutions (*i.e.*, nitrate salts concentrates) generated prior to 1992 from nitrate recovery operations at TA-55. Evaporator bottoms solution is the liquid residual that results when a volume of ion-exchange effluents, oxalate filtrates, vacuum-seal water, or negative chilled waters is processed and concentrated in evaporator processes. The procedure for stabilization of the

evaporator bottoms solution in a cement matrix was in development until 1992 when the process was successfully standardized. Prior to 1992, several alternate cementation methods were used and some of the cemented matrices may have dewatered over time.

Heterogeneous Debris

This waste stream consists of mixed heterogeneous debris waste generated from facility processes and equipment decontamination and decommissioning~~D&D~~, including associated sectioning, size reduction, and packaging operations. The waste is composed of noncombustible and combustible debris waste contaminated with radioactive isotopes. The waste includes greater than 50% by volume noncombustible waste, metal scrap, glass, metal waste, metal crucibles and dies, precious metals, filter media and residue, beryllium-contaminated debris, ion-exchange resins, irradiation sources, firing point sources, leaded rubber, graphite waste, high-efficiency particulate air (HEPA) filter waste, skull and oxide, slag and porcelain, and/or other noncombustible waste. The combustible portion of the waste stream consists of waste materials such as paper, rags, plastic, rubber, wood-based high-efficiency particulate air filters, or other plastic-based and cellulose-based items (*e.g.*, personal protective equipment). Some secondary waste generated during the remediation/repackaging operations may have been added to the waste containers. Nitrate salts in the form of homogenous solids can be found in some of the containers holding this waste stream and will require further treatment for disposition.

Soils

These wastes consist of soils and environmental media generated through various activities, including site decommissioning, site characterization, and site remediation, that contains transuranic waste radioactive components and is potentially contaminated, particularly with heavy metals and organic compounds.

~~1. *Homogeneous Inorganic, Cemented*: includes solidified aqueous or homogeneous inorganic solids, solidified inorganic process solids, leached process residues, evaporator bottoms/salts, and/or cement paste;~~

~~2. *Homogeneous Inorganic, Cemented Organics*: major portion of the waste is cement (*i.e.*, inorganic) containing a minor portion of cemented solidified organic process solids;~~

~~3. *Homogeneous Inorganic, Non-cemented*: includes solid (non-cemented) inorganic waste, ash, dewatered aqueous sludge, and/or chemical treatment sludge;~~

~~4. *Homogeneous Inorganic, Salts*: includes pyrochemical, nitrate, and/or chloride salts; hydroxide cake; and/or other salt waste;~~

~~5. *Homogeneous Inorganic, Vermiculite*: includes vermiculite-absorbed hydrocarbon oil, vermiculite-absorbed silicon-based liquid, inorganic particulates, and solidified (non-cemented) organic waste.~~

~~6. *Soil*: includes all radioactive-contaminated soil;~~

~~7. *Combustible debris*: includes greater than 50% by volume combustible decontamination waste, cellulosics, plastics, rubber, laboratory trash, building debris, hot cell waste, and/or other combustibles; and~~

~~8. *Heterogeneous debris*: includes greater than 50% by volume noncombustible waste, metal scrap, glass, metal waste, metal crucibles and dies, precious metals, filter media and residue,~~

~~beryllium-contaminated debris, ion-exchange resins, irradiation sources, firing point sources, leaded rubber, graphite waste, high-efficiency particulate air (HEPA) filter waste, skull and oxide, slag and porcelain, and/or other noncombustible waste.~~

The WMCs correspond to other historical and current waste identification systems used at the Facility. Table C-34 lists the ~~MTRUW~~mixed transuranic waste streams stored at the Facility by their Summary Category Group, WMC, and general matrix description and provides a cross-reference between past and present waste identification systems.

Facility ~~TRU Waste Stream~~transuranic waste stream identification ~~ID~~ numbers are applied to the ~~MTRUW~~mixed transuranic waste streams described above. Facility ~~TRU~~transuranic waste stream identification ~~Waste Stream ID~~ numbers are assigned the prefix "LA", followed by a unique identifier that further specifies the waste stream. ~~MTRUW~~Mixed transuranic waste information is summarized in Table C-~~45~~.

~~The following are some examples of MTRUW waste streams stored, and in some cases treated, at the Facility.~~

~~LA-TA-55-19: Mixed Combustible Debris Waste~~

~~This waste stream consists of mixed combustible debris waste generated by plutonium recovery, R&D processes, and facility and equipment operations and maintenance. The debris waste includes paper, rags, plastic, rubber, wood-based HEPA filters, and other plastic-based and cellulose-based items.~~

~~LA-TA-55-30: Mixed Heterogeneous Debris Waste~~

~~This waste stream consists of mixed heterogeneous debris waste generated by plutonium recovery, R&D processes, and facility and equipment operations and maintenance. The waste includes plutonium-contaminated noncombustible and combustible debris waste.~~

~~LA-MIN01-CIN: Mixed Inorganic Homogeneous Waste, Cemented Inorganics~~

~~This waste stream consists of mixed inorganic homogeneous waste generated by plutonium recovery, R&D processes, facility and equipment operations and maintenance, and liquid waste treatment operations. The waste includes cemented sludge, solidified aqueous waste, and solidified inorganic process solids.~~

~~A portion of the waste stream that requires treatment for off-site disposition includes evaporator bottom solutions (i.e., nitrate salts concentrates) generated prior to 1992 from nitrate recovery operations at TA-55. Evaporator bottoms solution is the liquid residual that results when a volume of ion-exchange effluents, oxalate filtrates, vacuum-seal water, or negative chilled waters is processed and concentrated in evaporator processes. The procedure for stabilization of the evaporator bottoms solution in a cement matrix was in development until 1992 when the process was successfully standardized. Prior to 1992, several alternate cementation methods were used and some of the cemented matrices have dewatered over time. Sampling of the liquids has shown elevated levels of nitrates and a range of corrosive pHs requiring the addition of EPA Hazardous Waste Number D001 and D002, along with other applicable EPA Hazardous Waste Numbers.~~

~~LA-MIN02-V: Mixed Inorganic Homogeneous Waste, Organics on Vermiculite~~

~~This waste stream consists of mixed inorganic homogeneous waste generated by plutonium recovery, R&D processes, and facility and equipment operations and maintenance. The waste is comprised of organic liquids (oils and solvents) adsorbed on vermiculite.~~

~~Portions of this waste stream that require treatment for off-site disposition are unremediated and remediated nitrate salts. As described for waste stream LA-MIN01-CIN, evaporator bottoms (i.e., nitrate salts) have been generated continuously from nitrate recovery operations at TA-55. In some cases, the evaporator bottoms solution was cooled, which causes a precipitation of solids (i.e., nitrate salts). The unremediated nitrate salt-bearing waste stream are nitrate salts that were double bagged and placed in containers. Reevaluation of the characterization of this waste required the addition of EPA Hazardous Waste Numbers D001, and D002, along with other applicable EPA Hazardous Waste Numbers.~~

~~The unremediated nitrate salts were mixed with various types of absorbents (e.g., WasteLok 770 [sodium polyacrylate] and Swheat Scoop [organic kitty litter]). Up to 50 percent by volume of debris including plastic packaging, lead (e.g. shielding), personal protective equipment (PPE), and metal fines may also be present in this waste stream. Some secondary waste generated during mixing/repackaging operations may also have been added to the waste containers, including but not limited to: tools, paper/plastic tags and labels, plastic/metal wire tires, leather gloves, lead-lined gloves, PPE, plastic sheeting used for contamination control, rags and wipes (e.g., Kimwipes, or Wypalls), and some packaging material (e.g., plastic bags, fiberboard liners, rigid liner lids cut into pieces).~~

~~LA-MHD01.001: Mixed Heterogeneous Debris~~

~~Waste stream LA-MHD01.001 consists of mixed heterogeneous debris waste generated in TA-55. The debris waste includes paper, rags, plastic, rubber, wood based high-efficiency particulate air (HEPA) filters, other plastic based and cellulose based items (e.g., PPE), noncombustible items (e.g., metal, glass), and lesser quantities of homogenous solids (less than 50 percent by volume) contaminated with radioactive materials. Some secondary waste generated during the remediation/repackaging operations may have been added to the waste containers. Nitrate salts in the form of homogenous solids can be found in some of the containers holding this waste stream and will require further treatment for disposition. Evaluation of the characterization of this waste required the addition of EPA Hazardous Waste Numbers D001 and D002, along with other applicable EPA Hazardous Waste Numbers.~~

~~LA-MIN03-NC: Mixed Inorganic Homogeneous Waste, Non-cemented~~

~~This waste stream consists of mixed inorganic homogeneous waste generated by plutonium recovery, R&D processes, and liquid waste treatment operations. It consists of vacuum filter cake solid waste.~~

~~LA-MIN04-S: Mixed Inorganic Homogeneous Waste, Salts~~

~~This waste stream consists of mixed inorganic homogeneous waste generated by plutonium recovery, R&D processes, and facility and equipment operations and maintenance. It is comprised of non-cemented inorganic process solids (salts).~~

~~LA-MIN05-COR: Mixed Inorganic Homogeneous Waste, Cemented Organics~~

~~This waste stream consists of mixed inorganic homogeneous solidified (cemented) organic process solids and emulsified solvents and oils generated by plutonium recovery, R&D processes, and facility and equipment operations and maintenance.~~

~~LA-MHD02-238: Mixed Heterogeneous Debris Waste, Pu-238~~

~~This waste stream consists of mixed heterogeneous debris waste generated by Pu-238 processing operations (primarily heat-source fabrication) and facility and equipment operations and maintenance. The waste includes Pu-238 contaminated noncombustible and combustible debris waste.~~

~~LA-MIN06-C238: Mixed Inorganic Homogeneous Waste, Cemented Inorganics, Pu-238~~

~~This waste stream consists of mixed inorganic homogeneous waste comprised of solidified (cemented) inorganic process solids. This waste stream is generated by Pu-238 processing operations (primarily heat-source fabrication) and facility and equipment operations and maintenance.~~

~~LA-MHD03-DD: Mixed Heterogeneous Debris Waste, D&D~~

~~This waste stream consists of mixed heterogeneous debris waste generated from facility and equipment D&D, including associated sectioning, size reduction, and packaging operations. The waste is comprised of plutonium-contaminated noncombustible and combustible debris waste.~~

~~LA-MHD05-ITRI: Mixed Heterogeneous Debris Waste, ITRI~~

~~This waste stream consists of mixed heterogeneous debris generated between 1975 and 1984 by the Inhalation Toxicology Research Institute, which is currently operated by Lovelace at the Kirtland Air Force Base, New Mexico. The waste is comprised of laboratory waste that may contain rags, tools, and biological waste contaminated with Pu-239.~~

~~LA-MHD04-RH: Mixed Heterogeneous Debris Waste, Remote-Handled~~

~~This waste stream consists of mixed remote-handled heterogeneous debris waste generated by hot cell operations. This waste is comprised of combustible and noncombustible waste.~~

~~LA-MIN06-NS.001: Mixed Inorganic Homogenous Waste, Solids Mixed with Zeolite~~

~~This waste stream consists primarily of inorganic homogenous solids generated from the evaporator process at TA-55 and treated at TA-50. This waste is comprised of transuranic waste solids (evaporator bottoms consisting primarily of nitrate salts, which may be mixed with organic-based kitty litter or Waste Lock 770 ®) mixed with zeolite (aluminosilicate mineral).~~

C.1.3 Treated Wastes

~~MTRUW~~Hazardous, mixed low-level, and mixed transuranic waste are~~ is~~ treated at hazardous waste management units~~a permitted unit~~ at the Facility. ~~MTRUW~~These treatment processes include explosives waste treatment by open burning/open detonation processes for hazardous waste, macroencapsulation for hazardous and mixed low-level waste, and treatment in containers and ~~is treated by~~ cementation ~~to stabilize the~~mixed transuranic waste ~~for storage and/or resizing~~ to meet the Waste Isolation Pilot Plant (WIPP) waste acceptance criteria.

C.1.3.1 Open Burning/ Open Detonation~~Treated Mixed TRU Wastes~~

Hazardous wastes that require treatment are generated primarily from research and development and processing explosives operations. Treatment of explosive hazardous wastes at the Facility consists of open burning or open detonation to consume waste materials or form a non-reactive solid matrix. Additional specific information on the open burning/open detonation processes is provided in Section C.3.1.4 of this WAP.

C.1.3.2 Macroencapsulation Wastes

Hazardous or mixed low-level wastes that require treatment by macroencapsulation may be generated by many of the operations described in Sections C.1.2.1 and C.1.2.2 of this WAP. The wastes will be treated primarily to meet land disposal restrictions (LDR) ~~requirements~~ for final disposition and the determination of applicable waste types will be controlled by the conditions for treatment identified in Permit Section 8.0, *Treatment by Macroencapsulation*. Additional specific information on the macroencapsulation treatment process is provided in Section C.3.1.3 of this WAP.

C.1.3.3 Treatment in Containers

~~MTRUW~~Mixed transuranic waste that require treatment ~~is~~are generated primarily from research and development~~R&D~~ and processing and recovery operations. Treatment of ~~MTRUW~~mixed transuranic waste at the Facility may consist of resizing~~, and~~ stabilization, and neutralization in containers ~~by cementation~~ to form a nonignitable, noncorrosive solid matrix. The determination of applicable waste types for this type of waste will be controlled by the conditions for treatment identified in Permit Part 7.0, *Treatment in Containers*. Additional specific information on the stabilization in containers treatment process is provided in Section C.3.2.6 of this WAP.

C.1.3.4 Cementation Wastes

Mixed transuranic waste that require treatment are generated primarily from research and development and processing and recovery operations. Treatment of mixed transuranic waste at the Facility may consist of stabilization by cementation to form a noncorrosive solid matrix. Additional specific information on the ~~stabilization~~ treatment in containers processes ~~is~~ provided in Section C.3.2.5~~4~~ of this WAP.

~~**C.1.4 Description of Permitted Units**~~

~~The permitted units used for storage and treatment of wastes addressed in this WAP are located within various TAs at the Facility. These units are listed in Attachment J (*Hazardous Waste Management Units*). Detailed information on the permitted units is provided in Attachment A (*Technical Area Unit Descriptions*).~~

C.2 WASTE ANALYSIS PARAMETERS

The Permittees shall conduct detailed chemical and physical characterization for~~on~~ non-mixed hazardous wastes, the hazardous component of ~~MLLW~~mixed low-level waste, and the hazardous component of ~~MTRUW~~mixed transuranic waste as required by 40 CFR § 264.13 and Permit Section 2.4. The Permittees shall select waste analysis parameters to ensure that the waste characterization documentation will contain the information necessary to manage the waste in accordance with Resource Conservation and Recovery Act (RCRA) general facility standards in 40 CFR Part 264 and the LDR requirements in 40 CFR Part 268.

C.2.1 Analytical Parameters and Methods

The Permittees shall use the characterization methods for non-mixed hazardous wastes, ~~MLLW~~mixed low-level waste, and ~~MTRUW~~mixed transuranic waste summarized in Tables C-6~~9~~ through C-~~11~~8 to quantify the waste characterization parameters in those tables. The Permittees shall comply with the sampling and analysis requirements of Permit Sections 2.4.1 through 2.4.9. The Permittees shall use the methods listed below, as necessary, for the wastes listed in ~~Attachment~~ Section C.1.

1. Acceptable Knowledge (AK);
2. Sampling and laboratory analysis to determine the presence and concentrations of:
    - RCRA-regulated metals,
    - RCRA-regulated volatile organic compounds (VOC), and
    - RCRA-regulated semivolatile organic compounds (SVOC)
3. Additional ~~MTRUW~~mixed transuranic waste characterization sampling methods:~~;~~
    - Headspace gas sampling to determine the presence of VOCs in container headspace, and
    - Physical waste form characterization through real-time radiography (RTR) and/or visual examination
4. Flash point characterization;
5. pH characterization;
6. Reactivity characterization; and
7. Free liquid determination via the paint filter test.

C.2.2 Criteria and Rationale for Characterization Methodology Selection

The Permittees shall select methods for waste characterization based on the physical form of the waste (*e.g.*, debris) and on knowledge of the process generating the waste. To determine whether a solid waste is hazardous, the Permittees shall use AK as described in Section C.3.1.1. When deemed necessary, the Permittees shall use sampling and laboratory analysis as described in Section C.3.1.2 and other characterization methodologies to evaluate the analytical parameters to confirm knowledge-based waste characterization for non-mixed hazardous waste, ~~MLLW~~mixed low-level waste, and ~~MTRUW~~mixed transuranic waste based upon the rationales identified in Tables C-~~6~~9, C-~~10~~7, and C-~~11~~8, respectively.

~~40 CFR § 260.11 lists approved~~Approved analytical methods to determine the concentrations of hazardous constituents in the liquid and solid fractions and extracts of waste samples are listed in 40 CFR § 260.11. All the methods are described in the most recent version of the U.S. EPA's *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)*. The Permittees shall use these and other ~~approved~~ methods approved by the Department, as necessary, to determine whether a waste stream is hazardous and to identify underlying hazardous constituents. The Permittees shall analyze samples for all hazardous constituents likely to be present based on the source of the waste stream and AK. ~~The Permittees shall require the analytical laboratory to report all constituents the laboratory analytical method is capable of measuring as specified in the most recent version of the U.S. EPA's *Test Methods for Evaluating Solid Wastes (SW-846)*. Any hazardous constituents identified during analysis shall be included on the waste profile form. Detailed instructions for conducting Toxicity Characteristic Leaching Procedure (TCLP) waste analysis are found in the most recent version of *SW-846* and are incorporated by reference in 40 CFR § 260.11.~~ Also listed in *SW-846* is the appropriate analytical method for each hazardous constituent required to determine whether or not the waste contains a contaminant in excess of the maximum contaminant concentration regulated under 40 CFR Part 261. The Facility requires the analytical laboratory to report all constituents the laboratory analytical method selected is capable of measuring as specified in *SW-846*. Any hazardous constituents identified during analysis at levels higher than the regulatory thresholds for hazardous waste will be included within the waste characterization documentation

~~TCLP is a method for leaching hazardous constituents from the solid portion of the waste and is used only if the solids constitute more than 0.5% of the waste by weight. The laboratory can also forego analysis by extraction if: 1) total analysis of the waste shows the concentrations of the analytes are so low that an extract of the waste could not contain analytes at concentrations above the regulatory limits (*see* Section C.3.1.2.1); or 2) analysis of any liquid portion of the waste contains such high concentrations of hazardous constituents that, even accounting for dilution, the entire sample would be hazardous~~.

Many hazardous wastes are restricted from land disposal under the Hazardous and Solid Waste Amendments unless they are treated to diminish their toxicity and reduce the likelihood that hazardous constituents will migrate from the disposal site. As required by 40 CFR Part 268, each waste shipment must be accompanied by a notification stating whether the restricted waste meets specific LDR treatment standards promulgated for hazardous constituents or is otherwise exempt. In most cases, the notification can be completed after laboratory analysis of the waste. If an LDR

notification is based solely on knowledge of the waste, the Permittees shall keep the supporting documentation on record, in accordance with 40 CFR § 268.7.

C.3 CHARACTERIZATION METHODS

Non-mixed hazardous wastes, mixed low-level waste, and mixed transuranic waste will be characterized based on the chemical, physical, and radiological nature of the waste stream. Characterization will be performed by using AK or sampling and analysis or both, as described below. The Permittees' operating procedures consider characterization of wastes before a waste-generating process will begin. The preliminary characterization of waste begins prior to actual generation (at the point of concept and design of a process or system) so that the generator can determine whether AK, sampling and analysis, or a combination of the two will be required for waste characterization.

~~The Permittees shall characterize non-mixed hazardous wastes, MLLW, and MTRUW based on the chemical, physical, and radiological nature of the waste stream. The Permittees shall perform characterization by using AK or sampling and analysis or both, as described below.~~

~~The~~Once generated, the Permittees shall record information for each waste stream on a waste characterization profile that includes~~form accompanied by~~ sampling and analysis data and/or AK documentation. This information~~These documents~~ are collectively referred to as the waste characterization documentation. Such documentation may include items referred to by a traceable identifier and separately located within the Facility. The Permittees shall ensure that waste characterization documentation is reviewed and approved prior to waste acceptance at a hazardous waste management~~permitted~~ unit for treatment or storage. If the documentation is incomplete or does not contain sufficient information to characterize the waste, the Permittees shall return the documentation to the generator and shall not accept the waste for storage or treatment.

Before accepting waste for storage or treatment, the Permittees shall determine that waste characterization documentation satisfies the information requirements of Permit Section 2.4, including but not limited to the assignment of all applicable EPA Hazardous Waste Numbers and the LDR status of the waste. Once the waste characterization documentation is reviewed and approved, the Permittees may notify the generator and authorize the transfer of the waste to a permitted unit. Before the waste is transferred, the Permittees' waste management personnel shall review any transfer documentation to ensure that it accurately pertains to the waste being transferred and that it corresponds with the waste characterization documentation. If the transfer documentation does not correspond with the characterization documentation, the Permittees shall not transfer the waste. The Permittees shall maintain the waste characterization documentation and the transfer documentation shall be part of the Facility Operating Record. After approval of waste characterization of a waste stream by waste management personnel, the Permittees shall approve subsequent transfer of waste from that waste stream based upon the generator's statement that the waste stream is accurately represented by the previously approved waste characterization information.

Training for use of waste characterization documentation is included in a facility waste documentation course. This training provides step-by-step instructions on how to complete and review documentation~~forms~~ for characterizing wastes.

The Permittees shall perform reevaluation of initial characterization information and annual verification in accordance with Permit Section 2.4.7.

The Permittees shall deem a waste container to contain free liquids if any of the following characterization methods so demonstrate:

- ~~1.~~ generator waste-characterization knowledge;
- ~~2.~~ visual examination;
- ~~3.~~ radiography; or
- ~~4.~~ the Paint Filter Test (*SW-846*, Method 9095).

C.3.1 Hazardous and Mixed Low-Level Waste Characterization

The Permittees shall select characterization methods for non-mixed hazardous waste and ~~MLLW~~mixed low-level waste based on the physical nature of the waste stream (*i.e.*, homogeneous or heterogeneous). The Permittees shall characterize homogeneous solid and liquid waste for the presence of hazardous constituents (*e.g.*, VOCs, SVOCs, metals) on the basis of AK and, if necessary, sampling and analysis.

The Permittees shall characterize heterogeneous solid waste solely on the basis of AK for the following reasons:

- ~~1.~~ the physical, chemical, and/or radiological nature of the waste makes it difficult to obtain representative samples;
- ~~2.~~ the lack of appropriate sampling methodology; and
- ~~3.~~ for ~~MLLW~~mixed low-level waste, safety concerns associated with unnecessary exposure to the radioactive component of the waste.

In using AK to characterize waste, the Permittees shall review characterization documents with the help of subject matter experts, when necessary.

The Permittees shall characterize chemicals of an unknown nature by assembling all knowledge of the operations and activities that were performed at the site of generation relevant to waste generation and management. The Permittees shall test unknown wastes in volumes greater than one gallon for ignitability, corrosivity, reactivity, toxicity characteristics, and any other parameters indicated by the initial data gathered on the material. Based on that determination, the Permittees shall assign the waste the proper EPA Hazardous Waste Number(s) and LDR status. The Permittees shall use the characterization methods provided in Tables C-6~~9~~ and C-7~~10~~.

The Permittees shall analyze small volumes of unknown wastes for pH, flash point, and reactivity. For purposes of managing unknown wastes, a small volume is defined as one liquid gallon or less. The rationale for this basis is that one gallon is the minimum quantity of sample needed for these three tests to determine whether or not the waste is hazardous~~. The Permittees shall analyze small volumes of unknown wastes for pH, flash point, and reactivity~~.

C.3.1.1. Acceptable Knowledge

Acceptable knowledge (AK) includes process knowledge, additional characterization data, and facility records of analysis ~~(EPA, 1994A)~~.

Process knowledge ~~(PK)~~ includes information about the process used to generate the waste, material inputs to the process, and the time period during which the waste was generated. Process knowledge~~PK~~ is described in 40 CFR § 264.13(a)(2) as data developed under 40 CFR Part 261 and existing published or documented data on a specific hazardous waste or hazardous waste generated from similar processes. Process knowledge~~PK~~ may include off-site facility waste characterization data pertaining to a specific waste and laboratory analysis data performed prior to the effective date of applicable RCRA regulations.

Additional characterization data includes data obtained after the advent of RCRA and from chemical or physical analysis that is not subject to the most recent version of *SW-846* and other approved methods, or through testing of similar or surrogate waste streams. This includes previous analytical data relevant to the waste stream including results from fingerprint analyses, spot checks, or routine waste verification sampling.

Facility records of analysis consist of waste analysis and physical characterization performed prior to the effective date of RCRA regulations.

The Permittees may use AK alone or in conjunction with sampling and analysis in the following instances (EPA, 2015~~1994A~~):

~~1.~~ hazardous constituents in wastes from specific processes ~~that~~ are well documented, such as with ~~;~~

~~2.~~• ~~F and~~ K-listed wastes, presuming that the wastes are not highly variable, and accurate and precise concentrations are not necessary for documenting compliance;

• wastes are discarded~~,~~ unused~~,~~ commercial chemical products, reagents, or chemicals of known physical and chemical (constituents, presuming that the wastes are not highly variable, and accurate and precise concentrations are not necessary for documenting compliance. See the ~~properties (~~P- and U-listed waste categories in 40 CFR § 261.33~~s)~~;

~~3.~~• in has been determined that no acceptable test method exists to satisfy an analytical requirement (*e.g.*, hazardous waste determinations under § 261.23 for D003 reactivity);

~~4.~~• health and safety risks to personnel would not justify sampling and analysis (*e.g.*, if opening a container exposes technician to radionuclides from radioactive mixed waste); or~~and~~

~~5.~~• the physical nature of the waste makes it technically impracticable to obtain ~~does not lend itself to taking~~ a laboratory sample ~~(*e.g.*, heterogeneous waste streams)~~.

The Permittees shall document the basis for using AK on a waste profile form. The Permittees shall maintain AK information in accordance with Permit Section 2.12.2 in a format that allows waste management personnel and subject matter experts to either obtain copies or, in the case of classified or sensitive AK documentation that cannot be kept in the standard recordkeeping systems~~sent to TA-54~~ due to security requirements, review the documentation at the point of waste generation.

The Permittees shall assign a traceable identifier (*i.e.*, process or AK document number or alphanumeric designation) in accordance with Permit Section 2.4.1 to the waste characterization documentation so that the Permittees can obtain the information for as long as required by RCRA regulation and this Permit.

C.3.1.1.1 Process Knowledge

The Permittees shall obtain, assemble, and prepare the process knowledge documentation for each waste stream. The Permittees may substantiate process knowledge for a specific waste stream using documentation such as:

- ~~1.~~• laboratory notebooks that detail the research processes and raw materials used in an experiment;
- ~~2.~~• process or experiment design documents;
- ~~3.~~• safety analysis reports;
- ~~4.~~• standard operating procedures and detailed operating procedures, which can include a list of the raw materials or reagents, a description of the process or experiment that uses the materials, and a description of the wastes generated and how the wastes are handled;
- ~~5.~~• waste packaging logs;
- ~~6.~~• test plans or research project reports that describe the reagents and other raw materials used in an experiment;
- ~~7.~~• chemical inventory database for particular processes or experiments;
- ~~8.~~• information from site personnel (*e.g.*, documented interviews);
- ~~9.~~• industry reports on a similar process when there is a clear connection between the Facility process/experiment and the industry's similar process or experiment;
- ~~10.~~• ~~Material~~ Safety Data Sheets, product labels, and other product package information; and
- ~~11.~~• ~~ER~~Environmental restoration site and waste characterization data.

C.3.1.2 Sampling and Analysis

For waste streams that can be representatively sampled (*i.e.*, homogeneous), the Permittees shall conduct sampling and analysis when there is insufficient AK. The Permittees shall collect a representative sample of the waste and handle it by a means that preserves its original physical form and composition and prevents contamination or changes in concentration of the constituents to be analyzed. The Permittees shall, when it is necessary to conduct sampling and analysis to fully characterize a waste, utilize the analytical methods specified in Tables C-119 through C-1318 for the identification of any hazardous constituents likely to be present based on the source of the waste stream and AK. Personnel involved in sampling and analysis shall comply with the most recent version of *SW-846* and other Department approved methods. The Permittees shall obtain samples representative of the waste stream in accordance with Permit Section 2.4.2.

C.3.1.2.1 ~~Solid Waste~~Toxicity Characteristic Analysis

The Permittees shall, if necessary for waste characterization purposes, sample and analyze homogeneous waste streams for the toxicity characteristic ~~(TC)~~ contaminants listed in 40 CFR § 261.24~~, which is incorporated herein by reference~~. ~~The Permittees may conduct~~Detailed instructions for conducting Toxicity Characteristic Leaching Procedure (TCLP) waste analysis ~~for total concentration of TC contaminants on samples in a screening step, as~~are ~~described~~ provided in Section 1.2 of SW-846 Method 1311. ~~, the toxicity characteristic leaching procedure (TCLP)~~TCLP is a method for leaching hazardous constituents from the solid portion of the waste and is used only if the solids constitute more than 0.5% of the waste by weight. The Permittees may forego analysis by extraction if: (1) total analysis of the waste shows the concentrations of the analytes are so low that an extract of the waste could not contain hazardous constituents at concentrations above the regulatory limits; or (2) analysis of any liquid portion of the waste contains such high concentrations of hazardous constituents that, even accounting for dilution, the entire sample would be hazardous. If total concentrations are used in the waste characterization process, the Permittees shall compare analytical data to the toxicity characteristic~~TC~~ regulatory levels expressed as total values. These total values will be considered the regulatory threshold limit ~~(RTL)~~ values for the determination of whether a particular waste exhibits a toxicity characteristic~~TC~~. The Permittees shall obtain regulatory threshold limit~~RTL~~ values by calculating the weight/weight concentration (in the solid) of a toxicity characteristic~~TC~~ contaminant that would give the regulatory weight/volume concentration in the TCLP extract. If the total concentrations are less than the regulatory threshold limit~~RTL~~ value, then it may be assumed that the waste does not exhibit the toxicity characteristic and the TCLP does not need to be completed for the screened toxicity characteristic~~TC~~ contaminants.

~~C.3.1.2.2 Liquid Waste Analysis~~

Liquid wastes generated at the Facility consist of aqueous solutions, slurries, and organic liquids. The Permittees shall sample and analyze these wastes, if necessary for waste characterization purposes, for total metal content, VOCs, and SVOCs. In accordance with SW-846 Method 1311 ~~(TCLP),~~ liquid wastes (~~*i.e.*, those~~ wastes that contain less than 0.5 percent dry solids) do not require extraction. The liquid waste, after filtration, is defined as the TCLP extract. Liquid waste, therefore, is characterized by filtering the waste, measuring total contaminant concentrations in the resulting filtrate, and comparing these concentrations to the toxicity characteristic~~TC~~ regulatory levels in 40 CFR § 261.24.

The Permittees shall characterize wastes that contain both a liquid and a solid phase using total analytical data for the solid phase to determine toxicity characteristics. The Permittees shall compare with the toxicity characteristic~~TC~~ regulatory levels for each phase in a manner consistent with the discussion in this section~~Section C.3.1.2.1~~. The following formula (EPA, 1994~~b~~) will be used to calculate the maximum theoretical leachate concentrations for the combined phases:

$$\frac{[A \times B] + [C \times D]}{B + [20 \text{ liters/kilogram} \times D]} = M$$

Where:

A = concentration of the analyte in the liquid portion of the sample (milligrams/liter);

B = volume of the liquid portion of the sample (liter);

C = concentration of the analyte in the solid portion of the sample (milligrams/kilogram);

D = weight of the solid portion of the sample (kilogram); and

M = maximum theoretical leachate concentration (milligrams/liter).

C.3.1.2.23 Sample Handling, Preservation, and Storage

Table C-1015 presents requirements specified in the most recent version of *SW-846* requirements forregarding sample containers, preservation techniques, and holding times associated with sample collection. The Permittees shall adhere to these requirements to ensure that sampling and analysis meet quality objectives for data. In the event the specified criteria are not met, the Permittees shall collect another sample and submit it for analysis.

C.3.1.2.34 Analytical Laboratory Selection and Analytical Methods

The Permittees shall ensure that analytical laboratories at the Facility and approved contractor laboratories conduct the detailed qualitative and quantitative chemical analyses specified in Tables C-1116 and C-1217. These laboratories must have:

1. a documented and comprehensive QA/QC program;
2. technical analytical expertise;
3. a document control and records management plan; and
4. the capability to perform data reduction, validation, and reporting.

C.3.1.32.5 Characterization of Waste to be Ttreated by Macroencapsulation

The treatment objective of macroencapsulation is to utilize an EPA-approved treatment technology to meet the LDR treatment standard for hazardous debris waste and radioactive lead solids as specified in 40 CFR § 268.42 and 40 CFR § 268.45. The macroencapsulation technology is at least a two-component system formulated to resist contaminants and leachate. The closure system ensures a permanent and impermeable barrier between the waste debris and the outside environment. Permittees shall conduct chemical and physical characterization of hazardous or mixed low-level waste prior to treatment by macroencapsulation. The Permittees shall use documented AK, as described in Attachment C, Section C.3.1.1, which will be used to determine whether or not the waste stream is regulated as a hazardous waste. The Permittees shall use After treatment, the waste will meet LDR treatment standards for toxicity characteristic hazardous waste debris. The EPA hazardous waste numbers D004-D011 and D018-D043 will no longer apply to the waste. The Permittees shall confirm this condition through process knowledge, prior to macroencapsulation and conformance with applicable treatment conditions.

C.3.1.4 Characterization of Waste to be Treated by Open Burning and Open Detonation

Explosives waste streams at the Facility are treated to remove the characteristic of reactivity as defined in 40 CFR § 261.23. Open burning treatment of these wastes involves a propane-fueled burn that removes the explosives component of the waste and renders the waste non-reactive and any residue amenable to handling and dispositioning. Regulations do not specify a particular test method for reactivity of explosives waste or explosives-contaminated waste, therefore, the determination of whether a waste is reactive is made based on the properties of the chemicals known or suspected to be in the waste. Wastes that contain concentrated explosives are characterized by process knowledge, as described in Section C.3.1.1.1. Explosives-contaminated waste streams are characterized by both process knowledge and/or other acceptable knowledge (Section C.3.1.1). Information to determine whether explosives content within the waste stream is detonable follows.

- If it is unknown whether explosives are present, a screening method or field test, such as the High Explosives Spot Test, may be used.
- If the waste contains visible explosives, it is considered reactive.
- If the waste came into direct contact with explosives, and all of the surfaces cannot be tested or visually examined (*e.g.*, debris or equipment), it is assumed that there is a reactive amount of explosives associated with it.
- All open burning treatment residues will be sampled and analyzed in accordance with the requirements of Section C.3.1.2 to ensure that treatment residuals are not hazardous waste. This is usually conducted using the appropriate analytical method from the most recent version of Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) listed in Table C-9. All sampling of waste streams is conducted to be representative of the waste.

Additionally, analysis of the treatment residue will be used to verify the characterization of the treated explosives waste stream that generated the residue. If analysis of the residue identifies constituents not identified in the waste characterization documentation, those constituents will be included on the waste profile form for the waste stream prior to acceptance at the unit in the future. Most treatment residues generated by the open burning treatment process are characterized as nonhazardous wastes; however, all treatment residues (both nonhazardous and hazardous) are shipped off-site for disposal.

- Because the TA-16-388 Flash Pad may be used to treat hazardous debris that exhibits a reactive characteristic potentially mixed with "toxicity characteristic debris" or a "debris contaminated with listed waste" (*see* 40 CFR § 268.45(b)), the alternative treatment standards outlined in Table 1 at 40 CFR § 268.45 must be met prior to land disposal of the waste. Any hazardous debris treated at the TA-16-388 Flash Pad that will be land disposed will be separated from treatment residues using simple physical or mechanical means as necessary. If further treatment of the hazardous debris waste is required to meet the waste-specific treatment standards for organic compounds, the additional treatment will be conducted at an off-site treatment facility prior to land disposal.

Open detonation treatment of explosives wastes involves an explosion that chemically transforms the explosives component of the waste faster than the speed of sound. Regulations do not specify a particular test method for reactivity of explosives waste and explosives-contaminated waste;

therefore, the determination of whether a waste is explosives waste is made based on the properties of the chemicals known or suspected to be in the waste and/or field screening or laboratory analysis. Wastes that contain concentrated explosives are characterized by process knowledge, as described in Section C.3.1.1.1. Wastes that may contain explosives in lower concentrations are characterized by both process knowledge and/or the following techniques to determine whether explosives in lower concentrations are detonable~~/explosive~~.

- If it is unknown whether explosives are present, a screening method, such as the High Explosives Spot Test, may be used.
- If heterogeneous waste contains visible high explosives, it is considered reactive.
- If heterogeneous waste came into direct contact with high explosives and all of the surfaces cannot be tested or visually examined (*e.g.*, debris or equipment), it is assumed that there is a reactive amount of explosives associated with it.
- High explosives concentrations may be directly measured in homogeneous materials (*e.g.*, soil or water). This is usually completed using the appropriate analytical method from the most recent version of SW 846 Method 8300 series. Parameters such as the concentration of the high explosive, its sensitivity, and the media in which it occurs are used to determine whether the waste is likely to be reactive or not.

Characterization methods for explosives-contaminated waste and explosives waste are summarized in Table C-9. Treatment by open burning and open detonation completely removes the reactive characteristic from explosives waste streams.

C.3.1.5~~3~~ Verification Frequencies

The Permittees shall comply with the waste characterization verification procedures identified in Permit Section 2.4.7(3). The Permittees shall place a non-conformance report in the Facility Operating Record if the characterization for the waste stream is found to be inconsistent with the documentation. The Permittees shall decline to accept any waste from the waste stream in issue until the characterization deficiency is remedied.

C.3.2 Mixed Transuranic Waste Characterization

The Permittees characterize ~~MTRUW~~mixed transuranic waste for the information specified in Tables C-8 and C-13 and described in Permit Section 2.4.1 ~~in accordance with the parameters and methods shown in Tables C-11 and C-18~~ for management, storage, and treatment at the Facility. Characterization of the hazardous component of ~~MTRUW~~mixed transuranic waste to be stored and treated at the Facility shall be conducted in accordance with the procedures discussed in the following sections.

Initial characterization of ~~MTRUW~~mixed transuranic waste for the purpose of storage at the Facility is based primarily on AK (*see* ~~Attachment~~ Section C.3.1.1) with additional procedures applied to confirm the AK. The Permittees shall begin the AK process by reviewing the available generator documentation for the waste stream. This includes process knowledge, any extant analytical data, and the information included with the waste documentation forms associated with the individual waste containers.

Most mixed transuranic waste managed at the Facility is destined for disposal at the WIPP in Carlsbad, New Mexico. WIPP certification procedures require additional characterization to meet the requirements of the WIPP permit and waste acceptance criteria prior to shipment ~~there~~to WIPP. Information regarding the waste derived from the WIPP certification procedures will be used as additional information for AK.

The Permittees shall categorize ~~MTRUW~~mixed transuranic waste streams by Summary Category Groups based on the physical and chemical form of the waste as established by AK. The Permittees shall assign individual waste containers to waste streams based upon AK.

The Permittees shall utilize AK to determine the EPA Hazardous Waste Numbers applicable to the waste stream or container under consideration. The Permittees shall utilize AK to determine whether the container requires additional waste management procedures such as secondary containment for liquid waste or segregation of incompatible, ignitable, or reactive wastes. If AK is insufficient to determine needed information (*e.g.*, ignitability), the Permittees shall use headspace gas sampling to provide the needed information.

~~Until it is determined that a container does not contain free liquids, the~~The Permittees shall manage ~~MTRUW~~mixed transuranic waste~~ container storage~~ in accordance with regulations and Permit requirements applicable to containers holding free liquids (*i.e.*, with secondary containment and appropriate labeling) if the hazardous waste determination made pursuant to Permit Section 2.4.1 indicates that the container holds any free liquids.

If AK is inadequate to characterize a homogeneous ~~MTRUW~~mixed transuranic waste stream or container (*e.g.*, homogeneous solids, soil and gravel, aqueous liquids and slurries) the Permittees shall collect a representative sample of the waste and submit the waste for on-site laboratory analysis. Mixed transuranic waste is not generally shipped off-site for analysis.

C.3.2.1~~.1~~ Real-Time Radiography

~~MTRUW~~Mixed transuranic waste containers generated after the effective date of the Permit and that are not wastes taken from retrievable storage after that date are not required to undergo RTR if associated AK documentation contains the information necessary to fully characterize the waste in accordance with Permit Section 2.4~~/~~.1 and the WIPP waste acceptance criteria. Otherwise, all ~~MTRUW~~mixed transuranic waste containers require RTR prior to storage at the Facility.

RTR is a nondestructive, qualitative, and semi-quantitative characterization technique that involves x-ray scanning of waste containers to identify and verify the physical form(s) of waste container contents using appropriate equipment and qualified operators. The Permittees shall use RTR to verify the absence of free liquids, to confirm the physical form of containerized waste, and to document the materials present.

The Permittees shall ensure that during RTR the waste container is scanned while the operator views and permanently records the image from the television screen on audio and videotape. The radiography image is examined for evidence of liquids by repetitively moving the container-handling system and searching for evidence of wave motion. The Permittees shall utilize a radiography data form to document the materials present and all other relevant characterization information about the containerized waste.

The Permittees shall allow only properly trained personnel to operate radiography equipment. Standardized training requirements for radiography operators are based upon existing industry standard training requirements. Operators must requalify periodically, as required~~at least every two years~~.

The Permittees shall examine the radiography image produced for evidence of liquids by repetitively moving the container-handling system and searching for evidence of wave motion.

C.3.2.~~1.~~2 Visual Examination

~~The Permittees may use visual~~Visual examination (VE) or visual inspection (VI) is used to verify the contents of ~~MTRUW~~mixed transuranic waste containers as a substitute to RTR or during packaging of the waste. VE/VI is performed by physically examining the contents of a waste container to verify that the container is properly included in the appropriate waste stream, to verify the absence of free liquids, to confirm the physical form of containerized waste, and to document the materials present. The Permittees shall ensure that waste characterization determined through VE/VI is recorded in the associated waste's AK documentation.

~~Standardized training for VE shall be developed.~~ Visual examination operators shall be trained in the specific waste generating processes, typical packaging configurations, and waste material parameters expected to be found in each waste stream at the generator site. The training shall be site specific to include the various waste configurations generated at the site. Operators must requalify periodically, as required~~at least every two years~~.

C.3.2.3 Headspace Gas Analysis

Headspace gas analysis is used to confirm the presence and concentration of flammable gas/VOCs, hydrogen, and methane in a mixed transuranic waste container intended for shipment to WIPP. A sample of headspace gas is taken through the vent assembly of a waste container at controlled temperatures and analyzed by gas chromatography and thermal conductivity. Waste characterization information collected through headspace gas analysis is recorded in the associated waste's AK documentation.

C.3.2.~~4~~2 Characterization to Meet LDR Requirements

~~The Permittees shall characterize MTRUW~~Mixed transuranic waste is characterized to determine its land disposal restriction status in accordance with ~~Attachment~~ Section C.5.2.

~~C.3.2.3 WIPP Characterization~~

~~Most MTRUW waste at the Facility is destined for disposal at the Waste Isolation Pilot Project (WIPP) in Carlsbad, New Mexico. Therefore, prior to shipment to WIPP, additional characterization to meet WIPP certification procedures will be implemented to meet requirements of the WIPP permit for these wastes. Waste information that is derived from the WIPP waste characterization will be used for Facility MTRUW characterization as additional information for AK.~~

C.3.2.54 Characterization Procedures ~~Prior to and After~~ for Treatment of Mixed ~~TRU~~Transuranic Wastes by Stabilization (Cementation)

The Permittees shall adhere to the waste characterization procedures specific to waste treatment in the stabilization unit at TA-55, Building 4. The stabilization unit at TA-55 is a miscellaneous unit pursuant to 40 CFR Part 264, Subpart X, and is used to treat liquid and solid mixed wastes by stabilization in cement to form a noncorrosive solid matrix.

The stabilization (cementation) unit at TA-55 treats homogeneous liquid and solid mixed waste generated primarily from research and development and processing and recovery operations at TA-55 and at the Chemistry and Metallurgy Research Building at TA-3. The liquid wastes (Summary Category Group L1000) generally consist of evaporator bottoms solutions and laboratory solutions that may exhibit the hazardous characteristics of corrosivity and toxicity for metals (*e.g.*, arsenic, barium, cadmium, chromium, lead, mercury, and silver) as defined in 40 CFR §§ 261.22 and 261.24, which are incorporated herein by reference. The homogeneous solid process wastes (Summary Category Group S3000) consist of process residue from the evaporator, process leached solids, filter cake, and other miscellaneous solids. This waste stream typically exhibits the hazardous characteristic of toxicity (for metals) and corrosivity. These waste streams are mixed with cement in 55-gallon drums and allowed to cure into a noncorrosive solid matrix. Table C-14 provides a description of the waste streams associated with the stabilization unit and identifies their potentially applicable EPA Hazardous Waste Numbers. The resulting cemented waste is identified by Summary Category Group S3000 and typically carries the Waste Matrix Code S3100. Based on documented AK, the wastes treated by stabilization at TA-50 do not contain VOCs or SVOCs.

C.3.2.6 Characterization Procedures for Treatment of Mixed Transuranic Waste by Treatment in Containers

~~, Room 401; for the resizing and~~ The Permittees shall adhere to the waste characterization procedures specific to waste treatment for the stabilization process of blending with zeolite at the TA-50, Building 69 (TA-50-0069) Indoor Permitted Unit; and the stabilization/neutralization treatment processes at TA-54, Area G, Pad 9, Dome 231 (TA-54-0231), TA 54, Area G, Pad 11, Dome 375 (TA-54-0375), and TA-54, Area G, Pad 1, Building 412 (TA-54-0412). ~~The stabilization unit at TA-55 is a miscellaneous unit pursuant to 40 CFR Part 264, Subpart X and is used to treat liquid and solid mixed wastes by stabilization in cement to form a noncorrosive solid matrix.~~

Items will be brought into the large glovebox through the air lock. The items will then be placed in a process area of the glovebox enclosure where they will be visually inspected/examined and processed. This process may include sorting, segregation, size reduction, decontamination, and repackaging of the waste. The size reduction will be conducted in the process area of the glovebox enclosure through the use of powered tools (e.g., sawzall, circular saw, drills, etc.). Other hand tools that may be utilized include box cutters, scissors, drill bits, torque wrenches, etc. The items will be packaged in the process area into approved containers (e.g., 55- or 85-gallon drums and standard waste boxes).

The stabilization treatment process at TA-50 occurs within a glovebox at a permitted storage unit and is used to treat liquid and solid mixed waste by blending with water and zeolite to form a

noncorrosive and non-ignitable solid matrix. The stabilization treatment process at TA-54-0231 occurs within a glove bag at a permitted storage unit and is used to treat liquid and solid waste by neutralizing pourable liquids and adding zeolite or another Waste Isolation Pilot Plan (WIPP)-approved absorbent to form a noncorrosive and non-ignitable solid matrix. The stabilization treatment process at TA-54-0412 occurs within the pre-engineered containment tent within TA-54-0412 at permitted storage unit and is used two treat liquid and solid waste by neutralizing pourable liquids and adding zeolite or another Waste Isolation Pilot Plan (WIPP)-approved absorbent to form a noncorrosive and non-ignitable solid matrix. Treatment will occur under fume hoods for 55-gallon and 85-gallon drums. The fume hoods are attached to the ventilation system when in use. The stabilization
treatment process at TA-54-0375 occurs within the PermaCon® within TA-54-0375 at a permitted storage unit and is used to treat liquid and solid waste by neutralizing pourable liquids and adding zeolite or another WIPP-approved absorbent to form a noncorrosive and nonignitable solid matrix. Treatment occurs inside the PermaCon®, which is equipped with a HEPA filtration system and is under negative pressure during waste processing activities.

~~The stabilization unit at TA-55 treats homogeneous liquid and solid mixed waste generated primarily from R&D and processing and recovery operations at TA-55 and at the Chemistry and Metallurgy Research Building at TA-3. The liquid wastes (Summary Category Group L1000) generally consist of evaporator bottoms solutions and laboratory solutions that may exhibit the hazardous characteristics of corrosivity and toxicity for metals (including arsenic, barium, cadmium, chromium, lead, mercury, and silver) as defined in 40 CFR §§ 261.22 and 261.24, which are incorporated herein by reference. The homogeneous solid process wastes (Summary Category Group S3000) consist of process residue from the evaporator, process leached solids, filter cake, and other miscellaneous solids. This waste stream typically exhibits the hazardous characteristic of toxicity (for metals) and corrosivity. These waste streams are mixed with cement in 55-gallon drums and allowed to cure into a noncorrosive solid matrix. Table C-19 provides a description of the waste streams associated with the stabilization unit and identifies their potentially applicable EPA Hazardous Waste Numbers. The resulting cemented waste is identified by Summary Category Group S3000 and typically carries the Waste Matrix Code S3100.~~

The glovebox at the TA-50-0069 Indoor Permitted Unit is used to treat nitrate salt-bearing waste by stabilization in containers. Liquids and solid waste that exhibit the hazardous characteristics of ignitability, corrosivity (for liquids only), and toxicity for metals (including arsenic, barium, cadmium, chromium, lead, mercury, and silver) as defined in 40 CFR §§261.22 and 261.24, which are incorporated herein by reference, are treated at the unit to remove only the ignitability and corrosivity characteristics. Table C-15~~20~~ provides a description of the waste streams associated with the stabilization within a bowl in a glovebox located within in TA-50-0069 and the stabilization (including absorption) and neutralization inside a Perma-Con in building TA-54-0231, and identifies their potentially applicable EPA Hazardous Waste Numbers prior to treatment. After treatment, only the EPA Hazardous Waste Numbers for ignitability and corrosivity (D001 and D002) will be removed from the treated waste. All other Hazardous Waste Numbers will still apply to the treated waste.

The Permitted Units at TA-54-0231, TA-54-0375, and TA-54-0412 are used to treat mixed transuranic waste from the S3000 waste matrix (homogenous solids) to remove the Resource Conservation and Recovery Act (RCRA) hazardous waste characteristics of ignitability (D001),

corrosivity (D002) and reactivity (D003). Treatment of cemented sludge waste will occur within glove bags located inside the Permitted Unit, a Perma-Con in TA-54-0231. At TA-54-0375, treatment of waste occurs within the PermaCon® within Dome 375. At TA-54-412, treatment of waste occurs within the pre-engineered containment tent within Building 412. Treatment activities include neutralization of liquids, and stabilization of liquids using zeolite or another WIPP-approved absorbent. Table C-1520 provides a description of the waste streams associated with the stabilization (including absorption) and neutralization inside a glove bag located within a PermaCon in TA-54-0231, within a PermaCon® in TA-54-0375, and within the pre-engineered containment tent in TA-54-0412; and identifies their potentially applicable EPA Hazardous Waste Numbers (HWNs) prior to treatment. After treatment, only the EPA HWNs D001 and D002 will be removed from the treated waste. To remove the D003 HWN, aerosol cans will be removed/segregated from the waste stream and sent off-site for treatment and disposal. All other HWNs that have not been removed by treatment or segregation will still apply to the treated waste.

C.3.2.4.1 Characterization Procedures for Waste to Be Treated by Stabilization

The Permittees shall conduct chemical and physical characterization prior to treatment of MTRUWmixed transuranic waste. The Permittees shall use documented AK, as described in Attachment Section C.3.1.1, to determine whether or not the waste stream is regulated as a hazardous waste. The Permittees shall use process knowledge, chemical analytical data, or both to adequately characterize the MTRUWmixed transuranic waste prior to stabilization and neutralization, if necessary (at TA-54-0231, TA-54-0375, and TA-54-0412 only). If process information is not sufficient, the Permittees shall periodically sample and analyze the wastes to be treated by stabilization for pH and for toxicity characteristicTC metals listed in 40 CFR § 261.24 to establish a baseline, as appropriate. Based on documented AK, the wastes treated by stabilization at TA-55 do not contain VOCs or SVOCs. Parameters and analytical methods for specific hazardous constituents are presented in Table C-1318.

The neutralization process will consist of verifying the pH and adding hydrochloric acid (HCl) or sodium hydroxide (NaOH) incrementally and iteratively to aqueous waste to bring the pH within a 3 -10 range. Pourable liquids in the waste drums will have their pH measured with a calibrated pH meter prior to the neutralization process and will generally follow EPA Method 9040C (as updated), pH Electrometric Measurement for pH testing. However, because of the need for “real-time” pH screening results at the time of waste processing, strict adherence to all aspects of EPA method 9040C may not be possible. The Permittees may use an equivalent method, if approved in advance by NMED. The liquids will be neutralized, if necessary, and stabilized with zeolite in a minimum ratio of 3:1 (three parts zeolite to one part liquid waste). The treated waste will be repackaged into a new certified 55-gal. daughter drum and characterized and certified by Central Characterization Program (CCP) personnel in accordance with the WIPP WAC. All measuring tools used in the stabilization process (*i.e.,* glass/plastic pipettes, graduated cylinders, beakers, etc.) must be resistant to a wide variety of reagents.

~~**C.3.2.4.2 Characterization Procedures for Waste Treated by Stabilization**~~

~~The Permittees shall characterize waste treated by stabilization (*i.e.*, MTRUW) in accordance with Attachment Section C.3.2. For treatment at the TA-50-0069 Indoor Permitted Unit, samples will be collected from a minimum of 1% of treated waste containers from each waste stream and analyzed at an onsite laboratory to confirm chemical composition when compared to that of the surrogates tested.~~

NMED may require additional sampling of waste from the TA-54-0231, TA-54-0375, and TA-54-0412 treatment processes.

~~**C.3.2.5 Sample Handling, Preservation, and Storage**~~

~~Table C-15 presents the most recent *SW-846* requirements regarding sample containers, preservation techniques, and holding times associated with sample collection. The Permittees shall adhere to these requirements to ensure that sampling and analysis meet quality objectives for data.~~

C.4 OFF-SITE WASTE ACCEPTANCE PROCEDURES

For off-site waste, the Permittees shall require the generator to provide waste characterization documentation equivalent to that prepared by the Permittees for waste generated on site. The Permittees shall review such documentation for completeness and accuracy prior to approving the waste for shipment to the Facility.

The Permittees shall verify that off-site waste documentation, including Uniform Hazardous Waste Manifests and LDR Notification Forms, corresponds to the waste received and its associated characterization documentation.

The Permittees shall physically examine waste shipments upon receipt for correct documentation, correctness and completeness of waste container identification and labeling, and conformance with permitted container types and waste compatibility for storage and segregation, as appropriate. If the Permittees find discrepancies between the wastes received and the manifest or during further characterization find such discrepancies, the Permittees shall notify the Department in accordance with Permit Section 2.4.4. If the Permittees cannot resolve the discrepancies, the waste shall be returned to the generator in accordance with Permit Section 2.4.4.

C.5 SPECIAL PROCEDURAL REQUIREMENTS

Waste management requirements specific to ignitable, reactive, and incompatible waste as well as requirements for compliance with LDR and 40 CFR Part 264 Subparts BB and CC are described below.

C.5.1 Procedures for Ignitable, Reactive, and Incompatible Wastes to be Stored or Treated

The Permittees shall characterize all waste to be stored or treated under this Permit to identify applicable and appropriate classes and divisions contained in 49 CFR § 177.848, which is incorporated herein by reference, and shall label the container or tank to reflect that classification.

C.5.2 Procedures to Ensure Compliance with LDR Requirements

The Permittees shall evaluate all waste streams to identify all applicable underlying hazardous constituents (UHCs) exceeding treatment standards in accordance with 40 CFR § 268.7(a)(1), which is incorporated herein by reference. Waste designated to be disposed of at the ~~Waste Isolation Pilot Plant (~~WIPP~~)~~ must undergo characterization to determine whether it is subject to the land disposal prohibitions, but it is not required to be characterized to determine all applicable underlying hazardous constituents listed in 40 CFR § 268.48.

If waste is to be treated on site to meet the LDR requirements, the Permittees shall comply with the testing and reporting requirements of 40 CFR § 268.7(b), which is incorporated herein by reference. The Permittees shall identify and document before treatment all waste whose treatment goal is to meet the LDR requirements. After treating such waste, the Permittees shall characterize the treated waste or residue to determine whether all treatment standards have been met. The Permittees shall analyze residues from wastes with concentration-based treatment standards by the appropriate methods described in ~~Attachment~~ Section C.3.1.2 to assure that the waste meets applicable treatment standards.

The Permittees shall prepare certifications required by the 40 CFR § 268.7(b), which is incorporated herein by reference, appropriate to formerly characteristic wastes for which all characteristics have been deactivated and all Universal Treatment Standards have been met, formerly characteristic wastes for which all characteristics have been deactivated but not all treatment standards are achieved, and other special certifications as required. The Permittees shall prepare new waste characterization documentation for the treated waste or residue, as appropriate, incorporating the treatment facility paperwork requirements of 40 CFR § 268.7(b) or the generator paperwork requirements of 40 CFR § 268.7(a), which is incorporated herein by reference, if the residue is considered a newly-generated waste.

C.5.3 Procedures to Ensure Compliance with Subpart BB Requirements

The Permittees shall comply with 40 CFR Part 264, Subpart BB, as described below, as to equipment at the facility that is subject to specific requirements for test methods and procedures at 40 CFR Part 264 Subpart BB, which is incorporated herein by reference.

C.5.3.1 Requirements for Leak Detection and Monitoring

The Permittees shall ensure that monitoring complies with Reference Method 21 at 40 CFR Part 60.

The detection instrument shall meet the performance criteria of Reference Method 21. The Permittees shall use Reference Method 21 procedures to calibrate the detection instrument prior to each day it is used. The calibration gases shall be:

1. less than 10 parts per million (ppm) of hydrocarbon in air; and
2. methane or n-hexane mixed with air at approximately, but less than, 10,000 ppm methane or n-hexane.

The Permittees shall measure all potential leak interfaces as close to the interface as possible. For determining compliance with “no detectable emissions” requirements (40 CFR § 264.1054, which is

incorporated herein by reference), the Permittees shall meet all of the above requirements as well as the following:

1. background shall be determined pursuant to Reference Method 21; and
2. the arithmetic difference between background and the maximum concentration detected shall be compared with 500 ppm.

C.5.3.2 Determination of Hazardous Waste Concentration

The Permittees shall determine whether hazardous waste contained in, or in contact with, the equipment is greater than or equal to 10% by weight organics using one of the following (*see* 40 CFR § 264.1063(d)):

1. ASTM Methods D 2267-88, E 169-87, E 168-88, E 260-85 (*see* 40 CFR § 260.11);
2. *SW-846* Method 9060 or 8260 (*see* 40 CFR § 260.11); or
3. acceptable knowledge with documentation (*e.g.*, production process information, measurements from an identical process at another facility).

If concentration of the hazardous waste changes such that it is believed to be greater than 10% by weight organics, the Permittees shall revise the determination only after chemical analyses is performed in accordance with the methods listed above (*see* 40 CFR § 264.1063(e)). If the Department does not agree with the determination, chemical analyses using the methods listed above can be used to resolve the dispute (*see* 40 CFR § 264.1063(f)). Samples used to make this determination shall be representative of the highest total organic concentration expected (*see* 40 CFR § 264.1063(g)).

C.5.4 Procedures to Ensure Compliance with Subpart CC Requirements

The Permittees' waste streams described in this document may be subject to 40 CFR Part 264, Subpart CC "Air Emission Standards for Tanks, Surface Impoundments, and Containers", based on applicability criteria specified in 40 CFR § 264.1080, incorporated herein by reference. For waste units that are not exempt from this Subpart under 40 CFR §264.1080(b), the Permittees shall address the applicable Subpart CC requirements. In addition, exemption from the standards specified in 40 CFR §§ 264.1084 through 264.1087, incorporated herein by reference, can be demonstrated if the average VOC concentration is less than 500 parts per million by weight (ppmw) at the point of waste origination, as described at 40 CFR § 264.1082(c)(1), incorporated herein by reference. The Permittees shall make this determination in accordance with 40 CFR § 264.1083(a) and shall review and update it as necessary at least every twelve months.

If the Permittees claim a 40 CFR § 264.1082(c) exemption for any hazardous waste management units, the Permittees shall document the determination for each waste stream. Permittees may use AK or process knowledge to make the determination. However, if sampling and analysis is needed, the Permittees shall conduct it in accordance with the approved methods identified at 40 CFR §§ 265.1084(a)(3)(iii)(A) through 265.1084(a)(3)(iii)(I), and listed in Tables C-11~~16~~, C-12~~17~~, and C-13~~18~~. The Permittees shall review the characterization documentation before acceptance of the waste at any permitted storage unit~~TA-54~~ as required in Permit Section 2.4.7.

Characterization requirements for waste that has been treated to meet the exemptions allowed at 40 CFR §§ 264.1082(c)(2) and (4) are summarized below:

1. ~~in~~In accordance with 40 CFR § 264.1082(c)(2)(i), waste is treated to reduce the volatile organic (VO) concentration to less than 500 ppmw that is measured in either a waste from a single point of origination or individual wastes from multiple points of origination commingled before treatment. The Permittees shall analyze the waste prior to and after treatment pursuant to provisions at 40 CFR § 264.1083(a) and (b)~~;~~.
2. ~~in~~In accordance with 40 CFR § 264.1082(c)(2)(ii), waste is treated to reduce the VO concentrations by at least 95% and the treated waste VO concentration is ensured to be less than 100 ppmw. The Permittees shall analyze the waste prior to and after treatment pursuant to provisions at 40 CFR § 264.1083(a) and (b)~~;~~.
3. ~~in~~In accordance with 40 CFR § 264.1082(c)(2)(iii), waste is treated to remove VO mass greater than or equal to the VO mass that exceeded the 500 ppmw. The Permittees shall analyze the waste prior to and after treatment pursuant to provisions at 40 CFR § 264.1083(a) and (b)~~;~~.
4. ~~in~~In accordance with 40 CFR § 264.1082(c)(2)(v), waste is treated to reduce the VO concentration to less than the lowest VO concentration for all individual waste streams mixed together at the point of origin and less than 500 ppmw. The Permittees shall analyze the waste prior to and after treatment pursuant to provisions at 40 CFR § 264.1083(a) and (b)~~;~~.
5. ~~in~~In accordance with 40 CFR § 264.1082(c)(2)(vi), waste is treated to reduce the VO concentration by 95% and each individual waste stream entering the treatment process is certified to be less than 10,000 ppmw. The Permittees shall analyze the waste prior to and after treatment pursuant to provisions at 40 CFR § 264.1083(a) and (b)~~; and~~.
6. ~~in~~In accordance with 40 CFR § 264.1082(c)(4), waste is treated to meet LDR standards, either concentration-based or technology-based. LDR compliance is determined for concentration-based using either analysis or AK.

Details for specific treatment criteria and analytical requirements associated with each exemption can be found at the regulations cited.

C.6 REFERENCES

ASTM, 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," ASTM D4547-91, *Annual Book of ASTM Standards*, Philadelphia, Pennsylvania, American Society for Testing and Materials.

DOE, 2011~~1999~~, "Radioactive Waste Management," *DOE Order 435.1*, U.S. Department of Energy, Washington, D.C.

DOE, 1995, "DOE Waste Treatability Groups Guidance," Revision 0.0, U.S. Department of Energy, Idaho Operations Office.

EPA, 2015~~1994a~~, "Waste Analysis at Facilities that Generate Treat, Store, and Dispose of Hazardous Wastes, A Guidance Manual," *OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

EPA, 1994~~b~~, "Use of Total Waste Analysis in Toxicity Characteristic Determinations," FAXBACK 13647, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

NMED, 1995, "Federal Facility Compliance Order (Los Alamos National Laboratory)," New Mexico Environment Department, Santa Fe, New Mexico.

~~**Table C-1**~~

~~(This table is reserved)~~

Table C-1~~C-2~~
Descriptions of Non-Mixed Hazardous Waste Stored at the Facility
~~(This table is for informational purposes only)~~

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Spent Solvents	Research and development ~~(R&D)~~ activities; laser research; organic and inorganic chemistry research (*e.g.*, solvent extractions, liquid chromatography solvents, polymer synthesis, and distillations); cleaning; and degreasing operations	Acceptable Knowledge Sampling and Analysis	D001 D002 D003 D004 D005 D006 D007 D008 D009 D010 D011 D018 D019 D021 D022 D027 D028 D029 D030 D032 D034 D035 D036 D037 D038 D040 D041 D042 D043 F001 F002 F003 F004 F005 U213	Ignitability Corrosivity Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform 1,4-Dichlorobenzene 1,2-Dichloroethane 1,1-Dichloroethylene 2,4-Dinitrotoluene Hexachlorobenzene Hexachloroethane Methyl ethyl ketone Nitrobenzene Pentachlorophenol Pyridine Trichloroethylene 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol Vinyl chloride Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Tetrahydrofuran	NA[c] NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 100.0 6.0 7.5 0.5 0.7 0.13 0.13 3.0 200.0 2.0 100.0 5.0 0.5 400.0 2.0 0.2 NA[c] NA[c] NA[c] NA[c] NA[c] NA[c]	Antimony, Arsenic, Barium, Cadmium, Cyanides (Total), Chromium (Total), Lead, Mercury-all others, Selenium, Silver, Acetone, Acetonitrile, Benzene, Carbon tetrachloride, Chlorobenzene, Chloroform, 1,4-Dichlorobenzene, 1,2-Dichloroethane, 1,1-Dichloroethylene, 2,4-Dinitrotoluene, 1,4-Dioxane, Ethyl ether, Hexachlorobenzene, Hexachloroethane, Methanol, Methylene chloride, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol, Pyridine, Toluene, Triethylamine, Trichloroethylene, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, Vinyl chloride and all applicable constituents identified above the UHC regulatory limit.

Table ~~C-2~~ C-1 (continued)
Descriptions of Non-Mixed Hazardous Waste Stored at the Facility

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Contaminated Solid Wastes	Machining operations, chemistry research, decontamination and decommissioning projects, metal finishing operations, HE wastewater filtration, and general maintenance operations	Acceptable Knowledge Sampling and Analysis	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011 D018 D019 D021 D022 D023 D024 D025 D027 D028 D029 D030 D031 D032 D033 D034 D035 D036 D037 D038 D039 D040 D041 D042 D043 F001 F002 F003 F004 F005 K045	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform o-Cresol m-Cresol p-Cresol 1,4-Dichlorobenzene 1,2-Dichloroethane 1,1-Dichloroethylene 2,4-Dinitrotoluene Heptachlor (and its epoxide) Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Methyl ethyl ketone Nitrobenzene Pentachlorophenol Pyridine Tetrachloroethylene Trichloroethylene 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol Vinyl chloride Spent halogented solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Spent carbon	NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 100.0 6.0 200.0[d] 200.0[d] 200.0[d] 7.5 0.5 0.7 0.13 0.008 0.13 0.5 3.0 200.0 2.0 100.0 5.0[e] 0.7 0.5 400.0 2.0 0.2 NA[c] NA[c] NA[c] NA[c] NA[c] NA[c] NA[c]	Arsenic, Barium, Beryllium, Cadmium, Chromium, Lead, Mercury-all others, Selenium, Silver, Thallium, Benzene, Carbon Disulfide, Carbon Tetrachloride, Chlorobenzene, Chloroform, o-Cresol, m-Cresol, p-Cresol Cresol,1,4-Dichlorobenzene 1,1-Dichloroethylene,2,4-Dinitrotoluene, Ethyl Ether, Heptachlor (and its epoxide), Hexachlorobenzene Hexachlorobutadiene, Hexachloroethane, Methanol, Methyl ethyl ketone, Methylene Chloride, Nitrobenzene, Pentachlorophenol, Phenol, p,p'-DDT, Pyridine, Tetrachloroethylene, Trichloroethylene, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, Vinyl chloride, and all applicable constituents identified above the UHC regulatory limit

Table ~~C-2~~C-1 (continued)
Descriptions of Non-Mixed Hazardous Waste Stored at the Facility

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Paint and Related Wastes	Painting and finishing operations, and general facility maintenance	Acceptable Knowledge Sampling and Analysis	D001 D005 D006 D007 D008 D009 D011 D036 F003 F005	Ignitability Barium Cadmium Chromium Lead Mercury Silver Nitrobenzene Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] 100.0 1.0 5.0 5.0 0.2 5.0 2.0 NA[c] NA[c]	Barium, Cadmium, Chromium (Total), Lead, Mercury –all others, Silver, Methyl ethyl ketone, Nitrobenzene and all applicable constituents above the UHC regulatory limit
Photographic and Photocopier Wastes	Photographic film processing and photocopier operations	Acceptable Knowledge Sampling and Analysis	D001 D002 D006 D007 D008 D011	Ignitability Corrosivity Cadmium Chromium Lead Silver	NA[c] NA[c] 1.0 5.0 5.0 5.0	Cadmium, Chromium, Lead, Silver and all applicable constituents above the UHC regulatory limit
Corrosive Liquid Wastes	Analytical chemistry research, electro-etching, and electro-polishing	Acceptable Knowledge Sampling and Analysis	D001 D002 D003 D004 D005 D006 D007 D008 D009 D010 D011 D018 D022 D038 F002 F003 F005 P023	Ignitability Corrosivity Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene Chloroform Pyridine Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Chloroacetaldehyde	NA[c] NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 6.0 5.0 NA[c] NA[c] NA[c] NA[c]	Acetone, Arsenic, Barium, Benzene, Cadmium, Chromium (Total), Chloroform, Cyanides (Total), 2,4-Dinitrophenol, Fluoride, Isobutyl alcohol, Lead, Mercury-all others, Methanol, Nickel, o-Nitrophenol, Pyridine Selenium, Silver, Sulfide, Thallium, Triethylamine, Zinc, and all applicable constituents above the UHC regulatory limit

Table C-1~~C-2~~ (continued)
Descriptions of Non-Mixed Hazardous Waste Stored at the Facility

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Solid Metals and Metallic Compounds	Machining and cutting operations; synthesis reactions; solder from electronic manufacturing, repair, and brazing operations; and grinding operations	Acceptable Knowledge Sampling and Analysis	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury-all others, Nickel, Silver, and all applicable constituents above the UHC regulatory limit
Mercury Wastes	Lamp replacement, chemical research, mercury spill cleanup, and equipment cleaning and maintenance	Acceptable Knowledge Sampling and Analysis	D003 D008 D009 D011 U151	Reactivity Lead Mercury Silver Mercury	NA[c] 5.0 0.2 5.0 NA[c]	Barium, Chromium (Total), Lead, Mercury-all others, Silver Thallium, Zinc and all applicable constituents above the UHC regulatory limit
Unused/Off-specification Commercial Chemical Products	~~R&D~~Research and development, spill residues, and general facility operations	Acceptable Knowledge Sampling and Analysis	D001 D002 D003 D004 through D043 All P- and U-listed EPA Hazardous Waste Numbers[g]	Ignitability Corrosivity Reactivity Toxicity characteristic wastes Discarded commercial chemical products and off-specification species	NA[c] NA[c] NA[c] -[b] NA[c]	Arsenic, Barium, Cadmium, Chromium (Total), Lead, Mercury-all others, Nickel, Selenium, Silver, Acetonitrile, Benzene, Carbon tetrachloride Chlorobenzene, Chloroform, o-Cresol, m-Cresol, p- Cresol, 2, 4-D, 1,4 Dichlorobenzene, 1,1-Dichloroethylene, 1,2-Dichloroethane 2,4 Dinitrotoluene, Endrin, Heptachlor (and its epoxide), Hexachlorobenzene Hexachlorobutadiene, Hexachloroethane, Lindane, Methoxychlor, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol; Pyridine, Tetrachloroethylene, Toluene, Toxaphene, Trichloroethylene, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4,5-TP (Silvex), Vinyl chloride, and all applicable constituents identified above the UHC regulatory limit

Table C-1~~C-2~~ (continued)
Descriptions of Non-Mixed Hazardous Waste Stored at the Facility

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Contaminated Non-corrosive Aqueous and Non-aqueous Solutions and Sludges	Vacuum pump maintenance, analytical spectrometry, equipment cleaning and maintenance, vehicle maintenance, synthesis reactions, metal-polishing operations, and chemical research	Acceptable Knowledge Sampling and Analysis	D001 D002 D003 D004 D005 D006 D007 D008 D009 D010 D011 D018 D019 D021 D022 D023 D024 D025 D027 D028 D029 D030 D032 D033 D034 D035 D036 D037 D038 D039 D040 D041 D042 D043 F001 F002 F003 F004 F005	Ignitability Corrosivity Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform o-Cresol m-Cresol p-Cresol 1,4-Dichlorobenzene 1,2-Dichloroethane 1,1-Dichloroethylene 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Methyl ethyl ketone Nitrobenzene Pentachlorophenol Pyridine Tetrachloroethylene Trichloroethylene 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol Vinyl chloride Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 100.0 6.0 200.0[d] 200.0[d] 200.0[d] 7.5 0.5 0.7 0.13[e] 0.13[e] 0.5 3.0 200.0 2.0 100.0 5.0 0.7 0.5 400.0 2.0 0.2 NA[c] NA[c] NA[c] NA[c] NA[c]	Acetone, Acetonitrile, Antimony, Arsenic, Barium, Benzene, Cadmium, Carbon tetrachloride, Chlorobenzene, Chloroform Chromium (Total), Chrysene, o-Cresol, m-Cresol p-Cresol m-Dichlorobenzene, 1,4-Dichlorobenzene 1,2-Dichloroethane, 1,1-Dichloroethylene, 2,4-Dinitrotoluene, 4,6-Dinitro-o-cresol, 1,4-Dioxane, Fluorine, Indeno(1,2,3-c,d) pyrene, Hexachlorobenzene, Hexachlorobutadiene, Hexachloroethane, Lead, Mercury-all others, Methanol, Methyl ethyl ketone, Methylene chloride, Naphthalene, Nitrobenzene, p-Nitrophenol, Pentachlorophenol, Pyridine, Selenium, Silver, Tetrachloroethylene, Toluene, Trichloroethylene, 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol, Zinc Vinyl chloride and all applicable constituents above the UHC regulatory limit

Table ~~C-2~~ C-1 (continued)
Descriptions of Non-Mixed Hazardous Waste Stored at the Facility

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Gas Cylinder Waste	~~R&D~~Research and development and general facility operations	Acceptable Knowledge	D001 D002 D003 Potential D-coded EPA Hazardous Waste Numbers Potential P-and U-listed EPA Hazardous Waste Numbers	Ignitability Corrosivity Reactivity Toxicity characteristic wastes Discarded commercial chemical products and off-specification species	NA[c] NA[c] NA[c] -[b] NA[c]	Arsenic, Barium, Cadmium, Chromium (Total), Lead, Mercury-all others, Selenium, Silver, Benzene, Carbon tetrachloride Chlorobenzene, Chloroform o-Cresol, m-Cresol, p-Cresol, 2,4-D, 1,4-Dichlorobenzene 1,1-Dichloroethylene,2,4-Dinitrotoluene, Endrin, Heptachlor (and its epoxide), Hexachlorobenzene Hexachlorobutadiene, Hexachloroethane, Lindane, Methoxychlor, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol Pyridine, Tetrachloroethylene, Toxaphene, Trichloroethylene, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4,5-TP (Silvex) Vinyl chloride, and all applicable constituents identified above the UHC regulatory limit
Used Batteries and Battery Fluids	Equipment maintenance	Acceptable Knowledge	D002 D003 D006 D007 D008 D009 D011 D038	Corrosivity Reactivity Cadmium Chromium Lead Mercury Silver Pyridine	NA[c] NA[c] 1.0 5.0 5.0 0.2 5.0 5.0[e]	Cadmium, Chromium, Lead, Mercury-all others, Pyridine, Silver and all applicable constituents above the UHC regulatory limit

Table ~~C-2~~ C-1 (continued)
Descriptions of Non-Mixed Hazardous Waste Stored at the Facility

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Environmental Restoration ~~(ER)~~ Soils and Sludges	Site decommissioning, site characterization, and site remediation; includes septic tank and detention basin closure, removal actions, and other remedial actions and site closures	Acceptable Knowledge Sampling and Analysis	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011 D018 D022 D030 D032 D033 D034 D036 D039 D040 D042 F001 F002 F003 F005	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene Chloroform 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Nitrobenzene Tetrachloroethylene Trichloroethylene 2,4,6-Trichlorophenol Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 6.0 0.13[c] 0.13[c] 0.5 3.0 2.0 0.7 0.5 2.0 NA[c] NA[c] NA[c] NA[c]	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury-all others, Selenium, Silver, Benzene, Chloroform, 2,4-Dinitrotoluene, Hexachlorobenzene, Hexachlorobutadiene, Hexachloroethane, Nitrobenzene, Tetrachloroethylene, Trichloroethylene, 2,4,6-Trichlorophenol, and all applicable constituents identified above the UHC regulatory limit

[a] Denotes information from the Los Alamos National Laboratory waste characterization documentation database

[b] A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), the extract from a representative sample of the waste contains any of the contaminants listed (D004-D043) at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart II, Part 261, Subpart C [6-14-00]

[c] Not applicable: Refers to the absence of regulatory limits for ignitable, corrosive, and reactive characteristic wastes and F-, P-, and U-listed wastes

[d] If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 milligrams per liter

[e] The quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level ~~(20.4.1 NMAC, Subpart II,~~ 40 CFR § 261.24, Table 1 ~~[6-14-00])~~

Table C-2~~C-3~~
Descriptions of Mixed Low-Level Waste Stored at the Facility
~~(This table is for informational purposes only)~~

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Solid Wastes						
Soils with Heavy Metals	Decontamination and decommissioning ~~(D&D)~~ and ~~Environmental Restoration~~environmental restoration ~~(ER)~~ activities	Acceptable Knowledge and Preliminary Analysis	D004 D005 D006 D007 D008 D009 D010 D011	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0	Arsenic, Barium, Cadmium, Chromium (Total), Mercury-all others, Lead, Selenium, Silver, Vanadium, Zinc and those constituents identified above the UHC regulatory limit
Environmental Restoration Soils	Remediation of release sites and ~~D&D~~decontamination and decommissioning activities	Acceptable Knowledge Sampling and Analysis	D005 D006 D007 D008 D009 D028 D029 F001 F002 F004 F005	Barium Cadmium Chromium Lead Mercury 1,2-Dichloroethane 1,1-Dichloroethylene Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	100.0 1.0 5.0 5.0 0.2 0.5 0.7 NA[c] NA[c] NA[c] NA[c]	Barium, Cadmium, Chromium (Total), Lead, Mercury 1,2-Dichloroethane 1,1-Dichloroethylene and all applicable constituents identified above the UHC regulatory limit.
Inorganic Solid Oxidizers	~~D&D~~Decontamination and decommissioning of research laboratories and research and development ~~(R&D)~~	Acceptable Knowledge	D001 D003 D005	Ignitability Reactivity Barium	NA[c] NA[c] 100.0	Barium and all applicable constituents identified above the UHC limit
Lead Waste	Radioisotope experiments and other reactor, accelerator, laser, and x-ray activities	Acceptable Knowledge	D002 D003 D007 D008 D009	Corrosivity Reactivity Chromium Lead Mercury	NA[c] NA[c] 5.0 5.0 0.2	Chromium, Lead, Mercury-all others and all applicable constituents identified above the UHC regulatory limit
Noncombustible Debris	Maintenance, ~~D&D~~decontamination and decommissioning, research and development~~R&D~~, and ~~ER~~environmental restoration activities	Acceptable Knowledge	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011 F002 F005	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Spent halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 NA[c] NA[c]	Arsenic, Barium, Cadmium, Chromium (Total), Lead, Mercury-all others, Selenium, Silver, and all applicable constituents identified above the UHC regulatory limit

Table C-2~~C-3~~ (continued)
Descriptions of Mixed Low-Level Waste Stored at the Facility

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Solid Wastes						
Combustible Debris	Maintenance, ~~R&D~~research and development, ~~D&D~~decontamination and decommissioning, and ~~ER~~environmental restoration activities	Acceptable Knowledge	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011 F001 F002 F003 F005	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 NA[c] NA[c] NA[c] NA[c]	Arsenic, Barium, Chromium, Lead, Mercury-all others, Selenium, Silver, Nickel, Zinc and all applicable constituents identified above the UHC regulatory limit
Organic-Contaminated Noncombustible Solids	Vacuum pump maintenance, ~~R&D~~research and development, ~~D&D~~decontamination and decommissioning, and ~~ER~~environmental restoration activities	Acceptable Knowledge	D001 D004 D005 D006 D007 D008 D009 D010 D011 D018 D027 D030 D032 D033 D034 D035 D037 D038 D041 D042 F001 F002 F004 F005	Ignitability Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene 1,4-Dichlorobenzene 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Methyl ethyl ketone Pentachlorophenol Pyridine 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 7.5 0.13[d] 0.13[d] 0.5 3.0 200.0 100.0 5.0[d] 400.0 2.0 NA[c] NA[c] NA[c] NA[c]	Arsenic, Barium Cadmium, Chromium Lead, Mercury Selenium, Silver Benzene, 1,4-Dichlorobenzene 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane, Methoxychlor, Methyl ethyl ketone, Pentachlorophenol, Pyridine, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol and all applicable constituents identified above the UHC regulatory limit

Table C-2~~C-3~~ (continued)
Descriptions of Mixed Low-Level Waste Stored at the Facility

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Solid Wastes						
Organic-Contaminated Combustible Solids	Maintenance, D&D, and ~~ER~~environmental restoration activities	Acceptable Knowledge	D001 D003 D007 D008 D009 D030 D035 F001 F002 F003 F005	Ignitability Reactivity Chromium Lead Mercury 2,4-Dinitrotoluene Methyl ethyl ketone Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] 5.0 5.0 0.2 0.13[d] 200.0 NA[c] NA[c] NA[c] NA[c]	Chromium, Lead Mercury-all other, 2,4-Dinitrotoluene, Methyl ethyl ketone and all applicable constituents identified above the UHC regulatory limit
Water-Reactive Wastes	Cleanup of HE firing-site debris, machining and disassembly of test components	Acceptable Knowledge	D001 D003 D005 F002	Ignitability Reactivity Barium Spent halogenated solvents	NA[c] NA[c] 100.0 NA[c]	Barium, and all applicable constituents identified above the UHC regulatory limit
Mercury Wastes	Cleanup operations	Acceptable Knowledge	D005 D007 D008 D009 F001	Barium Chromium Lead Mercury Spent halogenated solvents	100.0 5.0 5.0 0.2 NA[c]	Barium, Chromium, Lead, Mercury-all others and all applicable constituents identified above the UHC regulatory limit
Unused Solid Reagent Chemical Wastes	~~R&D~~Research and development activities	Acceptable Knowledge	D001 D002 D003 All P- and U-listed EPA Hazardous Waste Numbers[e]	Ignitability Corrosivity Reactivity Discarded commercial chemical products and off-specification species	NA[c] NA[c] NA[c] NA[c]	All applicable constituents above the UHC regulatory limit

Table C-2~~C-3~~ (continued)
Descriptions of Mixed Low-Level Waste Stored at the Facility

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Liquid Wastes						
Spent Solvents and Contaminated Solvent Mixtures	Maintenance, cleaning, and degreasing activities: ~~R&D~~research and development; processing operations, such as extraction, bench-scale experimental inorganic chemistry, environmental analysis, radiochemistry	Acceptable Knowledge	D001 D002 D004 D005 D007 D008 D009 D010 D011 D018 D019 D021 D022 D027 D028 D030 D032 D033 D034 D036 D042 D043 F001 F002 F003 F005	Ignitability Corrosivity Arsenic Barium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform 1,4-Dichlorobenzene 1,2-Dichloroethane 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Nitrobenzene 2,4,6-Trichlorophenol Vinyl chloride Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] 5.0 100.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 100.0 6.0 7.5 0.5 0.13[d] 0.13[d] 0.5 3.0 2.0 2.0 0.2 NA[c] NA[c] NA[c] NA[c]	Arsenic, Barium, Chromium, Lead, Mercury-all others, Selenium, Silver, Benzene, Carbon tetrachloride, Chlorobenzene, Chloroform, 1,4-Dichlorobenzene, 1,2-Dichloroethane, 2,4-Dinitrotoluene, Hexachlorobenzene, Hexachlorobutadiene, Hexachloroethane, Nitrobenzene, Tribromomethane (Bromoform) 2,4,6-Trichlorophenol, Vinyl chloride and all applicable constituents identified above the UHC regulatory limit
Corrosive Liquid Wastes	Radiochemistry research, plutonium-processing operations, and analytical chemistry	Acceptable Knowledge	D001 D002 D004 D006 D007 D008 D009 D010 D011 D036 D043 F001 F002 F005	Ignitability Corrosivity Arsenic Cadmium Chromium Lead Mercury Selenium Silver Nitrobenzene Vinyl chloride Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] 5.0 1.0 5.0 5.0 0.2 1.0 5.0 2.0 0.2 NA[c] NA[c] NA[c]	Arsenic, Barium, Cadmium, Bromodichloromethane, Chromium (Total), Lead, Mercury-all others, Nitrobenzene, Nickel, Selenium, Silver, Vinyl Chloride and all applicable constituents identified above the UHC regulatory limit

Table C-2~~C-3~~ (continued)
Descriptions of Mixed Low-Level Waste Stored at the Facility

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Liquid Wastes						
Oil Wastes	Equipment maintenance operations	Acceptable Knowledge	D004 D005 D006 D007 D008 D009 D010 D018 D019 D027 D028 D030 D032 D033 D034 D036 D037 D038 D041 D042 D043 F001 F002 F003 F005	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Benzene Carbon tetrachloride 1,4-Dichlorobenzene 1,2-Dichloroethane 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Nitrobenzene Pentrachlorophenol Pyridine 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol Vinyl chloride Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	5.0 100.0 1.0 5.0 5.0 0.2 1.0 0.5 0.5 7.5 0.5 0.13[d] 0.13[d] 0.5 3.0 2.0 100.0 5.0[d] 400.0 2.0 0.2 NA[c] NA[c] NA[c] NA[c]	Arsenic, Barium, Cadmium, Chromium Lead, Mercury-all others, Selenium, Silver, Thallium, Benzene, Carbon tetrachloride, 1,4-Dichlorobenzene, 1,2-Dichloroethane, 2,4-Dinitrotoluene, Diethylphthalate, Di-n-butyl phthalate, Hexachlorobutadiene, Hexachlorobenzene, Hexachloroethane, Hexachlorocyclopentadiene, Nitrobenzene, Pentachlorophenol, Pyridine, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, Vinyl chloride and all applicable constituents identified above the UHC regulatory limit
Unused Liquid Reagent Chemical Wastes	~~R&D~~Research and development activities	Acceptable Knowledge	D001 D002 D035 All P- and U-listed EPA Hazardous Waste Numbers[e]	Ignitability Corrosivity Methyl ethyl ketone Discarded commercial chemical products and off-specification species	NA[c] NA[c] 200.0 NA[c]	Methyl ethyl ketone and all applicable constituents identified above the UHC regulatory limit

Table C-2~~C-3~~ (continued)
Descriptions of Mixed Low-Level Waste Stored at the Facility

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Liquid Wastes						
Aqueous and Nonaqueous Liquids Contaminated with Heavy Metals and/or Organics	~~ER~~Environmental restoration activities, metal-polishing operations, and radiochemistry research	Acceptable Knowledge Sampling and Analysis	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011 D018 D019 D021 D022 D023 D024 F002 F005	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform o-Cresol m-Cresol Spent halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 100.0 6.0 200.0[f] 200.0[f] NA[c] NA[c]	Arsenic, Barium, Cadmium, Chromium (Total), Lead, Mercury-all others, Selenium, Silver, Benzene, Carbon tetrachloride~~Tetrachloride~~, Chlorobenzene, Chloroform, o-cresol, m-cresol, 1,2-Dichloroethane, and all applicable constituents identified above the UHC regulatory limit
Gas Cylinder Waste						
Gas Cylinder Waste	Research and development~~R&D~~ and general facility operations	Acceptable Knowledge	D001 D002 D003 Potential D-coded EPA Hazardous Waste Numbers Potential P- and U-listed EPA Hazardous Waste Numbers[e]	Ignitability Corrosivity Reactivity Toxicity characteristic wastes Discarded commercial chemical products and off-specification species	NA[c] NA[c] NA[c] -[b] NA[c]	All applicable constituents above the UHC regulatory limit

[a] Denotes information from the Los Alamos National Laboratory waste characterization documentation database.

[b] A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), the extract from a representative sample of the waste contains any of the contaminants listed (D004-D043) at a concentration equal to or greater than the respective value given in ~~the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart II,~~40 CFR Part 261, Subpart C ~~[6-14-00]~~.

[c] Not applicable: Refers to the absence of regulatory limits for ignitable, corrosive, and reactive characteristic wastes and F-, P-, and U-listed wastes.

[d] The quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level 40 CFR §~~(20.4.1 NMAC, Subpart II,~~ 261.24, Table 1 ~~[6-14-00]~~).

[e] Refers to the P- and U-listed wastes found in the "Los Alamos National Laboratory General Part A Permit Application," ~~Revision 3.0, 2002,~~ Los Alamos National Laboratory, Los Alamos, New Mexico.

[f] If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 milligrams per liter.

Note: Fluoride, sulfide, vanadium, and zinc are not "underlying hazardous constituents" in characteristic wastes, according to the definition in 40 CFR § 268.2(i). Selenium is not an underlying hazardous constituent as defined at 40 CFR § 268.2(i) because its Universal Treatment Standard level is greater than its Toxicity Characteristic level, thus a treated selenium waste would always be characteristically hazardous, unless it is treated to below its characteristic level.

Table C-3~~C-4~~
Facility ~~MTRUW~~Mixed Transuranic Waste Stream Waste Matrix Codes Correlated with Facility Waste Identification Systems

~~(This table is for informational purposes only)~~

Summary Category Group	Waste Matrix Code	Waste Stream Description	RSWD Code[a]		IDC[b]		TRUCON Code[c]	
S3000 - Homogeneous	S3100	Homogeneous Inorganic, Cemented	A-25	Leached Process Residues	002	Cemented Aqueous Waste	LA111	Solidified Aqueous or Homogeneous Inorganic Solids
			A-26	Evaporator Bottoms/Salts	006	Solidified Inorganic and Organic Process Solids	LA114	Solidified Inorganic Process Solids
			A-76	Cement Paste				
	S3100	Homogeneous Inorganic, Cemented Organics					LA126	Solidified Organic Process Solids
	S3100	Homogeneous Inorganic, Non-cemented	A-75	Chemical Treatment Sludge	003	Stabilized Aqueous Waste (dewatered sludge)	LA122	Solid Inorganic Waste
							LA130	Ash
	S3100	Homogeneous Inorganic, Salts	A-27	Nitrate Salts		Salt Waste	LA124	Pyrochemical Salt Waste
			A-28	Chloride Salts				
			A-29	Hydroxide Cake				
	S3100	Homogeneous Inorganic, Vermiculite	A-20	Hydrocarbon Oil – Liquid (Absorbed)			LA112	Solidified Organic Waste
			A-21	Silicon-Based - Liquid (Absorbed)				
S4000 – Soil/Gravel	S4100	Soil	A-90	Radioactively-Contaminated Soil				

Table ~~C-4~~ C-3 (continued)

Facility Mixed Transuranic Waste Stream Waste Matrix Codes Correlated with Facility Waste Identification Systems

Summary Category Group	Waste Matrix Code	Waste Stream Description	RSWD Code[a]		IDC[b]		TRUCON Code[c]	
S5000 – Debris	S5100	Non-Combustible Debris	NA[d]	NA[d]	NA[d]	NA[d]	LA117	Metal Wastes
	S5300	Combustible Debris	A-14	Combustible Decon Waste	004	Combustible Waste	LA116	Combustible Debris
			A-15.	Cellulosics				
			A-16	Plastics				
			A-17	Rubber Materials				
			A-18	Combustible Lab Trash				
			A-35	Combustible Building Debris				
			A-40	Combustible Hot-Cell Waste				
			A-60	Other Combustibles				
	S5400	Heterogeneous Debris	A-10	Graphite Solids	001	Metal Scrap and Incidental Combustibles	LA115	Graphite Waste
			A-19	Combined Combustible/ ~~Non-Combustible~~Noncombustible Lab Trash	005	Combined Noncombustible / Combustible Waste	LA117	Metal Waste
			A-30	PN Equipment	005LG	Glass Waste	LA118	Glass Waste
			A-31	Non-PN Equipment	005LM	Metal Waste	LA119	HEPA Filter Waste
			A-36	Noncombustible Building Debris	005P1	Leaded Rubber and Metal Waste	LA123	Leaded Rubber and Metal Waste

Table C-3~~C-4~~ (continued)
Facility Mixed Transuranic Waste Stream Waste Matrix Codes Correlated with Facility Waste Identification Systems

Summary Category Group	Waste Matrix Code	Waste Stream Description	RSWD Code[a]	IDC[b]	TRUCON Code[c]
			A-41 Noncombustible Hot-Cell Waste A-46 Skull and Oxide A-47 Slag and Porcelain A-50 Metal Crucibles, Scrap, Dies A-51 Precious Metals A-52 Scrap Metal A-55 Filter Media A-56 Filter Media Residue A-61 Other Noncombustibles A-72 Beryllium Contaminated Debris A-74 Ion Exchange Resin A-80 Irradiation Sources A-85 Firing Point Residues A-95 Glass	005P2G Graphite Waste	LA125 Mixed Combustible / Noncombustible Waste

[a] RSWD = Radioactive Solid Waste Disposal [codes]
[b] IDC = Item Description Code
[c] TRUCON = TRUPACT-II Content [codes]
[d] NA = Not Applicable~~;~~ RSWD code and IDC usage was discontinued in 2010

Table C-4~~C-5~~
Descriptions of Mixed Transuranic Waste Stored at the Facility
~~(This table is for informational purposes only)~~

Table C-4 (continued)
Descriptions of Mixed Transuranic Waste Stored at the Facility

Summary Category Group	Waste Matrix Code	Waste Description[a]	TRUCON Code	Waste-Generating Area	Waste-Generating Activity	Basis for Hazardous Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and /or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents[c]
S3000 – Homogeneous Solids	S3120~~S3100~~	LA-MIN03-NC.001, Homogeneous Solids – Solidified Inorganics ~~Homogeneous Inorganic, Cemented~~	LA111/211	TA-50	Plutonium processing operations	Acceptable Knowledge	D001 D002 D003 D004 D005 D006 D007 D008 D009 D010 D011 D018 D019 D021 D022 D035 D038 D039 D040 F001 F002 F003 F005	Ignitable Corrosive Reactive Arsenic Barium hydroxide Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform Methyl ethyl ketone Pyridine Tetrachloroethylene Trichloroethylene Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[d] NA[d] NA[d] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 100.0 6.0 200.0 5.0[e] 0.7 0.5 NA[d] NA[d] NA[d] NA[d]	Arsenic Barium hydroxide Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform Methyl ethyl ketone Pyridine Tetrachloroethylene Trichloroethylene and all applicable constituents identified above the UHC regulatory limit
	S3150	LA-CIN02.001, Homogeneous Solids, Solidified Inorganics ~~Homogeneous Inorganic, Cemented Organics~~	LA111/211	TA-50	Plutonium processing operations	Acceptable Knowledge				
	S3150	LA-CIN01.001, Homogeneous Solids, Solidified Inorganics ~~Homogeneous Inorganic, Non-cemented~~	LA126/226 LA114/214	TA-55	Plutonium processing operations	Acceptable Knowledge				
	S3110	LA-MIN02-V.001, Homogeneous Solids – Solidified Inorganics ~~Homogeneous Inorganic, Salts~~	LA112/212 LA126/226 SQ112/212 SQ113/213 SQ129/229 SQ113/113 SQ126/216	TA-55	Plutonium processing operations	Acceptable Knowledge				
	S3140	LA-MIN-04-S.001, Homogeneous Solids – Salt Waste	LA124/224	TA-55	Plutonium processing operations	Acceptable Knowledge				
	S3150	LA-CIN03-001, Homogeneous Solids – Solidified Inorganics	LA126/226 LA114/214	TA-03	Plutonium processing operations	Acceptable Knowledge				
	S3900	LA-MIN05-V.001, Homogeneous Solids – Solidified Inorganics	SQ111/211 LA112/212 LA126/226 SQ113/213 SQ/126/226 SQ129/229	TA-03	Plutonium processing operations	Acceptable Knowledge				

Table C-4 (continued)
Descriptions of Mixed Transuranic Waste Stored at the Facility

Summary Category Group	Waste Matrix Code	Waste Description[a]	TRUCON Code	Waste-Generating Area	Waste-Generating Activity	Basis for Hazardous Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and /or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents[c]
S4000 – Soil/ Gravel	S4200	LA-MSG04.001, Soils	LA111/211 SQ111/211	TA-21	D&D	Acceptable Knowledge	D004 D005 D006 D007 D008 D009 D010 D011 D018 D019 D021 D022 D035 D038 D039 D040 F001 F002 F003 F005	Arsenic Barium hydroxide Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform Methyl ethyl ketone Pyridine Tetrachloroethylene Trichloroethylene Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 100.0 6.0 200.0 5.0[e] 0.7 0.5 NA[d] NA[d] NA[d] NA[d]	Arsenic Barium hydroxide Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform Methyl ethyl ketone Pyridine Tetrachloroethylene Trichloroethylene and all applicable constituents identified above the UHC regulatory limit
S5000 – Heterogeneous Debris	S5400	LA-MHD09.001, Heterogeneous Debris	LA125/225 LA116/216 LA117/217 LA120/220 LA123/223	TA-50	Plutonium processing operations; D&D	Acceptable Knowledge				
	S5400	LA-MHD01.001, Heterogeneous Debris	LA125/225 LA116/216 LA115/215 LA118/218 LA119/219 LA117/217 LA122/222 LA123/223 SQ133/233	TA-55	Plutonium processing operations	Acceptable Knowledge				
	S5100	LA-OS-00-01.001, Uncategorized Metal – Defense Sealed Sources	LA120A/ 220A	TA-03, TA-54, TA-55	Plutonium processing operations; D&D	Acceptable Knowledge				
	S5100	LA-OS-00.03, Uncategorized Metal – Defense Sealed Sources (not in POC)	LA120B/ 220B	TA-03, TA-54, TA-55		Acceptable Knowledge				

Table C-4 (continued)
Descriptions of Mixed Transuranic Waste Stored at the Facility

Summary Category Group	Waste Matrix Code	Waste Description[a]	TRUCON Code	Waste-Generating Area	Waste-Generating Activity	Basis for Hazardous Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and /or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents[c]
	S5100	LA-OS-00-0.4, Uncategorized Metal – Mixed Sealed Sources	LA120A/ 220A	TA-03, TA-54, TA-55		Acceptable Knowledge				
	S5400	LA-MHD03.001, Heterogeneous Debris	LA125/225 LA116/216 LA117/217 LA120/220 LA123/223	TA-03		Acceptable Knowledge	D001 D002 D003 D004 D005 D006 D007 D008 D009 D010 D011 D018 D019 D021 D022 D035 D038 D039 D040 D043 F001 F002 F003 F004 F005 U080	Ignitable Corrosive Reactive Arsenic Barium hydroxide Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform Methyl ethyl ketone Pyridine Tetrachloroethylene Trichloroethylene Vinyl Chloride Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Methylene chloride	NA[d] NA[d] NA[d] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 100.0 6.0 200.0 5.0[e] 0.7 0.5 0.2 NA[d] NA[d] NA[d] NA[d] NA[d] NA[d]	Arsenic Barium hydroxide Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform Methyl ethyl ketone Pyridine Tetrachloroethylene Trichloroethylene Vinyl chloride Methylene chloride and all applicable constituents identified above the UHC regulatory limit
	S5400	LA-MHD04.001, Heterogeneous Debris	LA125/225 LA116/216 LA117/217 LA123/223	TA-21		Acceptable Knowledge				
	S5400	LA-MHD08.001, Heterogeneous Debris	LA125/225 LA116/216 LA117/217 LA120/220 LA123/223	TA-48		Acceptable Knowledge				
	S5400	LA-MHD05-ITRI.001, Heterogeneous Debris	LA125/225	TA-54		Acceptable Knowledge				

Table C-4 (continued)
Descriptions of Mixed Transuranic Waste Stored at the Facility

~~Table C-5 (continued)~~

~~Summary Category Group~~	~~Waste Matrix Code~~	~~Waste Description[a]~~			~~Waste-Generating Activity~~	~~Basis for Hazardous Waste Designation~~	~~Potential EPA Hazardous Waste Numbers~~	~~Potential Hazardous Waste Constituents and/or Characteristics~~	~~Regulatory Limits[b] (milligrams per liter)~~	~~Potential Underlying Hazardous Constituents[c]~~

Table C-4 (continued)
Descriptions of Mixed Transuranic Waste Stored at the Facility

~~Table C-5 (continued)~~

~~Summary Category Group~~	~~Waste Matrix Code~~	~~Waste Description[a]~~	~~Waste-Generating Activity~~	~~Basis for Hazardous Waste Designation~~	~~Potential EPA Hazardous Waste Numbers~~	~~Potential Hazardous Waste Constituents and/or Characteristics~~	~~Regulatory Limits[b] (milligrams per liter)~~	~~Potential Underlying Hazardous Constituents[c]~~
~~S4000—Soil/ Gravel~~	~~S4100~~	~~Soil~~	~~D&D~~	~~Acceptable Knowledge~~	~~D004~~	~~Arsenic~~	~~5.0~~	~~D004~~
					~~D005~~	~~Barium hydroxide~~	~~100.0~~	~~D005~~
					~~D006~~	~~Cadmium~~	~~1.0~~	~~D006~~
					~~D007~~	~~Chromium~~	~~5.0~~	~~D007~~
					~~D008~~	~~Lead~~	~~5.0~~	~~D008~~
					~~D009~~	~~Mercury~~	~~0.2~~	~~D009~~
					~~D010~~	~~Selenium~~	~~1.0~~	~~D010~~
					~~D011~~	~~Silver~~	~~5.0~~	~~D011~~
					~~D018~~	~~Benzene~~	~~0.5~~	~~D018~~
					~~D019~~	~~Carbon tetrachloride~~	~~0.5~~	~~D019~~
					~~D021~~	~~Chlorobenzene~~	~~100.0~~	~~D021~~
					~~D022~~	~~Chloroform~~	~~6.0~~	~~D022~~
					~~D035~~	~~Methyl ethyl ketone~~	~~200.0~~	~~D035~~
					~~D038~~	~~Pyridine~~	~~5.0[e]~~	~~D038~~
					~~D039~~	~~Tetrachloroethylene~~	~~0.7~~	~~D039~~
					~~D040~~	~~Trichloroethylene~~	~~0.5~~	~~D040~~
					~~F001~~	~~Spent halogenated solvents~~	~~NA[d]~~	~~F001~~
					~~F002~~	~~Spent halogenated solvents~~	~~NA[d]~~	~~F002~~
					~~F003~~	~~Spent non-halogenated solvents~~	~~NA[d]~~	~~F003~~
					~~F005~~	~~Spent non-halogenated solvents~~	~~NA[d]~~	~~F005~~

Table C-4 (continued)
Descriptions of Mixed Transuranic Waste Stored at the Facility

~~**Table C-5 (continued)**~~

~~Summary Category Group~~	~~Waste Matrix Code~~	~~Waste Description[a]~~	~~Waste-Generating Activity~~	~~Basis for Hazardous Waste Designation~~	~~Potential EPA Hazardous Waste Numbers~~	~~Potential Hazardous Waste Constituents and/or Characteristics~~	~~Regulatory Limits[b] (milligrams per liter)~~	~~Potential Underlying Hazardous Constituents[c]~~
~~S5000 - Debris~~	~~S5100~~	~~Non-Combustible Debris~~	~~Plutonium processing operations; D&D~~	~~Acceptable Knowledge~~	~~D001~~ ~~D002~~ ~~D003~~ ~~D004~~ ~~D005~~ ~~D006~~	~~Ignitable~~ ~~Corrosive~~ ~~Reactive~~ ~~Arsenic~~ ~~Barium hydroxide~~ ~~Cadmium~~	~~NA[d]~~ ~~NA[d]~~ ~~NA[d]~~ ~~5.0~~ ~~100.0~~	
	~~S5300~~	~~Combustible Debris~~	~~Plutonium processing operations~~	~~Acceptable Knowledge~~				

Table C-4 (continued)
Descriptions of Mixed Transuranic Waste Stored at the Facility

Summary Category Group	Waste Matrix Code	Waste Description[a]	Waste-Generating Activity	Basis for Hazardous Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents[c]
	S5400	Heterogeneous Debris	Plutonium processing operations; D&D	Acceptable Knowledge	D007	Chromium	1.0	
					D008	Lead	5.0	
					D009	Mercury	5.0	
					D010	Selenium	0.2	
					D011	Silver	1.0	
					D018	Benzene	5.0	
					D019	Carbon tetrachloride	0.5	
					D021	Chlorobenzene	0.5	
					D022	Chloroform	100.0	
					D035	Methyl ethyl ketone	6.0	
					D038	Pyridine	200.0	
					D039	Tetrachloroethylene	5.0[e]	
					D040	Trichloroethylene	0.7	
					D043	Vinyl Chloride	0.5	
					F001	Spent halogenated solvents	0.2	
					F002	Spent halogenated solvents	NA[d]	
					F003	Spent non-halogenated solvents	NA[d]	
					F004	Spent non-halogenated solvents	NA[d]	
					F005	Spent non-halogenated solvents	NA[d]	
					U080	Methylene Chloride	NA[d]	
							NA[d]	

[a] This table is based on information from the *Acceptable Knowledge Information Summary for Los Alamos National Laboratory Transuranic Waste Streams* (AKIS), (TWCP-AK-2.1-019, R.0) (LA-UR-03-4870); and from waste characterization documentation information maintained by the Facility and Waste Operations Division. Waste with EPA Hazardous Waste Numbers that are not included in the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit will not be transported to WIPP. Additionally, recharacterization efforts for nitrate salt-bearing waste have been conducted and documented in several documents as outlined in Enclosure 3 of *Response to Ordered Action 2/3; Attachment A to Settlement Agreement and Stipulated Final Order HWB-14-20; Los Alamos National Laboratory.*

Table C-4 (continued)
Descriptions of Mixed Transuranic Waste Stored at the Facility

[b] A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Subpart C [6-14-00].

[c] Potential underlying hazardous constituents (UHC) have been included, where the information is available. UHC characterization for the purpose of Land Disposal Restrictions will apply for mixed transuranic waste to be disposed of at WIPP.

[d] Not Applicable: Refers to the absence of regulatory limits for ignitable, corrosive, and reactive characteristic wastes and F-, P-, and U-listed wastes.

[e] Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

Note: Fluoride, sulfide, vanadium, and zinc are not "underlying hazardous constituents" in characteristic wastes, according to the definition in § 268.2(i). Selenium is not an underlying hazardous constituent as defined at § 268.2(i) because its Universal Treatment Standard level is greater than its Toxicity Characteristic level, thus a treated selenium waste would always be characteristically hazardous, unless it is treated to below its characteristic level.

Table C-5 (continued)
Waste Streams Treated Through Open Burning (OB) and/or Open Detonation (OD) at the Facility

Table C-5~~C-6~~
Waste Streams Treated through Open Burning (OB) and/or Open Detonation (OD) at the Facility

Waste Stream	Waste Stream Description	Percentage of Total Waste Treated[1]	Potential Explosives[2]	Other Potential Materials	Potential EPA Hazardous Waste Numbers[3]	Potential Hazardous Constituents and/or Characteristics	Regulatory Limits[4] (mg/L)
Explosives machining waste	Explosives machining chips, filters, filter solids, and water	80-95% OB	Pentaerythritol tetranitrate (PETN), Cyclo-1,3,5-trimethylene-2,4,6-trinitramine (RDX), Octahydro, 1,3,5,7-tetranitro, 1,3,5,7-tetrazocine (HMX), plastic-bonded explosives (PBXs or LXs), 4,4-diamino-3,3- azoxyfurazan (DAAF), 2,4,6-trinitrotoluene (TNT), Comp B, and triamino trinitrobenzene (TATB), Baratol, Cyclotol	Plastic bags	D003 D005 D008 D030	Reactivity Barium Lead 2,4-Dinitrotoluene	NA[5] 100.0 5.0 0.13
Excess explosives	Large, laboratory-sized, or small amounts of excess standard explosives. Explosives may be in the form of flakes, granules, crystals, powders, pressings, plastic bonded, putties, rubberized solids, or extrudable solids. Explosives infrequently contain barium or ammonium nitrate mixed with more than 0.2% combustible substances.	5-15% OB 50-90%OD	HMX, RDX, PETN, TATB, DAAF, (2,6-Bis[picrylamino]-3,5-dinitropyridine (PYX), Nitroguanidine (NQ), Nitrocellulose, PBXs and LXs, Comp B, TNT, Boracitol, Cyclotol, HBX-1, Octol, Pentolite, Tritonal, Baratol	Plastic bags, plastic wrapping, plastic casings, cardboard, paper, paper bags, and/or fiberboard containers. Small potential for aluminum, stainless steel, steel, and/or copper.	D001 D003 D005 D030	Ignitability Reactivity Barium 2,4-Dinitrotoluene	NA[5] NA[5] 100.0 0.13

Table C-5 (continued)
Waste Streams Treated Through Open Burning (OB) and/or Open Detonation (OD) at the Facility

Waste Stream	Waste Stream Description	Percentage of Total Waste Treated[1]	Potential Explosives[2]	Other Potential Materials	Potential EPA Hazardous Waste Numbers[3]	Potential Hazardous Constituents and/or Characteristics	Regulatory Limits[4] (mg/L)
Explosives-contaminated combustible debris	Explosives-contaminated debris generated in research laboratories and processing operations. Debris can involve filters removed from laboratories or processing bays, or may contain very small amounts of solvent. The most common solvents used are ethanol and acetone.	<1%OB <1%OD	HMX, RDX, PETN, Cyclotol, Octol, TATB, DAAF, PYX, TNT, PBXs, and LXs	Plastic bags, plastic wrapping, weigh boats, gloves, vials, cardboard, paper, paper bags, fiberboard containers, kimwipes, rags, swabs, flasks, watch glasses, tubing, and/or rods. Possible aluminum, stainless steel, steel, and/or copper. When solvents are present, may contain trace amounts of ethanol, acetone, methanol, ethyl acetate, toluene, cyclohexanone, benzene, chloroform, 1,2-dichloroethane, 1,2-dichloroethylene, methyl ethyl ketone, or trichloroethylene. Noncombustible portions of waste are minimized as much as possible.	D001 D003 D018 D022 D028 D029 D030 D035 D040 F001 F002 F003 F004 F005	Ignitability Reactivity Benzene Chloroform 1,2-Dichloroethane 1,1-Dichloroethylene 2,4- Dinitrotoluene Methyl ethyl ketone Trichloroethylene Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[5] NA[5] 0.5 6.0 0.5 0.7 0.13 200.0 0.5 NA[5] NA[5] NA[5] NA[5]
Explosives-contaminated solvent waste	Dimethyl sulfoxide (DMSO) containing dissolved explosives	<1%OB	HMX, RDX, PETN, TATB, DAAF, PBXs, and LXs		D003 D030	Reactivity 2,4-Dinitrotoluene	NA[5] 0.13

Table C-5 (continued)
Waste Streams Treated Through Open Burning (OB) and/or Open Detonation (OD) at the Facility

Waste Stream	Waste Stream Description	Percentage of Total Waste Treated[1]	Potential Explosives[2]	Other Potential Materials	Potential EPA Hazardous Waste Numbers[3]	Potential Hazardous Constituents and/or Characteristics	Regulatory Limits[4] (mg/L)
Explosives-contaminated noncombustible debris	Explosives-contaminated equipment including discarded, noncombustible equipment; debris from firing sites; noncombustible material from decommissioning and demolition activities; and material from explosives processing areas such as carbon or sand from filtering processes	1-3%OB <1%OD[6]	HMX, RDX, PETN, TATB, DAAF, PYX, NQ, Nitrocellulose, PBXs, LXs, Comp B, TNT, Boracitol, Cyclotol, HBX-1, Octol, Pentolite, Tritonal, Baratol	Noncombustible material may include glass, ceramic, or metal piping or equipment. Rarely when solvents are present, they may include trace amounts of ethanol, acetone, methanol, ethyl acetate, toluene, cyclohexanone, benzene, chloroform, 1,2- dichloroethane, 1,2-dichloroethylene, methyl ethyl ketone, or trichloroethylene.	D003 D005 D008 D011 D018 D022 D028 D029 D030 D035 D040 F001 F002 F003 F004 F005	Reactivity Barium Lead Silver Benzene Chloroform 1,2-Dichloroethane 1,1-Dichloroethylene 2,4-Dinitrotoluene Methyl ethyl ketone Trichloroethylene Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[5] 100.0 5.0 5.0 0.5 6.0 0.5 0.7 0.13 200.0 0.5 NA[5] NA[5] NA[5] NA[5]
Detonators, initiators, and mild detonating fuses	Detonators, initiators, and/or mild detonating fuses containing standard explosives. Explosives may be in metal or plastic casings and may contain lead-based primaries or be in a lead sheath. Typically nitromethane is used as fuel for treatment activities. This waste stream may include manufactured articles removed from fire protection systems.	1-2%OD	PETN, HMX, RDX, TATB, lead azide, lead styphnate, PBXs	Plastic bags, plastic wrapping, cardboard, paper, paper bags, and/or fiberboard containers. Possible aluminum, lead, stainless steel, steel, or copper present as well.	D003 D008	Reactivity Lead	NA[5] 5.0

Table C-5 (continued)
Waste Streams Treated Through Open Burning (OB) and/or Open Detonation (OD) at the Facility

Waste Stream	Waste Stream Description	Percentage of Total Waste Treated[1]	Potential Explosives[2]	Other Potential Materials	Potential EPA Hazardous Waste Numbers[3]	Potential Hazardous Constituents and/or Characteristics	Regulatory Limits[4] (mg/L)
Shaped charges and test assemblies	Shaped charges consisting of cores of explosives with metal sheaths or metal liners or high-explosives test assemblies consisting of standard explosives in plastic or metal holders. Assemblies may contain lead or silver metal.	1-2%OD	PETN, RDX, HMX, PBXs, and LXs	Plastic components, plastic bags, plastic wrapping, cardboard, paper, paper bags, and/or fiberboard containers. Aluminum, copper, lead, stainless steel, brass, and/or copper may be present.	D003 D008 D011 D030	Reactivity Lead Silver 2,4-Dinitrotoluene	NA[5] 5.0 5.0 0.13
Projectiles and munitions larger than 0.50 caliber	Projectiles and munitions larger than 0.50 caliber	1-2%OD	Munitions/ projectiles	Plastic bags, plastic wrapping, fiberglass, cardboard, paper, fiberboard drums, lead, brass, steel, stainless steel, copper, and/or aluminum	D003 D008	Reactivity Lead	NA[5] 5.0
Pressing molds	Adiprene (urethane) pressing molds contaminated with explosives	1-2%OD	TNT	Adiprene, plastic bags, plastic wrapping, cardboard, paper, and/or paper bags	D003 D030	Reactivity 2,4-Dinotrotoluene	NA[5] 0.13

[1] Estimated percentage of the waste stream's representation of all waste that will be treated at the open burning and open detonation units.
[2] Potential explosives do not include all of the possible explosives that may be treated at the unit, only those currently expected to be treated as part of the waste stream.
[3] Potential EPA Hazardous Waste Numbers do not include all of the possible waste numbers that may be treated at the unit, only those currently expected to be treated. A full list of EPA Hazardous Waste Numbers that may be treated at the unit is included with the most recent version of the LANL Part A Permit Application.
[4] A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), the extract from a representative sample of the waste contains any of the contaminants listed (D004-D043) at a concentration equal to or greater than the respective value given in 40 CFR Part 261, Subpart C. These are represented in milligrams per liter (mg/L).
[5] Not Applicable

~~(This table is reserved)~~

Table C-5 (continued)
Waste Streams Treated Through Open Burning (OB) and/or Open Detonation (OD) at the Facility
~~**TABLE C-7**~~

~~(This table is reserved)~~

Table C-5 (continued)
Waste Streams Treated Through Open Burning (OB) and/or Open Detonation (OD) at the Facility
~~**Table C-8**~~

~~(This table is reserved)~~

Table C-6~~C-9~~
Parameters, Characterization Methods, and Rationale for Parameter Selection for Hazardous Waste

Waste Description[a]	Parameters[b]	Characterization Methods	Rationale
Spent Solvents	~~-~~ Flash point (for liquid waste) ~~-~~ pH (for liquid waste) ~~-~~ RCRA[c]-regulated metals ~~-~~ Volatile organic compounds (VOC) ~~-~~ Semivolatile organic compounds (SVOC) ~~-~~ Free liquids	~~-~~ Acceptable Knowledge ~~-~~ Sampling and Analysis	~~-~~ Determine characteristic for ignitability, corrosivity, reactivity, and toxicity ~~-~~ Determine concentration of F-listed solvents ~~-~~ Determine underlying hazardous constituents
Contaminated Solid Wastes	~~-~~ RCRA[c]-regulated metals ~~-~~ VOCs ~~-~~ SVOCs	~~-~~ Acceptable Knowledge ~~-~~ Sampling and Analysis	~~-~~ Determine characteristic for ignitability, reactivity, and toxicity ~~-~~ Determine concentration of F-listed solvents
Paint and Related Wastes	~~-~~ Flash point (for liquid waste) ~~-~~ RCRA[c]-regulated metals ~~-~~ VOCs	~~-~~ Acceptable Knowledge ~~-~~ Sampling and Analysis	~~-~~ Determine characteristic for ignitability and toxicity ~~-~~ Determine concentration of F-listed solvents
Photographic and Photocopier Wastes	~~-~~ Flash point (for liquid waste) ~~-~~ pH (for liquid waste) ~~-~~ RCRA[c]-regulated metals	~~-~~ Acceptable Knowledge ~~-~~ Sampling and Analysis	~~-~~ Determine characteristic for ignitability, corrosivity, and toxicity
Corrosive Liquid Wastes	~~-~~ Flash point (for liquid waste) ~~-~~ pH (for liquid waste) ~~-~~ RCRA[c]-regulated metals ~~-~~ VOCs ~~-~~ SVOCs	~~-~~ Acceptable Knowledge ~~-~~ Sampling and Analysis	~~-~~ Determine characteristic for ignitability, corrosivity, and toxicity ~~-~~ Determine concentration of F-listed solvents
Solid Metals and Metallic Compounds	~~-~~ RCRA[c]-regulated metals	~~-~~ Acceptable Knowledge ~~-~~ Sampling and Analysis	~~-~~ Determine characteristic for ignitability, reactivity, and toxicity
Contaminated Noncorrosive Aqueous and Nonaqueous Solutions and Sludges	~~-~~ Flash point ~~-~~ RCRA[c]-regulated metals ~~-~~ VOCs ~~-~~ SVOCs	~~-~~ Acceptable Knowledge ~~-~~ Sampling and Analysis	~~-~~ Determine characteristic for ignitability, reactivity, and toxicity ~~-~~ Determine concentration of F-listed solvents
Mercury Wastes	~~-~~ RCRA[c]-regulated metal	~~-~~ Acceptable Knowledge ~~-~~ Sampling and Analysis	~~-~~ Determine characterisitc for toxicity ~~-~~ Determine the presence of a U-listed unused commercial chemical product
Used Batteries and Battery Fluids	~~-~~ pH (for liquid waste) ~~-~~ RCRA[c]-regulated metals	~~-~~ Acceptable Knowledge	~~-~~ Determine characteristic for corrosivity and toxicity
Unused/Off-specification Commercial Chemical Products	~~-~~ Flash point (for liquid waste) ~~-~~ pH (for liquid waste) ~~-~~ RCRA[c]-regulated metals ~~-~~ VOCs ~~-~~ SVOCs	~~-~~ Acceptable Knowledge ~~-~~ Sampling and Analysis	~~-~~ Determine characteristic for ignitability, corrosivity, reactivity, and toxicity ~~-~~ Determine presence of P-listed or U-listed unused commercial chemical products
Gas Cylinder Waste	~~-~~ RCRA[c]-regulated metals ~~-~~ VOCs ~~-~~ SVOCs	~~-~~ Acceptable Knowledge	~~-~~ Determine characterisitc for ignitability, corrosivity, and reactivity ~~-~~ Determine presence of D-coded and U- and P-listed wastes
Environmental Restoration ~~(ER)~~ Soils and Sludges	~~-~~ RCRA[c]-regulated metals ~~-~~ VOCs ~~-~~ SVOCs	~~-~~ Acceptable Knowledge	~~-~~ Determine characteristic for ignitability, reactivity, and toxicity ~~-~~ Determine concentration of F-listed solvents
~~ER~~Environmental Restoration Aqueous Liquids	~~-~~ pH ~~-~~ RCRA[c]-regulated metals	~~-~~ Acceptable Knowledge	~~-~~ Determine characteristic for ignitability, corrosivity, reactivity, and toxicity

Waste Description[a]	Parameters[b]	Characterization Methods	Rationale
	—VOCs —SVOCs		—Determine concentration of F-listed solvents
~~ER~~Environmental Restoration Debris	—RCRA[c]-regulated metals —VOCs —SVOCs	—Acceptable Knowledge	—Determine characteristic for ignitability, reactivity, and toxicity —Determine concentration of F-listed solvents

[a] Information contained in this column is from the Los Alamos National Laboratory waste characterization documentation database

[b] Parameter selection is based on acceptable knowledge for each waste stream. Additional parameters may be selected for each waste stream as necessary

[c] Resource Conservation and Recovery Act. Use of the term "RCRA-regulated metals" refers to hazardous waste as defined in ~~the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II,~~ 40 CFR § 261.24 ~~[6-14-00]~~

Table C-7~~C-10~~
Parameters, Characterization Methods, and Rationale for Parameter Selection for Mixed Low-Level Waste

Waste Description[a]	Parameter[b]	Characterization Method	Rationale
Soils with Heavy Metals	RCRA-regulated metals[c]	Acceptable Knowledge Sample and analyze randomly selected drums in waste stream	Determine toxicity characteristic
Environmental Restoration Soils	RCRA-regulated metals[c] VOCs	Acceptable Knowledge Sample and analyze randomly selected drums in waste stream	Determine presence of F-listed solvents Determine toxicity characteristic
Inorganic Solid Oxidizers	RCRA-regulated metals[c]	Acceptable Knowledge Sample and analyze randomly selected drums in waste stream	Determine toxicity characteristic Determine characteristic for ignitability and reactivity
Lead Waste	RCRA-regulated metals[c]	Acceptable Knowledge	Determine characteristic for reactivity Determine toxicity characteristic
Noncombustible Debris	RCRA-regulated metals[c]	Acceptable Knowledge	Determine toxicity characteristic Determine characteristic for ignitability and reactivity
Combustible Debris	RCRA-regulated metals[c] VOCs	Acceptable Knowledge	Determine toxicity characteristic Determine presence of F-listed solvents Determine characteristic for ignitability and reactivity
Organic-Contaminated Noncombustible Solids	RCRA-regulated metals[c] VOCs	Acceptable Knowledge	Determine toxicity characteristic Determine presence of F-listed solvents
Organic-Contaminated Combustible Solids	RCRA-regulated metals[c] VOCs	Acceptable Knowledge	Determine characteristic for ignitability and reactivity Determine toxicity characteristic Determine presence
Solid Wastes			
Mercury Wastes	RCRA-regulated metals[c] VOCs	Acceptable Knowledge Sample and analyze randomly selected drums in waste stream	Determine toxicity characteristic Determine presence of F-listed solvents
Unused Solid Reagent Chemical Wastes	RCRA-regulated metals[c]	Acceptable Knowledge	Determine characteristic for ignitability and corrosivity Determine the presence of P- and U-listed unused commercial chemical product

Table C-10 (continued)

Waste Description[a]	Parameter[b]	Characterization Method	Rationale
Solid Wastes			
Unused Solid Reagent Chemical Wastes	RCRA-regulated metals[c]	Acceptable Knowledge	Determine characteristic for ignitability and corrosivity Determine the presence of P- and U-listed unused commercial chemical product
Liquid Wastes			
Spent Solvents and Contaminated Solvent Mixtures	Flash point pH RCRA-regulated metals[c] VOCs Semivolatile organic compounds	Acceptable Knowledge Sampling and Analysis	Determine characteristic for ignitability, corrosivity, and toxicity Determine concentration of F-listed solvents
Corrosive Liquid Wastes	Flash point pH RCRA-regulated metals[c] SVOCs	Acceptable Knowledge Sampling and Analysis	Determine characteristic for ignitability, corrosivity, and toxicity Determine concentration of F-listed solvents
Aqueous and Nonaqueous Liquids Contaminated with Heavy Metals and/or Organics	Flash point RCRA-regulated metals[c] VOCs SVOCs	Acceptable Knowledge Sampling and Analysis	Determine characteristic for ignitability and toxicity Determine concentration of F-listed solvents
Oil Wastes	RCRA-regulated metals[c] VOCs SVOCs	Acceptable Knowledge Sampling and analysis	Determine characteristic for toxicity Determine concentration of F-listed solvents
Unused Liquid Reagent Chemical Wastes	Flash point pH	Acceptable Knowledge	Determine characteristic for ignitability and corrosivity Determine the presence of P- and U-listed unused commercial chemical product
Gaseous Wastes			
Gas Cylinder Waste	RCRA[c]-regulated metals VOCs SVOCs	Acceptable Knowledge	Determine characteristic for ignitability, corrosivity, and reactivity Determine presence of D-coded and P- and U-listed waste

[a] Information contained in this column is extracted primarily from Los Alamos National Laboratory, 1995, "LANL's Federal Facility Compliance Order Site Treatment Plan Background Volume," Los Alamos National Laboratory, Los Alamos, New Mexico.

[b] Parameter selection is based on acceptable knowledge for each waste stream. Additional parameters may be selected for each waste stream as necessary

[c] Resource Conservation and Recovery Act. Use of the term "RCRA-regulated metals" refers to hazardous waste as defined in ~~the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II,~~ 40 CFR § 261.24 ~~[6-14-00]~~

Table C-8~~C-11~~
Parameters, Characterization Methods, and Rationale for Parameter Selection for Mixed Transuranic Waste

Summary Category Group/ Description[a]	Waste Description	Parameters	Characterization Methods	Rationale
Storage				
S3000-Homogeneous Solids	Solidified aqueous waste (*e.g.*, concreted/cemented aqueous waste)	Free liquids in waste matrix Physical form of the waste	Visual examination Real-time radiography (RTR) Acceptable Knowledge	Verify physical waste form No free liquids allowed
	Solidified aqueous waste (*e.g.*, dewatered sludge and chemical treatment sludge) Solidified inorganic/organic process solids and liquids	Resource Conservation and Recovery Act (RCRA)-regulated metals	Sample and analyze statistically selected number of drums in waste stream Acceptable Knowledge	Determine toxicity characteristic Determine concentration of metals
	Homogeneous inorganic solids Glass/noncombustible waste Non-cemented inorganics Absorbed organics on vermiculite	Volatile organic compounds in container headspace gas	Gas chromatography / mass spectrometry (GC/MS) Fourier transform infrared spectrometry Gas chromatography / Flame ionization detector Acceptable Knowledge	Qualitative screening to confirm the presence of VOCs
S4000-Soils/Gravels	Contaminated soil	Free liquids in waste matrix Physical form of the waste	Visual examination RTR Acceptable Knowledge	Verify physical waste form No free liquids allowed
		RCRA-regulated metals	Sample and analyze statistically selected number of drums in waste stream Acceptable Knowledge	Determine toxicity characteristic Determine concentration of metals
		VOCs in container headspace gas	GC/MS Fourier transform infrared spectrometry Gas chromatography / Flame ionization detector	Qualitative screening to confirm the presence of VOCs
S5000-Debris Waste	Mixed metal scrap and incidental combustibles Combustible waste Graphite waste Metal waste Glass waste	Free liquids Physical form of the waste VOCs in container headspace gas VOCs and semivolatile organic compounds	Visual examination RTR Acceptable Knowledge	Verify physical waste form No free liquids allowed Determine compliance with land disposal restrictions (LDR) treatment standards, if applicable
	Leaded-rubber and metal waste High-efficiency particulate air filters Noncombustible waste Mixed combustible / noncombustible waste	RCRA-regulated metals	Gas chromatography / mass spectrometry Fourier transform infrared spectrometry Gas chromatography / Flame ionization detector Acceptable Knowledge	Qualitative screening to confirm the presence of VOC Determine compliance with LDR treatment standards, if applicable

Table ~~C-11~~C-8 (continued)
Parameters, Characterization Methods, and Rationale for Parameter Selection for Mixed Transuranic Waste

Treatment				
L1000 Aqueous Liquids/Slurries	Evaporator bottoms solutions, aqueous waste, and laboratory solutions	RCRA-regulated metals and corrosivity	Acceptable Knowledge Sampling and Analysis	Determine toxicity characteristics Determine concentration of metals
S3000 Homogeneous Solids	Inorganic process solids and cemented inorganic process solids	RCRA-regulated metals	Acceptable Knowledge Sampling and Analysis	Determine concentration of metals

[a] Information in this column is based on information from the *Acceptable Knowledge Information Summary for Los Alamos National Laboratory Transuranic Waste Streams* (AKIS), TWCP-AK-2.1-019, R.0, LA-UR-03-4870, Los Alamos National Laboratory, Los Alamos, New Mexico.

Table C-9~~C-12~~

Summary of Characterization Methods[a] for Explosives Waste Treatment Residue

~~(This table is reserved)~~

WASTE DESCRIPTION	PARAMETER[a]	CHARACTERIZATION METHOD	RATIONALE
Explosives machining waste	Reactivity Resource Conservation and Recovery Act (RCRA)-regulated metals SVOCs	Acceptable Knowledge[b] Field Screening[c]	Determine characteristic for reactivity, the total concentration of metals, and the presence of SVOCs
Excess explosives	Ignitability Reactivity RCRA-regulated metals SVOCs	Acceptable Knowledge[b] Field Screening[c]	Determine characteristic for ignitability and reactivity, the total concentration of metals, and the presence of SVOCs
Explosives-contaminated combustible debris	Ignitability Reactivity RCRA-regulated metals SVOCs Spent halogenated solvents Spent nonhalogenated solvents	Acceptable Knowledge[b] Field Screening[c]	Determine characteristic for ignitability and reactivity, the total concentration of metals, and the presence of SVOCs or solvents
Explosives-contaminated solvent waste	Reactivity 2,4-Dinitrotoluene	Acceptable Knowledge[b] Field Screening[c]	Determine characteristic for reactivity and the presence of SVOCs
Explosives-contaminated noncombustible debris	Reactivity RCRA-regulated metals SVOCs Spent halogenated solvents Spent non-halogenated solvents	Acceptable Knowledge[b] Field Screening[c]	Determine characteristic for reactivity and the presence of SVOCs
Residue (ash) generated from treatment	Ignitability Reactivity RCRA-regulated metals SVOCs	Acceptable Knowledge[b] Sampling and analysis[d]	Determine characteristic for ignitability, reactivity, toxicity characteristic for metals, and the presence of SVOCs.
Excess explosives	Ignitability Reactivity	Acceptable Knowledge[a] Field Screening	Determine characteristic for ignitability and reactivity
Detonators, initiators, and mild detonating fuses	Reactivity Lead	Acceptable Knowledge[a] Field Screening Sampling and analysis[b]	Determine characteristic for reactivity Determine toxicity characteristic for lead
Shaped charges and test assemblies	Reactivity Lead 2,4-Dinitrotoluene	Acceptable Knowledge[a] Field Screening Sampling and analysis[b]	Determine characteristic for reactivity Determine toxicity characteristic for lead and 2,4-Dinitrotoluene
Projectiles and munitions larger than 0.50 caliber	Reactivity Lead	Acceptable Knowledge[a] Field Screening Sampling and analysis[b]	Determine characteristic for reactivity Determine toxicity characteristic for lead
Pressing molds	Reactivity 2,4-Dintirotoluene	Acceptable Knowledge [a] Field Screening	Determine characteristic for reactivity Determine toxicity characteristic 2,4-Dinitrotoluene

[a] Regulations do not specify a particular characterization method for reactivity of explosives waste streams; characterization of explosives waste is based mainly on the properties of the chemicals known or suspected to be in the waste (e.g., process knowledge or acceptable knowledge).

[b] Acceptable knowledge is defined in Section C.3.1.1 of this Waste Analysis Plan.

[c] Field screening such as High Explosives Spot Test can be used to determine the presence of explosives.

[d] Sampling and analysis is conducted in accordance with Section C.3.1.2 of this Waste Analysis Plan.

~~**Table C-13**~~

~~(This table is reserved)~~

~~**Table C-14**~~

~~(This table is reserved)~~

Table C-10~~C-15~~
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Volatile Organics			
Concentrated Waste Samples:	Method 5035: 40-milliliter (mL) vials with stirring bar. Method 5021: See method. Methods 5031 & 5032: 125-mL WM[c]-G[d]. Use Teflon-lined lids for all procedures.	Cool to 0-64º degrees Celsius (ºC)[e]	14 days
Aqueous Samples:			
No Residual Chlorine Present	Methods 5030, 5031, & 5032: 3~~2~~ x 40-mL vials with Teflon-lined septum caps.	Cool to 0-64ºC and adjust pH[f] to less than 2 with H_2SO_4, HCl, or solid $NaHSO_4$	14 days
Residual Chlorine Present	Methods 5030, 5031, & 5032: ~~2~~3 x 40-mL vials with Teflon-lined septum caps.	Collect sample in a 125-mL container which has been pre-preserved with 4 drops of 10% sodium thiosulfate solution. Gently swirl to mix sample and transfer to a 40-mL volatile organic analysis (VOA) vial. Cool to 0-64ºC and adjust pH to less than 2 with H_2SO_4, HCl, or solid $NaHSO_4$	14 days
Acrolein and Acrylonitrile	Methods 5030, 5031, & 5032: 3~~2~~ x 40-mL vials with Teflon-lined septum caps.	Adjust to pH of 4-5. Cool to 0-64ºC	7~~14~~ days
Soil/Sediments and Sludges:	Method 5035: 40-mL vials with stirring bar. Method 5021: See method. Methods 5031 & 5032: 125-mL WM[c]-G[d]. Use Teflon-lined lids for all procedures.	See the individual method	14 days

Table C-10~~C-15~~ (continued)
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Semivolatile Organics/Organochlorine Pesticides and Herbicides			
Concentrated Waste Samples:	125 mL WM[c]-G[d] with Teflon-lined lid	None	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Soil/Sediments and Sludges:	250 mL WM[c]-G[d] with Teflon-lined lid	Cool to 0-64ºC	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Liquid Samples:			
No Residual Chlorine Present	1-gallon (gal.), 2 x 0.5 gal., or 4 x 1 liter (L) AG[g] container with Teflon-lined lid	Cool to 0-64ºC	Samples must be extracted within 7 days and extracts analyzed within 40 days following extraction
Residual Chlorine Present	1-gal., 2 x 0.5 gal., or 4 x 1-L AG[g] with Teflon-lined lid	Add 3-mL 10% sodium thiosulfate solution per gallon (or 0.008%). Addition of sodium thiosulfate solution to sample container may be performed in the laboratory prior to field use. Cool to 4ºC.	Samples must be extracted within 7 days and extracts analyzed within 40 days following extraction
Metals			
Aqueous Samples:			
Metals (except hexavalent chromium and mercury)	1-L P[h] or G[d]	Add nitric acid to adjust pH to less than 2.	180 days
Hexavalent chromium	500-mL P[h] or G[d]	Cool to ≤64ºC	24 hours
Mercury	500-mL P[h] or G[d]	Add nitric acid to adjust pH to less than 2.	28 days
Soil/Sediments and Sludges:			
Metals (except hexavalent chromium and mercury)	500-mL WM[c]-P[h] or G[d]	Cool to ≤64ºC	180 days
Hexavalent chromium	500-mL WM[c]-P[h] or G[d]	Cool to ≤64ºC	Samples must be extracted within 30 days and extracts analyzed within 7 days following extraction.~~Not established - analyze as soon as possible.~~
Mercury	500-mL WM[c]-P[h] or G[d]	Cool to ≤64ºC	28 days

[a] Smaller sample containers may be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations

[b] Information primarily from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846,* U.S. Environmental Protection Agency, 1986 and all approved updates

[c] Wide-mouth

[d] Glass
[e] Adjust to pH of less than 2 with sulfuric acid, hydrochloric acid, or solid sodium bisulfate
[f] A term used to describe the hydrogen-ion activity of a system
[g] Amber glass[h]; P = Polyethylene

Table C-11~~C-16~~
Summary of Characterization Methods for Non-Mixed Hazardous Waste

Parameter	Method Numbers	Test Methods	Rationale
Volatile organic compounds in waste matrix: Spent halogenated solvents Spent nonhalogenated solvents	ASTM Method D4547-91[a] U.S. EPA/540/4-91/001[b] *SW-846* (1311, 8260D~~8260B~~, 8275A)[c] or equivalent methods[d] Methods included in 20.4.1 NMAC §§ 265.1084(a)(2), (a)(3), and (a)(4)	Total and/or toxicity characteristic leaching procedure (TCLP) VOC analysis by gas chromotography/mass spectrometry (GC/MS) Semivolatile organic compound (SVOC) analysis by thermal extraction/gas chromatography/mass spectrometry (TE/GC/MS) Acceptable Knowledge	Determine total and/or TCLP and SVOC/VOC concentration in samples of solids or liquids
SVOCs in waste:	*SW-846* (1311 and 8270C)[c] or equivalent methods[d]	Total or TCLP SVOC analysis by GC/MS Acceptable Knowledge	Determine total and/or TCLP and SVOC concentration in samples of solids or liquids
Resource Conservation and Recovery Act-regulated metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	*SW-846* (1311, 6010D~~6010B~~, 7060A, 7061A)[c] (1311, 6010D~~6010B~~, 7080A, 7081)[c] (1311, 6010D~~6010B~~, 7130, 7131A)[c] (1311, 6010D~~6010B~~, 7190, 7191)[c] (1311, 6010D~~6010B~~, 7420, 7421)[c] (1311, 6010D~~6010B~~, 7470A, 7471A, 7472)[c] (1311, 6010D~~6010B~~, 7740, 7741A, 7742)[c] (1311, 6010D~~6010B~~, 7760A, 7761)[c] or equivalent methods[d]	Total and/or TCLP Inductively-coupled plasma atomic emission spectroscopy Atomic absorption Manual cold vapor atomic absorption Anodic stripping voltammetry Acceptable Knowledge	Determine total and/or TCLP concentration in samples of solids or liquids
Reactive Sulfide	*SW-846*, Test Method to Determine Hydrogen Sulfide Released from Wastes[e] *SW-846* (9030B, 9031, 9034)[c] or equivalent methods[d]	Colorimetric, titrametric, or spectrophotometric measurement of hydrogen sulfide released from waste following reflux distillation under acidic conditions	Determine concentration of reactive sulfides
Ignitability (Flash Point)	*SW-846* (1010, 1020B~~1020A~~, 1030)[c] or equivalent methods[d]	Pensky-Martens closed cup Setaflash closed cup Ignitability of solids	Determine ignitablity
pH (Corrosivity)	*SW-846* (9040C~~9040B~~, 9041A, 9045D~~9045C~~)[c] or equivalent methods[d]	pH electrometric measurement pH paper Soil and waste pH	Determine corrosivity

[a] American Society for Testing and Materials, 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," ASTM D4547-91, *Annual Book of ASTM Standards*, Philadelphia, Pennsylvania, American Society for Testing and Materials

[b] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," EPA 154014-91001, Office of Research and Development

[c] U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*

[d] Equivalent methods subject to EPA approval may be substituted

[e] *SW-846*, Section 7.3.4.2 contains specialized methods to determine if a sulfide-containing waste exhibits the reactivity characteristic

Table C-12~~C-17~~
Summary of Characterization Methods for Mixed Low-Level Waste

Parameter	Method Numbers	Test Method	Rationale
Solid Wastes			
Volatile organic compounds in waste matrix: Spent halogenated solvents Spent nonhalogenated solvents	ASTM Method D4547-91[a] U.S. EPA/540/4-91/001[b] *SW-846* (1311, 8260D~~8260B~~, 8275A)[c] or equivalent methods[d] Methods included in 20.4.1 NMAC §§ 265.1084(a)(2), (a)(3), and (a)(4)	Total and/or toxicity characteristic leaching procedure (TCLP) VOC analysis by gas chromotography/mass spectrometry (GC/MS) Semivolatile organic compounds (SVOC) analysis by thermal extraction/gas chromatography/mass spectrometry (TE/GC/MS) Acceptable Knowledge	Determine total and/or TCLP and VOC concentration in samples of solid process residues and soils
SVOCs in waste:	*SW-846* (1311 and 8270C)[c] or equivalent methods[d]	Total and/or TCLP SVOC analysis by GC/MS Acceptable Knowledge	Determine total and/or TCLP and SVOC concentration in samples of solid process residues and soils
Resource Conservation and Recovery Act (RCRA)-regulated metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	*SW-846* (1311, 6010D~~6010B~~, 7060A, 7061A)[c] (1311, 6010D~~6010B~~, 7080A, 7081)[c] (1311, 6010D~~6010B~~, 7130, 7131A)[c] (1311, 6010D~~6010B~~, 7190, 7191)[c] (1311, 6010D~~6010B~~, 7420, 7421)[c] (1311, 6010D~~6010B~~, 7470A, 7471A, 7472)[c] (1311, 6010D~~6010B~~, 7740, 7741A, 7742)[c] (1311, 6010D~~6010B~~, 7760A, 7761)[c] or equivalent methods[d]	Total and/or TCLP Inductively-coupled plasma atomic emission spectroscopy Atomic absorption Manual cold vapor atomic absorption Acceptable Knowledge	Determine total and/or TCLP concentration in samples of solid process residues and soils
Liquid Wastes			
VOCs in waste matrix: Spent halogenated solvents Spent nonhalogenated solvents	ASTM Method D4547-91[a] EPA/540/4-91/001[b] *SW-846* (1311 and 8260D~~8260B~~)[c] or equivalent methods[d]	Total and/or TCLP VOC analysis by GC/MS Acceptable Knowledge	Determine total and/or TCLP and VOC concentration in samples of liquid
SVOCs in waste:	*SW-846* (1311 and 8270B)[c] or equivalent methods[d]	Total and/or TCLP SVOC analysis by GC/MS Acceptable Knowledge	Determine total and/or TCLP and SVOC concentration in samples of liquid

Table C-12~~C-17~~ (continued)
Summary of Characterization Methods for Mixed Low-Level Waste

Parameter	Method Numbers	Test Method	Rationale
Liquid Wastes (cont.)			
RCRA-regulated metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	*SW-846* (1311, ~~6010B~~6010D, 7060A, 7061A)[c] (1311, 6010D~~6010B~~, 7080A, 7081)[c] (1311, 6010D~~6010B~~, 7130, 7131A)[c] (1311, 6010D~~6010B~~, 7190, 7191)[c] (1311, 6010D~~6010B~~, 7420, 7421)[c] (1311, 6010D~~6010B~~, 7470A, 7471A, 7472)[c] (1311, 6010D~~6010B~~, 7740, 7741A, 7742)[c] (1311, 6010D~~6010B~~, 7760A, 7761)[c] or equivalent methods[d]	Total and/or TCLP Inductively-coupled plasma atomic emission spectroscopy Atomic absorption Manual cold vapor atomic absorption Anodic stripping voltammetry Acceptable Knowledge	Determine total and/or TCLP concentration in samples of liquid
Ignitability (Flash Point)	*SW-846* (1010, 1020B~~1020A~~, 1030)[c] or equivalent methods[d]	Pensky-Martens closed cup Setaflash closed cup Acceptable Knowledge	Determine ignitability
pH (Corrosivity)	*SW-846* (9040C~~9040B~~, 9041A, 9045D~~9045C~~)[c] or equivalent methods[d] Equivalent methods: *HALO smart Electrode HI12302 polyetherimide gel-filled Bluetooth* (TA-54-0231 and TA-54-0412 units only. *HI98190 Professional Waterproof Portable pH/ORP Meter* (TA-54-0231 and TA-54-0412 units only)	pH electrometric Measurement pH paper Soil and waste pH Acceptable Knowledge	Determine corrosivity

[a] American Society for Testing and Materials, 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," ASTM D4547-91, *Annual Book of ASTM Standards*, Philadelphia, Pennsylvania, American Society for Testing and Materials

[b] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," EPA 154014-91991, Office of Research and Development

[c] U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*

[d] Equivalent methods, subject to EPA approval, may be substituted

Table C-13~~C-18~~
Summary of Characterization Methods for Mixed Transuranic Waste

Parameter	Method Numbers	Test Methods	Rationale
Storage			
Physical Waste Form (Free liquids in waste matrix)		Waste inspection procedures Real-time radiography Visual examination Acceptable Knowledge	Verify waste container contents
Volatile organic compounds in waste matrix: Spent halogenated solvents Spent nonhalogenated solvents	ASTM Method D4547-91[a] U.S. EPA/540/4-91/001[b] *SW-846* (1311, 8260D~~8260B~~, 8275A)[c] or equivalent methods[d] Methods included in 20.4.1 NMAC §§ 265.1084(a)(2), (a)(3), and (a)(4)	Total and/or toxicity characteristic leaching procedure (TCLP) VOCs in container headspace gas VOC analysis by gas chromatography/mass spectrometry (GC/MS) Semivolatile organic compound (SVOC) analysis by thermal extraction/gas chromatography/mass spectrometry (TE/GC/MS) Acceptable Knowledge	Determine the presence or absence of VOCs in samples
SVOCs in waste	*SW-846* (1311 and 8270C)[c] or equivalent methods[d]	Total and/or TCLP SVOC analysis by GC/MS Acceptable Knowledge	Determine the presence or absence of SVOCs in samples
Resource Conservation and Recovery Act (RCRA)-regulated metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	*SW-846* (1311, 6010D~~6010B~~, 7060A, 7061A)[c] (1311, 6010D~~6010B~~, 7080A, 7081)[c] (1311, 6010D~~6010B~~, 7130, 7131A)[c] (1311, 6010D~~6010B~~, 7190, 7191)[c] (1311, 6010D~~6010B~~, 7420, 7421)[c] (1311, 6010D~~6010B~~, 7470A, ~~7471A~~7471B, 7472)[c] (1311, 6010D~~6010B~~, 7740, 7741A, 7742)[c] (1311, 6010D~~6010B~~, 7760A, 7761) or equivalent methods[d]	Total and/or TCLP Inductively-coupled plasma atomic emission spectroscopy Atomic absorption Manual cold vapor atomic absorption Anodic stripping voltammetry Acceptable Knowledge	Determine total and/or TCLP concentration in samples
Ignitability	*SW-846* (1010, 1020A, 1030)[c] or equivalent methods[d]	Pensky-Martens closed cup Setaflash closed cup Ignitabililty of Solids Acceptable Knowledge	Determine ignitability
pH (Corrosivity)	*SW-846* (~~9040B~~9040C, 9041A, 9045D~~9045C~~) or equivalent methods[d]	pH electrometric measurement Acceptable Knowledge	Determine corrosivity

Table C-13 (continued)
Summary of Characterization Methods for Mixed Transuranic Waste

Parameter	Method Numbers	Test Methods	Rationale
Treatment			
RCRA-regulated metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Silver	*SW-846* (1311, 6010D~~6010B~~, 7060A, 7061A)[c] (1311, 6010D~~6010B~~, 7080A, 7081)[c] (1311, 6010D~~6010B~~, 7130, 7131A)[c] (1311, 6010D~~6010B~~, 7190, 7191)[c] (1311, 6010D~~6010B~~, 7420, 7421)[c] (1311, 6010D~~6010B~~, 7470A, 7471B~~7471A~~, 7472)[c] (1311, 6010D~~6010B~~, 7760A, 7761)[c] or equivalent methods[d]	Total and/or TCLP Inductively-coupled plasma atomic emission spectroscopy Atomic absorption Manual cold vapor atomic absorption Acceptable Knowledge	Determine total and/or TCLP metals concentration in samples
pH (Corrosivity)	*SW-846* (9040C~~9040B~~, 9041A, 9045D~~9045C~~) or equivalent methods[d] Equivalent methods: *HALO smart Electrode HI12302 polyetherimide gel-filled Bluetooth* (TA-54-02031 and TA-54-0412 units only. *HI98190 Professional Waterproof Portable pH/ORP Meter* (TA-54-0231, and TA-54-0412)	pH electrometric measurement Acceptable Knowledge	Determine corrosivity

[a] American Society for Testing and Materials, 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," ASTM D4547-91, *Annual Book of ASTM Standards*, Philadelphia, Pennsylvania, American Society for Testing and Materials

[b] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," EPA 154014-91001, Office of Research and Development

[c] U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

[d] Equivalent methods, subject to EPA approval, may be substituted

Table C-14~~C-19~~
Description of Cementation Waste Streams at Technical Area 55
~~(This table is for informational purposes only)~~

Summary Category Group	Waste Description	Waste-Generating Activity	Basis for Hazardous Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[a] (milligrams per liter)
L1000 – Aqueous Liquids/Slurries	Evaporator bottoms solutions, aqueous waste, and laboratory solutions	Process residue from evaporator bottoms and other discardable solutions.	Acceptable Knowledge	D002 D004 D005 D006 D007 D008 D009 D010 D011	Nitric acid Arsenic Barium hydroxide Cadmium Chromium Lead Mercury Selenium Silver	NA 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0
S3000 – Homogenous Solids	Inorganic process solids and cemented inorganic process solids	Process residue from evaporator bottoms and other discardable solutions; process-leached solids, ash, filter cakes, salts, metal oxides, and fines generated as a result of plutonium-processing	Acceptable Knowledge	D004 D005 D006 D007 D008 D009 D010 D011	Arsenic Barium hydroxide Cadmium Chromium Lead Mercury Selenium Silver	5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0

[a] A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *EPA-SW-846*, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C., the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in ~~the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II,~~ 40 CFR § 261.24~~, revised June 14, 2000~~

Table C-15~~C-20~~
Description of Stabilization Waste Streams at Technical Area 50, Building 69; Technical Area 54, Domes 231 and 375; and Technical Area 54, Building 412
~~(This table is for informational purposes only)~~

Summary Category Group	Waste Matrix Code	Waste Description[a]	Waste-Generating Activity	Basis for Hazardous Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and /or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents[c]
S3000 - Homogeneous	S3100	Homogeneous Inorganic, Cemented	Plutonium processing operations	Acceptable Knowledge	D001 D002 D003[e] D004 D005 D006 D007 D008 D009 D010 D011 D018 D019 D021 D022 D035 D038 D039 D040 F001 F002 F003 F004[e] F005 F006[e] F007[e] F008[e]	Ignitable Corrosive Reactivity Arsenic Barium hydroxide Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform Methyl ethyl ketone Pyridine Tetrachloroethylene Trichloroethylene Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Wastewater treatment sludges Spent cyanide plating solutions Spent strip/clean solutions	NA[d] NA[d] NA[d] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 100.0 6.0 200.0 5.0[e] 0.7 0.5 NA[d] NA[d] NA[d] NA[d] NA[d] NA[d] NA[d] NA[d]	
		Homogeneous Inorganic, Cemented Organics	Plutonium processing operations	Acceptable Knowledge				
		Homogeneous Inorganic, Non-cemented	Plutonium processing operations	Acceptable Knowledge				
		Homogeneous Inorganic, Salts	Plutonium processing operations	Acceptable Knowledge				

Table C-15~~C-20~~ (continued)

Description of Stabilization Waste Streams at Technical Area 50, Building 69; Technical Area 54, Domes 231 and 375; and Technical Area 54, Building 412 ~~(This table is for informational purposes only)~~

Summary Category Group	Waste Matrix Code	Waste Description[a]	Waste-Generating Activity	Basis for Hazardous Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents[c]
S3000 - Homogeneous	S3100	Homogeneous Inorganic, Vermiculite	Plutonium processing operations	Acceptable Knowledge	D001	Ignitable	NA[d]	
					D002	Corrosive	NA[d]	
					D003[e]	Reactivity	NA[d]	
					D004	Arsenic	5.0	
					D005	Barium hydroxide	100.0	
					D006	Cadmium	1.0	
					D007	Chromium	5.0	
					D008	Lead	5.0	
					D009	Mercury	0.2	
					D010	Selenium	1.0	
					D011	Silver	5.0	
					D018	Benzene	0.5	
					D019	Carbon tetrachloride	0.5	
					D021	Chlorobenzene	100.0	
					D022	Chloroform	6.0	
					D027	1,4-Dichlorobenzene	7.5	
					D028	1,2-Dichloroethane	0.5	
					D030	2,4-Dinitrotoluene	0.13[e]	
					D032	Hexachlorobenzene	0.13[e]	
					D033	Hexachlorobutadiene	0.5	
					D034	Hexachloroethane	3.0	
					D035	Methyl ethyl ketone	200.0	
					D036	Nitrobenzene	2.0	
					D037	Pentachlorophenol	100.0	
					D038	Pyridine	5.0[e]	
					D039	Tetrachloroethylene	0.7	
					D040	Trichloroethylene	0.5	
					D042	2,4,6-Trichlorophenol	2.0	
					D043	Vinyl Chloride	0.2	
					F001	Spent halogenated solvents	NA[d]	
					F002	Spent halogenated solvents	NA[d]	
					F003	Spent non-halogenated solvents	NA[d]	
					F004[e]	Spent non-halogenated solvents	NA[d]	
					F005	Spent non-halogenated solvents	NA[d]	
					F006[e]	Wastewater treatment sludges	NA[d]	
					F007[e]	Spent cyanide plating solutions	NA[d]	
					F008[e]	Spent strip/clean solutions	NA[d]	

Table C-15~~C-20~~ (continued)
Description of Stabilization Waste Streams at Technical Area 50, Building 69; Technical Area 54, Domes 231 and 375; and Technical Area 54, Building 412
~~(This table is for informational purposes only)~~

Summary Category Group	Waste Matrix Code	Waste Description[a]	Waste-Generating Activity	Basis for Hazardous Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents[c]
S5000 - Debris	S5300	Combustible Debris	Plutonium processing operations	Acceptable Knowledge	D001	Ignitable	NA[d]	
					D002	Corrosive	NA[d]	
					D003	Reactive	NA[d]	
					D004	Arsenic	5.0	
					D005	Barium hydroxide	100.0	
	S5400	Heterogeneous Debris	Plutonium processing operations; ~~D&D~~decontamination and decommissioning	Acceptable Knowledge	D006	Cadmium	1.0	
					D007	Chromium	5.0	
					D008	Lead	5.0	
					D009	Mercury	0.2	
					D010	Selenium	1.0	
					D011	Silver	5.0	
					D018	Benzene	0.5	
					D019	Carbon tetrachloride	0.5	
					D021	Chlorobenzene	100.0	
					D022	Chloroform	6.0	
					D035	Methyl ethyl ketone	200.0	
					D038	Pyridine	5.0[e]	
					D039	Tetrachloroethylene	0.7	
					D040	Trichloroethylene	0.5	
					D043	Vinyl Chloride	0.2	
					F001	Spent halogenated solvents	NA[d]	
					F002	Spent halogenated solvents	NA[d]	
					F003	Spent non-halogenated solvents	NA[d]	
					F004	Spent non-halogenated solvents	NA[d]	
					F005	Spent non-halogenated solvents	NA[d]	
					U080	Methylene Chloride	NA[d]	

[a] This table is based on information from the *Acceptable Knowledge Information Summary for Los Alamos National Laboratory Transuranic Waste Streams (*AKIS), (TWCP-AK-2.1, 1-019, R.0)(LA-UR-03-4870); and from waste characterization documentation information maintained by the Facility and Waste Operations Division. Waste with EPA Hazardous Waste Numbers that are not included in the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit will not be transported to WIPP. Additionally, recharacterization efforts for nitrate salt-bearing waste have been conducted and documented in several documents as outlined in Enclosure 3 of *Response to Ordered Action 2/3; Attachment A to Settlement Agreement and Stipulated Final Order HWB-14-20; Los Alamos National Laboratory.*

[b] A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1331 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), the extract from a representative sample of solid waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in ~~the New Mexico Administrative Code , Title 20, Chapter 4, Part 1, Subpart II,~~ 40 CFR Part 261, Subpart C.~~[6-14-00].~~

[c] Potential underlying hazardous constituents (UHC) have been included, where the information is available. UHC characterization for the purpose of Land Disposal Restrictions will apply for mixed transuranic waste to be disposed of at WIPP.

[d] Not Applicable: Refers to the absence of regulatory limits for ignitable, corrosive and reactive characteristic waste and F-, P-, and U-listed wastes.

[e] Potential EPA Hazardous Waste Numbers only present at TA-54-0231, TA-54-0375, and TA-54-0412.

[f] Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

Table C-16~~C-21~~
Description of Hazardous and Mixed Macroencapsulation Waste Streams at Container Storage ~~Permitted~~ Units
~~(This table is for informational purposes only)~~

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Radioactive Lead Solids	Radioisotope experiments and other reactor, accelerator, laser, and x-ray activities	Acceptable Knowledge	D008	Lead	5.0	All applicable constituents identified above the UHC regulatory limit
Noncombustible Debris	Maintenance, ~~D&D~~decontamination and decommissioning, ~~R&D~~research and development, and ~~ER~~environmental restoration activities	Acceptable Knowledge	D004 D005 D006 D007 D008 D009 D010 D011 D018 D019 D020 D021 D022 D023 D024 D025 D026 D027 D028 D029 D030 D031 D032 D033 D034 D035 D036 D037 D038 D039 D040 D041 D042 D043 F001 F002 F004	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlordane Chlorobenzene Chloroform o-Cresol m-Cresol p-Cresol Cresol 1,4-Dichlorobenzene 1,2-Dichloroethane 1,1-Dichloroethylene 2,4-Dinitrotoluene Heptachlor (and its epoxide) Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Methyl ethyl ketone Nitrobenzene Pentachlorophenol Pyridine Tetrachloroethylene Trichloroethylene 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol Vinyl chloride Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents	5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 0.03 100.0 6.0 200.0[d] 200.0[d] 200.0[d] 200.0[d] 7.5 0.5 0.7 0.13 0.008 0.13 0.5 3.0 200.0 2.0 100.0 5.0 0.7 0.5 400.0 2.0 0.2 NA[c] NA[c] NA[c]	Arsenic, Barium, Cadmium, Chromium (Total), Lead, Mercury-all others, Selenium, Silver, and all applicable constituents identified above the UHC regulatory limit

Table C-16~~C-21~~ (continued)

Description of Hazardous and Mixed Macroencapsulation Waste Streams at Container Storage Units ~~(This table is for informational purposes only)~~

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Combustible Debris	Maintenance, ~~R&D~~research and development, ~~D&D~~decontamination and decommissioning, and ~~ER~~environmental restoration activities	Acceptable Knowledge	D004	Arsenic	5.0	Arsenic, Barium, Chromium, Lead, Mercury-all others, Selenium, Silver, Nickel, Zinc and all applicable constituents identified above the UHC regulatory limit
			D005	Barium	100.0	
			D006	Cadmium	1.0	
			D007	Chromium	5.0	
			D008	Lead	5.0	
			D009	Mercury	0.2	
			D010	Selenium	1.0	
			D011	Silver	5.0	
			D018	Benzene	0.5	
			D019	Carbon tetrachloride	0.5	
			D020	Chlordane	0.03	
			D021	Chlorobenzene	100.0	
			D022	Chloroform	6.0	
			D023	o-Cresol	200.0[d]	
			D024	m-Cresol	200.0[d]	
			D025	p-Cresol	200.0[d]	
			D026	Cresol	200.0[d]	
			D027	1,4-Dichlorobenzene	7.5	
			D028	1,2-Dichloroethane	0.5	
			D029	1,1-Dichloroethylene	0.7	
			D030	2,4-Dinitrotoluene	0.13	
			D031	Heptachlor (and its epoxide)	0.008	
			D032	Hexachlorobenzene	0.13	
			D033	Hexachlorobutadiene	0.5	
			D034	Hexachloroethane	3.0	
			D035	Methyl ethyl ketone	200.0	
			D036	Nitrobenzene	2.0	
			D037	Pentachlorophenol	100.0	
			D038	Pyridine	5.0	
			D039	Tetrachloroethylene	0.7	
			D040	Trichloroethylene	0.5	
			D041	2,4,5-Trichlorophenol	400.0	
			D042	2,4,6-Trichlorophenol	2.0	
			D043	Vinyl chloride	0.2	
			F001	Spent halogenated solvents	NA[c]	
			F002	Spent halogenated solvents	NA[c]	
			F004	Spent non-halogenated solvents	NA[c]	

[a] Denotes information from the Los Alamos National Laboratory waste characterization documentation database

[b] A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), the extract from a representative sample of the waste contains any of the contaminants listed (D004-D043) at a concentration equal to or greater than the respective value given in ~~the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart II, 40~~ CFR Part 261, Subpart C ~~[6-14-00]~~

[c] Not applicable: Refers to the absence of regulatory limits for ignitable, corrosive, and reactive characteristic wastes and F-, P-, and U-listed wastes

[d] If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 milligrams per liter

Supplement 1-4

Permittees' Proposed Changes to Attachment D, Contingency Plan

ATTACHMENT D

CONTINGENCY PLAN

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~~D-1 General Hazardous Waste Emergency Notification System~~

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D-2	Emergency Facilities at Los Alamos National Laboratory

ATTACHMENT D

~~GENERAL~~ CONTINGENCY PLAN

This Attachment presents contingency measures applicable to all permitted hazardous ~~or mixed~~ waste management units. The Permittees shall implement the provisions of this Plan and the applicable provisions of Permit Part 2 (*General Facility Conditions*) immediately to minimize hazards whenever there is a fire, explosion, or release of hazardous ~~or mixed~~ waste or hazardous ~~or mixed~~ waste constituents that could threaten human health or the environment.

D.1 HAZARDOUS ~~AND MIXED~~ WASTE EMERGENCY RESPONSE RESOURCES

~~1.~~ The management of hazardous ~~and mixed~~ waste emergency incidents at the Facility resides within the Permittees' emergency management and emergency response organizations. During an emergency situation, line management (*i.e.*, the Line Manager of the affected area) works with an Incident Response Commander from the emergency management organization. The Incident Response Commander has primary responsibility for managing emergency response operations, directing the Emergency Operations Support Center (EOSC) to make appropriate notifications, and activating the emergency response organizations. The Incident Response Commander has authority to assume the role of Incident Commander (IC) during an emergency and typically assumes full responsibility for management of the emergency response operations at the scene. (Personnel from other organizations, such as the Federal Bureau of Investigation or the Los Alamos Fire Department [LAFD], may also assume the role of IC, depending upon the type of emergency and responding organizations.) Additional Facility resources that may provide assistance in an emergency include personnel from health physics, industrial hygiene, environment compliance, emergency response, and radiation protection ~~personnel~~ at the Facility. These personnel as well as other resources are discussed in ~~Attachment~~ Sections D.1.2, D.1.3, D.1.~~6~~4, and D.1.6~~.5~~ of this Attachment.

~~2.~~ Laboratory-contracted support services and other agencies shall also be available for assistance during emergencies. These are discussed in ~~Attachment~~ Section D.1.5 and include the contracted services for security and the LAFD. These contracted services, if changed, shall be replaced and/or supplemented with functionally equivalent contracted services required to assume the same duties and responsibilities described in this section. Other outside response agencies are discussed in Section D.1.7 and include the Los Alamos Police Department (LAPD) and the Los Alamos Medical Center (LAMC). The LAPD and the LAMC each provide assistance under a memorandum of understanding with the U.S. Department of Energy (DOE).

~~3.~~ The Permittees shall use the Incident Command System (ICS) in response to all emergencies. The ICS is based on the on-scene management response structure protocols of the National Incident Management System (NIMS). The NIMS is a national standard that provides a solid foundation for an effective and integrated emergency response both locally and nationally, if necessary.

~~4.~~ The IC (*e.g.*, Incident Response Commander) coordinates all groups and agencies responding to the emergency and personnel operating at the scene using the ICS. The General Hazardous Waste Emergency Notification System, illustrated on Figure D-1, is designed to expand and contract, as appropriate, to include the response groups/agencies needed to address any particular emergency. The EOSC provides notification to on-site and off-site groups and agencies for both response requests and information.

~~5.~~ The IC may appoint and utilize a network of support personnel to assess, plan for, and mitigate emergencies. These personnel can include, but are not limited to, a Safety Officer, a Public Information Officer, and a Liaison Officer that report directly to the IC and are responsible for issues related to safety, information, and the interaction of various groups associated with the overall emergency. Also reporting directly to the IC are an Operations Section Chief, Logistics Section Chief, Planning Section Chief, and an Administrative Section Chief. The Operations Section Chief oversees the Fire Branch, the Emergency Medical Services Branch, and the emergency response organization, and is responsible for mitigating the emergency response. The Logistics Section Chief is responsible for providing support personnel and equipment necessary for the emergency response. The Planning Section Chief is responsible for planning the mitigation and recovery activities for the emergency. The Administrative Section Chief is responsible for keeping records of expenditures. These ICS positions are listed in Figure D-1. The appropriate ICS positions will be activated as the emergency warrants. During an emergency at the Facility, assistance may be provided to the IC and the IC's appointees by a large variety of response groups/agencies. The responsibilities and/or assistance available from the various response groups/agencies are discussed briefly in ~~Attachment~~ Sections D.1.2 through D.1.7 and the appropriate representatives will be contacted during an emergency as appropriate.

~~6.~~ The Permittees shall provide a copy of this Contingency Plan and any revisions to each of the emergency response groups/agencies (including the LAPD, LAFD, LAMC, and the State of New Mexico's Department of Homeland Security and Emergency Management (DHSEM) Area 3 Emergency Management Coordinator).

D.1.1 Emergency Management

~~1.~~ The Permittees shall delegate the authority and responsibility for administering and implementing the Facility's emergency management program to the emergency management organization. Emergency management personnel shall coordinate and issue the Facility's Los Alamos National Laboratory and Los Alamos Field Office Hazardous Materials Program Plan; emergency management personnel provide response coordination for emergencies. Emergency management personnel provide a 24-hour EOSC for the Facility and a 24-hour Incident Response Commander to respond to emergencies, including hazardous ~~and mixed~~ waste releases. The Incident Response Commander is the functional equivalent of the Emergency Coordinator (40 CFR § 264.55). The emergency management organization maintains an Emergency Operations Center (EOC) in a ready condition, should a center be required. The primary EOC is located at TA-69, Building 33 (TA-69-33). An alternate mobile EOC is equipped and ready for

immediate deployment. Should an EOC be activated during an emergency, additional emergency personnel can be requested by the IC through the EOSC.

~~2.~~ Assignment as the Incident Response Commander is rotated. The Incident Response Commander can be reached 24 hours a day by contacting the EOSC at 505-667-2400.

~~3.~~ The Incident Response Commander responds ~~will respond~~ to emergency incidents involving the release of hazardous ~~or mixed~~ waste to the environment, including spills, fires, and explosions. With input from the appropriate Facility groups, the Incident Response Commander shall initially assess the possible hazards to human health or the environment and, if assuming incident command, shall use whatever response personnel and/or emergency equipment necessary to control and contain the waste. In the event of an emergency, the Incident Response Commander typically becomes the IC with full responsibility for field activities. As described previously, the exception to this is when on-site personnel can adequately address the emergency and maintain incident command internally.

~~4.~~ The Incident Response Commander responding to an emergency shall have access to various tools to include Emergency Actions Levels with prescribed protective actions and ~~ChemLog with~~ a current chemical inventory of the appropriate building(s) in the area in which the incident is occurring. Access to these tools shall be maintained at the facility and made available to the Incident Response Commander and other emergency response members at the EOC. Additionally, this information may be gained from the facility manager where a waste management unit is located. The various response groups shall obtain specific information, if necessary, relating to the facilities involved (including the layout of all affected buildings; the location of evacuation routes, equipment, and personnel; properties of the materials/wastes managed at the facility; and the hazards associated with these materials/wastes) from other site-specific information.

~~5.~~ The Permittees shall ensure that the names, addresses, and telephone numbers ~~listed below are~~ of the current Primary and Alternate Incident Response Commanders are kept up-to-date and provided to the New Mexico Environment Department – Hazardous Waste Bureau.

~~6.~~ To assure timely notifications and immediate response during an emergency, the Permittees shall ensure that the telephone numbers 911 or 505-667-2400 are contacted to obtain the on-call Incident Response Commander.

D.1.2 Hazardous Materials Response

~~1.~~ Hazardous Materials (HAZMAT) personnel are responsible for the aggressive mitigation of chemical, radiological, and hazardous waste~~, and mixed waste~~ emergencies, including field decontamination of responders and response equipment. At the request of the IC, the HAZMAT personnel may provide limited field decontamination support for victims. HAZMAT personnel are capable of providing a decontamination station at the scene of a hazardous material incident to process people working in a contaminated area and ~~is~~are prepared to perform decontamination of personnel. HAZMAT personnel shall meet the training criteria for emergency response

personnel specified in the Code of Federal Regulations, Title 29, §1910.120(q)(6)(iii), (iv), and (v). HAZMAT personnel act as part of the ICS reporting directly to IC, or the Operations Section Chief if the position is staffed.

~~2.~~ During an emergency response, the HAZMAT personnel may also provide site field monitoring to determine the nature and extent of contamination, provide information on correct handling of chemicals, make recommendations on protective clothing and equipment, and provide exposure and treatment information to responders. The field monitoring team leader supervises field monitoring activities to determine the boundaries of the potential release. The HAZMAT personnel may obtain resources from environmental monitoring groups, such as health physics and industrial hygiene personnel.

D.1.3 Environmental Regulation and Waste Management Compliance Response

At the scene, representatives and technical advisors from the environmental regulation and waste compliance personnel and other response personnel are coordinated by the IC. In addition to their post-emergency duties, they may also be responsible for on-scene emergency operations such as planning. Depending on the type of emergency and the associated hazards, an individual from the most relevant personnel shall provide technical support and shall ensure the Permittees' compliance with applicable federal, state, and local regulations.

D.1.3.1 Ecology Personnel

Ecology personnel provide field surveys of soil, foodstuffs, and biota to determine environmental effects of exposure after an emergency.

D.1.3.2 Meteorology and Air Quality Personnel

Meteorology and air quality personnel provide field surveys of air to determine environmental impacts and dose equivalent to members of the public after a radiological emergency. In addition, they provide expertise in meteorology to project short- and long-term environmental effects of emergency conditions.

D.1.3.3 Hazardous Waste Compliance Personnel

Hazardous waste compliance personnel provide guidance on regulatory requirements for proper treatment, storage, and transportation of hazardous ~~and mixed~~ waste~~s~~ to other Facility groups. After an emergency, waste management sampling personnel may provide field sampling (*e.g.*, of soil, spills, or potentially hazardous waste) to determine environmental effects of exposure.

D.1.3.4 Water Quality and Hydrology Personnel

After an emergency, water quality and hydrology personnel provide sampling of surface water runoff and sediments to determine the environmental effects of an emergency and perform assessments for regulatory reporting requirements. They also provide expertise in hydrogeology to establish short- and long-term environmental effects of emergency conditions.

D.1.4 Other Facility Response Resources

Emergency response personnel at TA-55 are trained to respond to emergencies at that facility. Personnel from the Los Alamos National Laboratory (LANL) Transuranic Program may provide guidance on proper treatment, storage, and transportation of hazardous ~~and mixed~~ waste at TA-50 and TA-54.

D.1.5 Contracted Response

Contracted response groups' representatives may report directly to the Incident Command Post (ICP), if requested. If the IC deems it necessary, the IC may designate an Operations Section Chief to aid in the coordination and direction of these groups. In addition, contracted response groups may report to a staging area, with a representative going either to the ICP or, if activated, to the EOC.

D.1.5.1 Security Services

Security personnel provide security service to the Facility. During an emergency, these activities include maintaining security, directing traffic within the Facility, and controlling access to the emergency scene. Security personnel maintain the necessary equipment (such as crowd-control equipment and patrol vehicles) to perform these functions.

D.1.5.2 Maintenance and Site Services

Maintenance and Site Services (MSS) provides a maintenance support force to the Facility. This support force is under the Permittees' direction in an emergency. MSS also provides a representative to the Facility in the event of an emergency and participates, as necessary, in post-emergency cleanup under the direction of a Recovery Manager designated by the IC. The duties of the Recovery Manager are discussed in ~~Attachment~~ Section D.10.

D.1.5.3 Los Alamos Fire Department

The LAFD provides fire protection and ambulance coverage for the residential communities of Los Alamos and White Rock and for the Facility. In the case of an emergency within the Facility, the LAFD coordinates fire suppression and Emergency Medical Services. The IC retains overall responsibility for the emergency response effort.

D.1.6 Facility Support

D.1.6.1 Health Physics Operations

Radiation protection personnel perform routine site evaluation and monitoring to determine radiological conditions in facilities. They also provide guidance on radiological decontamination. In addition, this group augments the assessment and monitoring functions of the HAZMAT personnel.

D.1.6.2 Occupational Medicine Personnel

~~1.~~ The Facility maintains its own medical facility operated by occupational medicine personnel. Occupational medicine personnel provide appropriate medical treatment for occupation-related illnesses and injuries and monitors employees to assess the effectiveness of health protection programs.

~~2.~~ Although occupational medicine personnel are not routinely involved with on-scene emergency response, the group maintains a central medical facility with a fully equipped emergency room and decontamination facilities at TA-3, Building 1411. The location of this and other emergency facilities are shown on Figure ~~49 in Attachment N (*Figures)*~~D-2, *Emergency Facilities at Los Alamos National Laboratory*. Medical staff at these facilities includes physicians, physician assistants, nurse practitioners, nurses, technicians, psychologists and counselors. All full-time medical providers and nurses receive radiation accident training. Occupational medicine personnel also maintain access to a database that provides the clinical staff with timely toxic exposure and treatment information.

D.1.6.3 Industrial Hygiene and Safety Personnel

Industrial hygiene and safety personnel assist occupational medicine personnel with their ability to obtain additional exposure and treatment information. In addition, they maintain computer access to the National Institute of Occupational Safety and Health Technical Information Center and the Registry of Toxic Effects of Chemical Substances. During routine operations, these personnel perform site evaluations and field testing to determine the nature and extent of chemical contamination and specify protective clothing and equipment.

D.1.6.4 Performance Assurance Office

The Performance Assurance Office assists the facility manager in investigating all adverse environmental, safety, health, and operational occurrences (on-site and off-site), determining the causal factors, identifying the appropriate corrective actions, and assisting in the preparation of reports documenting the occurrence to DOE. This group tracks corrective actions associated with such occurrences and maintains the information in an on-site database.

D.1.7 Outside Response Agencies

During an emergency, outside response agencies report directly to the IC. A Liaison Officer or an Operations Section Chief, designated by the IC, may aid in coordinating and directing the groups responding to an emergency.

D.1.7.1 Los Alamos Police Department

The Los Alamos Police Department (LAPD) may assume IC under unique circumstances, but usually has only minimal interaction with the Facility in an on-site emergency. This interaction normally involves traffic control on DOE roads with public access, handling criminal activity, and criminal investigations.

D.1.7.2 Los Alamos County Emergency Management Coordinator

Los Alamos County has an agreement with the Facility's emergency management organization to provide assistance in certain emergency situations. If an emergency occurs on Facility property that may affect the communities of Los Alamos and White Rock, emergency management personnel will notify the Los Alamos County Consolidated Dispatch Center which in turn will notify the Los Alamos County Emergency Management Coordinator, who will coordinate necessary emergency actions throughout the county.

D.1.7.3 Los Alamos Medical Center

The Facility maintains a fully equipped decontamination room adjacent to the emergency room at LAMC. In the event that a case is sent to LAMC, support for the emergency room staff is provided by Facility occupational medical personnel. Radiation protection, industrial hygiene, and HAZMAT personnel also provide assistance to the emergency room staff; assistance from additional Facility resources is provided, as necessary. Assistance is coordinated through emergency management personnel.

D.2 EMERGENCY EQUIPMENT AND COMMUNICATIONS

D.2.1 Emergency Equipment

The Permittees shall make available the lists of emergency equipment listed in Table D-1 for use at any of Permittees' hazardous ~~or mixed~~ waste management units. The list includes emergency equipment available in the HAZMAT vehicles and trailers as well as supplemental emergency equipment maintained by the LAFD, MSS, and occupational medicine personnel. A list of emergency equipment available for use at specific hazardous ~~and/or mixed~~ waste management units is identified in ~~Attachment~~ Tables D-3 through D-16~~TA-3, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3; TA-55 Building 4 First Floor, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3; TA-55-0355 Pad, D-4; TA-60 Building 17, D-1, and TA-63 Transuranic Waste Facility, D-1~~. Emergency equipment listed in these tables may be replaced and/or upgraded with functionally equivalent components and equipment, as necessary, for routine maintenance and repair.

D.2.2 Emergency Communications

The initial phase of an emergency may involve a small number of individuals at the affected area and that requires notification of the Incident Response Commander, utilizing local communication equipment and/or systems. When responding to hazardous ~~and/or mixed~~ waste emergencies, the Permittees shall ensure that emergency management personnel can provide communications between response units and emergency organizations.

D.2.2.1 Fire Alarms

Fire alarms are monitored 24 hours per day by trained personnel in the EOSC. Both the primary and backup buildings where the monitoring takes place have emergency power systems. The Incident Response Commander is notified when there is confirmed fire or smoke by the EOSC.

D.2.2.2 Power Dispatch

The Permittees shall maintain the Power Dispatch facility 24 hours a day. Alarms at this facility are connected to Facility experiments, equipment, and/or buildings to record outages and hazardous conditions. Any conditions that activate these alarms shall be reported immediately to the building management or to the EOSC operator for notification and response.

D.2.2.3 Additional Communication Systems

Internal communication systems at the Facility include:

- ~~1.~~ Preprogrammed telephone system
- ~~2.~~ Private telephone lines
- ~~3.~~ A variety of frequency modulated very high frequency simplex repeater systems, including:
  - ~~-~~ Multiple base stations
  - ~~-~~ Mobile and hand-held units
  - ~~-~~ Links to New Mexico public safety agencies
- ~~4.~~ An ultrahigh frequency radio system, including:
  - ~~-~~ Multiple antenna sites
  - ~~-~~ Mobile and base units
  - ~~-~~ Links with the LAPD, the LAFD, and the State Medical System
- ~~5.~~ A trunked radio system that includes a link with the LAFD
- ~~6.~~ Transmission and reception (through the EOC) for:
  - ~~-~~ Secure telephone
  - ~~-~~ Secure fax
  - ~~-~~ Secure still video
  - ~~-~~ Secure videoconference system (to all DOE EOCs and DOE Headquarters)
- ~~7.~~ Access to all radio systems outlined above (through the EOC).
- ~~8.~~ Mass Notification System

~~2.~~ Off-site communications with federal, state, tribal, county, and other agencies are available through the following:

- ~~1.~~ A preprogrammed telephone system
- ~~2.~~ Private telephone lines
- ~~3.~~ Trunked radio system
- ~~4.~~ Mass Notification System

~~3.~~ The Permittees' EOC, maintained by emergency management personnel, operates radio systems on key Facility and off-site channels. Emergency personnel responding to on-site incidents have the benefit of wide-area radio coverage using EOC facilities. The Incident Response Commander is responsible for activating whatever support personnel, equipment, or services are needed 24 hours a day.

D.3 CONTINGENCY PLAN IMPLEMENTATION

The following sections discuss requirements used to implement this Plan, emergency notification, and Incident Response Commander activities and actions to be taken in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents into the environment at the Facility.

D.3.1 Requirements for Implementation

~~1.~~ The decision to implement this Plan depends upon whether an emergency exists, which for the purposes of this section is defined as an imminent or actual incident arising from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents that could threaten human health or the environment. The Incident Response Commander or IC will use the guidelines listed below to decide whether to implement this Plan. The Permittees shall investigate all adverse environmental, safety, health, and operational occurrences (on-site and off-site) resulting in implementation of the contingency plan to determine causal factors and identify the appropriate corrective actions.

~~2.~~ This Plan shall be implemented immediately in the following situations involving releases or potential releases of hazardous ~~or mixed~~ waste:

- ~~1.~~ Spills:
  - If a hazardous ~~or mixed~~ waste spill cannot be contained with secondary containment or application of sorbents
  - If a hazardous ~~or mixed~~ waste spill causes the release of flammable material, creating a fire or explosion hazard
  - If a hazardous ~~or mixed~~ waste spill results in toxic fumes that threaten human health
- ~~2.~~ Explosions:
  - If an unplanned explosion involving hazardous ~~or mixed~~ waste occurs
  - If an imminent danger of an explosion involving hazardous ~~or mixed~~ waste exists.
- ~~3.~~ Fires:
  - If a fire involving hazardous ~~or mixed~~ waste occurs
  - If any building, grass, forest, or nonhazardous waste fire exists that threatens to volatilize or ignite hazardous ~~or mixed~~ waste.
- ~~4.~~ Other Acts of Force Majeure
  - If an earthquake or other natural disaster threatens containment integrity, including precipitation that threatens to move spilled material off site.

D.3.2 Emergency Notification

1. Emergency notification requires immediate notification of 505-667-2400 or emergency management personnel upon discovery of an imminent or actual incident involving hazardous ~~and/or mixed~~ waste. During nonworking hours, personnel will report all imminent or actual incidents involving hazardous ~~and/or mixed~~ waste to the Incident Response Commander at 505-667-2400. In the case of fire, notification of these individuals is superseded by the Facility fire alarm system. A fire is reported by dialing 911, activating automatic alarms, or activating a fire alarm pull box. All fire alarms alert EOSC. The EOSC alerts the Incident Response Commander and the Los Alamos County Consolidated Dispatch Center, who contacts the LAFD.

2. Upon recognition of a hazardous ~~or mixed~~ waste emergency, the first arriving emergency-trained person will become the Facility Command Leader. Once emergency management personnel are notified of the emergency, the Incident Response Commander will proceed to the scene and be briefed by the Facility Command Leader, building/area personnel, and/or other emergency units/teams. The Incident Response Commander will then assume the position of IC. If necessary, the IC may recommend activation of the EOC and the emergency management team. The IC will assign ICS positions ~~and~~, update the EOSC, and request necessary resources. The EOSC will notify the appropriate emergency response groups. The IC may determine from the list of response groups described in ~~Attachment~~ Sections D.1.2 through D.1.7 which groups to contact in an emergency. Each response group maintains an on-call person and/or a call-down procedure to respond to emergencies.

3. Emergency management personnel shall be notified of any potential hazardous ~~or mixed~~ waste emergency. The IC will use whatever means are available (including the assistance of other response groups, computer data searches, and sampling) to determine if a hazardous ~~or mixed~~ waste emergency exists.

4. The Facility Incident Response Commander or his or her designee shall make best efforts to timely communicate the nature of the emergency and the hazards that may be present to any outside response agency whose assistance may be required.

D.3.3 Incident Response Commander Actions

~~1.~~ Upon notification of an emergency incident, the Incident Response Commander may:

- ~~1.~~• Make an initial assessment of the incident and, in conjunction with the Facility Command Leader, obtain resources to determine the source, quantities, and types of hazardous ~~and/or mixed~~ waste involved and the areal extent of any released materials.
- ~~2.~~• Request resources needed and have EOSC staff begin notifications.
- ~~3.~~• Proceed directly to the scene, if safe to do so.
- ~~4.~~• Assess the nature of the incident (*e.g.*, through communication with the IC).
- ~~5.~~• Assume incident command after a direct briefing with the Facility Command Leader.
- ~~6.~~• Based on the guidelines in ~~Attachment~~ Section D.3.1 of this Plan, determine if implementation of this Plan is warranted.
- ~~7.~~• Activate the EOC, if necessary.

2. Upon deciding to implement this Plan, the IC will, when appropriate:

1. Assess the hazards to human health and the environment, including both direct and indirect effects, such as generation of toxic, irritating, or asphyxiating gases and/or hazards of runoff of water or chemicals used for fire suppression. An individual designated by the IC will use the guidelines in Section D.3.1 to assess the hazards to human health and the environment. If any of the criteria under Section D.3.1 are met and if the responsible Line Manager (or his/her designee) has not already accomplished evacuation of the area, the IC will initiate shelter in place or evacuation of the immediate area.

2. Direct the EOSC staff to initiate protective actions and immediately notify appropriate response groups and personnel as per the emergency operations organization Guidelines. The Los Alamos County Emergency Coordinator may activate one or more of the following community alert mechanisms: reverse 911, the AM 1490 KRSN radio, or the cable television capture system, site wide area network radios, and public radio and television channels.

3. In the case of fire or release of any type, make reasonable efforts to confirm that all response personnel at the scene are aware of actual or imminent special hazards associated with hazardous ~~or mixed~~ waste.

4. In emergency situations, contact the appropriate environmental or waste compliance representative to notify the Department's Hazardous Waste Bureau and the National Response Center at (800) 424-8802, reporting:

   - The name and telephone number of the environmental or waste compliance representative
   - The name and address of the facility
   - The time and type of incident
   - The name and quantity of material involved, to the extent known
   - The extent of injuries, if any
   - The possible hazards to human health or the environment outside the facility.

5. When an emergency occurs at hazardous ~~or mixed~~ waste treatment units, ensure that appropriate Facility personnel monitor for leaks, pressure buildup, gas generation, or equipment ruptures.

3. Once control of the emergency is established, the IC will take all reasonable measures to minimize the occurrence, recurrence, or spread of fires, explosions, or releases. In addition, the IC will delegate cleanup and decontamination responsibilities to the Recovery Manager. These responsibilities may include the following:

1. Arranging for site cleanup~~.~~
2. Assisting with arrangements for proper handling of recovered waste, contaminated soil, or contaminated surface/groundwater~~.~~
3. Assisting with arrangements for decontamination of equipment, as needed~~.~~
4. Arranging for replacement and/or repair of equipment, as needed~~.~~

~~5.~~ • Requesting that testing is conducted to verify successful cleanup~~.~~

~~4.~~ The Permittees shall report implementation of this Plan in accordance with Permit Sections 1.9.12, 1.9.13, and 2.11.6.3.

D.4 SPILLS

~~1.~~ Sudden releases may include spills of hazardous ~~or mixed~~ waste that pose a significant threat to human health or the environment. Spill incidents resulting in a sudden release of hazardous ~~or mixed~~ waste that present a potential threat to human health or the environment, as listed in ~~Attachment~~ Section D.3.1, require implementation of this Plan.

~~2.~~ Hazardous ~~and mixed~~ wastes are stored on site at the Facility in a variety of containers. The general steps in handling hazardous ~~and/or mixed~~ waste spills are as follows:

1. Isolate the immediate area and deny entry to all unauthorized personnel;
2. Contain the spill by spreading sorbents or forming temporary dikes to prevent further migration (performed by properly trained personnel, if safe);
3. Monitor the spill area and sample the spilled waste and contaminated media.
4. Package the waste and contaminated media in sound containers;
5. Decontaminate the area and all involved equipment and personnel (followed by testing to assure adequate cleanup); and
6. Remove the waste and contaminated media (performed by appropriate waste management personnel).

~~3.~~ The IC will determine the steps to be taken for spill mitigation. If initial mitigation of the spill is necessary and can be accomplished safely (by appropriately trained personnel) before the Incident Response Commander arrives, a qualified member of the affected area's operating group will serve as the Facility Command Leader.

~~4.~~ The Permittees shall ensure that hazardous ~~and/or mixed~~ waste spills are stabilized and cleaned up. During spill control and cleanup, all personnel shall wear appropriate personal protective equipment (PPE). Monitoring will be conducted to ensure that chemical and, as appropriate, radiological exposure is minimized. The collected material may be treated as hazardous ~~or mixed~~ waste, depending on the components present. Runoff from spills of listed hazardous ~~or mixed~~ waste that has~~have~~ migrated outside hazardous waste management areas must be contained and managed as hazardous ~~or mixed~~ waste, as appropriate. If the spill was from a characteristic hazardous ~~or mixed~~ waste and if it is determined by analysis that the runoff does not exhibit the characteristic (*i.e.*, ignitability, corrosivity, reactivity, and/or toxicity), the runoff need not be managed as characteristic waste. Temporary dikes may be constructed to contain runoff.

D.4.1 Spill Control Procedures

When a flammable organic solvent spill, a highly acidic spill, or a highly caustic spill has been stabilized with the contents of an organic solvent spill kit, an acid spill kit, or a caustic spill kit,

respectively, the resulting material may be sorbed using a nonbiodegradable sorbent. Nonbiodegradable sorbent can be used to control any spill if it is known to be compatible with the spilled material. Appropriate containers or packaging shall be used to collect all spilled material and contaminated sorbent. ~~Attachment~~ Tables D-3 through D-16 ~~TA-3, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3; TA-55 Building 4 First Floor, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3; TA-55-0355 Pad, D-4; TA-60 Building 0017, and TA-63 Transuranic Waste Facility, D-1 list~~ emergency equipment available for spill control at specific units. The ultimate disposition of any contaminated sorbent or waste material shall be determined by appropriate waste management personnel, and in accordance with hazardous waste management regulatory requirements.

D.4.1.1 Tank System Spill Control and Reporting

~~1.~~ The Permittees shall remove a tank system from service immediately using approved shutdown procedures if a leak or spill occurs from the tank system or its secondary containment system or if the system is determined to be unfit for use. Further addition of waste to the tank system or containment system will cease and the system shall be visually inspected to determine the cause of the leak or spill. If a leak occurs from a tank system, as much of the waste as is necessary to prevent further release of waste will be removed within 24 hours after detection or as early as practicable, and the system will be inspected and repaired. All released waste will be removed within 24 hours or as soon as possible if a leak occurs to a tank's containment system.

~~2.~~ If a spill from a tank is not immediately contained and cleaned up and exceeds a quantity of one pound, the release will be reported to the Department within 24 hours of its detection in accordance with the requirements of 40 CFR § 264.196(d)(1). In addition, the Permittees shall report in accordance with Permit Section 1.9.12 and 2.11.6.3. That report shall describe the likely migration route of the release; soil characteristics at the site; monitoring and sampling data relevant to the release; proximity to down gradient drinking water, surface water, and populated areas; and response actions taken or planned.

D.4.1.2 Tank System/Secondary Containment Repair and Closure

If the integrity of a tank system, including its secondary containment, has not been damaged by a spill, the system may be returned to service. Service may not resume until after all released waste is removed and repairs, if necessary, are made. Any tank system that cannot satisfy the criteria described above shall undergo closure in accordance with the requirements of 40 CFR § 264.197.

D.4.1.3 Certification of Major Repairs

If a tank system undergoes extensive repairs (*e.g.*, installation of an internal liner, tank system piping retrofit), the tank system will not be returned to service until a certification by an independent, qualified registered professional engineer is obtained, verifying that the repaired system is capable of handling wastes without release for the intended life of the system. This certification will be submitted to the Department within seven days after returning the tank system to use.

D.4.1.4 Unexpected Events Reporting

If a spill at an open burning or open detonation treatment unit is not immediately contained, or emergency services are called to an unexpected event at an open burning or open detonation treatment unit, the event will be reported to the Department within 24 hours in accordance with Permit Sections 5.~~3~~4 and 6.4.

D.4.2 Decontamination Verification

~~1.~~ Decontamination will be accomplished at the spill site by removal of all contaminated material. After the spilled material has been sorbed, the material will be containerized. If the spill occurs on a concrete or asphaltic-concrete area, water or an appropriate solvent will be used to clean the area. Liquids (*i.e.*, spilled material and cleaning water or solvents used to clean a spill) may be sorbed with a compatible, nonbiodegradable sorbent and containerized. If a spill is from an identifiable source, the spilled material may be characterized as a newly-generated waste using acceptable knowledge or may be analyzed, as applicable, for the hazardous waste constituents known to be components of the waste managed at that unit. ~~Analytical method(s) given in Table D-3~~Appropriate analytical method(s) given in the most recent version of the U.S. EPA's *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846) will be utilized, as appropriate. If the spill is from other than an identifiable source, the spilled material will be analyzed for the appropriate parameters listed in ~~Table D-3~~40 CFR Part 261, Subpart C. All personnel conducting decontamination verification will wear appropriate PPE. Radiation protection personnel will conduct health physics monitoring whenever mixed waste is involved to ensure that radiation exposure is maintained as low as reasonably achievable. Any hazardous ~~or mixed~~ waste collected from decontamination activities will be handled appropriately.

~~2.~~ In order to establish baseline data, a sample of decontamination water or solvent (and nonbiodegradable sorbent material, as applicable) will be taken prior to the start of the decontamination effort. A sample of the final washwater (or the used sorbent) will then be taken. The baseline samples and final washwater/used sorbent samples will be analyzed for the applicable parameters ~~given in Attachment Table D-2~~within 40 CFR 261, Subpart C, and analyzed using the appropriate devices and methods as described in the most recent version of the SW-846. These and other ~~approved~~ methods approved by the Department will be used as necessary to determine whether a waste stream is hazardous and to identify underlying hazardous constituents. If the decontamination samples contain hazardous constituents that are not present in the baseline samples, the decontamination procedure shall be repeated. An alternative demonstration of decontamination may be proposed and justified to the Department, who will evaluate the proposed alternative in accordance with the standards and guidance currently in effect. If the proposed alternative is accepted, decontamination levels will meet the levels approved by the Department. ~~Each sample will be collected with an appropriate sampling device (*e.g.*, a thief or trier) as specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), and approved updates, as applicable.~~

~~3.~~ If a hazardous~~/mixed~~ waste spill occurs on soil, any free liquid present will be collected and containerized. Liquids may be sorbed with a compatible nonbiodegradable sorbent prior to containerization. For such a spill, contaminated soil will either be excavated and containerized

or remediated in situ. Industrial health and safety personnel will conduct industrial hygiene monitoring and, if mixed waste is involved, radiation protection personnel will conduct health physics monitoring, if deemed necessary, to minimize exposure during soil removal or remediation operations. Excavation or remediation will continue until soil contaminant concentrations are at a level approved by the Department.

4. If a hazardous~~/mixed~~ waste spill occurs in an area with flooring, the floor will either be removed in lieu of decontamination, or the floor will be decontaminated. If the decision is made to decontaminate the floor, swipe samples or other types of sampling appropriate for the contaminant will be collected at random and characterized for decontamination verification. If, after several decontamination efforts, it is subsequently determined that the affected floor area cannot be decontaminated, the floor material will be removed. In all cases, wastes generated during the decontamination and/or removal process will be managed appropriately.

D.5 EXPLOSION

~~1.~~ Explosions and resultant releases may result in a significant threat to human health or the environment. The potential exists for hazardous ~~or mixed~~ waste to be released during an explosion. Implementation of this Plan is required whenever there is an explosion at a permitted unit.

~~2.~~ In the event of an explosion at the Facility, all personnel will immediately evacuate the area. Any injured personnel will be decontaminated at the site, if required and if time allows. An LAFD ambulance will transport these personnel to LAMC for treatment. If an injury is severe and requires immediate medical evacuation, the injured person will be wrapped to contain contamination, if necessary. In the case of an actual or potential explosion, on-site personnel will contact emergency management personnel immediately so that the Incident Response Commander can ensure that all necessary emergency response personnel are alerted. The LAFD is notified automatically upon fire alarm activation. The Incident Response Commander assumes incident command and will remain near but at a safe distance from the site in order to inform personnel responding to the explosion of the known hazards. Where there is more than one agency (personnel from other organizations, such as the Federal Bureau of Investigation, or the Los Alamos Fire Department) with incident jurisdiction or when incidents cross political jurisdictions, agencies will work together through the designated member of the unified command to establish a common set of objectives and strategies and single incident Action Plan.

~~3.~~ If a fire results from an explosion, the LAFD Senior Officer will, upon arrival at the scene, evaluate all available information and determine the appropriate firefighting methods and tactics. The LAFD Senior Officer will direct firefighting operations under a unified command.

D.6 FIRE

~~1.~~ Fires and resultant releases of hazardous ~~or mixed~~ waste may result in a significant threat to human health or the environment. Implementation of this Plan is required whenever there is a fire at a permitted unit.

~~2.~~ Fire alarms will be sounded automatically or manually to alert personnel that a fire hazard exists and to evacuate the area immediately if in the vicinity. Information related to the various fire alarms at the specific units is included in ~~Attachment~~ Tables D-3 through D-16~~TA-3, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3; TA-55 Building 4 First Floor, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3; TA-55-0355 Pad, D-4; TA-60 Building 17, D-1, and TA-63 Transuranic Waste Facility, D-1~~.

~~3.~~ Depending on the size of the fire and the fuel source, portable fire extinguishers may be used. However, Facility policy does not encourage the use of portable fire extinguishers by employees unless they are properly trained. Instead, Facility policy encourages immediate evacuation of the area and notification of the Los Alamos County Dispatch Center by dialing 911. For any fire, including a fire that involves hazardous ~~or mixed~~ waste, the responsible Line Manager and emergency management personnel must be contacted immediately. The Incident Response Commander will alert the LAFD and all other necessary emergency response personnel. If the fire spreads or increases in intensity, all personnel must follow protective actions as designated by the Incident Response Commander. The Incident Response Commander assumes incident command or enters unified command and will remain near the scene to advise personnel responding to the fire of the known hazards.

~~4.~~ Upon arrival at the scene, the LAFD Senior Officer will evaluate all available information and determine the appropriate firefighting methods and tactics. The LAFD Senior Officer will direct firefighting operations under a unified command.

D.7 UNPLANNED NONSUDDEN RELEASES

Nonsudden releases include those incidents that, if uncontrolled, impact the environment over a long period of time. Such incidents include minor leaks from containers and loss of secondary containment integrity.

D.7.1 Responsibility

Appropriate Facility personnel are responsible for correction of a nonsudden release from a hazardous ~~or mixed~~ waste unit if the correction can be performed safely with normal maintenance and management procedures. Emergency management personnel may provide assistance in mitigating releases. Any correction methods for nonsudden releases that have resulted in an impact to the environment will be coordinated with the Department.

D.7.2 Nonsudden Releases

~~1.~~ In general, the response to a nonsudden release will be to contain the release, to correct the cause of the release, and to clean up any release to a level that protects human health and the environment.

~~2.~~ Appropriate Facility personnel shall conduct regularly scheduled inspections to detect failure of containment at the unit(s) addressed in this Permit. Secondary containment systems shall be inspected regularly to ensure that the integrity of the containment systems has not deteriorated.

If an inspection reveals that containers are leaking or that secondary containment has deteriorated, Facility personnel shall ensure that maintenance or replacement of containment is performed, as appropriate. Inspections will be conducted in accordance with the facility's inspection plan.

D.7.3 Nonsudden Release Surveillance

~~1.~~ In addition to routine inspection and site-specific sampling and testing, the Permittees shall maintain an area-wide environmental monitoring network. Monitoring and sampling locations for various types of measurements are organized into three main groups. Regional monitoring stations located within the counties surrounding Los Alamos County are placed up to 80 kilometers (50 miles) from the Facility. These stations serve to determine background conditions. Perimeter stations are generally located within four kilometers (2.5 miles) of the Facility boundary and document conditions in residential areas surrounding the Facility. On-site stations, most of which are accessible only to employees during normal working hours, are within the Facility boundary.

~~2.~~ Different types of surveillance sampling conducted at these stations include measuring radiation and collecting samples of air particulates, surface waters, groundwater, soil, sediment, and foodstuffs for subsequent analysis. Additional samples provide information about particular events, such as major runoff events and nonroutine releases. Data from these efforts are used for comparison with standards, for determining background levels, and for radiation dose calculations.

D.8 EXPOSURE TO HAZARDOUS ~~OR MIXED~~ WASTE

~~1.~~ If a person is exposed to hazardous ~~or mixed~~ waste, the affected person, a co-worker, or line management will notify emergency management personnel. Appropriate first aid should be administered immediately. An emergency management representative will make appropriate notifications as soon as possible so that exposure levels and decontamination requirements can be established. The affected person will then be transported to the occupational medical facility or to LAMC for evaluation. If possible, the material involved in the exposure will be ascertained, and the information will be given to the medical staff.

~~2.~~ Other potential exposures will necessitate evacuation of the area, if appropriate, or under any of the following conditions:

- ~~1.~~ Irritation of the eyes, breathing passages, or skin
- ~~2.~~ Difficulty in breathing
- ~~3.~~ Nausea, lightheadedness, vertigo, or blurred vision.

~~3.~~ The affected person will be transferred to the occupational medical facility or to LAMC if there is a serious injury. An industrial health and safety, radiation protection, or HAZMAT representative will attempt to ascertain what, if any, exposure occurred and what corrective measure is appropriate.

D.9 PROTECTIVE ACTIONS

A permitted unit shall be evacuated upon the voice command to evacuate the area or upon the sounding of the evacuation or fire alarm. The IC may call for sheltering in place when evacuation is impractical due to significant airborne hazards. Shelter in place may be possible in a designated area or in a building where all exterior windows and doors may be closed and outdoor air ventilation equipment turned off. Once the airborne hazard has decreased, personnel would then be evacuated.

D.9.1 Emergency Process Shutdown Prior To Evacuation

Personnel are instructed to shut down equipment prior to evacuating a building/area unless an immediate building/area evacuation is announced or signaled. To ensure efficient shutdown, training and exercises addressing the shutdown process are performed. In the case of an immediate evacuation, a selected team may shut down designated equipment in an evacuated area upon approval of command. The team will be equipped with proper equipment and PPE. If they are on location, radiation protection, industrial health and safety, and/or HAZMAT personnel will provide advice and assistance.

D.9.2 Evacuation Plan

~~1.~~ Emergency situations may warrant the shutdown and evacuation of areas or buildings in order to protect personnel and property, to anticipate the emergency condition, or to enhance the appropriate response. ~~Attachment~~ Table D-2~~D-3~~ lists the criteria for evacuation, persons responsible for initiating evacuations, and reentry conditions.

~~2.~~ To initiate the evacuation of a building/area, the evacuation or fire alarm is sounded and/or the public address (PA) system may be used. Evacuation alarms cannot be silenced and reset by site personnel. Only the Fire Alarm Maintenance Section and the LAFD Battalion Chief can silence and reset alarms. To evacuate a portion of a building or area, use of the PA system may be more appropriate. The PA system will notify the occupants of the area to be evacuated and will advise personnel throughout the building of the existence of a problem in a specific area. Once evacuation has been initiated and if conditions allow, personnel will turn off all equipment that could contribute to the hazard if left unattended. All personnel will then proceed from the affected area to the assembly/muster area.

~~3.~~ In the event of evacuation of a building, an outbuilding, or an outlying work area, the responsible Line Manager (or his/her designee) will determine a control point at the closest safe location (*e.g.*, considering wind direction). The designated area will be outside the affected area and will serve as an assembly/muster area where the Line Manager (or designee) can oversee evacuation operations and work to prevent further spread of the hazard.

~~4.~~ As personnel exit an affected building/area, a primary sweep of the building/area may be performed to ensure that all personnel have evacuated. If the building/area is evacuated, a Group Leader designee will take attendance at the assembly/muster area and report personnel accountability to the IC. The evacuation procedure is as follows:

1. The person discovering the accident or emergency will call 911 if the event is life-threatening or LAFD is required, or 505-667-2400 for all other evacuations. The person will then notify line management.
2. Site-specific BEPs and/or emergency action procedures will be followed concerning evacuation, sweep, personnel accountability, and equipment shutdown procedures.

~~5.~~ A responsible on-site person may direct the initial evacuation and the fire alarm system may be activated. Emergency operations personnel will be notified and dispatched immediately. A responsible on-site person may implement and direct the evacuation process until the Incident Response Commander or LAFD arrives at the scene to assume that responsibility.

D.10 SALVAGE AND CLEANUP

~~1.~~ Appropriate environmental compliance representatives will survey the affected area before salvage and cleanup begin. They will conduct visual inspections and sampling, as appropriate, of the affected area to determine whether cleanup is complete. If gases or fumes, electrical or radiological problems, or other conditions present a hazardous situation, personnel or selected teams equipped with proper PPE will reenter the area to perform designated decontamination tasks, repairs, and salvage to allow the return to normal operations. After an emergency, the IC will turn the operation over to a designated Recovery Manager, who will:

1. Provide for proper handling of recovered waste, contaminated soil or surface water, or any other material that results from a spill, fire, or explosion. Contaminated material will be managed appropriately and temporarily stored at one of the hazardous ~~or mixed~~ waste storage areas at the Facility. Waste management personnel will be responsible for determining the final disposition of the waste. This determination will be made in compliance with hazardous waste management regulations.
2. Arrange to monitor for damage or improper operation of the unit and associated equipment as a result of the emergency or of plant shutdown in response to the emergency.
3. Arrange for site cleanup procedures to be completed and ensure that no waste that may be incompatible with the released material is treated or stored in the same area.
4. Ensure that emergency equipment is cleaned, decontaminated, and fit for its intended use before operations are resumed. Equipment will be inspected visually and then sampled, if necessary, to determine the type and degree of contamination and to determine appropriate cleanup measures.

~~2.~~ Prior to resuming operations, the Permittees shall verify that the previously mentioned tasks have been performed. The Permittees shall notify appropriate state and local authorities that cleanup procedures are completed and that emergency equipment is clean and fit for its intended use.

~~3.~~ The IC assumes the coordination of post-emergency actions (particularly during the time period immediately following the emergency) until a Recovery Manager is appointed. The Recovery Manager then assumes this coordination role. The Recovery Manager is the functional equivalent of the Emergency Coordinator for post-emergency actions. The post-emergency

actions include cleanup operations, vital equipment repair, or interim hazard-removal operations (such as arranging for demolition of unstable walls). The services of affected operational organizations, environmental compliance personnel, waste management compliance personnel, maintenance personnel, and other on-site resources will also be used to estimate cleanup costs and operational impact.

D.11 EMERGENCY RESPONSE RECORDS AND REPORTS

The Permittees shall ensure that any emergency that requires implementation of this Plan will be documented and reported in accordance with requirements of 40 CFR § 264.56 and Permit Sections 1.9.12, 1.9.13, and 2.11.6.3. This information will be maintained in the facility operating record.

D.12 CONTINGENCY PLAN AMENDMENT

The Permittees shall review this Plan at a minimum annually. The Plan will be amended immediately if determined to be inadequate to handle releases (spills, explosions, and/or fires) and whenever:

1. The facility permit is revised;
2. There is change in the design or operation of the facility (*e.g.*, quantities of waste handled and handling techniques) that increases the likelihood of an emergency and requires changes in emergency response;
3. The Primary Incident Response Commander changes; and
4. The list of emergency equipment changes significantly.

~~D.13 REFERENCES~~

~~EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *EPA-SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.~~

~~LANL, 2014. *LANL Emergency Procedures and Protective Actions, P1201-4, R3.* Los Alamos National Laboratory, Security and Emergency Operations Division, Los Alamos, New Mexico~~

~~LANL, 2002, "Los Alamos National Laboratory General Part B Permit Renewal Application", Revision 2.0, August 2002, LA-UR-03-5923, Los Alamos National Laboratory, Los Alamos, New Mexico.~~

Table D-1

Los Alamos National Laboratory-Wide Emergency Equipment

~~**Hazardous Materials (HAZMAT) Vehicles and Associated Emergency Equipment**~~

Hazardous Materials (HAZMAT) Vehicles and Associated Emergency Equipment

HAZMAT vehicles and trailers are located at Technical Area (TA) 64, Building 39 (TA-64-39). They are available to emergency management ~~organization~~ organizations for emergency response to all of the TAs at the Facility. Emergency management personnel are responsible for maintaining the supplies of appropriate emergency equipment in each vehicle and trailer.

The HAZMAT vehicles and trailers are equipped with safety and emergency equipment, personal protective clothing, and other supplies, which may include, but are not limited to, some or all of the following:

Assorted personal protective equipment, T-shirts, and gloves
Safety goggles, safety glasses, and face shields
Boots and booties
Totally encapsulating suits and boots
Level A and B suits
Flash suits
Self-contained breathing apparatus (SCBA) and SCBA bottles
Respirators and cartridges
Hazardous chemical reference books and other reference materials
Shovels
Siphon pumps
Assorted spill kits and sorbents
Neutralizing solutions: acids, bases, and caustics
Two-way radios, cellular phones, facsimile, and other communication equipment
Bottles of leak detector and leak repair kits
Emergency repair packs
HAZMAT bags
Gas detectors and chemical monitoring equipment
Radiological monitoring equipment
Sponges and cleaners
Warning signs and barricade tape
Traffic control barriers
Flashlights
Cameras and film
Knives
Portable power supplies
Warning and signal horns
Harnesses and belts

Decontamination equipment
Sampling equipment
Lifting equipment and vetter bags
Assorted tools, tape, and other supplies
Non-sparking tools
Biological detection equipment
Chemical vacuums
Sandia foam
Plugging and diking equipment
Sample van equipped with a glovebox and analysis equipment
Environmental continuous air monitoring equipment
Robot
National Atmospheric Release Advisory Center-Internet Client (NARAC Client)
Hotspot plume modeling program
Mass decontamination trailer with tent and supplies
Portable decontamination trailer
Portable structures
Tents
Trucks
Trailers
International Shipping Units
Portable hot water heater
Forklift
Automated external defibrillators

Supplemental Emergency Equipment and Personnel Available From the Los Alamos Fire Department (LAFD)

Supplemental emergency equipment available from the LAFD may include, but is not limited to, some or all of the following:

Fire engines
Mini-tankers with compressed air foam capability
Modular ambulances
Rescue vehicles
Crash-Fire-Rescue (CFR) unit
Water tankers with compressed air foam capability
Incident Command vehicles
SCBA units
SCBA air tanks
Remote air system for confined space rescue
Ladder truck with pump
Personnel with Hazardous Material First Response Operational Level training
Personnel with Basic Emergency Medical Technician training
Personnel with Advanced Life Support training

Supplemental Emergency Equipment and Personnel from Maintenance and Site Services (MSS)

Supplemental emergency equipment may include, but is not limited to, some or all of the following:

Transportation Equipment

Pickups, 1/2 through 3/4 ton
Trucks, 1 through 3 ton
Vans, panels, and carryalls
Buses

Special Equipment

Graders
Loaders
Snowplows and snow blowers
Bulldozers
Scrapers
Semitrailers
Chain saws
Street flushers
Mobile transceivers
Generators
Handsets (2-way)
Pageboys (1-way)
Welders
Mobile site logistics support equipment/associated heavy equipment
Fully equipped spill response unit
Utilities equipment and emergency utility support
Fuel trucks
Light banks
Dump trucks
Backhoes
Potable water trucks
Cranes
Forklifts

Trained Personnel

Heavy equipment operators
Dispatchers
Mechanics
Power saw operators

Radio and telephone operators
Truck drivers
Rodent/Pest Control personnel
HAZMAT response/cleanup personnel
Welders
Electricians

Emergency Equipment and Personnel at the Occupational Medicine Clinic Occupational Medicine Group (OM)

At TA-3 (SM-1411) Central Clinic

Emergency equipment and supplies available from OM may include, but are not limited to, some or all of the following:

Personnel

Physicians
Physician Assistants
Nurse Practitioners
Nurses
X-ray Technician
Clinical Laboratory Technicians
Clinical Testing Technicians
Clinical Psychologist
Counselors

Special Equipment-Portable

Multichannel emergency receiver-base station
Two-way radio on the State Med Net, the Facility Emergency Management channel, and the Facility Health-Safety Net
Cardiac monitors and defibrillators
Crash cart emergency equipment with E-tank oxygen (O_2)
Portable physicians' bag with medications
Portable suction unit
Portable stretchers (ambulance, gurney, folding)
Wheelchairs
O_2 tanks
Manual resuscitators
Intravenous (IV) stands
IV solutions
Otoscopes/ophthalmoscopes
Portable sphygmomanometers
Stethoscopes
Anticontamination apparel

Eye irrigation solution
First-aid kits
Extrication and cervical collars, crutches, canes
Suture sets
Protective apparel
Morgan lens irrigation sets
Decontamination equipment (portable)

Supplies-General

Bedding/pillows
Rescue blankets
Burn blankets
Thermal/icing pouches
Multitrauma dressings, surgical and first aid supplies
Disposable ice bags

Special Facilities - Nonportable

Fully equipped decontamination room at the Occupational Medicine Clinic
Completely equipped emergency room with ambulance entrance
Emergency lighting system
Complete X-ray suite
Protective clothing and wound counters
12-lead electrocardiograph
Fully equipped crash cart with Life Pak defibrillator/external pacer, intubation equipment, emergency medications
Fully equipped decontamination room at Los Alamos Medical Center (LAMC) adjacent to the LAMC emergency room

Transportation

Full ambulance service is available within minutes to the central facility.

Communication

Base station on State Medical Net and Los Alamos Fire Department trunked radio system.

Table D-2

Waste Analysis Parameters and Test Methods[a]

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L, S) SW1010, SW1020A
	Setaflash closed-cup method	(S) SW1030
	Ignitability of solids	(L, S) ASTM D93-02a
Reactivity	Test method to determine hydrogen cyanide released from waste	(L, S) SW, Section 7.3
	Test method to determine hydrogen sulfide released from waste	
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic (TC)	Toxicity characteristic leaching procedure (TCLP) extraction	(S) SW1311
TC Metals:	Graphite-furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA, manual cold-vapor technique	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A
Volatile organics	Gas chromatography (GC)/mass spectrometry (MS)	(L, S) SW8260B
	GC/MS capillary column technique	
Semivolatile organics	GC/MS	(L, S) SW8270C[c]
	GC/MS capillary column technique	(S) SW8275A
Organochlorine Pesticides	Thermal extraction/GC/MS	(L, S) SW8081A
Chlorinated Herbicides	GC	(L, S) SW8151A
Cyanide, free and total	Distillation and colorimetric ultraviolet	(L, S) SW9010B, SW9012A
Total chromium	Colorimetric method for hexavalent chromium	(L, S) SW7196A
Sulfide	Colorimetric titration	(L, S) SW9030B

Table D-2 (Continued)

Parameter	Test Method	Reference[b]
Total RCRA metals[c,d]	Acid digestion	(L) SW3010A, (S) SW3050B
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010B
Arsenic		(L, S) SW6010B
Barium		(L, S) SW6010B
Cadmium		(L, S) SW6010B
Chromium		(L, S) SW6010B
Lead		(L, S) SW6010B
Selenium		(L, S) SW6010B
Silver		(L, S) SW6010B
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095A

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include gross alpha, beta, and gamma screening.

[b] "A" (*e.g.*, A006) refers to U.S. Environmental Protection Agency, 1984, "Sampling and Analysis Methods for Hazardous Waste Combustion," *EPA 600/8-84-002*.
"ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.

[c] See also atomic absorption methods. Total metals may be substituted for TCLP metals, if appropriate.

[d] RCRA = Resource Conservation and Recovery Act.

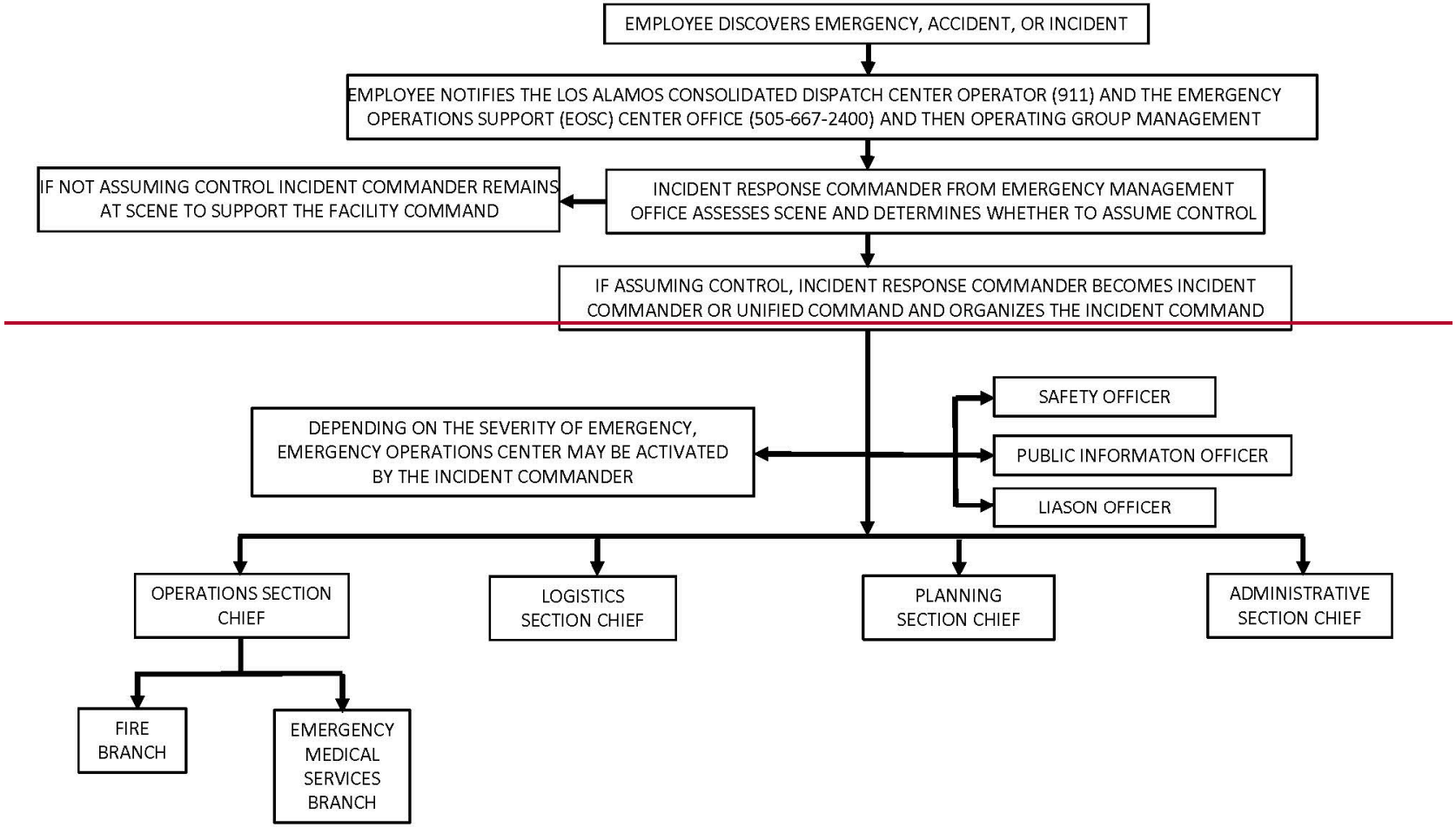
Table D-2~~D-3~~

Evacuation Determination and Re-Entry Conditions

Reason for Evacuation	Evacuation Determination Made by	Reentry Conditions[a]
Fire	[1]Fire or evacuation alarm, Line Manager or alternate, Lead Engineer, Senior Staff Member present, Senior Technician, or Incident Response Commander	Following survey by the person designated by the IC[b]
Explosion	Same as 1 above	Same as above
Loss of ventilation	[2]Line Manager or alternate, Senior Staff Member, Lead Engineer, or Senior Technician, or Incident Response Commander	Same as above
Loss of electric power	Same as 2 above	Same as above
Extensive contamination	Same as 2 above or health physics representative	Same as above
Airborne contamination	Same as 2 above or Radiation Monitor	Same as above
Escape or release of toxic or hazardous gas or fumes	Line Manager or alternate, Senior Staff Member, Lead Engineer, Senior Technician, or Incident Response Commander	Same as above
Bomb or bomb threat	Emergency management or security personnel, R&D[c] Section Leader or alternate, Senior Staff Member, or Lead Engineer	Same as above

[a] All reentries are authorized by the emergency management.
[b] "IC" refers to the Incident Commander as defined in 29 CFR § 1910.120.
[c] "R&D" refers to the Research and Development Section

Figure D-1
General Hazardous Waste Emergency Notification System



~~**TA-3**~~

~~**ATTACHMENT D**~~

~~**CONTINGENCY PLAN**~~

~~TA-3~~

~~ATTACHMENT D~~

~~CONTINGENCY PLAN~~

~~Specific information on emergency response resources and release prevention/mitigation at TA-3 is provided below.~~

~~The CMR Building at the Facility has a facility-specific Alarm/Emergency Response Instruction (AERI) to ensure that emergency planning and preparedness for the CMR Building are commensurate with the facility and the nature of work performed there and to provide sufficient subject matter experts at the facility, should an emergency occur.~~

~~The Alarm/Emergency Response Instruction (AERI) establishes emergency response activities at the CMR, which is comprised of a Facility Command Leader, and the CMR Operations Center. The Facility Command is comprised of division and line managers and key personnel who respond to pre-designated locations for the purpose of initial command and control of events that occur during CMR Building emergencies. The CMR Operations Center is the emergency communications focal point and has the responsibility of development and maintenance of alarm response instructions, notification lists, and call-out lists. When mitigation of the emergency is beyond the capabilities of CMR or when injuries occur or could potentially occur due to the emergency, emergency management personnel and the Incident Response Commander are required to respond.~~

~~The EMP has been superseded by the AERI which includes information on emergency equipment (*see* Table TA-3, D-1 of this Attachment Section); evacuation routes and primary and secondary evacuation assembly areas; and evacuation procedures for the Facility Command Leader, persons wearing anti-C clothing, and persons in non-anti-C clothing. The CMR EMP also includes emergency categorization, lists of potential facility emergencies, their associated alarms, and the appropriate response to the emergency and/or the alarms. Evacuation routes, evacuation area locations, and emergency equipment are subject to change.~~

Table D-3~~D-1~~
TA-3, Building 29

Emergency Equipment

FIRE CONTROL EQUIPMENT

Fire extinguishers are available in Rooms 9010, 9020, and 9030.

Description of General Capabilities:
Each fire extinguisher has a 10-pound minimum capacity and may be used by any qualified employee in the event of a small fire.

Twelve fire hydrants are located around the outside perimeter of Technical Area (TA) 3, Building 29 (TA-3-29). The nearest fire hydrants to Rooms 9010, 9020, and 9030 are located on the south side of Wing 9 and west side of Wing 5.

Description of General Capabilities:
The fire hydrants supply water at an adequate volume and pressure to satisfy the requirements of 40 CFR § 264.32(d).

Fire alarm pull boxes are located in Rooms 9010 and 9020.

Description of General Capabilities:
Manually-operated fire alarms may be activated by any employee in the event of fire to notify the Los Alamos Fire Department (LAFD) and the Emergency Operations and Support Center (EOSC).

Sprinkler systems are located in Rooms 9010, 9020, and 9030.

Automatic thermal alarm systems are located in Rooms 9010, 9020, and 9030.

Description of General Capabilities:
The sprinkler systems and thermal alarm systems are heat activated. The EOSC and the LAFD are alerted when a system has been activated.

SPILL CONTROL EQUIPMENT

Spill control kits are located in Rooms 9010, 9020, and 9030. Spill kits include (but are not limited to) sorbent pillows, and/or absorbents~~absorbent~~.

Description of General Capabilities:
Sorbent is used in the event of a small spill.

COMMUNICATION EQUIPMENT

Telephones are located in the north enclosure of Room 9010, in Room 9020, and in Room 9030.

Paging phones and evacuation alarms are located in Rooms 9010, 9020, and 9030.

Description of General Capabilities:
Telephones are used for internal and external communication and have paging capabilities. The evacuation alarm is a pulsating sound that can be heard over the public address system. The fire alarm is a double slow-whoop sound.

DECONTAMINATION EQUIPMENT

Emergency shower and eyewash stations are located in the two enclosures in Rooms 9010, 9020, and in Room 9030.

Safety data sheets (SDSs) are available hard copy or via online database.

Description of General Capabilities:
Emergency shower and eyewash stations are used by personnel who receive a chemical splash to the skin or eyes. Specific SDSs for the chemicals should be obtained prior to working with hazardous ~~or mixed~~ waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at TA-3-29 are required to use appropriate personal protective equipment (PPE) to protect themselves from hazards found in the workplace under normal conditions. This PPE may include gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation or during sampling activities.

Self-contained breathing apparatus are made available if necessary in the event of an emergency by HAZMAT Personnel.

Room 9102 is a change room with protective clothing available.

Full-mask negative pressure respirators are available as needed; radioactive particulate filters are available.

OTHER

See Table D-1 of this Contingency Plan for equipment available in the HAZMAT vehicles and trailers.

Table D-4

TA-16 Emergency Equipment

FIRE CONTROL EQUIPMENT

ABC- and/or BC-rated fire extinguishers are located at or in:

- Tank-truck garage (TA-16-1507)
- Control Building (TA-16-389)
- High Explosives Wastewater Treatment Facility (TA-16-1508)
- Each of the vehicles used to transport explosives

Description of General Capabilities:

The fire extinguishers may be used by any employee in the event of a small fire. For larger fires the Los Alamos Fire Department is alerted. LANL workers are trained not to fight a fire involving explosives.

Three fire hydrants are located in the vicinity of the unit and a water spigot is located at the TA-16-388 Flash Pad.

Description of General Capabilities:

The fire hydrants will supply water at adequate volume and pressure to satisfy the requirement of 40 CFR § 264.32.

SPILL CONTROL EQUIPMENT

Portable berms to contain spills are stored in an all-weather cabinet near the center of the TA-16 Burn Ground, at TA-16-386, and next to the TA-16-389 control building.

Description of General Capabilities:

Spill control equipment is available for use at the open burning unit in the event of a small spill.

COMMUNICATION EQUIPMENT

Telephones are located inside the TA-16-389 control building, at TA-16-1508, and at the railroad gate at the entrance to the TA-16 Burn Ground.

Personnel working at the TA-16 Burn Ground are assigned a site-specific pager for emergencies and lightning warnings.

Personnel working at the site have access to two-way radios.

Description of General Capabilities:

Telephones for internal and external communication are available for use by any employee. Employees can be notified of an emergency situation and appropriate response action through the use of two-way radios and pagers.

A fire alarm pull station is located at TA-16-1508.

Description of General Capabilities:

Manually-operated fire alarms may be activated by any employee in the event of a fire to notify the Emergency Operations Center. If fire danger level is "High", Los Alamos Fire Department presence may be required on-site during the burn.

DECONTAMINATION EQUIPMENT

A portable eyewash is available in the immediate area of TA-16-388, when workers will be handling liquids or dusty materials.

Description of General Capabilities:

Eyewashes may be used by personnel who receive an accidental chemical splash to the eyes. Specific Safety Data Sheets (SDSs) can be obtained prior to working with hazardous waste to determine if the application of water is indicated for decontamination. SDSs are also maintained to provide information during emergency response.

PERSONAL PROTECTIVE EQUIPMENT

Appropriate personal protective equipment (PPE) will be worn, when necessary, to protect from hazards found in the workplace under normal conditions. PPE includes respirators, coveralls, and safety glasses that are available for TA-16 personnel during waste-handling operations.

All vehicles are equipped with first-aid kits.

Description of General Capabilities:

First aid kits may be used by personnel who sustain minor injuries at the unit in the course of operations.

Table D-5

TA-36 Emergency Equipment

FIRE CONTROL EQUIPMENT

Fire extinguishers (carbon dioxide and water) are located in Building TA-36-8 (control building). An additional fire extinguisher is located in each vehicle used to transport explosive material.

Description of General Capabilities:

The fire extinguishers may be used by any employee in the event of a small fire. The water fire extinguisher is for use on wood or brush fires. The CO_2 fire extinguisher is for use on electrical fires.

An automatic thermal alarm system is located in the TA-36-8 control building.

Description of General Capabilities:

Two alarms are connected to this system. One alarm is located on the ceiling of the main chamber and the other alarm is located on the ceiling of the camera room.

In the event that treatment by open detonation should result in a potential fire hazard, local fire department personnel may be asked to stand by during treatment to control any fires that may be started.

SPILL CONTROL EQUIPMENT

A spill control kit is located within the TA-36-8 control building.

Description of General Capabilities:

The spill control kits may contain items such as absorbents (i.e., pillows and pigs) or weighted tarps. Emergency management personnel provide additional spill control and cleanup equipment as needed.

COMMUNICATION EQUIPMENT

Telephones are located inside the control building and a portable telephone is available at the firing site.

Two-way radios are located in TA-36-7 (the make-up building), and inside the control building. A two-way radio is also issued to each firing site vehicle.

Description of General Capabilities:

Telephones for internal and external communication are available for use by any employee. Employees can be notified of an emergency situation and appropriate response action through the use of two-way radios.

A fire alarm pull station is located in the control building.

Description of General Capabilities:

Manually-operated fire alarms may be activated by any employee in the event of a fire to notify security personnel and the Los Alamos County Consolidated Dispatch Center.

The evacuation alarm, which consists of horns and sirens, is used during routine operations at the TA-36-8 open detonation unit to alert personnel to clear the area and/or to warn of test operations.

DECONTAMINATION EQUIPMENT

A portable eyewash station and Safety Data Sheets (SDSs) are available in the control building and a portable eyewash station is available in the immediate area, when required or needed.

Description of General Capabilities:

Eyewashes may be used by personnel who receive an accidental chemical splash to the eyes. Specific SDSs can be obtained prior to working with hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

First aid kits and hearing protection are also located in the control building. A self-contained breathing apparatus shall be provided when necessary.

Description of General Capabilities:

The use of a self-contained breathing apparatus is determined by industrial hygiene personnel and will be provided as necessary. First aid kits may be used by personnel who sustain minor injuries at the unit in the course of operations. Hearing protection may be used by personnel during open detonation operations to mitigate noise impacts.

OTHER

If transportation is needed for evacuation, vehicles may be obtained through the Emergency Operations Support Center.

Table D-6

TA-39 Emergency Equipment

FIRE CONTROL EQUIPMENT

A fire extinguisher is located in the TA-39-6 control building. An additional fire extinguisher is located in each vehicle used to transport explosives.

Description of General Capabilities:

The fire extinguishers may be used by any employee in the event of a small fire. Fire extinguishers are never used to extinguish controlled fires at the open detonation unit.

A fire hydrant is located near TA-39-98.

Description of General Capabilities:

The fire hydrant supplies water at an adequate volume and pressure to satisfy the requirements of 40 CFR § 264.32.

SPILL CONTROL EQUIPMENT

A spill control kit is located within the TA-39-6 control building.

Description of General Capabilities:

The spill control kits may contain items such as absorbents (i.e., pillows and pigs) or weighted tarps. Emergency management personnel provide additional spill control and cleanup equipment as needed.

COMMUNICATION EQUIPMENT

Telephones are located in the TA-39-6 control building.

Two-way radios are located in the TA-39-6 control building. A two-way radio is also issued to each firing site vehicle.

Description of General Capabilities:

Telephones are used for internal and external communication. Two-way radios allow personnel in the field to maintain contact with various operations personnel and may be used to request emergency personnel and equipment, if necessary.

DECONTAMINATION EQUIPMENT

Safety Data Sheets (SDSs) are available in the control building.
Description of General Capabilities:

Specific SDSs can be obtained prior to working with hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

First aid kits and hearing protection are also located in the control building. A self-contained

breathing apparatus shall be provided when necessary.

Description of General Capabilities:

The use of a self-contained breathing apparatus is determined by industrial hygiene personnel and will be provided as necessary. First aid kits may be used by personnel who sustain minor injuries at the unit in the course of operations. Hearing protection may be used by personnel during open detonation operations to mitigate noise impacts.

OTHER

If transportation is needed for evacuation, vehicles may be obtained through the Emergency Operations Support Center.

~~**TA-50**~~

~~**ATTACHMENT D**~~

~~**CONTINGENCY PLAN**~~

~~**TA-50**~~

~~**ATTACHMENT D**~~

~~**CONTINGENCY PLAN**~~

~~Specific information on emergency response resources and release prevention/mitigation at TA-50 is provided below.~~

~~Emergency equipment currently available for use at the permitted units at TA-50-69 are included in Table D-1 below. A list of emergency equipment (including spill equipment) available from the emergency management organization is presented in Table D-1 in this Attachment.~~

~~Hazardous and mixed waste spills are managed by type and severity of the incident. If a hazardous/mixed waste spill occurs, the Incident Commander evaluates the type and severity of the spill and determines if assistance from emergency management personnel is required. If not, the spill is managed internally by TA-50 personnel.~~

~~REFERENCES~~

~~LANL, 1998, "Los Alamos National Laboratory General Part B Permit Application," Revision 1.0, Los Alamos National Laboratory, Los Alamos, New Mexico.~~

~~LANL, 2002, "Los Alamos National Laboratory Technical Area 50 Part B Permit Renewal Application", Revision 3.0, August 2002, LA-UR-02-4739, Los Alamos National Laboratory, Los Alamos, New Mexico~~

~~t~~Table D-7~~D-1~~

TA-50

Eemergency Equipment

FIRE CONTROL EQUIPMENT

- **Fire Extinguishers**

  Description of General Capabilities
  The fire extinguishers are portable, manually operated units and may be used by any employee in case of fire. They consist of Class ABC or BC rated.

  Locations
  2 fire extinguishers are located in TA-50-69, Indoor Unit (Room 102)

  1 fire extinguisher is located at the TA-50-69, Outdoor Unit

- **Fire Alarm Pull Boxes Connected ~~T~~to ~~T~~the Emergency Operations Support Center**

  Description of General Capabilities
  Fire alarms may be activated by any employee in the event of fire to notify the Emergency Operations Support Center. Upon activation, fire alarm horns and strobes provide audible and visual signals for personnel notification. The fire alarm is a pulsing sound.

  Locations
  Three fire alarm pull stations are located in the TA-50-69, Indoor Unit. Personnel working at the TA-50-69, Outdoor Unit may use the pull stations at TA-50-69 in the event of a fire.

- **Automatic Fire Suppression System**

  Description of General Capabilities
  A wet-pipe automatic sprinkler system that is hydraulically designed for ordinary hazard Group II coverage is in place throughout TA-50-69. This system is activated at 100°C (212°F).

  Locations
  Throughout TA-50-69, as described above.

- **Fire Hydrant**

  Description of General Capabilities
  Fire hydrants provide water for fire fighting. All fire hydrants are supplied by an 8-inch (in.) water line connected to the 12-in. water main on Pecos Drive.

  Location
  A fire hydrant is located approximately 55 ft west of TA-50-69.

SPILL CONTROL EQUIPMENT

- ~~**SPILL CONTROL EQUIPMENT**~~

Description of General Capabilities
The spill control kits may contain items such as absorbents (*i.e.*, pillows and pigs) or weighted tarps. The emergency management organization provides additional spill control and clean up equipment as needed.

Spill Control Kit Location
The spill kits are located in TA-50-69 and at the TA-50-69 Outdoor Unit

COMMUNICATION EQUIPMENT

Description of General Capabilities
Telephones for internal and external communication are available for use by employees. Alphanumeric pagers or cellular phones with page/text capabilities are also utilized by employees. Employees can be notified of an emergency situation and appropriate response actions through the use of a text message sent to the pagers, phones, or via two-way radios that may also be utilized for communication. Employees can reach emergency personnel in the time of an emergency through cellular telephones and two-way radios. Fire alarms are activated in the event of a fire. The fire alarm is a double slow whoop sound. When working at the permitted units, personnel will have immediate access to emergency communication equipment either directly or through visual or voice contact with another employee.

Location of Communication Equipment
Personnel working at the permitted units at TA-50-69, will carry cellular phones, pagers, or two-way radios, or will have immediate access to communication equipment through visual or voice contact with another employee.

DECONTAMINATION EQUIPMENT

- **Safety Showers**

Description of General Capabilities
Safety showers are available to personnel who receive a chemical splash to the skin.

Location of Safety Showers
A safety shower is located in TA-50-69, Room 102. One standard shower is located adjacent to the change room in TA-50-69.

- **Eyewashes**

Description of General Capabilities
Eyewashes are available to personnel who receive a chemical splash to the eye(s). Specific SDSs for the chemicals being managed are available hard copy or via online database to personnel working with hazardous ~~or mixed~~ waste to determine if the application of water is indicated for decontamination.

Location of Eyewashes and Safety Data Sheets
An eyewash is located in the TA-50-69, Indoor Unit (Room 102). A portable eyewash station will be available during active waste management operations at the Outdoor Unit if waste with free liquids is being managed.

PERSONAL PROTECTIVE EQUIPMENT

Appropriate personal protective equipment (PPE) will be worn to protect from hazards found in the workplace under normal conditions. This PPE may include gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation and may be found in the spill kits at various locations throughout the site.

OTHER

Continuous air monitors, giraffe monitors, or other appropriated air monitoring equipment (as determine by health physics personnel) may be located in the container storage units for detection of airborne radioactive constituents.

~~**TA-54**~~

~~**ATTACHMENT D**~~

~~**CONTINGENCY PLAN**~~

~~**TA-54**~~

~~**ATTACHMENT D**~~

~~**CONTINGENCY PLAN**~~

~~Specific information on emergency response resources and release prevention/mitigation at TA-54 is provided below.~~

~~Listings of emergency equipment currently available for use at Area L, Area G, and TA-54 West are presented in Tables D-1 through D-3 below.~~

~~REFERENCES~~

~~LANL, 2002, "Los Alamos National Laboratory General Part B Permit Renewal Application", Revision 2.0, August 2002, LA-UR-03-5923, Los Alamos National Laboratory, Los Alamos, New Mexico~~

~~LANL, 2003, "Los Alamos National Laboratory Technical Area 54 Part B Permit Renewal Application", Revision 3.0, June 2003, LA-UR-03-3579, Los Alamos National Laboratory, Los Alamos, New Mexico~~

Table D-8~~D-1~~

TA-54 Area L

Emergency Equipment

FIRE CONTROL EQUIPMENT

Class ABC and BC rated fire extinguishers are located at Area L. Class D rated fire extinguishers are available at Area L if combustible metals are being managed. A dry-pipe sprinkler system is located at TA-54-215.

Dry chemical fire-suppression systems are located in storage sheds TA-54-68, TA-54-69, and TA-54-70.

Description of General Capabilities:
Fire extinguishers may be used by any qualified employee in the event of a small fire. The automatic dry-pipe sprinkler system is heat activated. Emergency Operations Support Center (EOSC) and the Los Alamos Fire Department (LAFD) are alerted when this system has been activated.

Fire alarm pull boxes are located inside TA-54-37, TA-54-39, TA-54-51, TA-54-60, TA-54-117, TA-54-210, and TA-54-221.

Description of General Capabilities:
Fire alarms may be activated by any employee in the event of a fire to notify the LAFD and the Emergency Operations Support Center (EOSC).

Fire hydrants are located near the main site entrance to Area L and at the southeast corner of TA-54-62 inside Area L. These fire hydrants supply water at an adequate volume and pressure to satisfy 40 CFR § 264.32(d).

Freeze-proof faucets are located east of TA-54-31.

SPILL CONTROL EQUIPMENT

Spill equipment at TA-54 Area L includes the following:

- Shovels
- Oversized drums
- Absorbent (various locations on site)
- Heavy equipment from Area G available for any emergencies at Area L

Spill kits are located throughout Area L. Each kit includes bags of absorbent, caustic neutralizer, acid neutralizer, and an inventory of tools and supplies.

COMMUNICATION EQUIPMENT

Cellular telephones with text capabilities and/or two-way radios are given to employees working in the area and are the primary communication equipment for Area L. Personnel will carry cellular telephones or two-way radios or will have immediate access to communication equipment through visual or voice contact with another employee.

A fire alarm pull box is located at TA-54-215.

Description of General Capabilities:

External and internal Laboratory communications which may be used in emergency situations are listed.
Fire alarm may be activated by any employee in the event of a fire to notify the LAFD and security personnel.
Employees can be notified of an emergency situation and appropriate response actions through the use of a text message sent on cellular telephones with text capabilities.
The fire alarm is a double slow-whoop sound.
The emergency notification system can be utilized to alert workers of an emergency situation as well as appropriate response actions.

DECONTAMINATION EQUIPMENT

Emergency shower and eyewash stations are located immediately east of TA-54-31, at TA-54-215, at TA-54-39, and outside TA-54-39.

Safety Data Sheets (SDSs) are available hard copy or via online database at the facility.

Description of General Capabilities:
Emergency shower and eyewash stations are used by personnel who receive a chemical splash to the skin or eyes. Specific SDSs for the chemical(s) should be obtained prior to working with the chemical to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at Area L are required to use appropriate personal protective equipment (PPE) to protect themselves from the hazards found in the workplace under normal conditions. This PPE may include gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation or during sampling activities.

Spill kits throughout Area L may contain PPE items such as: gloves, goggles, safety glasses, coveralls, and face shields.

Table D-9~~D-2~~
TA-54 Area G

Emergency Equipment

FIRE CONTROL EQUIPMENT

ABC- and/or BC- rated fire extinguishers are available at TA-54-8, TA-54-33, TA-54-48, TA-54-49, TA-54-153, TA-54-224, TA-54-229, TA-54-230, TA-54-231, TA-54-232, TA-54-283, TA-54-375, and TA-54-412, and on Pads 1, 9 and 10.

Description of General Capabilities:
These portable, manually operated fire extinguishers may be used by any qualified employee in the event of a small fire. For larger fires, the Emergency Operations and Support Center (EOSC) and the Los Alamos Fire Department (LAFD) are alerted.

Flame or smoke detection equipment and fire alarm pull stations are located within structures at TA-54-229, TA-54-230, TA-54-231, and TA-54-232.

Ultra-violet detectors, smoke detectors, and audible devices are located within structure TA-54-153.

Dry-chemical fire suppression systems are available at TA-54-1027, TA-54-1028, TA-54-1030, and TA-54-1041.

A dry-pipe fire suppression system is available at TA-54-412.

Fire alarm pull stations are available at TA-54-33, TA-54-48, TA-54-49, TA-54-153, TA-54-224, TA-54-229, TA-54-230, TA-54-231, TA-54-232, TA-54-283, TA-54-375, and TA-54-412.

Description of General Capabilities:
Fire alarms may be activated by any employee in the event of a fire to notify the LAFD and the EOSC. The EOSC and LAFD are also notified upon activation of the flame or smoke detectors.

Several fire hydrants are located in Area G. These fire hydrants will supply water at an adequate volume and pressure to satisfy the requirements of 40 CFR 264.32(d).

SPILL CONTROL EQUIPMENT

Spill control stations and/or portable spill kits are located at TA-54-8, TA-54-33, TA-54-48, TA-54-49, TA-54-153, TA-54-224, TA-54-229, TA-54-230, TA-54-231, TA-54-232, TA-54-283, TA-54-375, and TA-54-412.

Each spill kit generally includes bags of absorbent and an inventory of tools and supplies.

COMMUNICATION EQUIPMENT

Cellular telephones with text capabilitied and/or two-way radios are given to employees working the in area and are the primary communication equipment for Area G. Personnel will carry cellular telephones, or two-way radios or will have immediate access to communication equipment through visual or voice contact with another employee.

Description of General Capabilities:
Cellular telephones and two-way radios, are used to notify personnel of an emergency. The emergency notification system can also be utilized to alert workers of appropriate response actions. Employees can also be notified of an emergency situation and appropriate response action through the use of a text message sent on the emergency cellular telephone texting system, or by two-way radio.

DECONTAMINATION EQUIPMENT

Portable eyewash stations are located at permitted units located at TA-54 Area G during waste management operations involving free liquids.

One permanent, hard-plumbed eyewash station and a safety shower is located in TA-54-33.

Safety Data Sheets (SDSs) are available hard copy or via online database.

Description of General Capabilities:
Emergency shower and eyewash stations are used by personnel who receive a chemical splash to the skin or eyes. Specific SDSs for the chemical(s) being managed should be obtained prior to working with hazardous ~~or mixed~~ waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at Area G are required to use appropriate personal protective equipment (PPE) to protect themselves from the hazards found in the workplace under normal conditions. This PPE may include gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation and can be found in the spill kits or at various locations throughout the site.

OTHER

Continuous air monitors and giraffe monitors (or other appropriate air monitoring equipment) are located in many of the container storage units for detection of airborne radioactive constituents.

Heavy equipment available on site includes:

Scraper
Back hoe
Bulldozer

Front-end loader

Vehicles available to evacuate personnel from Area G include:

All-terrain vehicles
Pickup truck
Flat-bed truck
Micro trucks
Vans

Table D-10~~D-3~~
TA-54 West

Emergency Equipment

FIRE CONTROL EQUIPMENT

ABC and/or BC fire extinguishers are available at TA-54-38 in the high and low bays and at the outdoor container storage unit.

Description of General Capabilities:
Fire extinguishers may be used by any employee in the event of a small fire. The Emergency Operations and Support Center (EOSC) and the Los Alamos Fire Department (LAFD) are alerted when the automatic dry-pipe sprinkler system has been activated.

A pre-action sprinkler system is available throughout TA-54-38, including the loading dock area. The sprinkler system is activated by loss of compressed air pressure (e.g., an open sprinkler) anywhere in the system or by heat detection in the high bay and at the loading dock and by smoke detection in the remainder of the building.

Fire alarm pull boxes are available inside TA-54-38 at the main entrance, in the high bay, and in the low bay.

Description of General Capabilities:
Fire alarms may be activated by any employee in the event of a fire to notify the LAFD and the EOSC.

A fire hydrant is located west of TA-54-38 near the entrance to TA-54 West. This fire hydrant supplies water at adequate volume and pressure to satisfy 40 CFR § 264.32(d).

A wall hydrant is located on the west side of TA-54-38.

Freeze-proof faucets are located on the west, south, and east sides of TA-54-38.

SPILL CONTROL EQUIPMENT

A mobile response kit is located at TA-54-38. The kit includes absorbent socks, pillows, and sheets; goggles; and large plastic bags.

COMMUNICATION EQUIPMENT

Evacuation alarm buttons are located at the high bay, the low bay, and the main entrance to TA-54-38.

Public address (PA) capabilities are located in TA-54-38 in the high bay, in the low bay, and outside the main entrance.

Additional equipment includes portable two-way radios and cellular phones. Personnel will carry cellular telephones or two-way radios or will have immediate access to communication equipment through visual or voice contact with another employee.

Description of General Capabilities:
PA capabilities for internal communication are available for use by any employee. Employees can be notified of an emergency situation and appropriate response actions through the use of a text message sent on cellular telephones, or by two-way radio. The evacuation alarm can be heard throughout TA-54-38. The fire alarm is a double slow-whoop sound. Fire and evacuation alarms are activated in the event of a fire or evacuation. The emergency PA can be utilized to alert workers of an emergency situation as well as appropriate response actions.

DECONTAMINATION EQUIPMENT

Safety showers and portable eyewash stations are located in TA-54-38 in the high bay and on the loading dock. The portable eyewash stations will be present during active waste management operations involving free liquids at these locations.

Safety Data Sheets (SDSs) are available hard copy or via online database.

Description of General Capabilities:
Safety showers and eyewashes are used by personnel who receive a chemical splash to the skin or to the eyes. Specific SDSs for the chemical(s) being managed should be obtained prior to working with mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at TA-54 West are required to use appropriate personal protective equipment (PPE) to protect themselves from the hazards found in the workplace under normal conditions. This PPE includes gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation and can be found in the spill kits or at various locations throughout the site or at adjacent TA-54 facilities.

Gloves and goggles are found in the spill kits located at TA-54-38.

All workers located within the operating limits of a crane (fixed or mobile) wear hard hats.

~~**TA-55**~~

~~**ATTACHMENT D**~~

~~**CONTINGENCY PLAN**~~

~~**TA-55**~~

~~**ATTACHMENT D**~~

~~**CONTINGENCY PLAN**~~

~~Specific information on emergency response resources and release prevention/mitigation at TA-55 is provided below.~~

~~Emergency equipment currently available for use at TA-55 are included as Tables D-1 through D-4 in this Attachment. A list of emergency equipment (including spill control equipment) available from the TA-55 Emergency Management Team is presented in Table D-1 of this Attachment's General Section. Emergency equipment discussed in this Plan may be replaced and/or upgraded with functionally equivalent components and equipment as necessary for routine maintenance and repairs.~~

~~Hazardous waste spills are managed by type and severity of the incident. If a hazardous waste spill occurs, the facility line management evaluates the type and severity of the spill and determines if assistance from emergency management organization and the Incident Response Commander is required. If not, the spill is managed internally by TA-55 personnel.~~

~~REFERENCES~~

~~LANL, 2002, "Los Alamos National Laboratory General Part B Permit Renewal Application", Revision 2.0, August 2002, LA-UR-03-5923, Los Alamos National Laboratory, Los Alamos, New Mexico~~

~~LANL, 2003, "Los Alamos National Laboratory Technical Area 54 Part B Permit Renewal Application", Revision 3.0, June 2003, LA-UR-03-3579, Los Alamos National Laboratory, Los Alamos, New Mexico~~

Table D-11
TA-55 Building 4, First Floor Emergency Equipment

FIRE CONTROL EQUIPMENT

Dry-chemical fire extinguishers are located in room.

Description of General Capabilities:
The fire extinguishers are portable, manually-operated units and can be used by any employee in case of fire. The fire extinguishers in room are for use only in case of fire outside the gloveboxes.

Fire alarm pull boxes and push button stations are available in room.

Description of General Capabilities:
Fire alarms can be activated by any employee in the event of fire to notify the Emergency Operations and Support Center (EOSC).

An automatic fire suppression sprinkler system is located in room.

Automatic thermal alarms are located in the gloveboxes in room.

Fire hydrants are located outdoors on the north, south, and west sides of TA-55-4.

SPILL CONTROL EQUIPMENT

Entire room provides secondary containment for the storage tank system and cementation unit.

COMMUNICATION EQUIPMENT

Telephones are located in room. The telephones are capable of handling incoming/outgoing calls and paging.

A telephone is located at each of the two west exit doors of TA-55-4.

Two-way radios are available from the TA-55 Operations Center located at TA-55, Building 0004, Room 218, for personnel.

Alarms at TA-55-4:
The fire alarm is a zone-wide whooping sound. If a drop-box pushbutton station is used, a zone-wide, high-pitched constant tone will be activated and then switch to the standard whooping sound.

The evacuation alarm is a facility-wide mid-range pulsating tone.

The continuous air monitor alarm is a local high-pitched pulsating tone.

The ventilation alarm is a local slow, repeating chime tone.

The public address system may also be used to announce an evacuation.

DECONTAMINATION EQUIPMENT

Safety showers and eyewash stations are located in room.

Description of General Capabilities:
Safety showers and eyewashes are available for decontamination of personnel who receive a chemical splash to the skin or eyes.

Electronic versions of Safety Data Sheets (SDSs) are available in room and at the TA-55 Operations Center located at TA-55, Building 0004, Room 218, for personnel.

Specific SDSs may be obtained prior to working with any hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Self-contained breathing apparatus (SCBA) are located in the hallway outside of the room and in TA-55-3, Room 179. The SCBAs are available for personnel working in hazardous waste management units.

Change/decontamination rooms with protective clothing available are located on the first floor of TA-55-4 and in TA-55-3. Protective clothing is also available in a locker located in the hallway near the room for use by personnel working in or near the hazardous waste management units.

Respirators located in TA-55-3 (Room 107) and in TA-55-4 (Room 515) are available for all personnel working in or near TA-55-4. Respirators are re-issued on a regular basis to TA-55-4 personnel for radiation work. These respirators are stored in the personnel's individual lockers. Combination gas canisters (particulate, organic, and acid) are available in TA-55-4 (Room 515).

OTHER:

If transportation is needed for evacuation, the request for additional assistance should be sent through emergency management organization.

Table D-12~~D-2~~
TA-55 Building 4, Basement

Emergency Equipment

FIRE CONTROL EQUIPMENT

Halon, dry chemical, and/or carbon dioxide fire extinguishers are available near B40, B05, K13, B45, B13, G12, and the Vault.

Description of General Capabilities:
The fire extinguishers are portable, manually-operated units and can be used by any employee in case of fire.

Fire alarm pull boxes are located at B05, K13, B45, the Vault, and on each side of the fire door.

Description of General Capabilities:
Fire alarms can be activated by any employee in the event of fire to notify the Emergency Operations Support Center (EOSC).

An automatic fire suppression sprinkler system is located throughout the basement at TA-55-4, including the Vault and the office and corridor associated with the Vault.

Fire hydrants are located outdoors on the north, south, and west sides of TA-55-4.

SPILL CONTROL EQUIPMENT

Self-containment pallets or cabinets are provided for containers of liquid and/or potentially liquid-bearing wastes stored at B40, K13, and the Vault.

COMMUNICATION EQUIPMENT

Telephones and intercom stations are located throughout the basement of TA-55-4. The telephones are capable of handling both incoming and outgoing calls. The intercom system is connected to the TA-55-4 Operations Center and allows the Operations Center to easily mobilize emergency response support.

Two-way radios are available from the TA-55 Operations Center located at TA-55, Building 0004, room 218, for personnel working in the basement at TA-55-4.

Personal pagers are issued to and carried by assigned personnel working in the basement of TA-55-4. These pagers are accessed by telephone.

Alarms at TA-55-4:

The fire alarm is an area-wide whooping sound.

The evacuation alarm is a facility-wide mid-range pulsating tone.

The continuous air monitor alarm is a local high-pitched pulsating tone.

The ventilation alarm is a local slow, repeating chime tone.

The public address system activated from the TA-55-4 Operations Center may be used to announce an evacuation.

A site-wide paging system activated from the TA-55-4 Operations Center can be heard throughout TA-55-4.

DECONTAMINATION EQUIPMENT

Eyewashes are located throughout the basement of TA-55-4.

> Description of General Capabilities:
> The eyewash stations are available for decontamination of personnel who receive a chemical splash to the eyes.

Safety showers are located near B40, K13 and in the office for the Vault.

> Description of General Capabilities:
> The safety showers are available for decontamination of personnel who receive a chemical splash to the skin.

Safety Data Sheets (SDSs) are available at TA-55-4. Specific SDSs may be obtained prior to working with any hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Change/decontamination rooms with protective clothing available are located on the first floor of TA-55-4 and in TA-55-3.

Respirators located in TA-55-4 and in TA-55-3 are available for all personnel working in or near TA-55-4. Particulate and toxic gas canisters are available in TA-55-4.

Self-contained breathing apparatus are located in the TA-55, Basement.

OTHER:

If transportation is needed for evacuation, vehicles may be obtained through the emergency management organization.

Forklifts stored in the basement are available for use in the basement and are stored near the north basement doorway.

Table D-13~~D-3~~
TA-55 Container Storage Pad

Emergency Equipment

FIRE CONTROL EQUIPMENT

A dry chemical fire extinguisher is located on the ~~Container~~ Outdoor Storage Pad.

Description of General Capabilities:
The fire extinguishers are portable, manually-operated units and can be used by any employee in case of fire.

Fire hydrants are located along the north, south, and west sides of TA-55-4.

One fire hydrant is located just south of the ~~Container~~ Outdoor Storage Pad.

Fire alarm pull boxes are located in TA-55-42 at the northwest corner of TA-55-4.

One fire alarm pull box is located outside on the south side of TA-55-4.

COMMUNICATION EQUIPMENT

A telephone is located on the east side of TA-55-11, and additional phones are located on the south side of TA-55-4.

Two-way radios are available from the TA-55 Operations Center located at TA-55, Building 0004, Room 218, for personnel working at the ~~Container~~ Outdoor Storage Pad.

Personal pagers are issued to and carried by assigned personnel working at the ~~Container~~ Outdoor Storage Pad. These pagers are accessed by telephone.

Alarms at TA-55:
The fire alarm is an area-wide whooping sound.
The evacuation alarm is a facility-wide mid-range pulsating tone.

The public address (PA) system activated from the TA-55-4 Operations Center may be used to announce an evacuation. PA speakers are located on the west side of TA-55-4.

Two intercom systems to the TA-55-4 Operations Center are located on the south and north sides of TA-55-4.

DECONTAMINATION EQUIPMENT

A safety shower and eyewash station are located outdoors on the ~~Container~~ Outdoor Storage Pad.

Description of General Capabilities:
The safety shower and eyewash are available for personnel who receive a chemical splash to the skin or eyes.

Safety Data Sheets (SDSs) are available at TA-55-2. Specific SDSs may be obtained prior to working with any hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Change rooms with protective clothing available are located on the first floor of TA-55-4 and in TA-55-3.

Respirators are located in TA-55-4 and in TA-55-3 for all personnel working in or near TA-55-4.

OTHER:

If transportation is needed for evacuation, vehicles may be obtained through the emergency management organization. Two forklifts are available for TA-55 personnel use.

Table D-14~~D-4~~
TA-55-0355 Pad

Emergency Equipment

FIRE CONTROL EQUIPMENT

Four ABC rated fire extinguishers are located at the TA-55-0355 Pad. An ABC rated fire extinguisher is located in each vehicle used to transport waste containers to the unit.

Description of General Capabilities:

Portable and manually operated fire extinguishers may be used by any qualified employee in the event of a small fire. For larger fires, the Los Alamos Fire Department (LAFD) is alerted and requested to respond.

COMMUNICATION EQUIPMENT

A telephone is located on the ~~North~~north side of the TA-55-0355 Pad and within the High Energy Neutron Counter (HENC) unit. The facility's~~facilities~~ public address (PA) system can be heard from the TA-55-0355 Pad.

Description of General Capabilities:

A telephone for internal and external communication is available for use by any employee. Employees can be notified of an emergency situation and appropriate response action through the PA system.

Alarms at TA-55-0355:
No fire alarm station is located at the TA-55-0355 Pad. The nearest fire alarm pull box is located outside of PF-4 on the ~~South~~south dock. In the cased of fire, notification will be made via telephone.

Description of General Capabilities:

Manually-operated fire alarms may be activated by any employee in the event of a fire to alert fire personnel, LANL Emergency Response ~~Personnel~~personnel, and the LAFD.

Fire and PA systems are located throughout the facility.

Description of General Capabilities:

The fire and PA system are activated or used to provide a sound signal to alert personnel of fires or the need to clear the area.

DECONTAMINATION EQUIPMENT

An eyewash~~Eyewash~~ station and any applicable Safety Data Sheets (SDSs) are available at the TA-55-0355 Pad or at the Operation Support Building. SDS information is maintained where appropriate for personnel accessibility and is used for chemicals that will be needed to support operations or emergency activities.

Description of General Capabilities:

The eyewash station may be used by personnel who receive a chemical splash to the eyes. Specific SDSs should be reviewed prior to working with chemicals. No free liquids will be stored on the Pad.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at the TA-55-0355 Pad will be required to use appropriate PPE to protect themselves from hazards found under normal conditions. This PPE may include gloves, steel toe shoes, and eye protection. Additional PPE may be required during unusual hazardous situations. First aid kits and hearing protection will be available.

Description of General Capabilities:

To prevent undue exposure of personnel to hazardous ~~or mixed~~ waste, PPE appropriate for the waste containers being managed will be worn by all on-site personnel at the TA-55-0355 Pad. First aid kits are available and may be used by personnel who sustain minor injuries at the unit in the course of operations. Hearing protection may be used by operations personnel to mitigate noise impacts.

OTHER~~:~~

If transportation is needed for evacuation, vehicles may be obtained through the emergency management organization.

~~**TA-60**~~
~~**ATTACHMENT D**~~
~~**CONTINGENCY PLAN**~~

~~**TA-60**~~
~~**ATTACHMENT D**~~
~~**CONTINGENCY PLAN**~~

~~Specific information on emergency response resources and release prevention/mitigation at TA-60 is provided below.~~

~~Listings of emergency equipment currently available for use at TA-60 Building 17 are presented in Table D-1 below.~~

Table D-15~~D-1~~

TA-60 Building 17, Container Storage Facility

Emergency Equipment

FIRE CONTROL EQUIPMENT

The structure is equipped with a wet pipe sprinkler system, an alarm system (pull-stations, horn, and strobe units), and a partial smoke detection system. The smoke detection is located over the fire alarm control panel (FACP) and is required for the FACP. Also, exit signage, emergency lights and ABC and/or BC rated fire extinguishers are located and spaced accordingly in the structure. An ABC and/or BC rated fire extinguisher is located in each vehicle used to transport waste containers to the facility.

Description of General Capabilities:
In the event of a small fire, portable and manually operated fire extinguishers may be used by any qualified employee. For larger fires, the Emergency Operations and Support Center (EOSC) and the Los Alamos Fire Department (LAFD) is alerted and requested to respond.

The EOSC and LAFD are also notified upon activation of the flame or smoke detectors.

Fire hydrant located near TA-60-0017.

Description of General Capabilities:
Fire hydrant supplies water at an adequate volume and pressure to satisfy the requirements of 40 CFR 264.32(d).

SPILL CONTROL EQUIPMENT

Spill control stations and/or portable spill kits are located at TA-60-0017. Each spill kit generally includes bags of absorbent and an inventory of tools and supplies.

COMMUNICATION EQUIPMENT

Telephone system located inside the container storage unit of building. Facility personnel use cell phones for communications.

Description of General Capabilities:
Telephone and portable two-way radios for internal and external communication are available for use by any employee. Employees can be notified of an emergency situation and appropriate response action through the LANL Alert notification system.

Fire alarm pull station located in the storage building and adjacent area. In case of a fire, notification will be made via telephone.

Description of General Capabilities:

In the event of a fire, manually operated fire alarms may be activated by any employee to alert TA-60-0017 site personnel, the EOSC, and the LAFD.

Fire and public address system alarms are located throughout the facility.

Description of General Capabilities:
The fire and public address system are activated or used to provide a sound signal to alert personnel of fires or the need to clear the area.

DECONTAMINATION EQUIPMENT

Eyewash/emergency shower stations are available at TA-60-0017. Safety Data Sheets (SDSs) are available. SDS information is maintained where appropriate for personnel accessibility and are used for chemicals that will be needed to support operations or emergency activities.

Description of General Capabilities:
Eyewashes and emergency showers may be used by personnel who receive a chemical splash to the eyes or body. Specific SDSs should be reviewed prior to working with chemicals.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at TA-60-0017 are required to use appropriate personal protective equipment (PPE) to protect themselves from hazards found under normal conditions. This PPE may include gloves, steel toe shoes, and eye protection, additional PPE may be required during unusual hazardous situations. First aid kits and hearing protection are also available.

Description of General Capabilities:
To prevent undue exposure of personnel to hazardous waste, PPE appropriate for the waste containers being managed will be worn by all on-site personnel at TA-60-0017. First aid kits are available and may be used by personnel who sustain minor injuries at the unit in the course of operations. Hearing protection may be used by operations personnel to mitigate noise impacts.

~~TA-63~~

~~ATTACHMENT D~~

~~CONTINGENCY PLAN~~

~~**TA-63**~~

~~**ATTACHMENT D**~~

~~**CONTINGENCY PLAN**~~

~~Specific information on emergency response resources and release prevention/mitigation at TA 63 is provided below.~~

~~Listings of emergency equipment currently available for use at TA-63-0149, TA-63-0150, TA-63-0151, TA-63-0152, TA-63-0153, TA-63-0154, TA-63-0155, TA-63-0156, and TA-63-0157 are presented in Table D-1 below.~~

Table D-16~~D-1~~
TA-63 Transuranic Waste Facility

Emergency Equipment

FIRE CONTROL EQUIPMENT

ABC and/or BC rated fire extinguishers are available at TA-63-0149, TA-63-0150, TA-63-0151, TA-63-0152, TA-63-0153, TA-63-0154, TA-63-0155, TA-63-0156, and TA-63-0157.

Description of General Capabilities:
These portable, manually operated fire extinguishers may be used by any qualified employee in the event of a small fire. For larger fires, the Emergency Operations and Support Center (EOSC) and the Los Alamos Fire Department (LAFD) must be alerted.

Flame or smoke detection equipment and fire alarm pull stations are located within structures at TA-63-0149, TA-63-0150, TA-63-0151, TA-63-0152, TA-63-0153, and TA-63-0154.

Dry-pipe fire suppression systems are available at TA-63-0149, TA-63-0150, TA-63-0151, TA-63-0152, TA-63-0153, and TA-63-0154.

Fire alarm pull stations are available at TA-63-0149, TA-63-0150, TA-63-0151, TA-63-0152, TA-63-0153, TA-63-0154, TA-63-0155, TA-63-0156, and TA-63-0157.

Description of General Capabilities:
Fire alarms may be activated by any employee in the event of a fire to notify the LAFD and the EOSC. The EOSC and LAFD are also notified upon activation of the flame or smoke detectors.

Two fire hydrants are located in TWF. These fire hydrants supply water at an adequate volume and pressure to satisfy the requirements of 40 CFR 264.32(d).

SPILL CONTROL EQUIPMENT

Spill control stations and/or portable spill kits are located at TA-63-0149, TA-63-0150, TA-63-0151, TA-63-0152, TA-63-0153, TA-63-0154, TA-63-0155, TA-63-0156, and TA-63-0157. Each spill kit generally includes bags of absorbent and an inventory of tools and supplies.

COMMUNICATION EQUIPMENT

Telephones and the public address system are located inside the Operations Support Building.

Description of General Capabilities:
Telephones and portable two-way radios for internal and external communication are available for use by any employee. Employees can be notified of an emergency situation and appropriate response action through the public address system.

Fire alarm pull stations are located in the storage buildings, and at operations support building.

Description of General Capabilities:
Manually-operated fire alarms may be activated by any employee in the event of a fire to alert TWF site personnel, LANL Emergency Response Personnel, and the LAFD.

Fire and public address system alarms.

Description of General Capabilities:
The fire and public address system are activated or used to provide a sound signal to alert personnel of fires or the need to clear the area.

DECONTAMINATION EQUIPMENT

Eyewash/emergency shower stations are available at TA-63-0149, TA-63-0150, TA-63-0151, TA-63-0152, TA-63-0153, and TA-63-0154. SDSs are available in the Operation Support Building. SDS information is maintained where appropriate for personnel accessibility and are used for chemicals that will be needed to support operations or emergency activities.

Description of General Capabilities:
Eyewashes and emergency showers may be used by personnel who receive a chemical splash to the eyes or body. Specific SDSs should be reviewed prior to working with chemicals.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at TWF are required to use appropriate personal protective equipment (PPE) protect themselves from hazards found under normal conditions. This PPE may include gloves, steel toe shoes, and eye protection, additional PPE may be required during unusual hazardous situations. First aid kits and hearing protection are also available.

Description of General Capabilities:
To prevent undue exposure of personnel to hazardous ~~or mixed~~ waste, personal protective equipment (PPE) appropriate for the waste containers being managed is worn by all on-site personnel at the TWF (see section 2.5.6). First aid kits may be used by personnel who sustain minor injuries at the unit in the course of operations. Hearing protection may be used by operations personnel to mitigate noise impacts.

Figure D-1
General Hazardous Waste Emergency Notification System

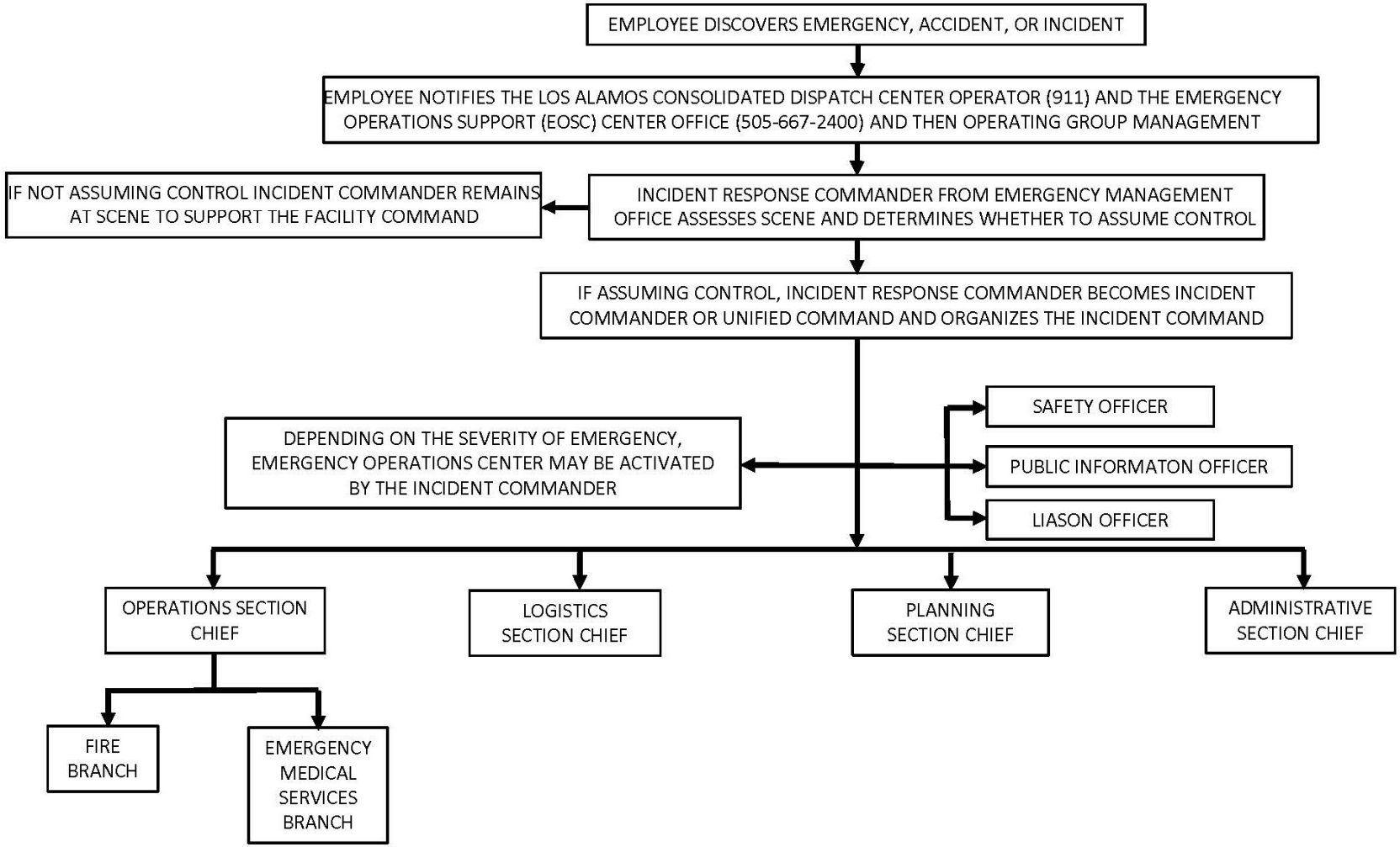
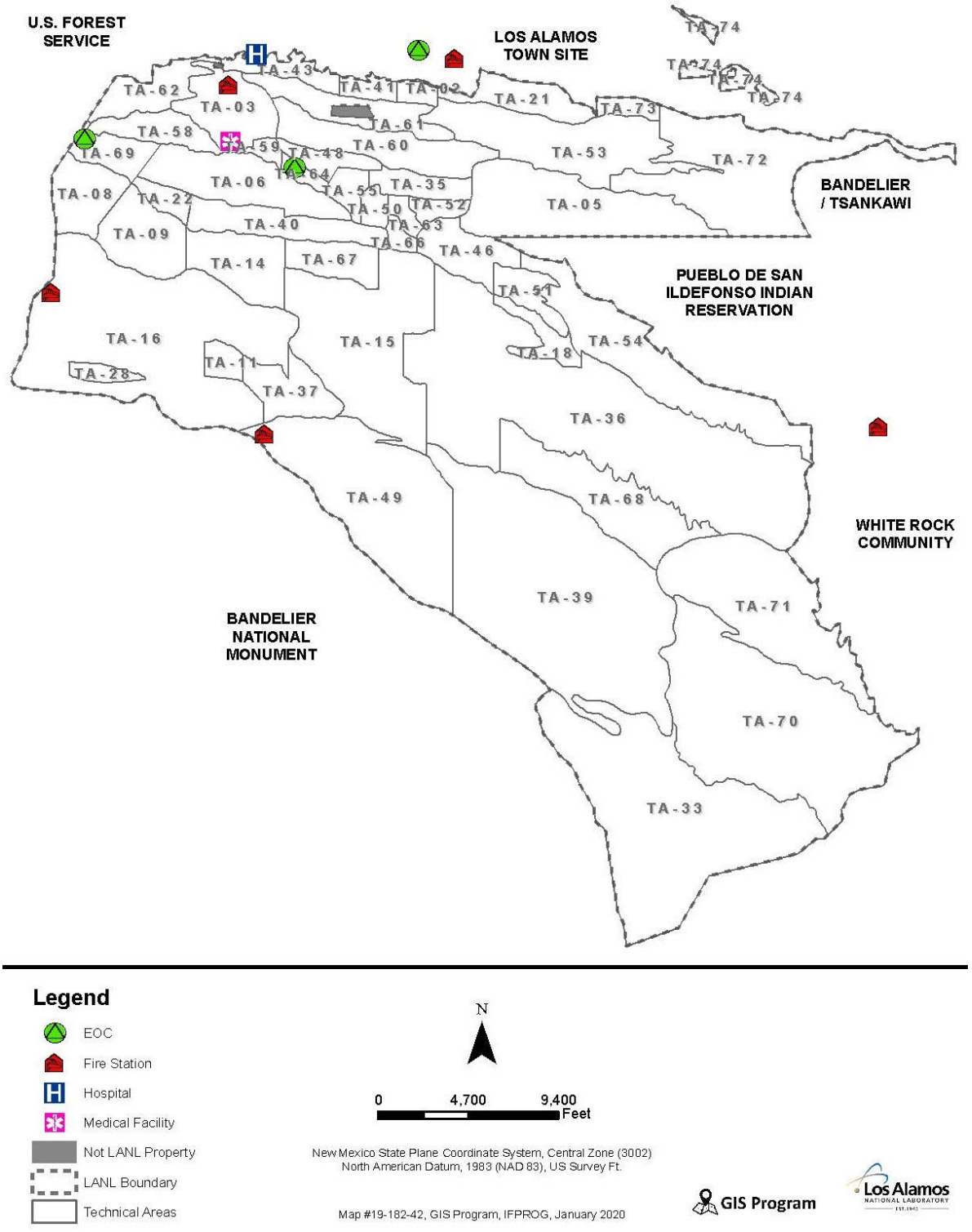


Figure D-2

Emergency Facilities at Los Alamos National Laboratory



Supplement 1-5

Permittees' Proposed Changes to Attachment E, Inspection Plan

ATTACHMENT E

INSPECTION PLAN

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E-2	Checklist for Detonation or TA-16-388 Flash Pad Treatment Operations
E-3	Annual TA-50-69 Storm Water Drainage Inspection Form
E-4	Monthly Area L, Dome 215 Holding Tank Inspection Form

~~FIGURE NO. TITLE~~

~~E-1 Hazardous Waste Facility Inspection Record Form~~

ATTACHMENT E
INSPECTION PLAN

This Attachment presents inspection requirements applicable to activeall hazardous or mixed waste management units (permitted units) at Los Alamos National Laboratory (LANL). Inspection schedules for the units have been developed to identify equipment malfunctions and deterioration, operator errors, and discharges that mightmight cause or lead to a release of hazardous or mixed waste and pose a threat to human health and the environment.

The Permittees shall conduct Inspections shall be conducted at the schedule specified herein to identify problems in time to correct them before they harm may adversely impact human health or the environment. Inspection schedules or methods may differ at certain hazardous waste management units based upon worker safety issues or the nature of the safety and emergency equipment.

E.1 GENERAL INSPECTION SCHEDULES AND REQUIREMENTS

The Permittees shall follow this Inspection Plan for the inspection of monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, and responding to environmental or human health hazards. Inspections may be conducted at any time during the applicable day or week, as specified in the inspection schedule.

A copy of this Inspection Plan, which includes inspection schedules, shall be maintained by the Permittees' hazardous waste compliance personnel and by the site operator (*i.e.*, the division or operating group that is responsible for or manages the permitted unit), as requiredoutlined in Permit Section 2.6, *General Inspection Requirements*.

The Permittees Hazardous waste management unit personnel shall follow the inspection schedules outlining the items to be addressed on the Permittees' Hazardous Waste Facility Inspection Record Form (IRF), and inspection frequencies for the unit types are provided in this Attachment's Sections E.2 through E.8, and in Technical Area (TA) -specific Attachment E sections. The IRF and instructions for its completion are provided at the end of this Attachment Sectionas Form E-1; the form may be supplemented, changed, or otherwise replaced through a permit modification pursuant to 40 CFR § 270.42(a). The IRF lists the items to be inspected.

E.1.1 Inspection Records

The Permittees shall ensureinsure that permitted unit personnel conduct inspections and record the information on IRFs or equivalent forms. The Permittees shall retain inspection records until closure of the associated permitted unit. The Permittees shall maintain an electronic version of the records through the closure or post-closure periods dependent upon the type of facility. The Permittees shall make inspection records available for review in the event that the Department or the U.S. Environmental Protection Agency inspects the facility for compliance with inspection requirements.

The IRF encompasses requirements for permitted hazardous ~~and mixed~~ waste management units, and additional requirements directed by the Permittees' policy. Instructions included with the IRF provide specific guidance for each inspection item listed.

The Permittees shall ensure~~complete~~ the IRF or equivalent form is completed according to the daily and/or weekly schedules provided in ~~Attachment~~ Sections E.2 through E.8. The Permittees shall conduct and record inspections in Parts I and II of the IRF for each working day or week that waste is opened, moved, received, stored, treated, removed, or remains open, as appropriate. The Permittees may use other records, such as a memo to file, to document a condition of "No Use" at a unit.

For every item requiring inspection, the Permittees shall enter a response indicating the condition of each item in the column under the appropriate day of the week. Responses may include ~~"OK,"~~ "Yes," "No," "NA" (Not Applicable), or "AR" (Action Required), or "Comment". If the response is AR, the Permittees shall note the action required in Part II of the IRF. If more than one AR is listed, the Permittees shall number the ARs. The Permittees shall identify and number all ARs, even if corrected immediately by the inspector. If inspection results indicate that corrective measures are warranted, actions~~the Permittees~~ shall be recorded along with any and all actions taken (along with time, date, and other pertinent information) in Part II of the IRF and the ARs shall be noted~~note the AR~~ on all subsequent IRFs until corrective measures are completed. When corrective measures ~~have been~~are completed and recorded on an IRF, "Yes"~~the Permittees~~ shall be indicated~~enter an "OK"~~ in the appropriate~~"Condition"~~ column on the IRF. Comments may be noted on the IRF in the same fashion as ARs, designating a condition at the unit that should be noted or other activities that may be occurring at the unit that do not require corrective action.

As appropriate for the hazardous waste management unit, fire protection maintenance specialists~~The Permittees~~ shall conduct and document ~~monthly~~ inspections ~~of the items listed below to ensure that the equipment is fully functional for its intended purpose:~~to verify

~~1.~~ evacuation alarms, ~~;~~

~~2.~~ ventilation alarms, ~~;~~

~~3.~~ fire alarms,~~;~~ and

~~4.~~ fire pumps are fully functional for the intended purpose(s).

E.1.2 Actions Resulting from Inspections

~~If~~When the Permittees discover any defects, deterioration, operator errors, discharges, or potential hazards during an inspection, the Permittees shall complete appropriate corrective measures (*e.g.*, transfer of waste from a defective container to an appropriate container in good condition, repair or replacement of nonfunctioning equipment and/or systems, or removal of any accumulated liquids) promptly so that the problem does not lead to an environmental or human health hazard. The Permittees shall note any action taken in response to an inspection on the IRF or IRF documentation.

If a hazardous condition is imminent or has already occurred, the Permittees shall assess the condition immediately and follow up with appropriate remedial action. If this assessment indicates that human health or the environment may be or may have been adversely affected, the Permittees may implement Permit Attachment D, (*Contingency Plan*). In any case, the Permittees shall document the remedial action ~~that is required~~ and the outcome~~is taken~~.

E.1.3 Training

The Permittees shall provide inspection training to appropriate Facility personnel, and ensure that training is repeated, as necessary.

E.2 INSPECTION SCHEDULE AND REQUIREMENTS FOR CONTAINER STORAGE UNITS

The Permittees shall inspect hazardous waste management units utilized for container storage ~~units (CSU)~~ according to the schedule provided below.

E.2.1 On Day(s) of Waste Handling

The Permittees shall conduct inspections every day of, or the day after, waste handling, with special attention placed on areas subject to spills, such as loading and unloading areas. The IRF will be filled out as appropriate for each specific unit or portion of a unit, as appropriate. Waste handling includes when waste is received at, moved or opened within, treated at, or removed from a ~~CSU~~unit. With respect to each container, the Permittees shall inspect and record the following items, as applicable:

~~1.~~• General IRF information (Items 1-~~7~~6)
• Secondary containment structures
~~2.~~• (un)loading area(s)
~~3.~~• Run-~~-~~on and run-off control
~~4.~~• Covers and lids of containers
~~5.~~ Labels (including accumulation
~~6.~~• ~~Accumulation~~ start date)
~~7.~~• Compatibility
~~8.~~• Structural integrity of containers
~~9. (Un)loading area(s)~~
~~10.~~• Presence and condition of shaft cover

E.2.2 Weekly

The Permittees shall conduct weekly inspections of ~~CSU~~hazardous waste management units every week that waste remains in storage. The Permittees shall inspect and record the following items, as applicable:

~~1.~~• General IRF information (Items 1-~~7~~6)
~~2.~~• Communications equipment
~~3.~~• Warning signs
~~4.~~• Security

~~5.~~• Work surfaces/floors
~~6.~~• Spill/fire equipment
~~7.~~• Eyewashes/safety showers
~~8.~~• Wind sock
~~9.~~• Secondary containment structures
• (Un)loading area(s)
~~10.~~• Run-~~-~~on and run-off control
~~11.~~• Covers and lids of containers
~~12.~~ Labels (including accumulation
~~13.~~• ~~Accumulation~~ start date)
~~14.~~• Compatibility
~~15.~~• Structural integrity of containers
~~16. (Un)loading area(s)~~
~~17.~~• Aisle space/stacking
~~18.~~• Pallets/raised containers
~~19.~~• Presence and condition of shaft cover

E.2.3 Special Inspection Requirements at Technical Area 55

The Vault is a container storage hazardous waste management unit located in the basement at TA-55-4 and waste containers in the Vault shall only contain mixed waste. The following special inspection requirements are applicable to those rooms in the Vault that store mixed waste.

E.2.3.1 Non-Intrusive Inspection Systems

Inspection requirements are satisfied in part by the use of continuous air monitors (CAM) located in each individual storage room within the Vault to continuously monitor airborne radioactivity levels. If a problem with a container is identified by a CAM, the Permittees shall remove that container from the Vault and inspect it in an open-front hood.

The Permittees shall ensure that information obtained during inspections and all container transfers are noted on the Vault Traffic Log Book maintained at TA-55. The Permittees shall inspect the Vault Traffic Log Book weekly to verify receipt or transfer of mixed waste from the Vault. If mixed waste is not currently being stored in the Vault and the weekly inspection indicates that no mixed waste has been received, the Permittees shall mark the Inspection Record Form (IRF) "No Use" and complete it according to the IRF instructions.

E.2.3.2 Intrusive Inspection Procedures

The Permittees shall ensure that the central hallway of the Vault is inspected weekly when mixed waste is in storage. The Permittees shall inspect and note the following items in weekly inspections:

- Vault Traffic Log Book (inspected for receipt or transfer of waste)

- Communications equipment
- Warning signs
- Security
- Work surfaces and floors in central corridor and a visual inspection of storage rooms from hallway
- Spill and fire equipment
- Secondary containment
- (Un)loading area
- Confirm communication with Nuclear Materials Custodian that there are no alarms or problems at the unit

When containers are placed into or removed from a storage room within the Vault, the Permittees shall inspect the following items in that storage room, as appropriate:

- Vault Traffic Log Book (inspected for receipt or transfer of waste)
- Communications equipment
- Warning signs
- Security
- Work surfaces and floors
- Spill and fire equipment
- Secondary containment
- (Un)loading area
- Confirm communication with Nuclear Materials Custodian that there are no alarms or problems at the unit
- Emergency equipment/lighting
- Covers/lids of containers
- Labels (including accumulation start date)
- Compatibility
- Structural integrity of containers
- Aisle spacing/stacking
- Pallets/raised containers

The Permittees shall record inspection results on the IRF maintained at TA-55.

E.3 INSPECTION SCHEDULE AND REQUIREMENTS FOR TANK SYSTEMS

The Permittees shall inspect tank systems according to the schedule provided below.

E.3.1 Daily (During Operation)

The Permittees shall inspect tank systems (including ancillary equipment) at least once each operating day. An operating day includes all days that~~when~~ waste is present in the tank. The Permittees shall inspect tank systems for the items listed below, as appropriate:

~~1.~~• General IRF information (Items 1-6~~7~~)
~~2.~~• Secondary containment structures

~~3.•~~ Labels
~~4.•~~ Structural integrity of tanks and ancillary equipment
~~5. (Un)loading area~~
~~6.•~~ ~~Aboveground~~ Visible portions of tank systems to detect corrosion or releases of waste and to detect any possible malfunctions to overfill and spill control equipment, tank monitoring and leak detection systems, and data from these systems
~~7.•~~ Proper operating condition of treatment tank (if applicable)

E.3.2 Weekly

The Permittees shall conduct weekly inspections of tank systems every week that waste is~~are~~ managed in the systems. Weekly inspection requirements for tank systems include the following items, as appropriate:

~~1.•~~ General IRF information (Items 1-6~~7~~)
~~2.•~~ Communications equipment
~~3.•~~ Warning signs
~~4.•~~ Security
~~5.•~~ Work surfaces/floors
~~6.•~~ Spill and fire equipment
~~7.~~ Eyewashes and safety showers
~~8.• Wind sock, if applicable~~
~~9.~~ Secondary containment structures
~~10.• Run on and runoff controls, if applicable~~
~~11.~~ Labels (including accumulation
~~12.• Accumulation~~ start date~~, if appropriate~~)
~~13.~~ Structural integrity of tanks and ancillary equipment
~~14.• (Un)loading areas~~
~~15.•~~ Visible~~Aboveground~~ portions of tank systems to detect corrosion or releases of waste, overfill and spill control equipment, tank monitoring and leak detection systems, and data from these systems
~~16.•~~ Proper operating condition of treatment tank (if applicable)

E.4 ~~(Reserved)~~ INSPECTION SCHEDULE AND REQUIREMENTS FOR OPEN BURNING AND OPEN DETONATION UNITS

The open burning and open detonation units will be inspected according to the schedule below.

E.4.1 On the Day of Treatment

Inspections will be conducted every day of operation (*i.e.*, every day that open burning treatment or open detonation occurs). For inspections conducted on the day of treatment, the following items will be inspected, as appropriate:

- General IRF information (Items 1-6)
- (Un)loading area

- Open burning unit or open detonation unit area

E.4.2 Weekly

Weekly inspections of the active open burning or open detonation units will be conducted even if no treatment will occur during that week or when waste is present at the treatment unit and awaiting treatment. Weekly inspections will address the following items, as appropriate:

- General IRF information (Items 1-6)
- Communications equipment
- Warning signs
- Security
- Work surfaces/floors/roads
- Spill/fire equipment
- Eyewashes/safety showers
- Wind sock
- (Un)loading area
- Run-on/off control
- Open burning unit or open detonation unit area

E.4.3 Open Burning/Open Detonation Treatment Inspection

Before treatment activities commence at the open burning and open detonation treatment units, an inspection shall be conducted to ensure that operational restrictions required by Permit Parts 5 and 6 are met. The inspection is documented on Form E-2 as included within this Attachment. After treatment has been completed, a final visual survey shall also be conducted and documented on Form E-2.

E.5 INSPECTION SCHEDULE AND REQUIREMENTS FOR STABILIZATION UNITS

The Permittees shall inspect stabilization units according to the schedule provided below.

E.5.1 Daily (During Operation)

The Permittees shall inspect stabilization units each operating day (*i.e.*, when waste is treated in the unit). The Permittees shall inspect and record the following items, as applicable.

~~1.~~• General IRF information (Items 1-6~~7~~)
~~2.~~• Warning signs
~~3.~~• Work surfaces and floors
~~4.~~• Secondary containment structures
~~5.~~• Covers and lids of containers
~~6.~~ Labels (including accumulation start date)
~~7.~~• ~~(Un)loading area~~
~~8.~~• Structural integrity of cementation unit

E.5.2 Weekly

The Permittees shall conduct weekly inspections of the stabilization unit including weeks when no treatment occurs. The Permittees shall inspect and record the following items, as applicable:

- ~~1.~~ General IRF information (Items 1-~~7~~6)
- ~~2.~~ Communications equipment
- ~~3.~~ Warning signs
- ~~4.~~ Security
- ~~5.~~ Work surfaces and floors
- ~~6.~~ Spill/fire equipment
- ~~7.~~ Eyewashes and safety showers
- ~~8.~~ Secondary containment structures
- ~~9.~~ Covers and lids of containers
- ~~10.~~ Labels (including accumulation start date)
- ~~11.~~ ~~(Un)loading area~~
- ~~12.~~ Structural integrity of cementation unit

E.6 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART AA REQUIREMENTS

Inspection and monitoring requirements for units subject to 40 CFR Part 264, Subpart AA, are currently not ~~addressed, if~~ applicable at any hazardous waste management units located at the Facility. If applicable requirements would be addressed~~, in the TA-specific Sections of this Attachment~~.

E.7 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART BB REQUIREMENTS

The Permittees shall inspect units subject to 40 CFR Part 264, Subpart BB, according to the schedule and procedures provided below. There are currently no hazardous waste management units located at the Facility where these inspections are required.

E.7.1 Requirements for Pumps in Light Liquid Service

- ~~1.~~ The Permittees shall perform leak detection monitoring monthly using Reference Method 21 in 40 CFR Part 60.
- ~~2.~~ The Permittees shall perform visual inspection for liquids dripping from the pump seal each week.
- ~~3.~~ If a leak is detected, the Permittees shall initiate repairs no later than within 5 days and complete them as soon as possible, but no later than 15 days.
- ~~4.~~ A delay of repair is allowed if the repair is technically infeasible without shutting down the unit, and/or if the leaking equipment is isolated from the unit and does not contain or contact hazardous waste with greater than or equal to 10% by weight organics.

E.7.2 Requirements for Pressure Relief Devices In Gas/Vapor Service

- ~~1.~~ The Permittees shall measure and monitor devices to ensure that they are operated with no detectable emissions (less than 500 parts per million (ppm) above background) using Reference Method 21 in 40 CFR Part 60.
- ~~2.~~ The Permittees shall perform measurement and monitoring as soon as practicable, but no later than 5 days after a pressure release.
- ~~3.~~ A delay of repair is allowed if the repair is technically infeasible without shutting down the unit, or if the leaking equipment is isolated from the unit and does not contain or contact hazardous waste with greater than or equal to 10% by weight organics.

E.7.3 Requirements for Open-ended Valves or Lines

- ~~1.~~ The Permittees shall ensure that open-ended valves or lines are equipped with a cap, blind flange, or plug.
- ~~2.~~ The Permittees shall ensure that all caps, blind flanges, or plugs are sealed except during operations requiring movement of hazardous waste through the open-ended valve or line.

E.7.4 Requirements for Valves in Gas/Vapor or Light Liquid Service

The Permittees shall perform leak detection monitoring monthly using Reference Method 21 in 40 CFR Part 60. If no leaks are detected for two successive months, monitoring frequency may be changed to the first month of every succeeding quarter unless a leak is detected. Should that occur, monitoring frequency shall return to monthly until no leaks are detected for two successive months.

Alternatively, and following notification to the Department, if 2% or fewer valves are found to be leaking after two consecutive quarters, monitoring frequency may be changed to once every six months. If 2% or fewer valves are found to be leaking after five consecutive quarters, monitoring frequency may be changed to annually. Should the percentage of leaking valves exceed 2%, the Permittees shall perform monitoring monthly.

Alternatively, and following notification to the Department, no more than 2% of valves may be allowed to leak if the Permittees conduct performance testing pursuant to 40 CFR § 264.1061 initially, annually, and upon the Department's request to ensure that the leak percentage is being met. Should use of this alternative discontinue, the Permittees shall notify the Department within 15 days.

If a leak is detected, the Permittees shall initiate repair(s) no later than within 5 days and complete them as soon as possible, but no later than 15 days. A delay of repair is allowed if the repair is technically infeasible without shutting down the unit, if the leaking equipment is isolated from the unit and does not contain or contact hazardous waste with greater than or equal to 10% by weight organics, if purged emissions from immediate repair would exceed emissions from delaying repair, or if insufficient valve repair supplies exist although adequately stocked normally and the next unit shutdown is within 6 months.

E.7.5 Requirements for Pressure Relief Devices in Light Liquid Service, Flanges and Other Connectors

The Permittees shall conduct monitoring within 5 days of identifying a potential leak by visual, audible, olfactory, or other method. If a leak is detected by an instrument reading of 10,000 ppm or greater, the Permittees shall initiate repairs within 5 days and complete them as soon as possible, but no later than 15 days. No monitoring is required for inaccessible, glass, or glass-lined connectors.

E.8 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART CC REQUIREMENTS

The Permittees shall inspect units subject to 40 CFR Part 264, Subpart CC, according to the schedule and procedures provided below.

Container Levels that may be present at the storage areas are defined as follows:

Container Level 1- The volume of the container in direct contact with waste is greater than 0.1 cubic meter (m^3) and less than or equal to 0.46 m^3, or the volume of the container is greater than 0.46 m^3 and not in light material service. The container must also be either: (1) compliant with the applicable Department of Transportation (DOT) regulations (40 CFR § 264.1086(f)); (2) equipped with a cover and closure devices that form a continuous barrier so that, when closed, no visible holes, gaps, or open spaces into the interior of the container are evident; or (3) an open-top container with an organic vapor suppressing barrier that precludes exposure of waste to the atmosphere.

Container Level 2- The volume of the container in direct contact with waste is greater than 0.46 m^3 and is in light material service. The container also must be either: (1) compliant with the applicable DOT regulations (40 CFR § 264.1086(f)); (2) capable of operation with no detectable organic emissions as determined by the procedure specified at 40 CFR § 264.1086(g); or (3) demonstrated to be vapor-tight within the past 12 months using 40 CFR 60, Appendix A, Method 27 and the procedure specified at 40 CFR § 264.1086(h).

Container Level 1 Inspection Requirements

The Permittees shall inspect and maintain containers in Container Level 1 as follows:

If waste is already in the container when received:

- ~~1.~~ • On or before the date the container is accepted at the facility, the Permittees shall perform a visual inspection of the container, cover, and closure devices for visible cracks, holes, gaps, and other open spaces into the interior when cover and closure devices are secured in closed position.
- ~~2.~~ • If a defect is detected, the Permittees shall initiate repair(s) within 24 hours and complete them as soon as possible, but no more than 5 days. If a defect(s) ~~are~~is not completely repaired within 5 days, the Permittees shall remove waste and the container shall not be used until the defect(s) has been repaired.

If waste remains in storage for greater than or equal to 1 year:

~~1.~~• The Permittees shall perform a visual inspection of the container at initial receipt and at least once every 12 months.

~~2.~~• If a defect is detected, the Permittees shall initiate repair(s) within ~~the~~ 24 hours and complete them as soon as possible, but no later than 5 days. If the defect(s) is not completely repaired within 5 days, the Permittees shall remove the waste and the container shall not be used until the defect(s) ~~have~~has been repaired.

Container Level 2 Inspection Requirements

The Permittees shall inspect and maintain containers in Container Level 2 as follows:

If waste is already in the container when received:

1. On or before the date the container is accepted at the facility, the Permittees shall perform a visual inspection of the container, cover, and closure devices for visible cracks, holes, gaps, and other open spaces into the interior when cover and closure devices are secured in a closed position.

2. If a defect(s) is detected, the Permittees shall initiate repair(s) within 24 hours and complete them as soon as possible, but no later than 5 days. If the defect(s) ~~are~~is not completely repaired within 5 days, the Permittees shall remove waste and the container shall not be used until the defect(s) has~~have~~ been repaired.

If waste remains in storage for greater than or equal to 1 year:

1. The Permittees shall perform a visual inspection of the container at initial receipt and at least once every 12 months.

2. If a defect(s) is detected, the Permittees shall initiate repair(s) within 24 hours and complete them as soon as possible, but no later than 5 days. If defect(s) are not completely repaired within 5 days, the Permittees shall remove the associated waste and the container shall not be used until the defect(s) have been repaired.

The Permittees shall minimize exposure of hazardous waste to the atmosphere in the process of waste transference in or out of containers.

E.9 ADDITIONAL INSPECTIONS REQUIRED

This section outlines other inspections as required by Sections of the Permit other than Permit Section 2.6, *General Inspections*.

E.9.1 Technical Area 50, Building 69 Storm Water Drainage

The storm water drainage swales located in the vicinity of the TA-50-69 Outdoor hazardous waste management unit are utilized to divert storm water away from the TA-50-69 pad. One drainage swale is located just south of the permitted unit or between it and the Material Disposal Area (MDA) C. A second drainage swale is located on the west side of the permitted unit between Pecos Drive and the TA-50 fence line.

The storm water drainage area is inspected annually for signs of deterioration to ensure that potential run-on is directed away from the facility for the following areas:

- South of TA-50-69 between TA-50-69 and MDA C
- West of TA-50-69 between Pecos Drive and the TA-50 fence line

The form utilized to document this inspection is included as Form E-3 of this Attachment.

E.9.2 Technical Area 54, Area L Dome 215 Holding Tank

The 10,000-gallon holding tank is located at Area L, Dome 215. The tank is used to collect liquid that may result from fire-suppression activities and that is in excess of the capacity inside the rind wall located around the dome to prevent run-on into the dome. The tank is inspected monthly for any detectable fluids. If any fluids are detected in the holding tank, the Waste Management Coordinator and the Shift Operations Manager will ensure that a chemical analysis of the fluid is performed and fluid is removed within 3 days. The inspection requirements should be applied to the monthly inspections conducted on the 10,000-gallon holding tank and documented on Form E-4 as included within this Attachment.

FORM E-1

Hazardous Waste Facility Inspection Record Form

HAZARDOUS WASTE FACILITY INSPECTION RECORD FORM

[1] FACILITY:	[2] SITE ID #:	[3] START DATE:	[4] END DATE:

Part I: Answer **YES, NO,** or **N/A** for each item inspected. If an action is required, mark **AR** (Action Required) and describe the AR in **Part II**.

ITEM	INSPECTION:	MON	TUE	WED	THU	FRI	SAT	SUN
[5] UNIT IN USE	Is hazardous waste stored at the unit?							
[6] WASTE HANDLING ACTIVITIES	Were waste-handling activities performed?							
[7] COMMUNICATIONS EQUIPMENT	Available and in proper operating condition?							
[8] WARNING SIGNS	Posted, legible, and bilingual?							
[9] SECURITY	Proper administrative/physical controls implemented?							
[10] WORK SURFACES/ FLOORS/ROADS	Absence of conditions that could lead to a spill or accident?							
[11] SPILL/FIRE EQUIPMENT	Is equipment present, appropriate, and in proper operating condition?							
[12] EYEWASHES/ SAFETY SHOWERS	Is equipment present, appropriate, and in proper operating condition?							
[13] WIND SOCK	Present and in proper operating condition?							
[14] SECONDARY CONTAINMENT	In good condition and properly maintained?							
[15] (UN)LOADING AREA	Safe from hazards, in good condition, and properly maintained?							
[16] RUN-ON/OFF CONTROL	Controls are intact and properly maintained?							
[17] COVERS/LIDS OF CONTAINERS	Properly closed and securely in place?							
[18] LABELS	Labels have all required information and visible for inspection?							
[19] COMPATIBILITY	Compatibility was evaluated and containers separated if needed?							
[20] INTEGRITY OF CONTAINERS	In good condition with no signs of damage, leakage, or corrosion?							
[21] AISLE SPACE/STACKING	Adequate for movement of personnel, fire protection, spill control, & decontamination equipment?							
[22] PALLETS AND/OR RAISED CONTAINERS	In good condition with no signs of damage or corrosion?							
[23] TANK SYSTEMS	Are tank, ancillary equipment, & leak detection controls all in proper operating condition?							

HAZARDOUS WASTE FACILITY INSPECTION RECORD FORM

[1] FACILITY:	[2] SITE ID #:	[3] START DATE:	[4] END DATE:

ITEM	INSPECTION:	MON	TUE	WED	THU	FRI	SAT	SUN
[24] SHAFTS/LANDFILL COVERS	Securely in place with area free of evidence of erosion?							
[25] OPEN BURNING UNITS	Covered when not in use, in good condition, and free of deterioration & explosives?							
[26] OPEN DETONATION UNITS	In good condition and free of erosion, vegetation, & explosives?							
[27] CEMENTATION UNITS	Good structural integrity and good condition of equipment with no signs of damage?							

		MON		TUE		WED		THU		FRI		SAT		SUN	
[28] INSPECTOR(S) NAME	DATE AND TIME	Name	Date and Time	Name	Date and Time	Name	Date and Time	Name	Date and Time	Name	Date and Time	Name	Date and Time	Name	Date and Time

Part II: For any comment(s) or AR (Action Required) in Part I, describe the item(s) below. Document: action required, action taken, status, date, and time of action. Attach additional sheets if necessary. If more than one action is required, number each AR.

[29]

Part I

Weekly and daily inspection of hazardous waste management units will be conducted in accordance with the Inspection Plan in the LANL Hazardous Waste Facility Permit, (Attachment E) or in the most recent permit application for interim status units, as appropriate. Not all items in this section will apply to all facilities. An "NA" (not applicable) is required if the item does not apply. Facilities may shade parts of the form to indicate items that need to be completed only on a weekly basis. Holidays and Laboratory closures may also be noted (e.g., by writing "H" (for holidays) or "Closed" in the first box and drawing a line all the way down the page).

All boxes within the column for the day of the inspection are required to be filled. However, a column may be left blank on days when operations are not conducted.

1. Location information, including TA, building, room (if applicable), and any other location descriptors that may be necessary (e.g., TA-50-69 Indoor or TA-16-388 Flash Pad).
2. A site identification number is assigned to every facility by the waste management compliance personnel. This allows for ease in identification.
3. Start date: Indicate week start date beginning on Monday for the week of record.
4. End date: Indicate week end date ending on Sunday for the week of record.
5. Unit in Use: For container storage units only: If any hazardous waste is stored at the unit at the time of inspection, mark "Yes" and continue to the next item. If the unit is empty (no hazardous waste stored at time of inspection), mark "No". If waste was not stored at the unit for the week in question, only complete this box, the items related to site location (Items 1-5), and the inspector name section for that week (Item 28). If any hazardous waste is subsequently placed at the site for any reason, a full inspection must be performed immediately according to the container storage inspection schedule.
6. Waste-Handling Activities: Indicate whether waste-handling activities were performed on the day of or the day before inspection. IF YOU bring containers into an empty unit, add or remove waste to/from a container, label a container, move a container within the unit, take a container out, open/close or tighten/loosen a container lid, transfer waste from one container to another, tilt/shake a container, or treat hazardous waste—YOU ARE HANDLING the waste and/or CONDUCTING WASTE MANAGEMENT ACTIVITIES. (This includes Tank Systems accordingly.)
    a. If the unit is empty, mark "No" and continue to the next item.
    b. If the unit is storing hazardous waste but you are not HANDLING/CONDUCTING WASTE MANAGEMENT ACTIVITIES, mark "No" and continue to the next item.
    c. If any items in #6 above were performed during your weekly inspection, mark "Yes" and continue to the next item.
    d. If your weekly inspection was completed at an earlier date in the week but you performed any item listed in #6 above, you must complete another full inspection on or by the end of the next day (and mark "Yes" on item #6 on the IRF and continue to the next item).
7. Communications Equipment: All equipment (e.g., telephones, radios, and alarms) must be inspected for availability and operability. Equipment must be present in accordance with the appropriate contingency plan.
8. Warning Signs: Required signs must be legible and prominently posted in accordance with 40 CFR § 264.14(c) and/or the Permit as applicable. Warning signs at all gates and perimeter fences where present around permitted units must be bilingual (in English and Spanish) and must be visible from a distance of at least 25 feet and from all angles. Warning signs along shared boundaries with the Facility's permitted unit and the Pueblo de San Ildefonso shall be posed in the appropriate dialect of Tewa, equivalent to the

bilingual warning signs (see Permit Section 2.5.1, *Warning Signs*). Signs at large outdoor storage areas will be inspected no less than two times per year to evaluate for deterioration.

9. Security: Verify proper operating condition or mitigative measures (e.g., attendants, locks, prohibited or controlled roadway access). (See Permit Section 2.5, *Security.*)
10. Work Surfaces/Floors/Roads: Roads, process floors, and other work surfaces at hazardous waste management units must be inspected for any conditions that could lead to a release or accident, or cause an environmental or human health hazard. Inspection includes structures and base materials for malfunctions, deterioration (e.g., tears in dome fabric), operator errors, and discharges.
11. Spill/Fire Response Equipment: Hazardous waste management units must have spill control and fire response equipment readily available in proper operating condition, and appropriate for the material in question. Hose bibs, where present, should be inspected for proper operating condition and adequate pressure. Outdoor fire-water supply systems must be checked for freezing and damage. Equipment must be inspected and present in accordance with the appropriate inspection and contingency plans. Attachment D, *Contingency Plan*, of the Permit includes a list of required equipment specific to each permitted unit.
12. Eyewashes/Safety Showers: Where present, eyewashes and safety showers must be inspected to ensure proper operating condition or document that scheduled routine inspections have been conducted. Documentation of routine inspections must be maintained at each eyewash or safety shower. Outdoor locations must be checked for freezing.
13. Wind Sock: Where present at outside hazardous waste management units, wind socks must be inspected for damage and to ensure that they are in proper operating condition/functional.
14. Secondary Containment: Structures or equipment (e.g., secondary containment pallets) for hazardous waste operations must be inspected to verify proper operating condition and to ensure adequate capacity for the wastes stored. Structures must also be inspected for the presence of standing water or any other indication of a spill (i.e., discolored vegetation, soil, or concrete). For certain operations, secondary containment includes inspection of gloves, gloveboxes, hoods, and ventilation systems. For locations where inflatable "Porta Berms" are used, inspectors must ensure that they are adequately inflated. All monitoring and leak detection systems must also be checked. (Note: Dome 224 must be checked for liquids even though the liner is not considered secondary containment.)
15. Loading and Unloading Areas: When in use, these areas must be inspected daily for signs of damage or deterioration that may lead to a release or accident or cause an environmental or human health hazard. This includes asphalt-covered areas and areas where containers or tanks are handled or the contents thereof are transferred, including doorways or entry ways (Permit Section 2.6.1).
16. Run-On/Runoff Control: Wherever present, run-on/runoff controls must be checked. The integrity should be inspected by looking for signs of damage, erosion, ponding, or any other conditions that could lead to a release or accident or cause an environmental or human health hazard.
17. Covers/Lids of Containers: All containers used for storing hazardous waste must have the cover or lid securely in place. Containers are not considered to be closed until the lid/cover is fastened in the manner the manufacturer originally intended. However, the lid may be off a container while waste is being placed into or removed from a container.
18. Labels: All containers and tanks containing hazardous waste must be labeled with the words "HAZARDOUS WASTE," EPA Hazardous Waste Numbers, and an indication of the hazards of the contents (e.g., hazardous waste characteristics, DOT requirements, OSHA standards, or NFPA labels). They must also be marked with a legible accumulation start date. All containers must be dated when they arrive at the unit and no hazardous waste may be stored for over one year, unless specifically exempted. All

containers holding mixed waste shall be labeled "Radioactive" and all containers with any amount of free liquids must be labeled as such.

19. Compatibility: All hazardous waste containers holding materials that may be incompatible with any other materials at that location must be separated from those materials by dikes, berms, or other physical barriers to prevent a possible reaction (e.g., ignitable or corrosive wastes may be segregated by distance and signage or other physical boundary or marking).
20. Integrity of Containers: All containers and tanks must be checked for structural integrity, leakage, corrosion, or damage that may impact integrity. This includes checking the condition of all construction materials, fixtures, seams, and auxiliary equipment. Additionally, waste containers must be protected from contact with precipitation. If precipitation (i.e., water or snow) has accumulated on the containers, it must be noted as an AR in Part II and *the accumulated water* must be removed within 24 hours from discovery. The impacted containers must all be covered (e.g., tarps). There are special inspection criteria for tank systems (see Item 23 below).
21. Aisle Spacing/Stacking: Adequate aisle space must be maintained to allow for inspection and for the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency. Containers of hazardous waste must be stored in a manner that ensures a minimum 2-foot aisle space and containers may not be stacked more than 3 high, unless otherwise specified for the facility (i.e., some units may only stack 55-gallon drums or smaller containers 3 high).
22. Pallets and/or Raised Containers: Containers stored at hazardous waste management units that do not contain liquids or where secondary containment is engineered must be on pallets, elevated, or otherwise raised to be protected from contact with accumulated liquid. Pallets must be compatible with type of waste and in good condition.
23. Tank Systems: For tank systems used for treatment or storage of hazardous waste, all aboveground portions of the tank system, including any and all ancillary plumbing, must be inspected for signs of leaking, corrosion, deterioration, or improper operation. Tanks must be operated with a minimum freeboard of 6 inches. If the tank system includes discharge controls, overtopping controls, tank level alarms, or other monitoring equipment, including leak detection equipment, all controls and relevant data must be checked to ensure they are operating properly and that operation is within design specifications for the system.
24. Shafts/Landfill Covers: Disposal shafts and shafts used for retrievable storage should have their covers securely in place and the surrounding area should show no evidence of erosion. Landfill covers must be inspected at least weekly and after storms for evidence of erosion, subsidence, and water intrusion.
25. Open Burning Unit: This unit must be inspected for deterioration, leakage, or vegetation in the immediate vicinity that could catch fire, and to assure that the unit is covered when not in use. Inspectors must also look for explosives and debris not consumed during the burn.
26. Open Detonation Units: These units must be inspected for deterioration, leakage, or vegetation in the immediate vicinity that could catch fire. Inspectors must also look for explosives and debris not consumed by the detonation.
27. Stabilization Units: The structural integrity and condition of equipment and systems must be inspected on stabilization units. Units must also be inspected for signs of leaking, corrosion, deterioration, or improper operation.

FOR ALL INSPECTIONS:

28. Inspector Name, Date, and Time of Inspection: Legibly print the name of the inspector(s) involved in current inspection. Record the date of the current inspection and print the inspector's name on the form. Only one date and time are given for each inspection, whether a team or an individual performs the inspection.

Part II

29. List any action required: Document any action taken immediately and express any plans for future action to be taken. Also, ensure that previous ARs are closed out with completed actions described. If the AR has not been resolved, ensure that it is carried over to the current inspection. Status should be provided for both open and closed items. If necessary, attach additional sheets to inspection record form to efficiently cover the action taken or required. Printouts and database or other documentation may be included as necessary. Initial any information or comments added, and if more than one action is required or conducted, assign a number to each AR.

Informational comments may be also documented in this section, as well as any status associated with the current inspection that does not require specific regulatory action or remedies applicable to hazardous waste requirements.

FORM E-2

Checklist for Detonation or TA-16-388 Flash Pad Treatment Operations

Pre- and Post- Checklist for Detonation or TA-16-388 Flash Pad Treatment Operations

Pre-Treatment

Date			
Event Number			
Operation Type			
Waste Stream Profile Number		Approved through SME/ RCRA Review Process?	YES NO
Type of Waste			
Temperature			
Fire Danger			
Wind Speed			
Wind Direction			
Precipitation (*e.g.*, no precipitation)			
Comments regarding weather restrictions:			

Post Treatment

Date	
Description of Residues (if any)	

Personnel completing the checklist

Name (s)	

FORM E-3

Annual TA-50-69 Storm Water Drainage Inspection Form

ANNUAL WCCRF STORM WATER DRAINAGE INSPECTION FORM

Date: _____

Inspection	**SATISFACTORY/UNSATISFACTORY**
Drainage swales south of TA-50-69 between TA-50-69 and Material Disposal Area (MDA) C show no signs of deterioration and will direct potential storm water away from the facility.	☐ **Satisfactory** ☐ **Unsatisfactory**
Drainage swales west of TA-50-69 between Pecos Drive and the TA-50 fence line show no signs of deterioration and will direct potential storm water away from the facility.	☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:

_____

_____

_____

_____

_____

Performed By:

_____

Inspector Name (Print) Signature Z# Date

Reviewed By:

_____

RCRA Compliance (Print) Signature Z# Date

Reviewed By:

_____

SOM/Designee (Print) Signature Z# Date

FORM E-4

Monthly Area L, Dome 215 Holding Tank Inspection Form

MONTHLY AREA L, DOME 215 HOLDING TANK INSPECTION FORM

Month	Fluids detected in Dome 215 holding tank	Printed Name of Inspector	Signature of Inspector	Date of Inspection
January	Yes ☐ No ☐			
February	Yes ☐ No ☐			
March	Yes ☐ No ☐			
April	Yes ☐ No ☐			
May	Yes ☐ No ☐			
June	Yes ☐ No ☐			
July	Yes ☐ No ☐			
August	Yes ☐ No ☐			
September	Yes ☐ No ☐			
October	Yes ☐ No ☐			
November	Yes ☐ No ☐			
December	Yes ☐ No ☐			

Comments:

Reviewed By:

Designee (print) Signature Z# Date

HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

[1] FACILITY:	[2] Site ID #:	TREATMENT, STORAGE, OR DISPOSAL UNIT (TSD)	[3] START DATE:	[4] END DATE:

[5] ☐Containers ☐Landfill ☐Chemical Treatment ☐Tank ☐Miscellaneous Unit (OB/OD, Cementation)

PART I- Enter condition of the item inspected (i.e. **OK**, **NA** [Not Applicable], or **AR** [Action Required]) in column for day inspected.

ITEM	INSPECTED FOR:	MON	TUE	WED	THU	FRI	SAT	SUN
All TSDs								
[6] NO UNIT USE	No waste stored							
[7] NO WASTE HANDLING	No waste handled/treated (see instructions)							
[8] COMMUNICATIONS EQUIPMENT	Availability and proper operating condition							
[9] WARNING SIGNS	Posted, legible, and bilingual							
[10] SECURITY	Good condition of fences, gates, locks, and other access control equipment							
[11] WORK SURFACES/ FLOORS/ROADS	Absence of conditions that could lead to an accident or spill							
[12] SPILL/FIRE EQUIPMENT	Present, appropriate, and in proper operating condition							
[13] EYEWASHES/ SAFETY SHOWERS	Proper operating condition							
[14] WIND SOCK	Proper operating condition and no damage							
[15] SECONDARY CONTAINMENT	Integrity- No standing water/waste, erosion, or other signs of a spill							
[16] (UN)LOADING AREA	No spills or deterioration							
[17] RUN-ON/OFF CONTROL	Integrity- no ponding, erosion, or damage							
Container Storage Units and/or Tanks (see instructions)								
[18] COVERS/LIDS OF CONTAINERS	Closed and secured properly							
[19] LABELS	Proper labels with start date, present & legible							
[20] COMPATIBILITY	Separated according to compatibility							
[21] INTEGRITY	No leakage, deterioration, corrosion, or damage							
[22] AISLE SPACE/STACKING	Appropriateness and adequacy							
[23] PALLETS AND RAISED CONTAINERS	Absence of conditions that could result in failure							
[24] TANK SYSTEMS	Discharge controls and fill level and no corrosion or leakage							
Other TSDs								
[25] SHAFTS/LANDFILL COVERS	Presence and condition of cover							
[26] OPEN BURNING UNITS	Condition of cover, and no erosion, leakage, or deterioration							
[27] OPEN DETONATION UNITS	Unit and vegetation condition and no erosion							
[28] CEMENTATION UNITS	Structural integrity and condition of equipment and systems							

HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

FACILITY:	Site ID #:	START DATE:	END DATE:

	MON	TUE	WED	THU	FRI	SAT	SUN
[29] DATE							
[30] TIME							
[31] INSPECTOR(S)							

Part II- For any AR (Action Required) in PART I, describe below: action required, action taken, date, and time of action. Attach additional sheets if necessary. If more than one action is required, number each AR.

[32]

Part III- Comments.

[33]

Part I

Weekly and daily inspection of TSDs will be conducted in accordance with the inspection plan in the LANL Hazardous Waste Facility Permit, (Attachment E) or in the most recent permit application for interim status units, as appropriate. Not all items in this section will apply to all facilities. An "NA" (not applicable) is required if the item does not apply. Facilities may shade parts of the form to indicate items that need to be completed only on a weekly basis. Holidays and Laboratory closures may also be noted (e.g., by writing "H" (for holidays) or "Closed" in the first box and drawing a line all the way down the page).

All boxes within the column for the day of the inspection are required to be filled. However, a column may be left blank on days when operations are not conducted.

1. Location information, including TA, building, room (if applicable), and any other location descriptors that may be necessary (*e.g.*, TA-59-3-114 or TA-59-1-S, Dock).
2. A site identification number is assigned to every facility by the Resource Conservation and Recovery Act (RCRA) compliance personnel. This allows for ease in identification.
3. Start date of Monday for the week of record.
4. End date of Sunday for the week of record.
5. Check the appropriate box for the type of operation. Several boxes may be checked, if necessary, for those locations where inspections are combined on a single sheet. You must have prior approval from RCRA compliance personnel to combine inspections for more than one unit.
6. For container storage units only – "NO UNIT USE" may be checked (or marked "OK") if waste was not stored at the unit for the week in question. When this box is checked, the individual responsible for the inspection must only complete this box, the items related to site location (Items 1-5), and the inspector name section for that week (Items 29-31). If any hazardous or mixed waste is subsequently placed at the site for any reason, a full inspection must be performed immediately and then subsequently according to the appropriate inspection plan.
7. a. At a container storage unit if waste is in storage but no waste is handled at the unit for the week – "NO WASTE HANDLING" may be checked, but a weekly inspection in accordance with the appropriate inspection plan must be conducted.
   b. If a treatment unit is not conducting treatment for the week – "NO WASTE HANDLING" may be checked, but a weekly inspection in accordance with the appropriate inspection plan must be conducted.
   c. For a tank storage system unit, if no waste is being stored and the tank system is empty, "NO WASTE HANDLING" may be checked. However, a weekly inspection in accordance with the appropriate inspection plan must be conducted. (If any hazardous or mixed waste is subsequently placed in the tank for any reason, full inspection must be performed immediately and then subsequently according to the appropriate inspection plan.

8. Communication equipment must be inspected in order to ensure availability and proper operating condition for each piece of equipment (*e.g.,* telephones, radios, and alarms). Equipment must be present in accordance with the appropriate contingency plan.

9. Required signs must be legible and prominently posted in accordance with 40 CFR § 264.14(c) and/or the permit as applicable. Warning signs at all gates and perimeter fences where present around permitted units, must be posted in bilingual (In English and Spanish), must be visible from a distance of at least 25 feet and from all angles. Warning signs along shared boundaries with the Facilities permitted unit and the pueblo of San Ildefonso shall be posed in the appropriate dialect of Tewa, equivalent to the bilingual warning signs (See Permit Section 2.5.1 (Warning Signs)). Signs at large outdoor storage areas will be inspected no less than two times per year to evaluate for deterioration.

10. Site security must be verified. Items such as fences, gates, locks, and other access control equipment (as appropriate) should be checked for proper operating condition or mitigative measures (e.g., attendants, locks, prohibited or controlled roadway access). (See Permit Section 2.5 (Security))

11. Roads, process floors, and other work surfaces at TSDs must be inspected for any conditions that could lead to a spill or an accident. Inspection includes structures and base materials and malfunctions, deterioration (e.g., tears in dome fabric), operator errors, and discharges.

12. Hazardous or mixed waste TSDs must have fire control and spill control equipment. Equipment must be present, in proper operating condition, and appropriate for the material in question. Hose bibs, where present, should be inspected for proper operating condition and adequate pressure. Outdoor fire-water supply systems must be checked for freezing and damage. Equipment must be inspected and present in accordance with the appropriate inspection and contingency plans. (Attachment D (contingency Plan) of the Permit includes a list of required equipment specific to each permitted unit.)

13. Where present, eyewashes and safety showers must be inspected to ensure proper operating condition or that scheduled routine inspections have been conducted and documented as indicated at the eyewash or safety shower. Outdoor locations must be checked for freezing.

14. Wind socks, where present at outside TSDs, must be inspected to ensure that they are in proper operating condition/functional and checked for damage.

15. Secondary containment structures for hazardous or mixed waste operations must be inspected to verify proper operating condition and to ensure adequate capacity. Structures must also be inspected for the presence of standing water or hazardous/mixed waste or any other indication of a spill (*i.e.* discolored vegetation, soil, or concrete). For certain operations, secondary containment includes inspection of gloves, gloveboxes, hoods, and ventilation systems. For locations where inflatable "Porta Berms" are used, inspectors must ensure that they are adequately inflated. All monitoring and leak detection systems must also be checked. (Note: Dome 224 must be checked for liquids even though the liner is not considered secondary containment.)

16. Loading and unloading areas must be inspected daily when in use for signs of damage or deterioration that may lead to an accident or spill. This includes asphalt covered areas and areas where containers or tanks are handled or the contents thereof are transferred, including doorways or entry ways (Permit Section 2.6.1).

17. Run-on and runoff controls, wherever present, must be checked. The integrity should be inspected by looking for signs of damage, erosion, ponding, or any other conditions that could lead to a spill or an accident.

18. All tanks and containers used for storing hazardous or mixed waste must have the cover or lid securely in place. Containers are not considered to be closed until the lid/cover is fastened in the manner the manufacturer originally intended. However, the lid may be off of a tank or container while waste is being placed into or removed from a container.

19. All containers and tanks containing hazardous or mixed waste must be labeled with the words "HAZARDOUS WASTE," and EPA Hazardous Waste Numbers or hazardous waste constituents. They must also be marked with a legible accumulation start date. All containers must be dated when they arrive at the facility and no hazardous or mixed waste may be stored for over one year, unless specifically exempted. All containers holding mixed waste shall be labeled "Radioactive" and all containers with any amount of free liquids must be labeled as such.

20. All hazardous or mixed waste containers holding materials that may be incompatible with any other materials at that location must be separated from those materials by dikes, berms, or other physical barriers to prevent a possible reaction (e.g., when ignitable or corrosive wastes are segregated by signage or other physical boundary or marking).

21. All containers and tanks must be checked for structural integrity, leakage, corrosion, or damage that may impact integrity. This includes checking the condition of all construction materials, fixtures, seams, and auxiliary equipment. There are special inspection criteria for tank systems (see Item 24 below).

22. Adequate aisle space must be maintained to allow for inspection and for the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency. Containers of hazardous and mixed waste must be stored in a manner that ensures a minimum 2-foot aisle space and containers may not be stacked more than 3 high, unless otherwise specified for the facility (*i.e.* some units within the LANL Hazardous Waste Facility Permit must have an aisle space of 28 inches and only 55 gallon drums may be stored three high). Please consult RCRA compliance personnel for permit related questions.

23. Hazardous or mixed waste containers stored at TSDs must be on pallets, elevated, or otherwise raised to be protected from contact with accumulated liquid.

TANKS SYSTEMS:

24. For tank systems used for treatment or storage of hazardous or mixed waste, all aboveground portions of the tank system, including any and all ancillary plumbing, must be inspected for signs of leaking, corrosion, deterioration, or improper operation. Tanks must be operated with a minimum freeboard of 6 inches. If the tank system includes discharge controls, overtopping controls, tank level alarms, or other monitoring equipment, including leak detection equipment, all controls and relevant data must be checked to ensure they are operating properly and that operation is within design specifications for the system.

~~SHAFTS:~~

~~25. Shafts used for retrievable storage should have their covers securely in place and the surrounding area should show no evidence of erosion. Disposal shafts and shafts used for retrievable storage should have their covers securely in place and, during waste handling operations, guard rails must be installed and in good condition. Landfill covers must be inspected at least weekly and after storms for evidence of erosion, subsidence, and water intrusion.~~

~~OPEN BURNING UNITS:~~

~~26. Open burning units must be inspected for deterioration, leakage, vegetation in the immediate vicinity that could catch fire, and assure that the unit is covered when not in use. Inspectors must also look for explosives and debris not consumed during the burn.~~

~~OPEN DETONATION UNITS:~~

~~27. Open detonation units must be inspected for deterioration, leakage, or vegetation in the immediate vicinity that could catch fire. Inspectors must also look for explosives and debris not consumed by the detonation.~~

~~STABILIZATION UNITS~~~~:~~

~~28. The structural integrity and condition of equipment and systems must be inspected on stabilization units. Units must also be inspected for signs of leaking, corrosion, deterioration, or improper operation.~~

~~FOR ALL INSPECTIONS:~~

~~29. Record of the date of the current inspection. Only one date is given for each inspection, whether a team or an individual performs the inspection.~~

~~30. Record of the time of the current inspection. Only one time is given for each inspection, whether a team or an individual performs the inspection.~~

~~31. Legible and/or printed name of each inspector involved in the current inspection.~~

~~PART II~~

~~List any action required.~~

~~32. Document any action taken immediately and express any plans for future action to be taken. Also, ensure that previous ARs are closed out with completed actions described. If the AR has not been resolved, ensure that it is carried over to the current inspection. Status should be provided for both open and closed items. If necessary, attach additional sheets to inspection record form to efficiently cover the action taken or required. Printouts and data base or other documentation may be included as necessary. Initial any information or comments added, and if more than one action is required or conducted, assign a number to each AR.~~

~~PART III~~

~~Identify any comments.~~

~~33. Document informational comments and any status associated with the current inspection that does not require specific regulatory action or remedies applicable to the LANL Hazardous Waste Facility Permit specific to permit application (in the case of interim status units).~~

~~TA-50~~

~~ATTACHMENT E~~

~~INSPECTION PLAN~~

~~WCRRF STORMWATER DRAINAGE~~

~~ATTACHMENT E~~

~~INSPECTION PLAN~~

~~This Attachment Section presents additional inspection requirements applicable to the waste management units at Technical Area (TA) 50-69. The Permittees shall conduct inspection at the frequency specified in the General Inspection Section to identify problems in time to correct them before they harm human health or the environment.~~

~~E.1 WCRRF STORMWATER DRAINAGE~~

~~The WCRRF storm water drainage swales located in the vicinity are utilized to divert storm water away from the TA-50-69 pad. One drainage swale is located just south of the permitted unit or, between it and the Material Disposal Area (MDA) C. A second drainage swale is located on the west side of the permitted unit between Pecos Drive and the TA-50 fence line.~~

~~E.1.1 STORAGE TANK SYSTEM~~

~~The Permittees shall inspect the WCRRF storm water drainage annually. The drainage swales must be inspected for signs of deterioration to ensure that potential run-on is directed away from the facility for the following areas:~~

- ~~South of TA-50-69 between TA50-69 and Material Disposal Area (MDA) C~~
- ~~West of TA-50-69 between Pecos Drive and the TA-50 fence line~~

MONTHLY AREA L, DOME 215 HOLDING TANK INSPECTION FORM

Month	Fluids detected in Dome 215 holding tank?	Printed Name of Inspector	Signature of Inspector	Date of Inspection
January	☐ YES ☐ NO			
February	☐ YES ☐ NO			
March	☐ YES ☐ NO			
April	☐ YES ☐ NO			
May	☐ YES ☐ NO			
June	☐ YES ☐ NO			
July	☐ YES ☐ NO			
August	☐ YES ☐ NO			
September	☐ YES ☐ NO			
October	☐ YES ☐ NO			
November	☐ YES ☐ NO			
December	☐ YES ☐ NO			

Comments: _____

_____

_____

_____

_____

_____

Reviewed By:

_____ / _____ / _____ / _____

SOM/Designee (print) Signature Z# Date

ANNUAL WCRRF STORMWATER DRAINAGE INSPECTION FORM

Date: _____

Inspection	SAT / UNSAT
Drainage swales south of TA-50-69 between TA-50-69 and Material Disposal Area (MDA) C show no signs of deterioration and will direct potential stormwater away from the facility.	☐ SAT ☐ UNSAT
Drainage swales west of TA-50-69, between Pecos Drive and the TA-50 fence line show no signs of deterioration and will direct potential stormwater away from the facility.	☐ SAT ☐ UNSAT

Comments: _____

Performed By:

Inspector Name (print)	Signature	Z#	Date

Reviewed By:

RCRA Compliance (print)	Signature	Z#	Date

Reviewed By:

SOM/Designee (print)	Signature	Z#	Date

~~January2017~~

~~**TA-54**~~

~~**ATTACHMENT E**~~

~~**INSPECTION PLAN**~~

~~TA-54~~

~~ATTACHMENT E~~

~~INSPECTION PLAN~~

~~This Attachment Section presents additional inspection requirements specific to the container storage units at Technical Area (TA) 54. The Permittees shall conduct inspections at the frequency specified in the general inspection Section to identify problems in time to correct them before they harm human health or the environment.~~

~~E.1 INSPECTION REQUIREMENTS FOR TRUPACT-II CONTAINERS~~

~~The Permittees shall visually inspect waste containers prior to their placement in the TRUPACT-II containers to ensure their integrity. The inspection shall include a close examination of the cover and closure devices for visible cracks, holes, gaps, or other open spaces into the interior of the waste container when the cover and closure devices are secured in the closed position. The TRUPACT-II shall be loaded with waste containers and sealed with a locking-ring closure mechanism. After the TRUPACT-II has been sealed, the Permittees shall inspect the outside of the TRUPACT-II to ensure its integrity and that there has been no human intervention.~~

~~E.2 INSPECTION REQUIREMENTS FOR TA-54 DOME 215 HOLDING TANK~~

~~The 10,000 gallon holding tank is located at Area L, Dome 215. The tanks is used to collect liquid that may result from fire-suppression activities and that is in excess of the capacity inside the rind wall located around the dome to prevent run-on into the dome. The Permittees shall inspect the storage tank for any detectable fluids each month. If any fluids are detected in the holding tank, the Waste Management Coordinator and the Shift Operations Manager to ensure that a chemical analysis of the fluid is performed and fluid is removed within 3 days. The following inspection requirements should be applied to the monthly inspections conducted on the 10,000 gallon holding tank and shall be documented on separate forms.~~

~~E.3 STABILIZATION UNITS~~

~~The Permittees shall inspect the stabilization units located at TA-54-0231, TA-54-0375, and TA-54-0412, according to the schedule provided below.~~

~~E.3.1 Daily (During Operation)~~

~~The Permittees shall inspect the stabilization unit each operating day (*i.e.*, when mixed waste is treated in the unit). In the daily inspection of the stabilization unit, the Permittees shall inspect the following items, as applicable:~~

~~1. Work surfaces and floors~~
~~2. Secondary containment structures~~
~~3. Labels~~
~~4. Structural integrity of stabilization unit~~
~~5. (Un)loading area~~

~~6. Communication equipment~~

~~E.3.2 Weekly~~

~~The Permittees shall inspect the stabilization unit weekly for the following items as applicable;~~

~~1. Warning signs~~
~~2. Work surfaces and floors~~
~~3. Secondary containment structure~~
~~4. Labels~~
~~5. Structural integrity of the stabilization unit~~
~~6. (Un)loading area~~
~~7. Communication equipment~~

~~**TA-55**~~

~~**ATTACHMENT E**~~

~~**INSPECTION PLAN**~~

~~TA-55~~

~~ATTACHMENT E~~

~~INSPECTION PLAN~~

~~This Attachment Section presents additional inspection requirements applicable to the waste management units at Technical Area (TA) 55. The Permittees shall conduct inspections at the frequency specified in the General Inspection Section to identify problems in time to correct them before they harm human health or the environment.~~

~~The Permittees shall perform daily inspections for the fences at TA-55 and document them on separate forms.~~

~~E.1 TA-55 VAULT~~

~~The Vault is a container storage unit (CSU) located in the basement at TA-55-4 and waste containers in the Vault shall only contain mixed waste. The following inspection requirements are applicable to those rooms in the Vault that store mixed waste.~~

~~E.1.1 Non-Intrusive Inspection Systems~~

~~Inspection requirements are satisfied in part by the use of continuous air monitors (CAM) located in each individual storage room within the Vault to continuously monitor airborne radioactivity levels. If a problem with a container is identified by a CAM, the Permittees shall remove that container from the Vault and inspect it in an open-front hood.~~

~~The Permittees shall ensure that information obtained during inspections and all container transfers are noted on the Vault Traffic Log Book maintained at TA-55. The Permittees shall inspect the Vault Traffic Log Book weekly to verify receipt or transfer of mixed waste from the Vault. If mixed waste is not currently being stored in the Vault and the weekly inspection indicates that no mixed waste has been received, the Permittees shall mark the Inspection Record Form (IRF) "No Use" and complete it according to the IRF instructions.~~

~~E.1.2 Intrusive Inspection Procedures~~

~~The Permittees shall ensure that the central hallway of the Vault is inspected weekly when mixed waste is in storage. The Permittees shall inspect and note the following items in weekly inspections:~~

1. ~~Vault Traffic Log Book (inspected for receipt or transfer of waste)~~
2. ~~Communications equipment~~
3. ~~Warning signs~~
4. ~~Security~~
5. ~~Work surfaces and floors in central corridor~~
6. ~~Spill and fire equipment~~
7. ~~Secondary containment~~
8. ~~(Un)loading area~~

1. Communication equipment

E.4 ADDITIONAL INSPECTION ITEMS

The Permittees shall ensure that the items listed below are inspected monthly and documented on a separate IRF:

1. Evacuation alarms
2. Ventilation alarms
3. Fire alarms
4. Fire pumps
5. Fire extinguishers
6. Eyewashes and safety showers

Additionally, the Permittees shall inspect the fences and TA-55 access controls daily.

E.5 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPARTS AA AND BB REQUIREMENTS

The TA-55 CSUs are not subject to the requirements of 40 CFR Part 264, Subparts AA and BB, because they do not operate applicable process vents or equipment.

Supplement 1-6

Permittees' Proposed Changes to Attachment F, Personnel Training Plan

ATTACHMENT F

PERSONNEL TRAINING PLAN

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F-1	Facility~~Los Alamos National Laboratory~~-Wide Training Program Outline
~~F-2~~	~~Outline of Facility-Specific and On-the-Job Training for Treatment and Storage Facility Operations~~

ATTACHMENT F

PERSONNEL TRAINING

Attachment F describes the personnel training program for Los Alamos National Laboratory (LANL) permitted unit workers. The primary objective of the training program is to prepare personnel to operate and maintain safely those areas managing hazardous ~~and/or mixed~~ waste. This training program applies to all employees of the Permittees and any subcontractors who work regularly at LANL permitted units and manage hazardous ~~and/or mixed~~ waste. The degree of training varies with the job duties.

F.1 HAZARDOUS ~~AND MIXED~~ WASTE MANAGEMENT ~~/~~RESPONSIBILITIES

Waste management activities and responsibilities at specific hazardous ~~and/or mixed~~ waste management units are handled by the appropriate organization~~LANL division or group. Waste management personnel within the Environmental Projects Associate Directorate are responsible for most centralized waste management activities~~ at LANL. Hazardous waste compliance personnel are responsible for providing waste management regulatory guidance to all ~~LANL~~ personnel regarding waste~~and~~ operations. Other personnel at LANL who may provide assistance in various waste management activities are discussed in the following paragraph and in Attachment D, ~~(~~*Contingency Plan*.~~).~~

Laboratory-contracted support services provide trained personnel to assist in waste-handling activities. The Permittees shall ensure that radiation protection, health physics, occupational medicine, industrial hygiene and safety, nuclear criticality safety, occurrence reporting, hazardous material response, meteorology and air quality, water quality and hydrology, ecology, and hazardous waste compliance personnel are trained in their respective specialties to provide emergency response support and that LANL security provides workers trained in traffic and site-access control.

The emergency management organization provides emergency planning and response at LANL and ~~have~~ has the overall responsibility for LANL's Emergency Management Plan (EMP) training. Training~~Central training~~ personnel are responsible for the analysis, design, development, and delivery of LANL-wide environment, safety, and health ~~(ES&H)~~ training.

Training~~Courses~~ on hazardous ~~and/or mixed~~ waste is~~are~~ designed with substantial input from hazardous waste compliance personnel, hazardous waste operations personnel, and other subject matter experts, as appropriate.

F.2 TRAINING CONTENT, FREQUENCY, AND IMPLEMENTATION~~TECHNIQUES~~

The training program instituted at the Facility includes a combination of Facility-wide training managed by each prime contractor operating at the Facility~~courses~~, permitted unit-specific

training, and on-the-job training (OJT). Facility-wide training is~~courses are~~ provided internally or through external vendors and ~~are~~ is usually instructor-led or computer~~classroom~~-based. Permitted unit-specific training may be developed and delivered within a particular permitted unit, and OJT consists of supervised and documented training focused primarily on procedures performed by individual workers. Each of these types of training is described in Sections F.2.1 through F.2.3.

The Permittees shall ensure that all Facility employees and contract and support personnel who handle hazardous ~~and/or mixed~~ waste at permitted units receive the appropriate level of training within six months of their date of hire or transfer for work at a permitted unit. The Permittees do~~shall~~ not allow personnel to work in unsupervised waste handling positions at permitted units until they have successfully completed the appropriate level of training for their positions and responsibilities.

The Permittees shall ensure that records of Facility-wide training currently sponsored or administered by ~~central~~ training personnel are entered ~~by that group~~ into ~~UTrain,~~ the appropriate~~official Facility~~ training tracking system. These~~database, and that these~~ records document that the required training has been successfully completed by the worker. Training ~~The Permittees shall retain training~~ records are retained of former and current workers as described in ~~accordance with~~ Permit Section 2.12.2.

The~~The Permittees shall ensure that the~~ Facility-wide training program depicted in Table F-1 is carried out by the Permittees' ~~central~~ training personnel. Table F-1 includes a listing of the relevant training ~~courses~~, a summary of topics, and a designation of the relevant training~~courses~~ for each job category. Categories of workers presented in Table F-1 include ~~permitted unit~~ hazardous~~/mixed~~ waste management unit workers, managers and supervisors of workers in ~~permitted unit~~ hazardous~~/mixed~~ waste management units~~workers~~, emergency responders, and environmental clean-up personnel~~uncontrolled area potential release site workers~~. Section~~Table~~ F.-2.3 summarizes the components of hazardous waste management~~permitted~~ unit-specific training and OJT that workers receive, as applicable.

Hazardous~~Permitted unit hazardous/mixed~~ waste management unit workers are responsible for handling hazardous~~/mixed~~ wastes at an active hazardous waste management~~a permitted~~ unit. In addition, they are responsible for assisting in hazardous waste management~~permitted~~ unit spill and emergency response activities, as assigned~~required~~.

Managers and supervisors of ~~permitted~~ unit hazardous~~/mixed~~ waste workers are directly responsible for day-to-day operations related to ~~permitted~~ unit waste management activities. They are also responsible for assuring that personnel safety and training requirements are met.

Emergency response personnel ~~Responders~~ are trained to~~emergency response personnel who~~ respond to emergencies involving hazardous ~~and/or mixed~~ wastes. Emergency response personnel~~Responders~~ also provide support for emergency response activities.

Environmental clean-up personnel~~Uncontrolled Area Potential Release Site Workers~~ conduct investigations and remedial activities at Solid Waste Management Units and Areas of Concern~~potential release sites~~. They are also responsible for proper waste management from generation to disposal, including waste characterization, treatment, and storage.

The Permittees shall review course content regularly~~at least annually~~ and shall update it as required to keep materials current with hazardous waste management regulations. Training ~~The Permittees shall maintain training~~ materials of Facility-wide training courses ~~is~~are maintained on file within~~in~~ the Facility Operating Record~~ES&H Training Center~~ and are~~make them~~ available for review by all hazardous~~/mixed~~ waste management and handling personnel~~,~~ and emergency response personnel. The Permittees shall maintain files listing the requisite skills, education, and training for workers who handle hazardous ~~and/or mixed~~ waste at each hazardous waste management~~permitted~~ unit, and the duties and responsibilities for each job description, as well as the name of each worker filling a job description~~, are maintained in accordance with Permit Section 2.12.2~~.

F.2.1 Facility-Wide Training~~Courses~~

The Permittees shall require certain hazardous waste management training~~courses~~ for hazardous waste management~~permitted~~ unit personnel, including~~including~~ Waste Generation Overview ~~Live Training~~, Resource Conservation and Recovery Act (RCRA) Personnel Training, and RCRA Refresher Training.

Waste Generation Overview courses provide an overview of federal and state waste management regulations and Facility policies and procedures for waste management operations. The training addresses the information needed to identify and properly manage wastes that are subject to hazardous waste regulations in 40 CFR Parts 261, 264, and 268. Course topics include waste characterization and classification including identification of RCRA waste types and their determination, the information needed to characterize the wastes, and the documentation requirements for proper management of the wastes.

The RCRA Personnel Training course shall provide an overview of state and federal hazardous waste management regulations, emphasizing compliance with the RCRA requirements that apply to job-related activities, such as the safe handling of hazardous ~~and mixed~~ waste. Instructors shall be trained in hazardous ~~and mixed~~ waste management programs and procedures and in RCRA. Training~~Central training~~ personnel, with guidance from hazardous waste compliance personnel, shall provide an annual refresher of applicable hazardous waste management requirements. Permitted unit personnel who handle hazardous ~~and/or mixed~~ waste and/or clean up spills or releases of hazardous ~~and/or mixed~~ waste at hazardous waste management~~permitted~~ units, and the managers and supervisors of these workers, shall receive instruction on the topics listed in Table F-1. Personnel responsible for shipping or transporting hazardous ~~and/or mixed~~ waste shall receive supplementary training, as appropriate.

The Permittees shall ensure that training concerning the use of waste characterization documentation is included in the Waste Generation Overview training~~Live course~~. This training

shall be provided to appropriate personnel and provide detailed instructions on the information necessary how to complete forms for properly characterizing wastes.

F.2.2 Unit-Specific Training

Waste-handling personnel shall participate in hazardous waste managementpermitted unit-specific training at their particular work locations. Section Table F.-2.3 addresses program requirements that ensure that hazardous and mixed waste management and handling personnel know the specific requirements for their particular facilities and are able to respond effectively to emergencies. Personnel who work within hazardous waste management units shall be The Permittees shall ensure that personnel becomefamiliar with emergency procedures, equipment, and systems at their particular facility, including emergency and monitoring equipment use, inspection, repair, and replacement, as appropriate. The Permittees shall ensure that they also receive instruction on immediate emergency response actionscontingency plan contents and implementation (as they apply to their particular facility) including, but not limited to, communications or alarm systems, response to fires and explosions at their facility, key parameters for automatic waste-feed cutoff systems, shutdown of facility operations, and response to groundwater contamination incidents.

F.2.3 On-the-Job Training

The Permittees shall provide supervised and documented OJT, if developed, delivered by qualified instructorssupervisors or other subject matter experts who are able to evaluate worker proficiency and determine appropriate training for the procedures required of each function-specific position. OJT topics may include implementation of permitted unit-specific procedures, maintenance of operating records, reporting requirements, and permitted unit-specific inspection requirements. Hazardous waste managementPermitted unit emergency response personnel receive permitted unit-specific training regarding emergency response and shutdown procedures at the permitted unit to which they are assigned.

Only properly trained personnel may operate radiography equipment or , or conduct visual examinations (VE) of waste contents, or waste--specific field tests such as the high--explosives spot test. Radiography, visual examination and VE procedure operators, or personnel trained to conduct field tests shall receive on-the-job training in project requirements, system operations and standards, safe operating practices, application techniques, specific waste-generating practices, packaging configurations, parameter estimation, and identification of prohibited items. Operators shall be trainedThe Permittees shall train and tested test operators before they are qualified for radiography operation, visual examination operations, or field tests and VE, and shall requalify operators periodically, as appropriateat least every two years.

Unit-specific training may include the following topics:

- Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment
- Key parameters for automatic waste--feed cut-off systems

- Communications or alarm systems
- Response to fires or explosions
- Response to groundwater contamination incidents
- Shutdown of operations~~.~~

- Implementation of facility-specific procedures
- Maintenance of operating records
- Reporting requirements
- Permitted unit-specific inspection requirements
- Operation of radiograph equipment
- Field testing
- Visual examination of waste contents~~.~~

OJT and facility-specific training must be documented and maintained in accordance with the Facility Operating Record requirements as described in Permit Section 2.12.2.

F.2.4 Training Coordination~~Coordinator~~

The Permittees' ~~institutional~~ training organization(s) shall implement ~~shall direct~~ the applicable Facility-wide hazardous waste~~ES&H~~ training program and provide training coordinator support~~that the Division Leader (or designee) serves as the Training Coordinator~~ for Facility-wide waste management training. ~~The~~ Training coordination~~Coordinator~~ shall support~~be trained in~~ the operation of hazardous ~~and mixed~~ waste management units~~facilities~~, waste management practices, and emergency procedures ~~and is responsible for coordinating training courses~~.

F.3 TRAINING FOR EMERGENCY EVENTS~~TRAINING~~

If called upon by the emergency management organization, additional non-LANL emergency response personnel may assist the Facility Incident Commander at the scene of a hazardous ~~or mixed~~ waste emergency. These workers shall be trained in their specialties (e.g., heavy equipment operation, hazardous material clean-ups~~cleanups~~, traffic control, and security).

Hazardous waste management~~Permitted~~ unit personnel involved in waste handling and emergency response shall be knowledgeable about appropriate building and operating area emergency procedures to ensure maximum protection of life and property and to mitigate the consequences of an emergency situation. These workers shall receive training in ~~permitted~~ unit-specific emergency procedures or participate in the Facility-wide emergency training program. Managers~~Group leaders~~ and ~~immediate~~ supervisors shall ensure~~shall be responsible for ensuring that education and~~ that training in ~~permitted~~ unit-specific emergency procedures ~~are~~ is provided to all personnel under their supervision. Training in permitted unit-specific emergency procedures is provided~~given~~ by the operating organization~~group~~.

Supervisors shall~~Immediate supervisors shall~~ ensure that each new or transferred worker is informed on the general and specific emergency procedures related to the work area, ~~and~~ that

each worker is advised of any changes to emergency procedures, and that each worker is provided with an annual refresher of these procedures.

Specialized training shall be given to personnel assigned special functions or specific emergency duties. For example, specific emergency response personnel are required to attend training on the implementation of Attachment D, ~~(~~*Contingency Plan*~~;),~~ spill response~~;~~ and Occupational Safety and Health Administration emergency response provisions. The emergency management organization ~~Office~~ shall provide training related to implementing LANL's EMP. In addition, ~~permitted unit~~ waste management and handling personnel shall participate in a training program in which they are instructed in emergency procedures pertinent to their work areas. The operating group is responsible for providing this site-specific instruction, which shall also include walk-throughs of the areas covered by the Contingency Plan.

~~**F.4 IMPLEMENTATION OF TRAINING PROGRAMS**~~

~~Waste Generation Overview Live is an introductory course that provides an overview of federal and state waste management regulations and Facility policies and procedures for waste management operations. The training addresses the information needed to identify and properly manage wastes that are subject to hazardous waste regulations in 40 CFR Parts 261, 264, and 268. Course topics include waste characterization and classification including identification of RCRA waste types and their determination, the information needed to characterize the wastes, and the documentation requirements for proper management of the wastes.~~

~~In addition, all permitted unit workers who handle hazardous and/or mixed waste are required to complete RCRA Personnel Training and annual RCRA refresher courses. These refresher courses update personnel on LANL procedures and changes in hazardous waste regulations and provide them with an overview of their introductory training. Line managers and group leaders shall be responsible for ensuring that personnel participate in the appropriate introductory and annual training courses.~~

TABLE F-1

Facility-Wide Training Program Outline

Courses[a]	~~Permitted Unit~~[b] Hazardous~~/ Mixed~~ Waste Management Unit Worker	Manager/ Supervisor~~ of permitted unit Hazardous/Mixed Waste Workers~~	Emergency Responder	Environmental Clean-up Personnel ~~Uncontrolled Area Potential Release Site Worker~~
HAZWOPER[b] **~~HAZWOPER~~**[e]**: First Responder (Operations Level)** (provides an overview of hazardous materials emergency response, including recognition and identification of hazardous materials and associated risks, required actions, and relationships with other emergency responders)			X[c] ~~X~~[d]	
HAZWOPER: General Site Worker (40 hours) (provides general information on hazardous waste operations and emergency response for general site workers engaged in corrective action, remediation, or decontamination and decommissioning activities)				X
HAZWOPER: Refresher (provides general information on hazardous waste operations)			X	X

Courses[a]	~~Permitted Unit[b]~~ Hazardous~~/ Mixed~~ Waste Management Unit Worker	Manager/ Supervisor~~ of permitted unit Hazardous/Mixed Waste Workers~~	Emergency Responder	Environmental Clean-up Personnel ~~Uncontrolled Area Potential Release Site Worker~~
RCRA~~[d] RCRA[e]~~ Personnel Training (includes an overview of 40 CFR Parts 260-265, 268; the New Mexico Administrative Code, Title 20, Chapter 4, Part 1; Department of Transportation shipping regulations; internal and external protocol for facility inspections; operating equipment, communication systems, security systems; contingency plan; and emergency equipment use, inspection, and repair)	X	X	*[c~~f~~]	*
RCRA Refresher Training (includes regulatory and legislative updates, occurrence reports and lessons learned, audit findings, modification/review of the contingency plan; provides required retraining)	X	X	*	*
Waste Generation Overview ~~Live~~ (includes waste management regulations and policies, definition of hazardous waste, waste~~s~~ characterization and documentation, waste minimization, cycle of waste management at Los Alamos National Laboratory, storage and disposal)	X	X	X[f~~X~~]	X

Courses[a]	~~Permitted Unit[b]~~ Hazardous~~/ Mixed~~ Waste Management Unit Worker	Manager/ Supervisor~~ of permitted unit Hazardous/Mixed Waste Workers~~	Emergency Responder	Environmental Clean-up Personnel ~~Uncontrolled Area Potential Release Site Worker~~
Respirators: Air-Purifying (provides required annual retraining for operation and inspection of device, changing filters, donning and doffing)	*	*	X[f]~~X[g]~~	*
Respirators: Self-Contained Breathing Apparatus (provides required annual retraining for operation and inspection, changing compressed air bottles, donning and doffing, safety features, care and cleaning, fitting)	*	*	X[f]~~X[g]~~	*

[a] Additional training courses (not listed in this attachment) may also be required for~~taken by~~ personnel depending on the types of hazards (e.g., chemical) associated with a particular job description.

~~[b] TSF = Treatment and storage facility~~

[e] HAZWOPER = Hazardous Waste Operations and Emergency Response

[d] X indicates a required course.

[e] RCRA = Resource Conservation and Recovery Act

[f] * indicates that a course may be required for specific job tasks and/or work areas.

[g] ~~–~~Only emergency responders who will perform~~enter the hazard area as part of the~~ response activities are required to be specifically trained for the hazardous waste management unit requirements. ~~authorized respirator users.~~ Non-entry responders and their supervisors~~are~~ are not required to complete waste generator or~~,~~ respirator training, or fit testing because they will not enter the hazard area as part of the response activities or be responsible for waste characterization or management.

~~TABLE F-2~~

~~OUTLINE OF PERMITTED UNIT-SPECIFIC AND ON-THE-JOB TRAINING FOR TREATMENT AND STORAGE FACILITY OPERATIONS~~

~~Permitted unit-specific and/or on-the-job training (OJT) is provided to permitted unit workers to ensure that operations are performed in a safe manner and that actual job tasks are conducted in accordance with safe operating procedures.~~

~~Permitted unit-specific training will include, as applicable, the following topics:~~

- ~~Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment~~
- ~~Key parameters for automatic waste feed cut-off systems~~
- ~~Communications or alarm systems~~
- ~~Response to fires or explosions~~
- ~~Response to groundwater contamination incidents~~
- ~~Shutdown of operations.~~

~~OJT will include the following topics, as applicable:~~

- ~~Implementation of facility-specific procedures~~
- ~~Maintenance of operating records~~
- ~~Reporting requirements~~
- ~~Permitted unit-specific inspection requirements~~
- ~~Operation of radiograph equipment~~
- ~~Visual examination (VE) of waste contents.~~

~~OJT and facility-specific training must be documented by the sponsoring organization and training records must be maintained for a minimum of three years from the date that the trainee last worked at the permitted unit.~~

Supplement 1-7

Permittees' Proposed Changes to Attachment J, Hazardous Waste Management Units

ATTACHMENT J

HAZARDOUS WASTE MANAGEMENT UNITS

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
TA-3-29	S01 T04	18,500 gal 3,441 gal/day	Includes Room 9010 and portions of Room 9020 and 9030 Located in Wing 9 of the basement of Building 29 Includes treatment process for macroencapsulation Total square footage – 3,040	Indoor

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
TA-14-23	X01*	50 lbs HE/burn	Near Structure TA-14-23 Interim Status Unit	NA
TA-14-23	X01**	20 lbs HE/ detonation	Near Structure TA-14-23 Interim Status Unit	NA

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
TA-16-388	X01*		Flash Pad Total square footage - 484 ~~Interim Status Unit~~	Outdoor (associated with a open burning unit)
TA-36-8	X01**	2000 lbs/ detonation	Near Structure TA-36-8 Interim Status Unit	NA
TA-39-6	X01**	1000 lbs/ detonation	Near Structure TA-39-6 ~~Interim Status Unit~~	NA
TA-39-57	X01**	1000 lbs/ detonation	Near Structure TA-39-57 ~~Interim Status Unit~~	NA
TA-50-69 Indoor	S01 T04	1,500 gal 275 gal/day 1,100 gal/day	Includes Rooms 102 and 103. Includes treatment process for stabilization of nitrate salt-bearing waste. Includes resizing of oversized waste.Total square footage – 2,680	Indoor
TA-50-69 Outdoor Pad	S01 T04	30,000 gal 3,441 gal/day	Includes 50-75 and 50-194. Includes treatment process for macroencapsulation. Total square footage – 2,160	Outdoor (not associated with a regulated unit)

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
TA-54 "G," unspecified pits, shafts, or trenches	D80	NA	Material Disposal Area Unit not permitted to receive hazardous waste	Regulated unit(s)
TA-54 Area G Container Storage Unit (below ground)	S99	4,950 gal	Includes shafts 145 and 146 Wastes removed and unit undergoing closure, closure certification incomplete	NA
TA-54 Area G Pad 1	S01 T04	502,920 gal 23,160 gal/day	Includes building TA-54-412 (DVRS) Includes treatment process for macroencapsulation, stabilization (including absorption), and neutralization Approximately 76,000 square feet	Outdoor (associated with a regulated unit)
TA-54 Area G Pad 3	S01 T04	213,840 gal 23,160 gal/day	Includes Storage Dome 48 Includes treatment process for macroencapsulation Approximately 17,000 square feet	Outdoor (associated with a regulated unit)
TA-54 Area G Pad 5	S01 T04	623,480 gal 23,160 gal/day	Includes Storage Domes 49 and 224 and Storage Sheds 144, 145, 146, 177, 1027, 1028, 1030, and 1041 Pad 5 is a consolidation of former Pads 5, 7, and 8. Includes treatment process for macroencapsulation Total square footage – 59,900	Outdoor (associated with a regulated unit)

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
			Total square footage – 65,500	
TA-54 Area G Storage Shed 8	S01	11,880 gal	Also referred to as TA-54-8 Total square footage - 640	Indoor
TA-54 Area G TA-54-33	S01 T04	108,240 gal 23,160 gal/day	Also referred to as Drum Prep Facility Includes treatment process for macroencapsulation Total square footage – 8,570	Indoor
TA-54 "H," unspecified pits, shafts, or trenches	D80	NA	Material Disposal Area H Unit not permitted to receive hazardous waste	Regulated unit(s)
TA-54 "L," unspecified pits, shafts, or trenches	D80	NA	Material Disposal Area L Unit not permitted to receive hazardous waste	Regulated unit(s)
TA-54 Area L Container Storage Unit (below ground)	S99	600 gal	Includes shafts 36 and 37 Wastes removed and unit undergoing closure, closure certification incomplete	NA
TA-54 Area L Outdoor Pad	S01 T04	407,880 gal 23,160 gal/day	Includes all area within fence-line except limited administrative areas. Includes Storage Sheds 31, 68, 69, and 70; Storage Pads 32, 35, 36, and 58; and Building 39; and Storage Dome 215 (former Area 1). Includes treatment process for macroencapsulation Total square footage – 110,500	Outdoor (associated with a regulated unit)

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
TA-54-38 West Indoor	S01	4,950 gal	Includes High Bay and Low Bay Total square footage – 4,060	Indoor
TA-54-38 West Outdoor Pad	S01 T04	29,160 gal 3,441 gal/day	Includes loading dock and Pad surrounding Includes treatment process for macroencapsulation Total square footage – 37,900	Outdoor (not associated with a regulated unit)
TA-54-38 West Outdoor Pad	S01	13,410 gal	Excess storage capacity Included in total square footage above	Outdoor (not associated with a regulated unit)
TA-55-4, B40	S01 T04	21,500 gal 3,441 gal/day	Located in basement ~~Referred to as Area 1~~ Includes treatment process for macroencapsulation Total square footage – 3,380	Indoor
TA-55-4, K13	S01	2,500 gal	Located in basement ~~Referred to as Area 4~~ Total square footage - 208	Indoor
TA-55-4, B05	S01	3,600 gal	Located in basement ~~Referred to as Area 5~~ Non-liquid wastes only Total square footage - 260	Indoor
TA-55-4, B45	S01 T04	11,000 gal 3,441 gal/day	Located in basement Non-liquid wastes only Includes treatment process for macroencapsulation Total square footage - 788	Indoor

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
TA-55-4, B13	S01	4,950 gal	Located in basement Non-liquid waste only Total square footage - 495.83	Indoor
TA-55-4, G12	S01	5,225 gal	Located in basement Non-liquid waste only Total square footage - 512.98	Indoor
TA-55-4, Vault	S01	4,000 gal	Located in basement ~~Referred to as Area 6~~ Total square footage – 4,020	Indoor
TA-55 Mixed Waste Storage Tank System	S02	Storage - 137 gal	TA-55-4 Unit divided into two components (Evaporator Glovebox Storage Tank System and Cementation Storage Tank System) Ancillary equipment and secondary containment. Total square footage – 4,500	Indoor
TA-55 Mixed Waste Stabilization Unit	T04	Treatment - 150 gal / day	TA-55-4 Total square footage – 4,500	Indoor
TA-55-4 Outdoor Storage Pad	S01 T04	135,000 gal 3,441 gal/day	Located outside and west of TA-55-4 Includes treatment process for macroencapsulation Total square footage – 11,100	Outdoor (not associated with a regulated unit)
TA-55-355 Pad	S01 T04	84,370 gal 3,441 gal/day	Includes canopy and pad Includes treatment process for macroencapsulation Total square footage - 13,390	Outdoor (not associated with a regulated unit)
TA-60, Building 17	S01	17,600 gal	Located in the southern wing of Building 17 (TA-60-0017)	Indoor

Supplement 1-8

Permittees' Proposed Changes to Attachment K, Listing of SWMUs and AOCs

ATTACHMENT K

LISTING OF SWMUS AND AOCS

Table K-1

SWMUs and AOCs Requiring Corrective Action

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU/AOC	Unit #	Unit Type
TA-0		
SWMU	00-001	Sediment traps in Mortandad Canyon
SWMU	00-011(a)	Former Mortar impact area
SWMU	00-011(c)	Mortar impact area
SWMU	00-011(d)	Mortar impact area
SWMU	00-011(e)	Mortar impact area
AOC	00-015	Firing Range-Rendija Canyon
SWMU	00-017	Waste lines
~~SWMU~~	~~00-018(a)~~	~~Former Sludge bed wastewater treatment plant, Pueblo Canyon~~
~~AOC~~	~~00-018(b)~~	~~Sludge Bed Wastewater Treatment Plant~~
SWMU	00-019	Former Wastewater treatment plant, central
AOC	00-027	Storage Area-DP Road
SWMU	00-030(a)	Former Septic Tank
SWMU	00-030(b)	Septic Tanks
~~AOC~~	~~00-030(d)~~	~~Septic Tank~~
~~AOC~~	~~00-030(eN)~~	~~Septic Tanks~~
AOC	00-030(eS)	Septic Tank
AOC	00-030(f)	Septic Tank
SWMU	00-030(g)	Former Septic tank (near old Catholic Church parking lot)
AOC	00-030(h)	Former Septic tank (near new Catholic Church)
~~AOC~~	~~00-030(j)~~	~~Septic Tank~~
SWMU	00-030(l)	Septic Tank
SWMU	00-030(m)	Former Septic Tank
~~AOC~~	~~00-030(n)~~	~~Former Septic Tank~~
~~AOC~~	~~00-030(o)~~	~~Septic Tank~~
~~AOC~~	~~00-030(p)~~	~~Septic Tank~~
AOC	00-031(a)	Soil Contamination from former Service Station
AOC	00-031(b)	Soil Contamination from former motor pool facility
SWMU	00-033(a)	Soil contamination from former UST, 6th Street Warehouses
AOC	00-034(b)	Landfill, western area
~~SWMU~~	~~00-039~~	~~Soil contamination from former USTs~~
AOC	C-00-001	Guaje Canyon
AOC	C-00-002	Rendija Canyon
AOC	C-00-003	Barrancas Canyon
AOC	C-00-004	Bayo Canyon
AOC	C-00-005	Pueblo Canyon
AOC	C-00-006	Los Alamos Canyon
AOC	C-00-007	Sandia Canyon
AOC	C-00-008	Mortandad Canyon
AOC	C-00-009	Canada del Buey Canyon
AOC	C-00-010	TwoMile Canyon

Table K-1

SWMUs and AOCs Requiring Corrective Action

AOC	C-00-011	Pajarito Canyon
AOC	C-00-012	Three Mile Canyon
AOC	C-00-013	Potrillo Canyon
AOC	C-00-014	Canon de Valle Canyon
AOC	C-00-015	Fence Canyon
AOC	C-00-016	Water Canyon
AOC	C-00-017	Indio Canyon
AOC	C-00-018	Ancho Canyon
AOC	C-00-019	Chaquehui Canyon
AOC	C-00-020	Mortar impact area
AOC	C-00-021	DP Canyon
AOC	C-00-037	Landfill, Bandelier, NM
AOC	C-00-038	Surface Disposal, Bandelier, NM
AOC	C-00-041	Asphalt and tar remnant site
AOC	C-00-042	Former Underground Storage Tank
~~AOC~~	~~C-00-043~~	~~Former Manhole~~
AOC	C-00-044	Soil contamination
TA-1		
SWMU	01-001(a)	Septic Tank 134
SWMU	01-001(b)	Septic Tank 135
SWMU	01-001(c)	Septic Tank 137
SWMU	01-001(d1)	Soil contamination from Septic Tank 138
SWMU	01-001(d2)	Soil contamination from Septic Tank 138
SWMU	01-001(d3)	Soil contamination from Septic Tank 138
SWMU	01-001(e)	Septic Tank 139
SWMU	01-001(f)	Septic Tank 140(hillside)
SWMU	01-001(g)	Septic Tank 141
SWMU	01-001(o)	Waste Line
SWMU	01-001(s1)	Waste Line
SWMU	01-001(s2)	Waste Line
SWMU	01-001(s3)	Waste Line
SWMU	01-001(t)	Waste Line
SWMU	01-001(u)	Waste Lines
SWMU	01-002(a1)-00	Waste Lines
SWMU	01-002(a2)-00	Waste Lines
SWMU	01-002(b)-00	Outfall associated with TA-01 (Located in former TA-45)
SWMU	01-003(a)	Landfill
AOC	01-003(b1)	Surface Disposal Site
AOC	01-003(b2)	Surface Disposal Site
AOC	01-003(c)	Surface Disposal Site
SWMU	01-003(d)	Surface Disposal Site
SWMU	01-003(e)	Surface Disposal Site
SWMU	01-006(a)	Drainline and Outfall

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	18-004(a)	Waste line
SWMU	18-004(b)	Soil contamination from former Tanks and Pit
SWMU	18-005(a)	Contaminated soil from former magazine 18-15
AOC	18-006	Storage Pipe
AOC	18-008	Former Underground tank
AOC	18-010(b)	Outfall
AOC	18-010(c)	Outfall
AOC	18-010(d)	Outfall
AOC	18-010(e)	Outfall
AOC	18-010(f)	Outfall from Building 18-32
AOC	18-011	Soil contamination from former Building 18-22
SWMU	18-012(a)	Outfall from Building 18-116
SWMU	18-012(b)	Outfall from Buildings 18-30 and -31
AOC	18-012(c)	Sump and drainlines
AOC	18-013	Waste Tank
TA-19		
~~SWMU~~	~~19-001~~	~~Septic System~~
~~SWMU~~	~~19-002~~	~~Surface Disposal Site~~
~~SWMU~~	~~19-003~~	~~Drainline and Outfall Associated with former Building 19-05~~
TA-20		
SWMU	20-001(a)	Landfill
SWMU	20-001(b)	Landfill
SWMU	20-001(c)	Firing Site
SWMU	20-002(a)	Firing Site
SWMU	20-002(b)	Landfill
SWMU	20-002(c)	Firing site
SWMU	20-002(d)	Firing site
AOC	20-003(b)	Firing site
AOC	20-003(c)	Firing site
AOC	20-004	Former Septic system
SWMU	20-005	Septic tank
TA-21		
AOC	21-001	Container Storage Area
SWMU	21-002(a)	Container Storage Area
AOC	21-002(b)	Container Storage
SWMU	21-003	Container Storage Area
AOC	21-004(a)	Aboveground tank
SWMU	21-004(b)	Aboveground tank
SWMU	21-004(c)	Aboveground tank
SWMU	21-006(a)	Underground Seepage Pit
SWMU	21-006(b)	Underground Seepage pit
SWMU	21-006(c)	Underground Seepage pit
SWMU	21-006(d)	Underground Seepage pit

Table K-1

SWMUs and AOCs Requiring Corrective Action

AOC	40-007(a)	Storage area
AOC	40-007(b)	Storage area
AOC	40-007(c)	Storage area
AOC	40-007(d)	Storage area
AOC	40-007(e)	Storage area
SWMU	40-009	Landfill
SWMU	40-010	Surface disposal site
TA-41		
SWMU	41-001	Septic Tank
SWMU	41-002(a)	Imhoff Tank
SWMU	41-002(b)	Chlorine Contact Tank
SWMU	41-002(c)	Sludge Drying Bed
AOC	41-003	Sump
AOC	C-41-004	Storm drains
TA-42		
SWMU	42-001(a)	Soil contamination from former Incinerator Building 42-1
SWMU	42-001(b)	Soil contamination from former Ash storage tank
SWMU	42-001(c)	Soil contamination from former Ash storage tank
AOC	42-002(a)	Soil contamination from former Vacublaster and storage area
SWMU	42-002(b)	Soil contamination from former Decontamination area
SWMU	42-003	Soil contamination from former Septic System
TA-43		
SWMU	43-001(a)	Waste lines
AOC	43-001(a2)	Waste lines
SWMU	43-001(b)	Outfall
AOC	43-001(b2)	Outfall from Building 43-1
SWMU	43-002	Former Incinerator
AOC	C-43-001	Storm Drain associated with Building 43-1 Loading Dock
~~**TA-45**~~		
~~SWMU~~	~~45-001~~	~~Soil contamination from former RLW Treatment Plant~~
~~SWMU~~	~~45-002~~	~~Soil contamination from former Decontamination Facility~~
~~SWMU~~	~~45-003~~	~~Soil contamination from former Waste lines~~
~~SWMU~~	~~45-004~~	~~Sanitary sewer outfall~~
~~AOC~~	~~C-45-001~~	~~Soil contamination from spill in parking lot south of former RLW Treatment Plant~~
TA-46		
SWMU	46-002	Surface Impoundment
SWMU	46-003(a)	Septic system
SWMU	46-003(b)	Septic system
SWMU	46-003(c)	Septic system
SWMU	46-003(d)	Septic system
SWMU	46-003(e)	Septic system
SWMU	46-003(f)	Septic system

Table K-1

SWMUs and AOCs Requiring Corrective Action

AOC	60-004(d)	Storage area
AOC	60-004(e)	Storage area
AOC	60-004(f)	Storage area
SWMU	60-005(a)	Surface impoundment
SWMU	60-006(a)	Septic Ssytem
SWMU	60-007(a)	Operational Release
SWMU	60-007(b)	Operational Release
TA-61		
SWMU	61-002	Transformer storage area
SWMU	61-005	Landfill (Los Alamos municipal)
SWMU	61-006	Waste oil tank (renumbered from 00-002)
SWMU	61-007	Soil contamination associated with transformer staging area
AOC	C-61-002	Subsurface contamination
TA-63		
SWMU	63-001(a)	Septic system
SWMU	63-001(b)	Septic system
TA-69		
SWMU	69-001	Two-Mile Incinerator Facility
TA-72		
AOC	72-001	Firing range
TA-73		
SWMU	73-001(a)	Landfill
SWMU	73-001(b)	Soil contamination from former waste oil pit
SWMU	73-001(c)	Bunkers
SWMU	73-001(d)	Landfill
SWMU	73-002	Incinerator Surface Disposal
AOC	73-003	Soil contamination from former Steam cleaning plant
SWMU	73-004(a)	Former septic tank
SWMU	73-004(b)	Former septic tank
~~SWMU~~	~~73-004(c)~~	~~Septic System~~
SWMU	73-004(d)	Soil contamination form former septic tank
SWMU	73-006	Airport Building Outfalls

Table K-3

SWMUs and AOCs
Corrective Action Complete Without Controls

Unit #	Unit Description	Date Corrective Action Completed	SWMU/AOC
TA-0			
00-003	Container Storage, Western Steam Plant	9/5/2003	SWMU
00-004	Container Storage, 6th street warehouses	2/23/2006	AOC
00-005	Landfill	12/23/1998	SWMU
00-008	Surface disposal site	1/26/2005	AOC
00-010(a)	Surface disposal site	1/26/2005	AOC
00-010(b)	Surface disposal site, 6th street warehouses	2/23/2006	AOC
00-012	Underground Storage Tank, Western Steam Plant	9/5/2003	SWMU
00-016	Firing Range	11/9/2001	SWMU
00-018(a)	Former Sludge bed wastewater treatment plant, Pueblo Canyon	1/28/2015	SWMU
00-018(b)	Sludge-Bed Wastewater Treatment Plant	1/14/2011	AOC
00-024	Cistern (never located)	01/26/05	AOC
00-025	Landfill	01/26/05	AOC
00-026	Landfill	01/26/05	AOC
00-028(a)	Effluent discharge, golf course	9/5/2003	SWMU
00-028(b)	Effluent discharge, golf course	9/5/2003	SWMU
00-029(a)	Transformer	1/26/2005	AOC
00-029(b)	Transformer	1/26/2005	AOC
00-029(c)	Transformer	1/26/2005	AOC
00-030(c)	Septic system	1/26/2005	AOC
00-030(d)	Septic Tank	12/30/2008	AOC
00-030(eN)	Septic Tanks	12/30/2008	AOC
00-030(i)	Septic tank	09/05/03	AOC
00-030(j)	Septic Tank	12/30/2008	AOC
00-030(k)	Septic System	12/6/2006	AOC
00-030(n)	Former Septic Tank	12/30/2008	AOC
00-030(o)	Septic Tank	12/30/2008	AOC
00-030(p)	Septic Tank	12/30/2008	AOC
00-030(q)	Septic system – Land Transfer parcel (11/9/1995)	1/26/2005	AOC
00-032	Soil contamination beneath former motor pool (UST for used motor oil)	1/26/2005	AOC
00-033(b)	Soil Contamination from Drainlines	2/23/2006	AOC
00-034(a)	Landfill, eastern area	12/6/2006	AOC
00-035(a)	Surface disposal	1/26/2005	AOC
00-039	Soil contamination from former USTs	12/30/2008	SWMU
00-040	Underground Tank	1/26/2005	AOC
C-00-036(a)	Borrow pit 1, Bandelier NM	1/26/2005	AOC
C-00-036(b)	Borrow pit 2, Bandelier NM	1/26/2005	AOC
C-00-036(c)	Borrow pit 3, Bandelier NM	1/26/2005	AOC
C-00-036(d)	Borrow pit 4, Bandelier NM	1/26/2005	AOC
C-00-043	Former Manhole	12/30/2008	AOC
TA-1			
01-001(h)	Septic Tank 142	12/23/1998	SWMU
01-001(i)	Septic Tank 143	12/23/1998	SWMU
01-001(j)	Septic Tank 149	12/23/1998	SWMU
01-001(k)	Septic Tank 268	12/23/1998	SWMU
01-001(l)	Septic Tank 269	12/23/1998	SWMU
01-001(m)	Septic Tank 275	9/5/2003	SWMU
01-001(n)	Septic Tank 276	12/23/1998	SWMU
01-001(p)	Septic sytem,	1/26/2005	AOC
01-001(q)	Septic sytem	1/26/2005	AOC

C-16-027	Building	1/26/2005	AOC
C-16-029	Building	1/26/2005	AOC
C-16-032	Building	1/26/2005	AOC
C-16-033	Warehouse	1/26/2005	AOC
C-16-037	Storage area	1/26/2005	AOC
C-16-038	Storage area	1/26/2005	AOC
C-16-039	Building	1/26/2005	AOC
C-16-040	Building	1/26/2005	AOC
C-16-042	Steam manhole	1/26/2005	AOC
C-16-043	Steam manhole	1/26/2005	AOC
C-16-045	Manhole	1/26/2005	AOC
C-16-048	Steam manhole	1/26/2005	AOC
C-16-052	Steam manhole	1/26/2005	AOC
C-16-053	Water manhole	1/26/2005	AOC
C-16-054	Steam manhole	1/26/2005	AOC
C-16-055	Switch box	1/26/2005	AOC
C-16-056	Steam manhole	1/26/2005	AOC
C-16-057	Steam manhole	1/26/2005	AOC
C-16-059	Electrical pit	1/26/2005	AOC
C-16-066	Storage area	1/26/2005	AOC
TA-18			
18-007	Buried Armored Vehicle	5/2/2001	SWMU
18-009(a)	Transformer, PCB only site	1/26/2005	AOC
18-009(b)	Transformer, PCB only site	1/26/2005	AOC
18-009(c)	Transformer, PCB only site	1/26/2005	AOC
18-009(d)	Transformer, PCB only site	1/26/2005	AOC
18-009(e)	Transformer, PCB only site	1/26/2005	AOC
18-010(a)	Outfall	1/26/2005	AOC
18-012(d)	Drainline	1/26/2005	AOC
C-18-001	Laboratory	1/26/2005	AOC
C-18-002	Building	1/26/2005	AOC
C-18-003	Storage area	1/26/2005	AOC
TA-19			
19-001	Septic System	6/27/2006	SWMU
19-002	Surface Disposal Site	6/27/2006	SWMU
19-003	Drainline and Outfall Associated with former Building 19-05	6/27/2006	SWMU
C-19-001	Soil contamination from former Buildings	6/27/2006	AOC
TA-20			
20-003(a)	Soil contamination associated with a former Control building at a firing site	4/22/2007	SWMU
20-003(d)	Firing site	1/26/2005	AOC
C-20-001	Storage building	1/26/2005	AOC
C-20-002	Storage building	1/26/2005	AOC
C-20-003	Building	1/26/2005	AOC
TA-21			
21-004(d)	Drainline from Structure 21-223	1/26/2005	AOC
21-005	Disposal Pit	11/9/2001	SWMU
21-008	Incinerator	1/26/2005	AOC
21-012(a)	Dry Well	12/23/1998	SWMU
21-019(a)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(b)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(c)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(d)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC

C-35-004	Operational release	1/26/2005	AOC
C-35-005	Operational release	1/26/2005	AOC
C-35-006	Operational release	1/26/2005	AOC
C-35-008	Leaking transformer – PCB only site	1/26/2005	AOC
TA-36			
36-003(c)	Septic System	12/23/1998	SWMU
36-003(d)	Septic system	1/26/2005	AOC
36-004(f)	Firing site	1/26/2005	AOC
36-007(a)	Storage area	1/26/2005	AOC
36-007(b)	Storage area	1/26/2005	AOC
36-007(c)	Storage area	1/26/2005	AOC
36-007(d)	Storage area	1/26/2005	AOC
36-007(e)	Storage area	1/26/2005	AOC
36-007(f)	Storage area	1/26/2005	AOC
C-36-002	Surface disposal	1/26/2005	AOC
TA-37			
37-001	Septic system	1/26/2005	AOC
TA-39			
39-002(g)	Storage area	1/26/2005	AOC
39-003	Incinerator	12/23/1998	SWMU
39-006(b)	Septic System	12/23/1998	AOC
39-007(b)	Storage area	1/26/2005	AOC
39-007(c)	Storage area	1/26/2005	AOC
39-007(e)	Storage area	1/26/2005	AOC
39-009	Outfall	1/26/2005	AOC
TA-40			
40-001(a)	Septic System	12/23/1998	SWMU
40-002(a)	Container storage area SAA located inside building TA-40-23	1/26/2005	AOC
40-002(b)	Container storage area SAA located inside building TA-40-23	1/26/2005	AOC
40-002(c)	Container storage area SAA located inside building TA-40-05	1/26/2005	AOC
40-008	HE storage area (decommissioned)	1/26/2005	AOC
C-40-001	Usage Site	1/26/2005	AOC
TA-41			
41-004	Container storage	1/26/2005	AOC
C-41-001	Sump	1/26/2005	AOC
C-41-002	Underground tank	1/26/2005	AOC
C-41-003	Underground tank	1/26/2005	AOC
C-41-005	Underground tank	1/26/2005	AOC
TA-42			
42-004	Canyon disposal	1/26/2005	AOC
TA-43			
43-001(b1)	Outfall	1/26/2005	AOC
43-003	Carcass storage	1/26/2005	AOC
43-004	Waste storage	1/26/2005	AOC
43-005	Radioactive liquid storage	1/26/2005	AOC
TA-45			
45-001	Soil contamination from former RLW Treatment Plant	2/22/2013	SWMU
45-002	Soil contamination from former Decontamination Facility	2/22/2013	SWMU
45-003	Soil contamination from former Waste lines	2/22/2013	SWMU
45-004	Sanitary sewer outfall	2/22/2013	SWMU

C-45-001	Soil contamination from spill in parking lot south of former RLW Treatment Plant	2/22/2013	AOC
TA-46			
46-001	Aboveground tank	1/26/2005	AOC
46-004(i)	Outfall	1/26/2005	AOC
46-004(j)	Outfall	1/26/2005	AOC
46-004(k)	Outfall	1/26/2005	AOC
46-004(l)	Outfall	1/26/2005	AOC
46-004(n)	Outfall	1/26/2005	AOC
46-004(o)	Outfall	1/26/2005	AOC
46-006(e)	Surface disposal	1/26/2005	AOC
46-008(c)	Storage Area	12/23/1998	SWMU
46-008(misc)	Storage area – doesn't exist	1/26/2005	AOC
46-010(a)	Storage area	1/26/2005	AOC
46-010(b)	Storage area	1/26/2005	AOC
46-010(c)	Storage area	1/26/2005	AOC
46-010(e)	Storage area	1/26/2005	AOC
46-010(f)	Storage area	1/26/2005	AOC
46-010(misc)	Storage area – doesn't exist	1/26/2005	AOC
TA-48			
48-002(c)	Container storage area	1/26/2005	AOC
48-002(d)	Container storage area	1/26/2005	AOC
48-004(d)	Sumps and tanks	1/26/2005	AOC
48-006	Septic system	1/26/2005	AOC
48-007(e)	Outfall	1/26/2005	AOC
48-008	Transformer leak-PCB only site	1/26/2005	AOC
48-009	Soil contamination	1/26/2005	AOC
TA-49			
49-007(a)	Septic system (Area 6)	1/26/2005	AOC
49-007(b)	Septic system (HDT area)	1/26/2005	AOC
49-009	Aboveground tank (former location)	1/26/2005	AOC
TA-50			
50-003(b)	Storage area	1/26/2005	AOC
50-003(c)	Storage area	1/26/2005	AOC
50-003(d)	Storage area	1/26/2005	AOC
50-003(e)	Storage area	1/26/2005	AOC
50-005	Waste treatment facility	1/26/2005	AOC
50-006(b)	Operational release	1/26/2005	AOC
50-006(e)	Aboveground tank	1/26/2005	AOC
TA-51			
51-002(a)	usage site (Environmental research caisson)	1/26/2005	AOC
51-002(b)	usage site (Environmental research caisson)	1/26/2005	AOC
C-51-001	Storage area	1/26/2005	AOC
C-51-002	Buildings	1/26/2005	AOC
TA-52			
52-001(a)	UHTREX Equipment	12/23/1998	SWMU
52-001(b)	UHTREX Equipment	12/23/1998	SWMU
52-001(c)	UHTREX Equipment	12/23/1998	SWMU
52-002(b)	Septic System	12/23/1998	SWMU
52-002(c)	Septic System	12/23/1998	SWMU
52-002(d)	Septic System	12/23/1998	SWMU
52-002(e)	Septic Tank and seepage pit	12/8/1997	SWMU
52-002(f)	Septic System	12/23/1998	SWMU

C-60-001	Underground tank	1/26/2005	AOC
C-60-002	Underground tank	1/26/2005	AOC
C-60-003	One-time spill at pesticide shed	1/26/2005	AOC
C-60-004	Underground tank	1/26/2005	AOC
TA-61			
61-001	Storage area	1/26/2005	AOC
61-003	Burn sites	1/26/2005	AOC
61-004(a)	Former Septic Tank	5/2/2001	SWMU
61-004(b)	Septic tank	1/26/2005	AOC
61-004(c)	Septic System	1/26/2005	AOC
C-61-001	Leak from transformer storage area – PCB only site	1/26/2005	AOC
TA-63			
63-002	Container storage area	1/26/2005	AOC
TA-64			
64-001	Storage area	1/26/2005	AOC
TA-69			
69-002(a)	Septic system	1/26/2005	AOC
69-002(b)	Septic system	1/26/2005	AOC
TA-72			
72-002	Firing site	1/26/2005	AOC
72-003(a)	Septic system	1/26/2005	AOC
72-003(b)	Septic system	1/26/2005	AOC
TA-73			
73-004(c)	Septic System	1/23/2008	SWMU
73-005	Surface disposal site	09/05/2003	SWMU
73-007	Septic Tank and Drainlines	09/05/2003	AOC
C-73-001	Underground tank	1/26/2005	AOC
C-73-002	Underground tank	1/26/2005	AOC
C-73-003	Underground tank	1/26/2005	AOC
C-73-004	Underground tank	1/26/2005	AOC
C-73-005(a)	Unlined Septic Tank/Outhouse Trench	09/05/2003	AOC
C-73-005(b)	Unlined Septic Tank/Outhouse Trench	09/05/2003	AOC
C-73-005(c)	Unlined Septic Tank/Outhouse Trench	09/05/2003	AOC
C-73-005(d)	Unlined Septic Tank/Outhouse Trench	09/05/2003	AOC
C-73-005(e)	Unlined Septic Tank/Outhouse Trench	09/05/2003	AOC
C-73-005(f)	Unlined Septic Tank/Outhouse Trench	09/05/2003	AOC

Supplement 1-9

Permittees' Proposed Changes to Attachment N, Figures

ATTACHMENT N

FIGURES

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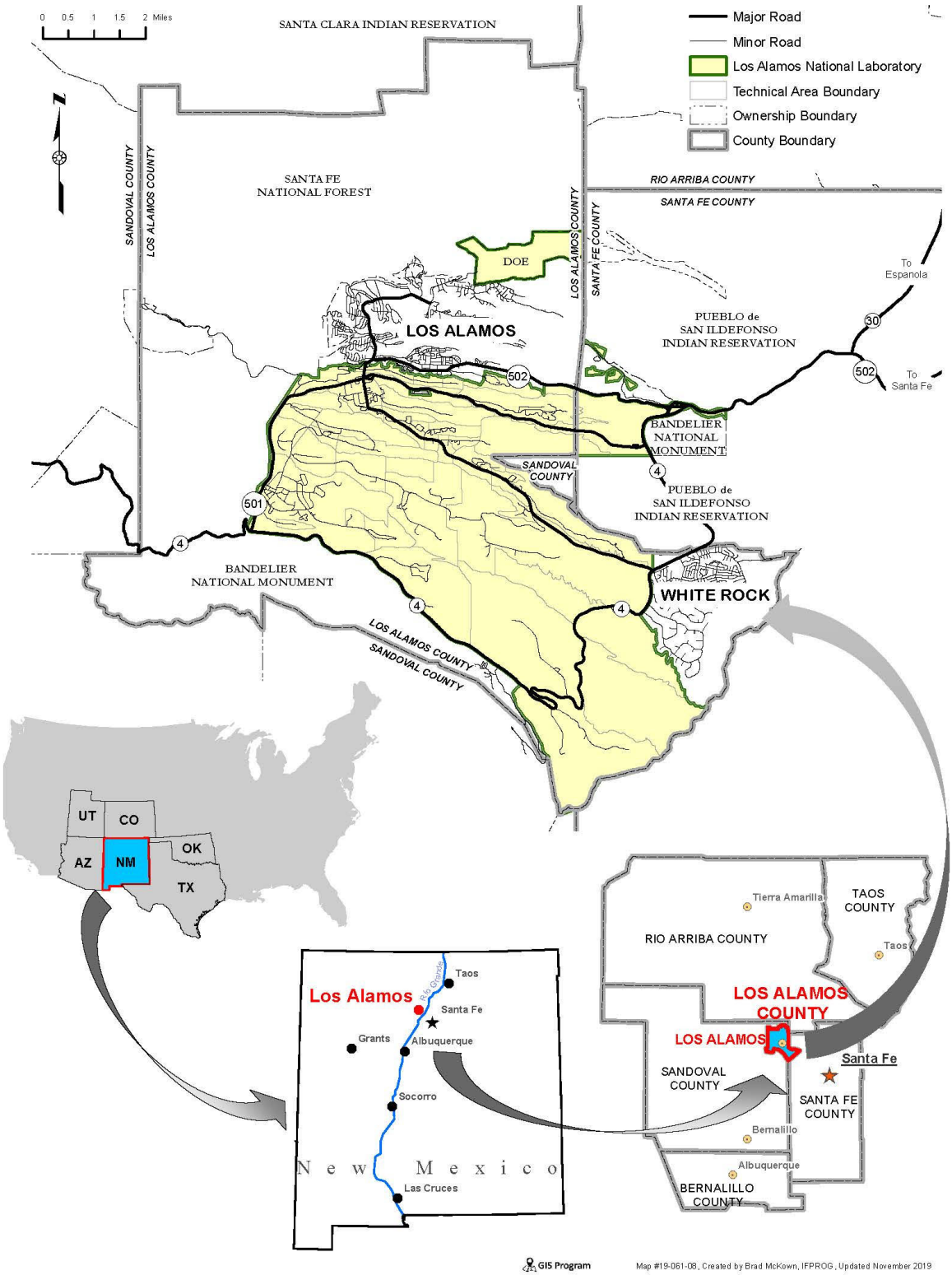


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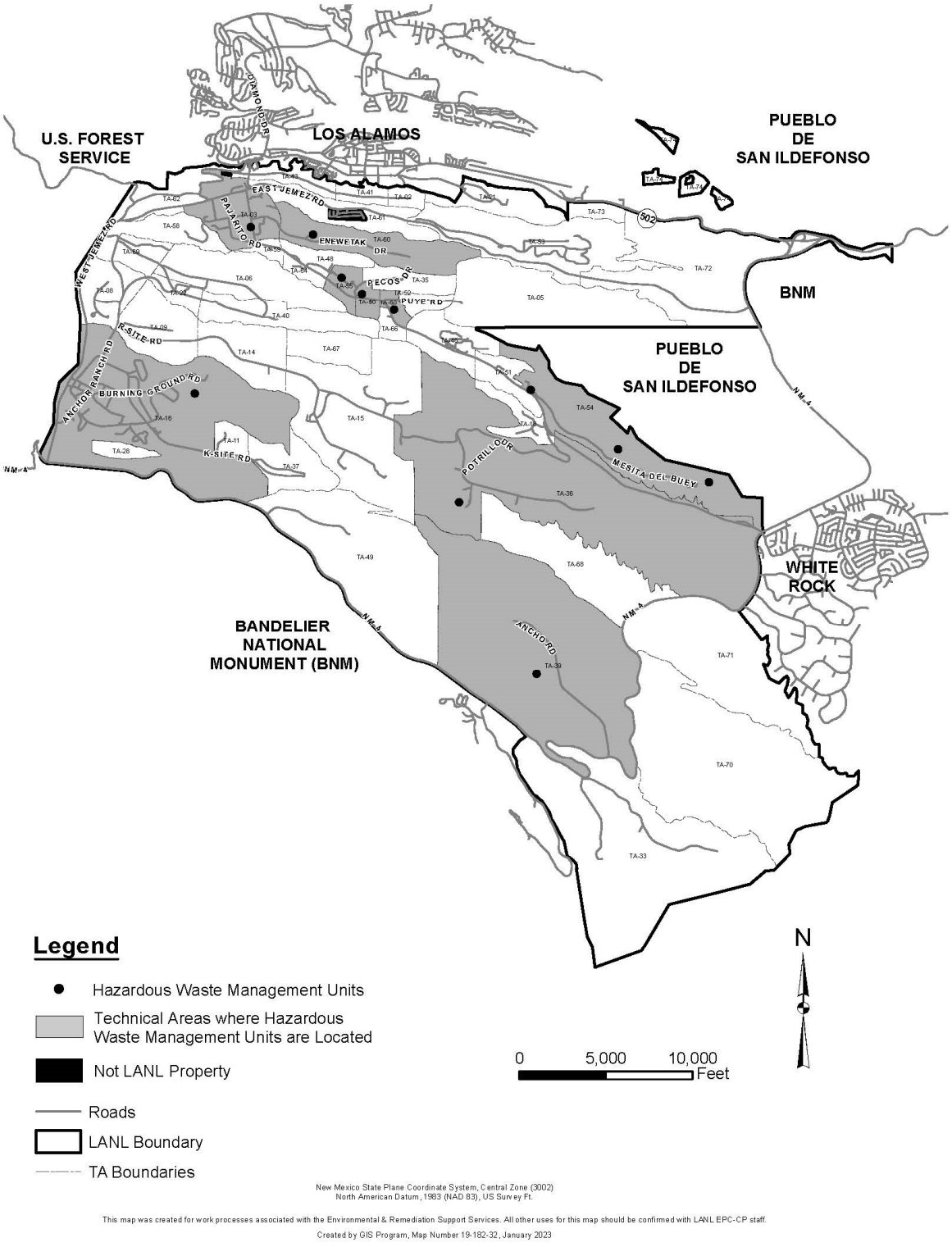


Figure 2: Facility Boundary and Location Map of Technical Areas (TAs)

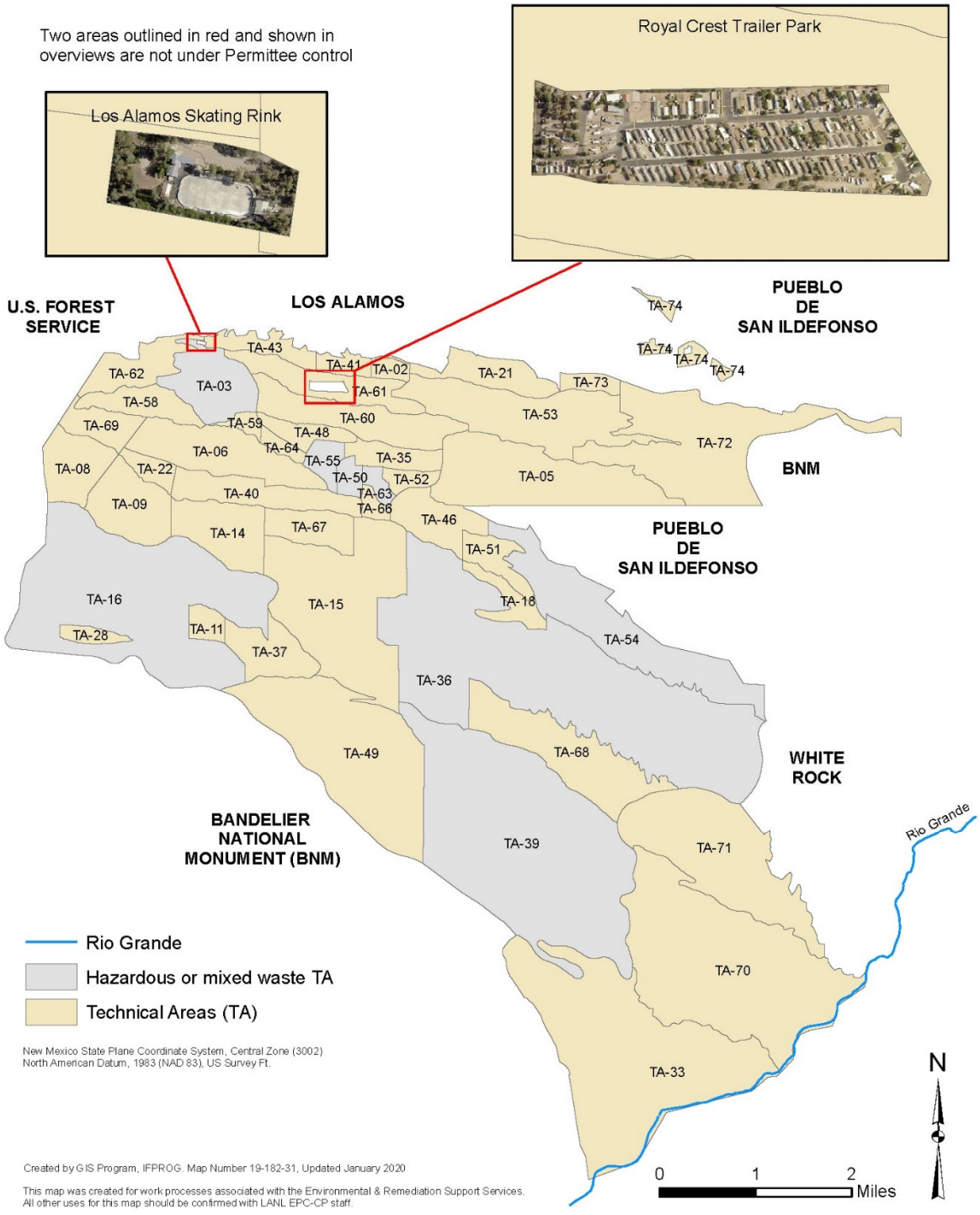


Figure 3: Facility Boundary with Details of Non-LANL Site Areas

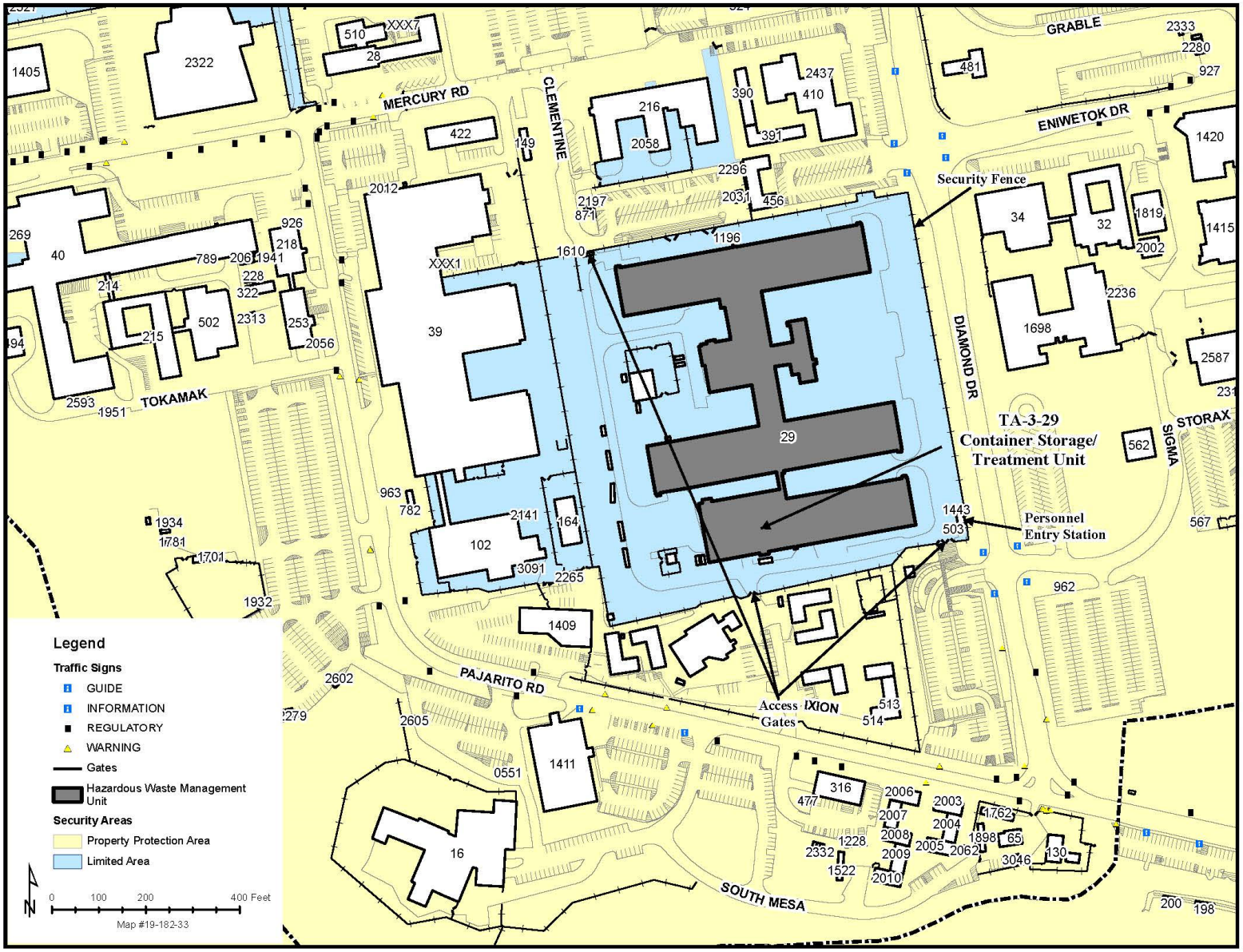


Figure 4: TA-3 Location Map Showing Security Fences, Entry Gates, and Entry Station

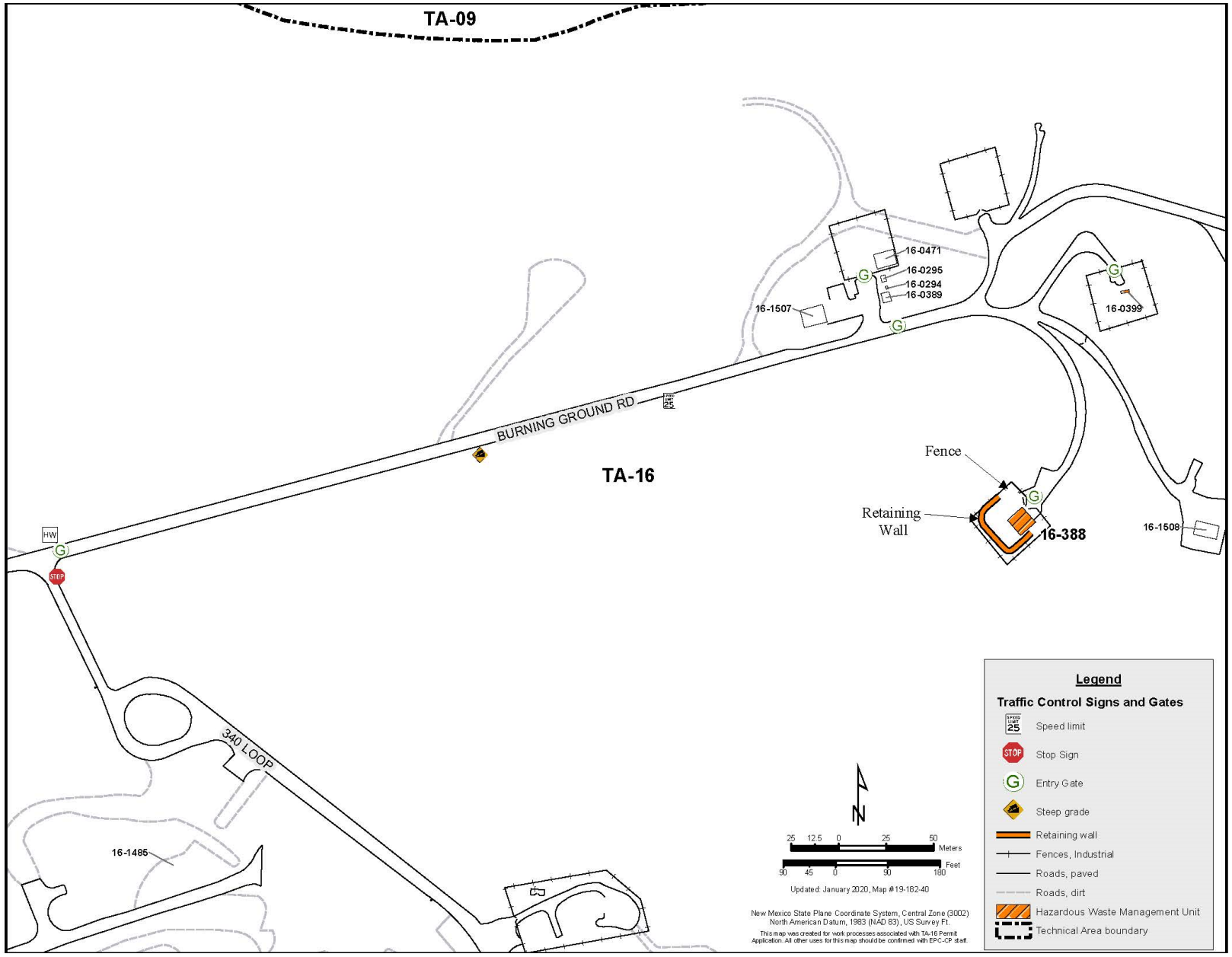


Figure 5: TA-16-388 Flash Pad Location Map Showing Security Fences and Entry Gate

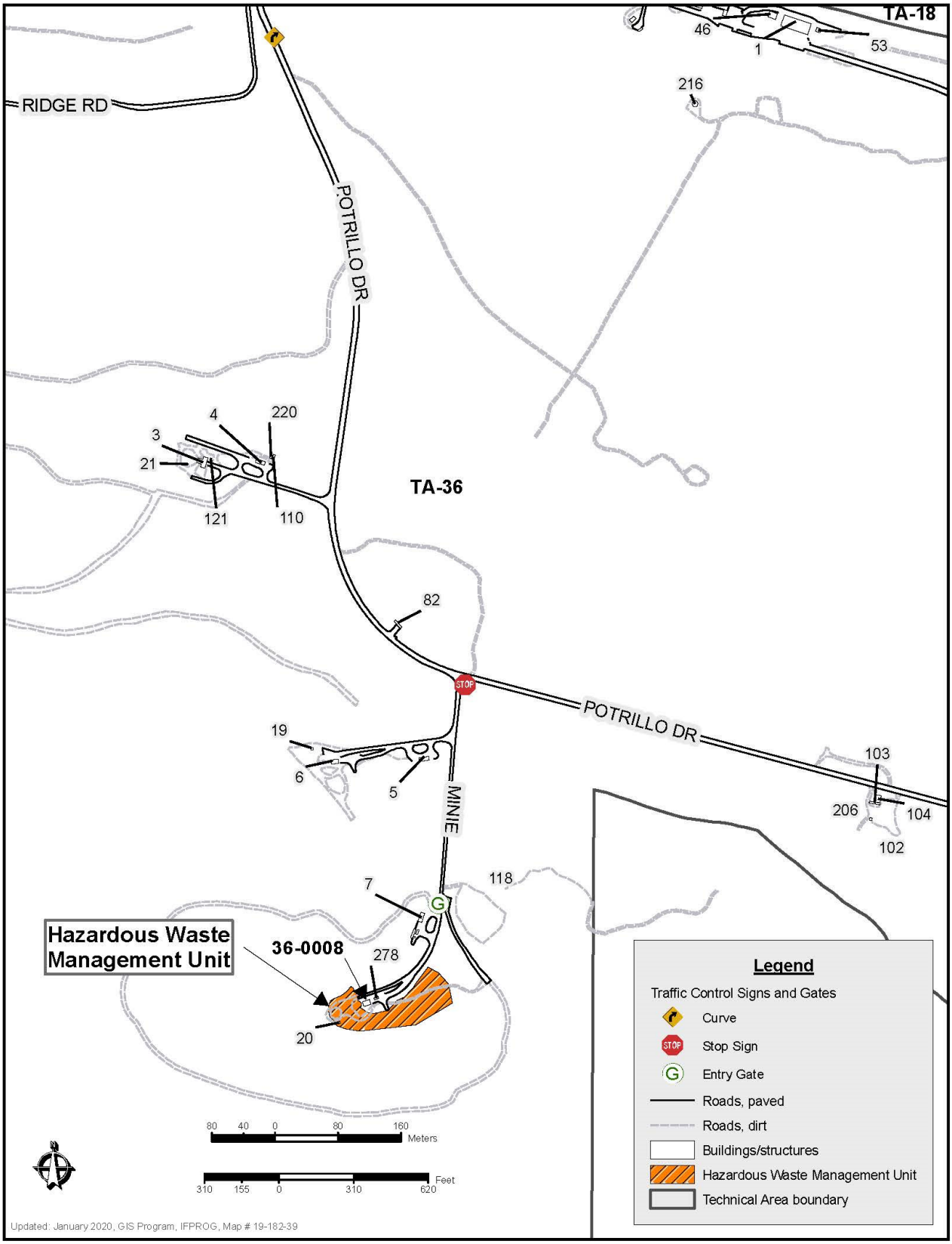


Figure 6: TA-36-8 Open Detonation Location Map Showing Security Fences and Entry Gate

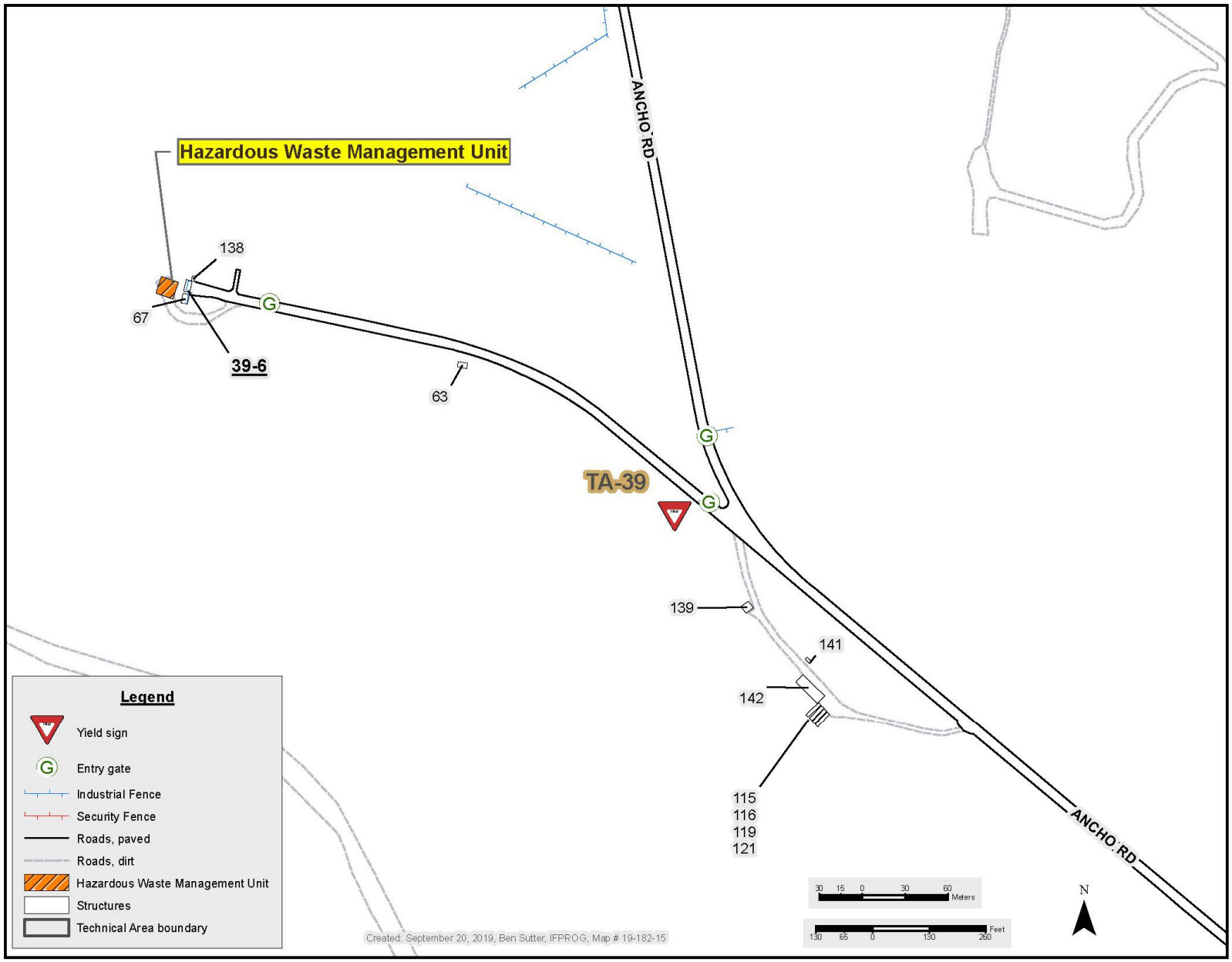


Figure 7: TA-39-6 Open Detonation Location Map Showing Security Fences and Entry Gate

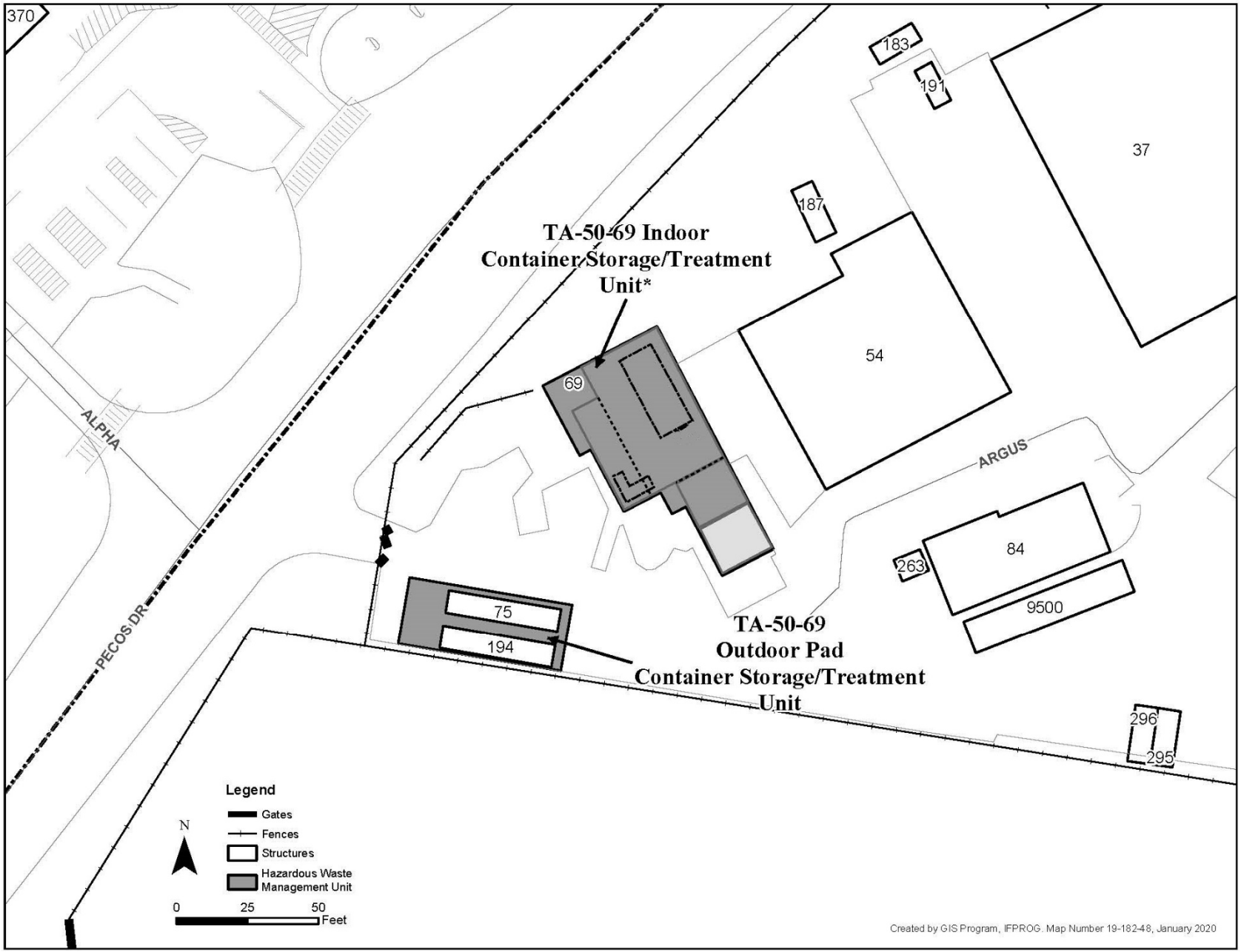


Figure 8: TA-50 Location Map Showing Security Fences and Entry Gate

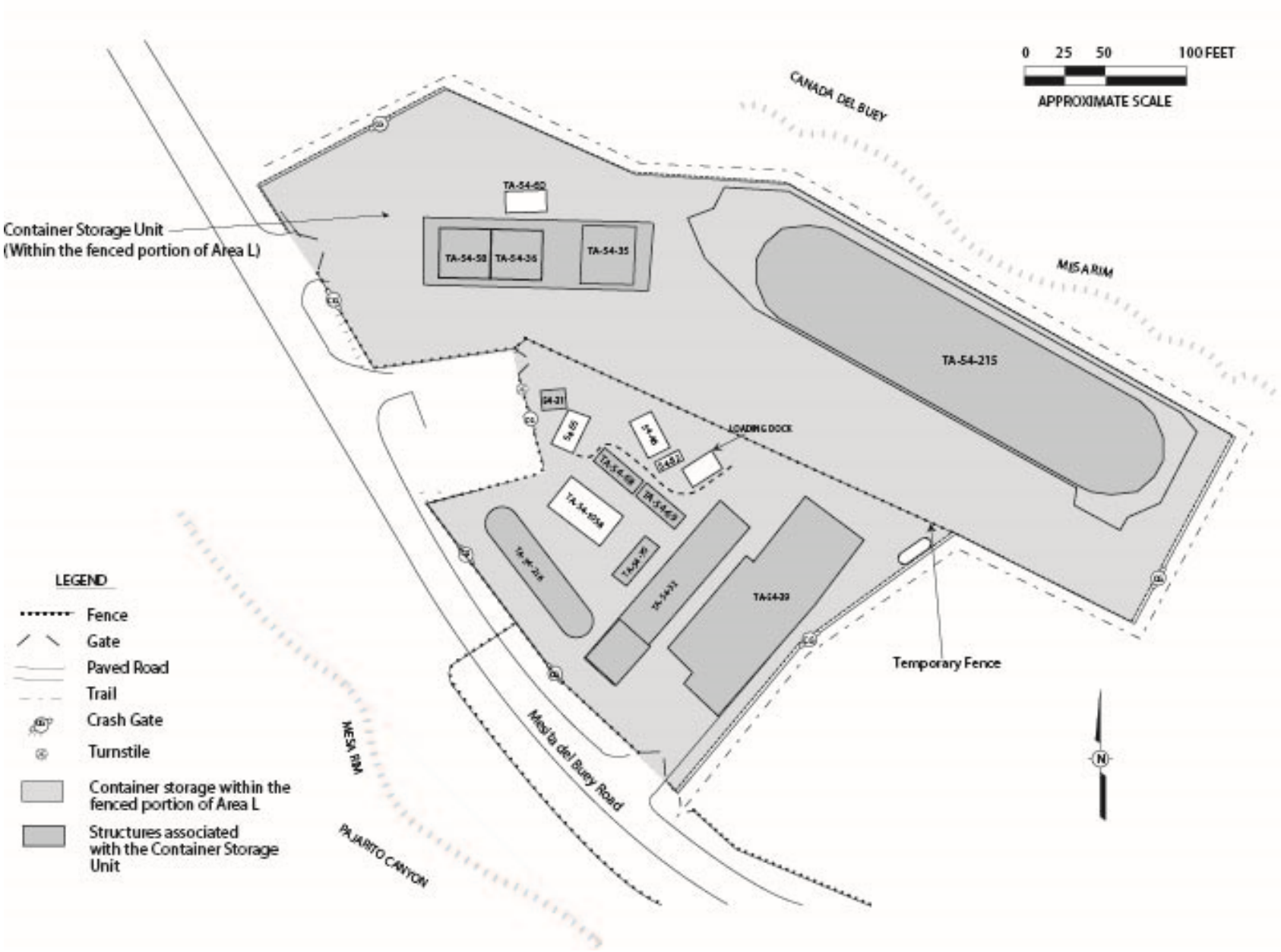


Figure 9: TA-54, Area L, Location Map Showing Security Fences, Entry Gates, and Entry Stations

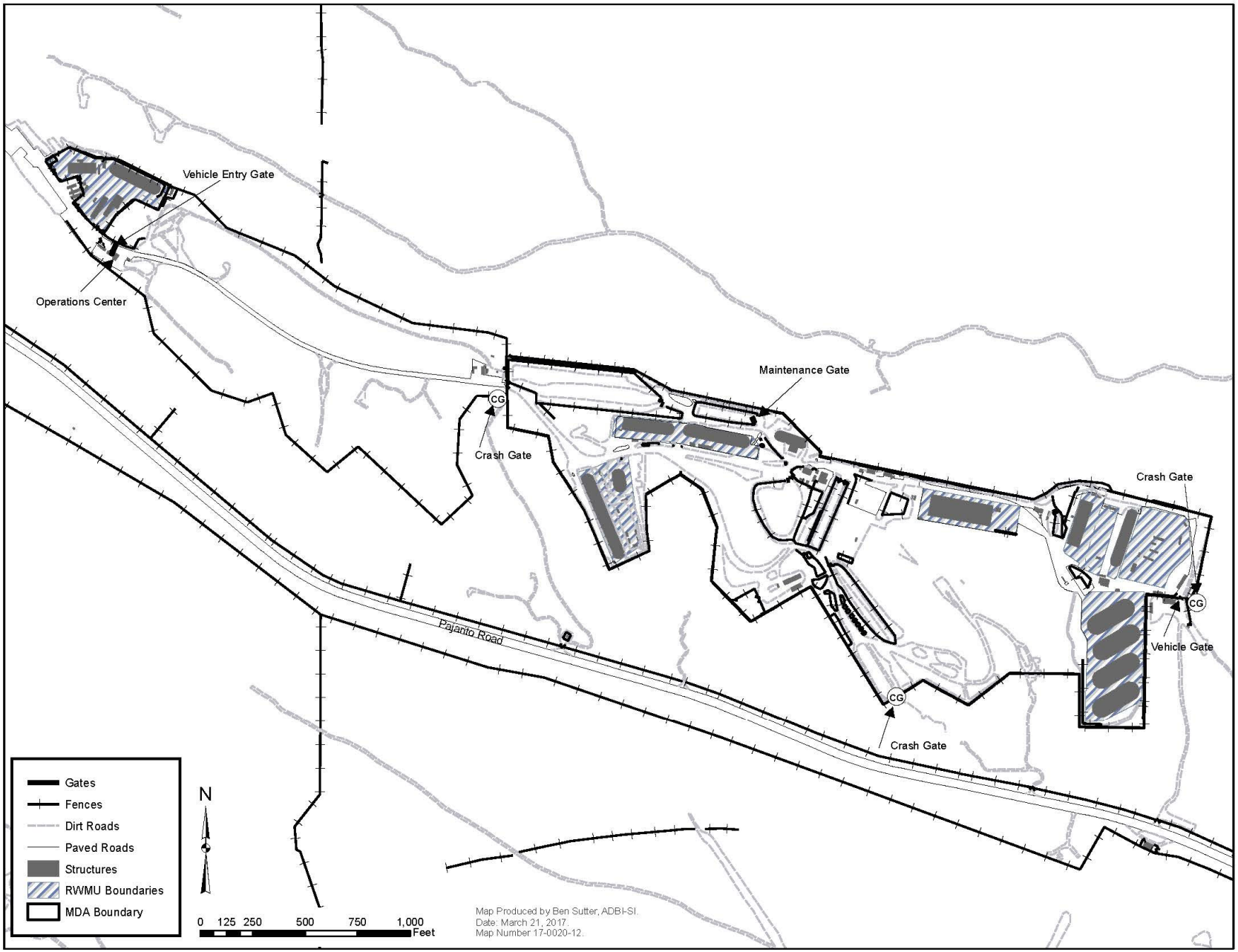


Figure 10: TA-54, Area G, Location Map Showing Security Fences, Entry Gates, and Entry Stations

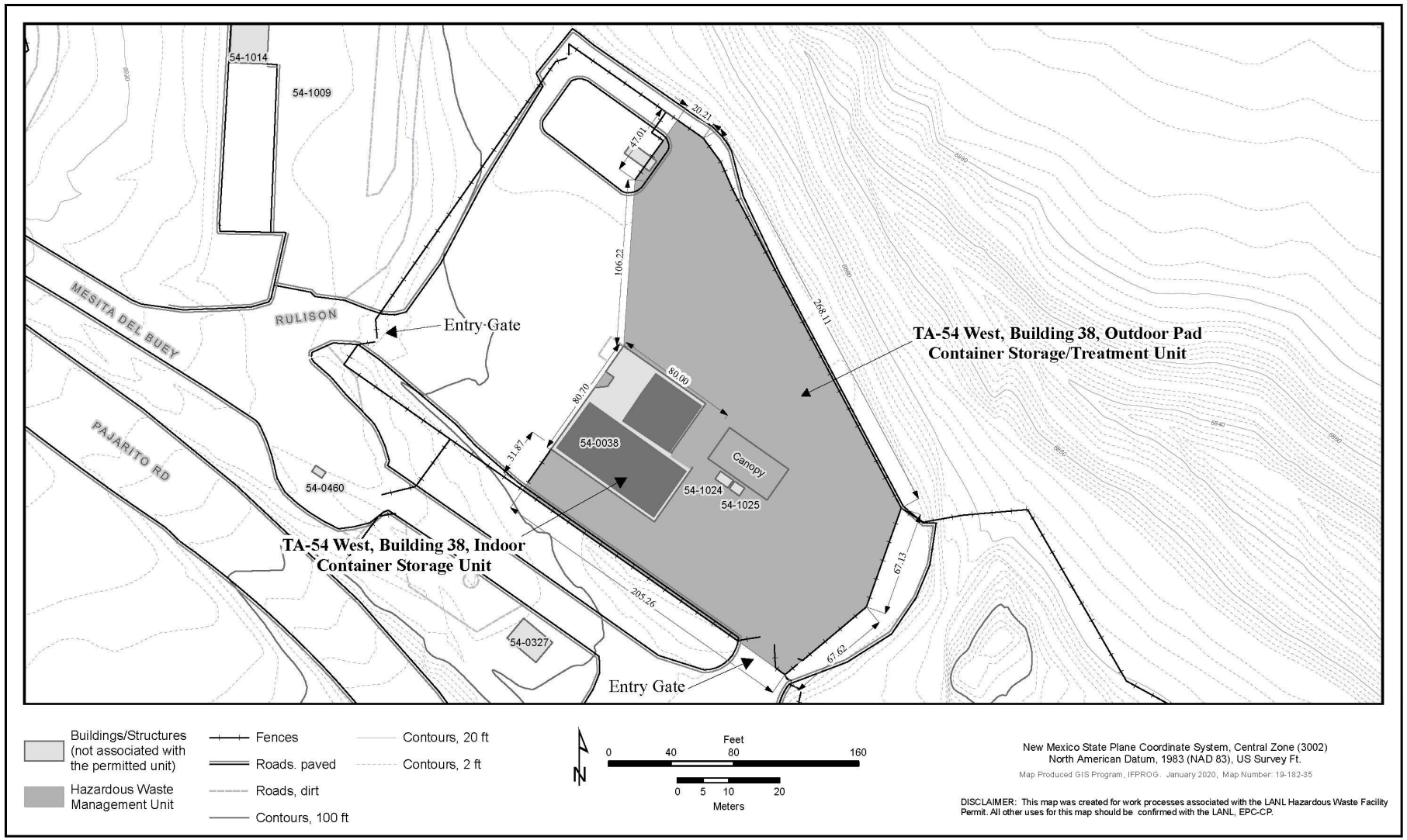


Figure 11: TA-54 West Location Map Showing Security Fences, Entry Gates, and Entry Stations

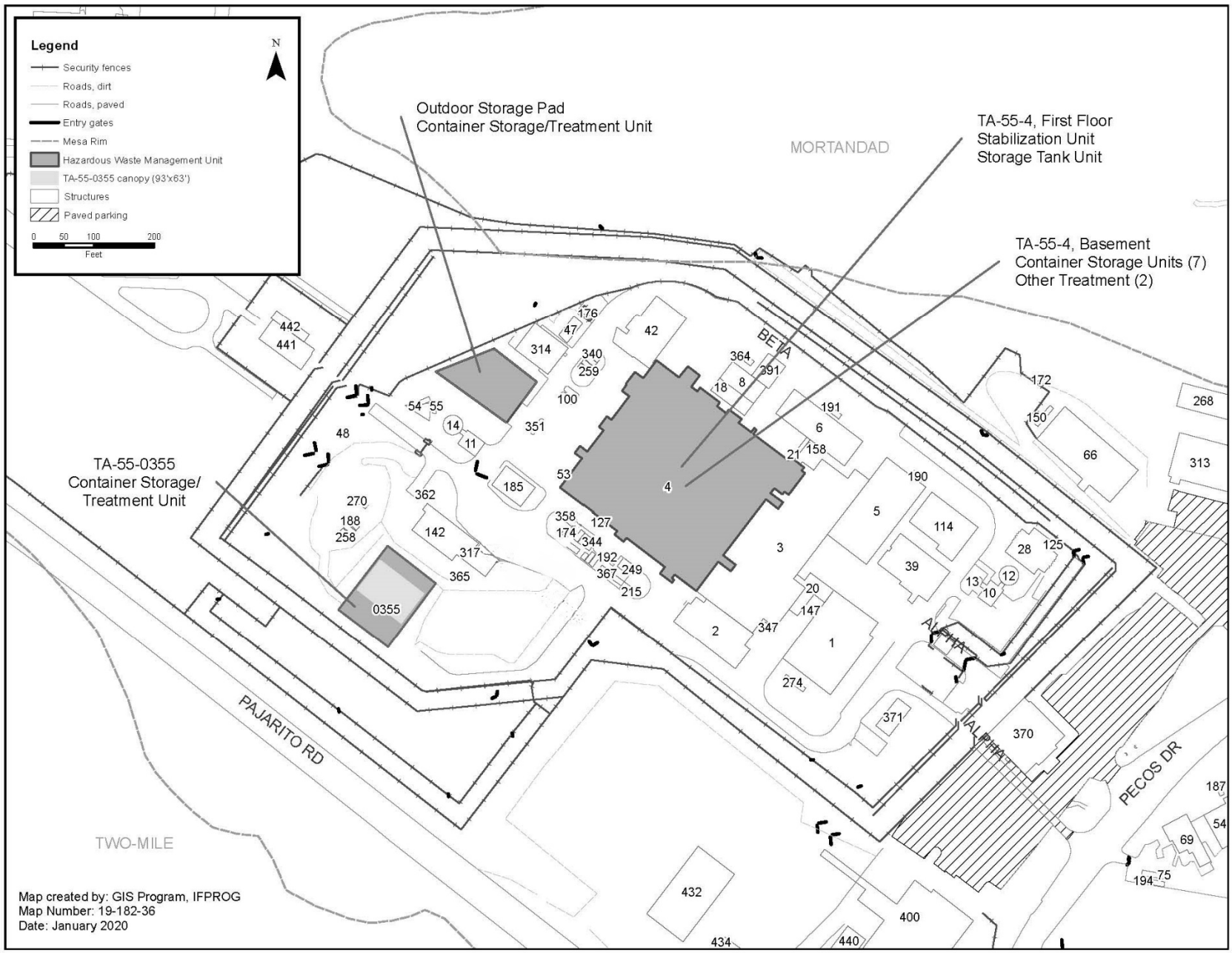


Figure 12: TA-55 Location Map Showing Security Fences and Entry Gates

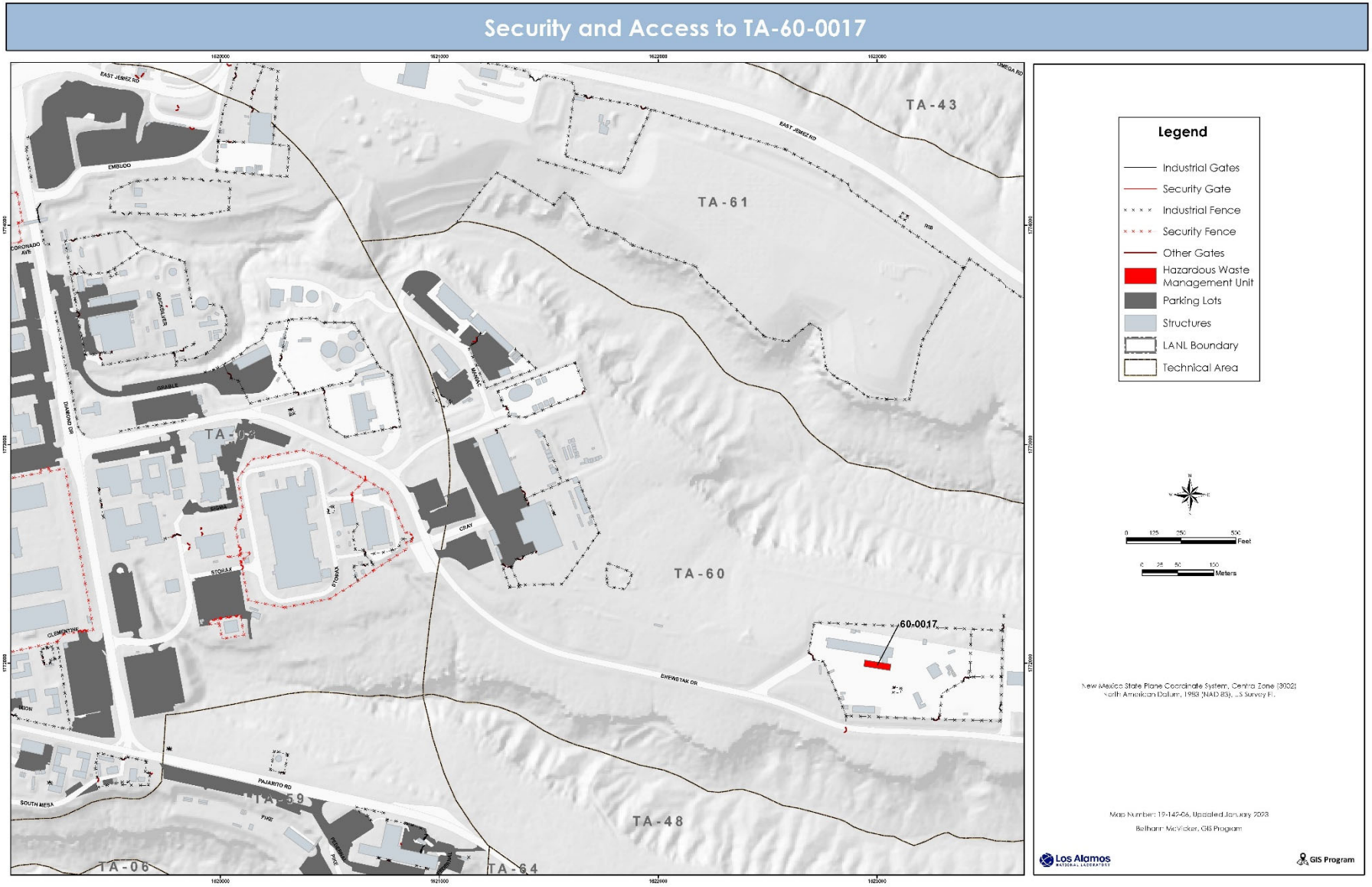


Figure 13: TA-60 Location Map Showing Security Fences and Entry Gates

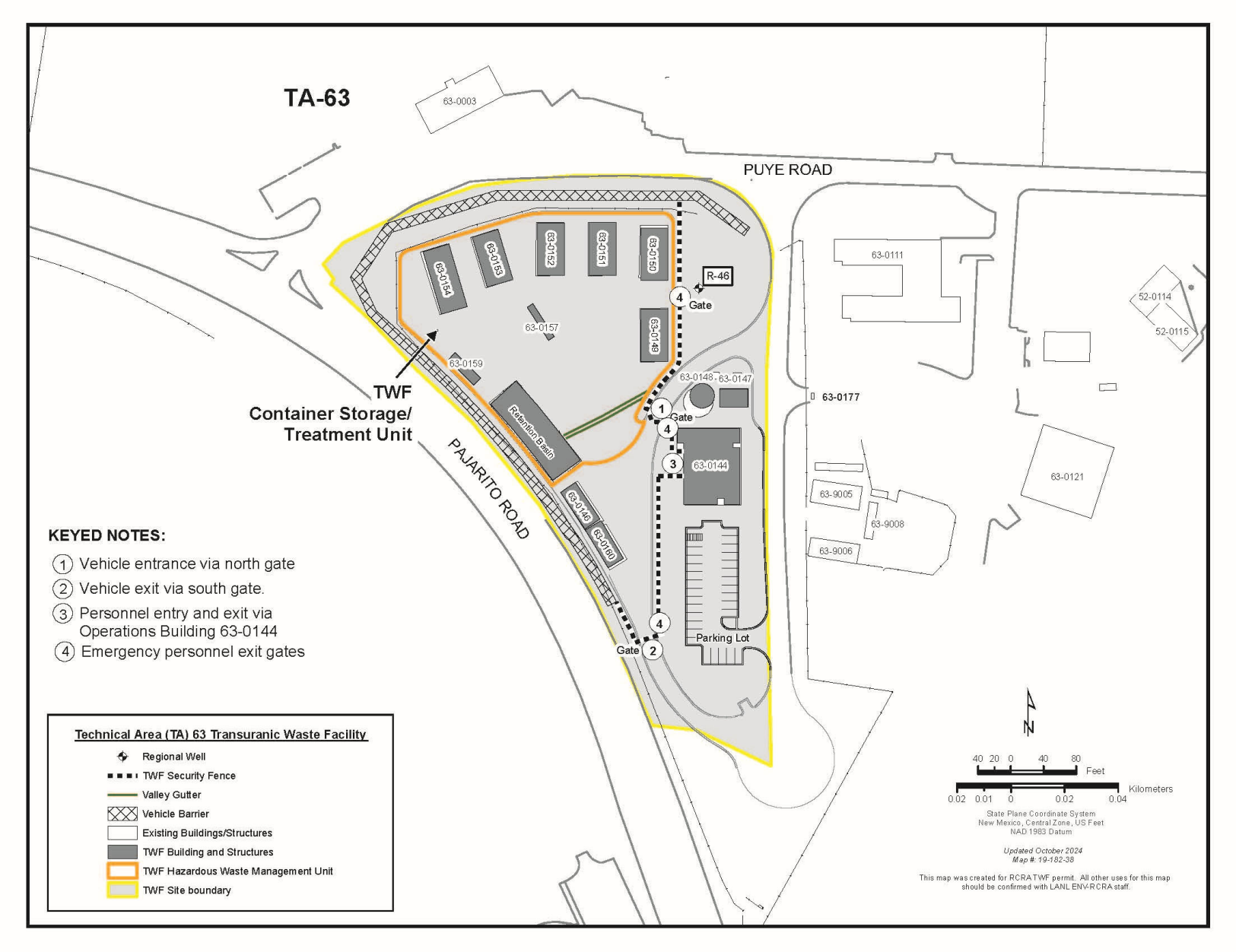


Figure 14: TA-63 Transuranic Waste Facility Location Map Showing Security Fences, Entry Gates, and Vehicle Barriers

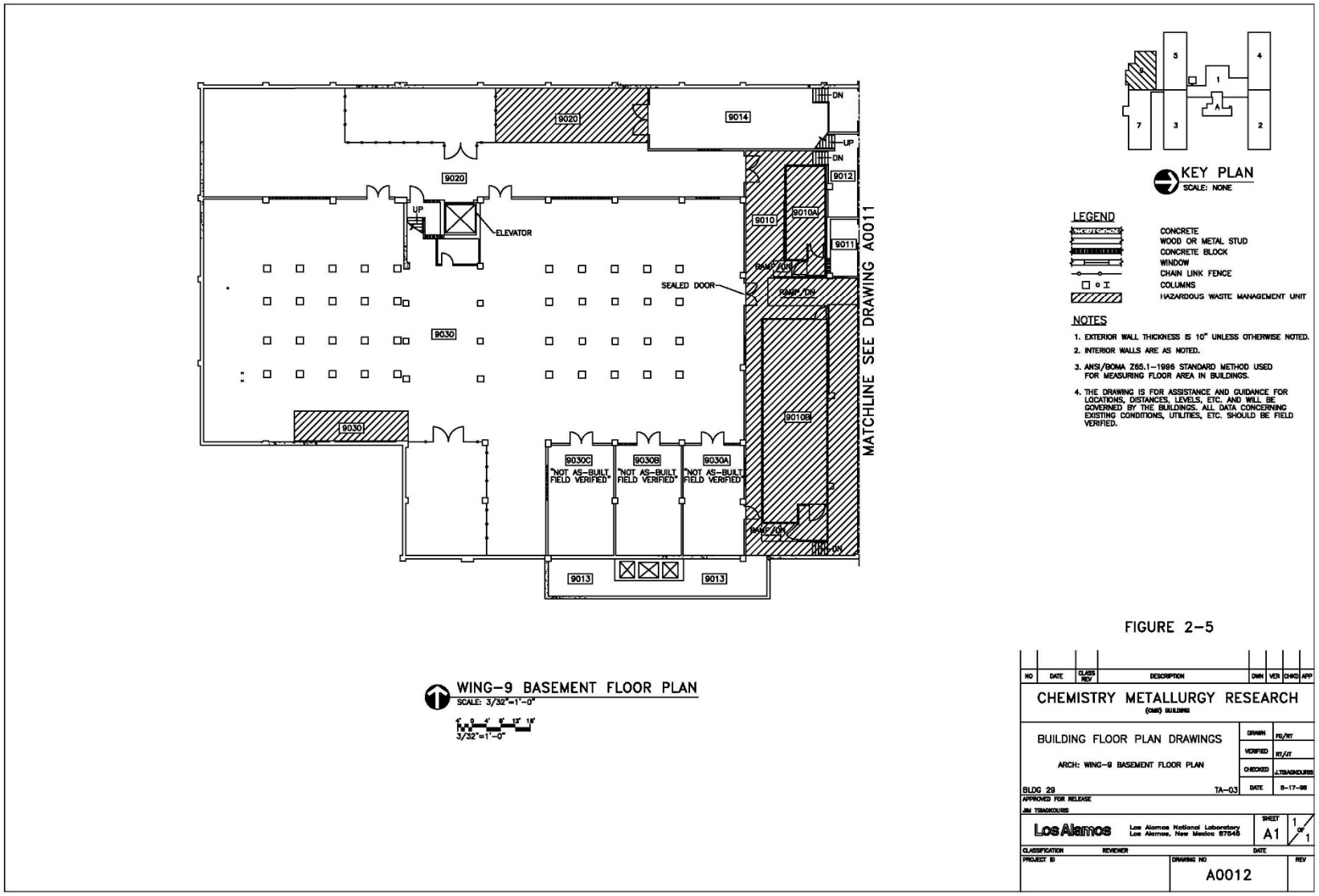


Figure 15: TA-3 Chemistry Metallurgy Research (CMR) Building Basement Layout

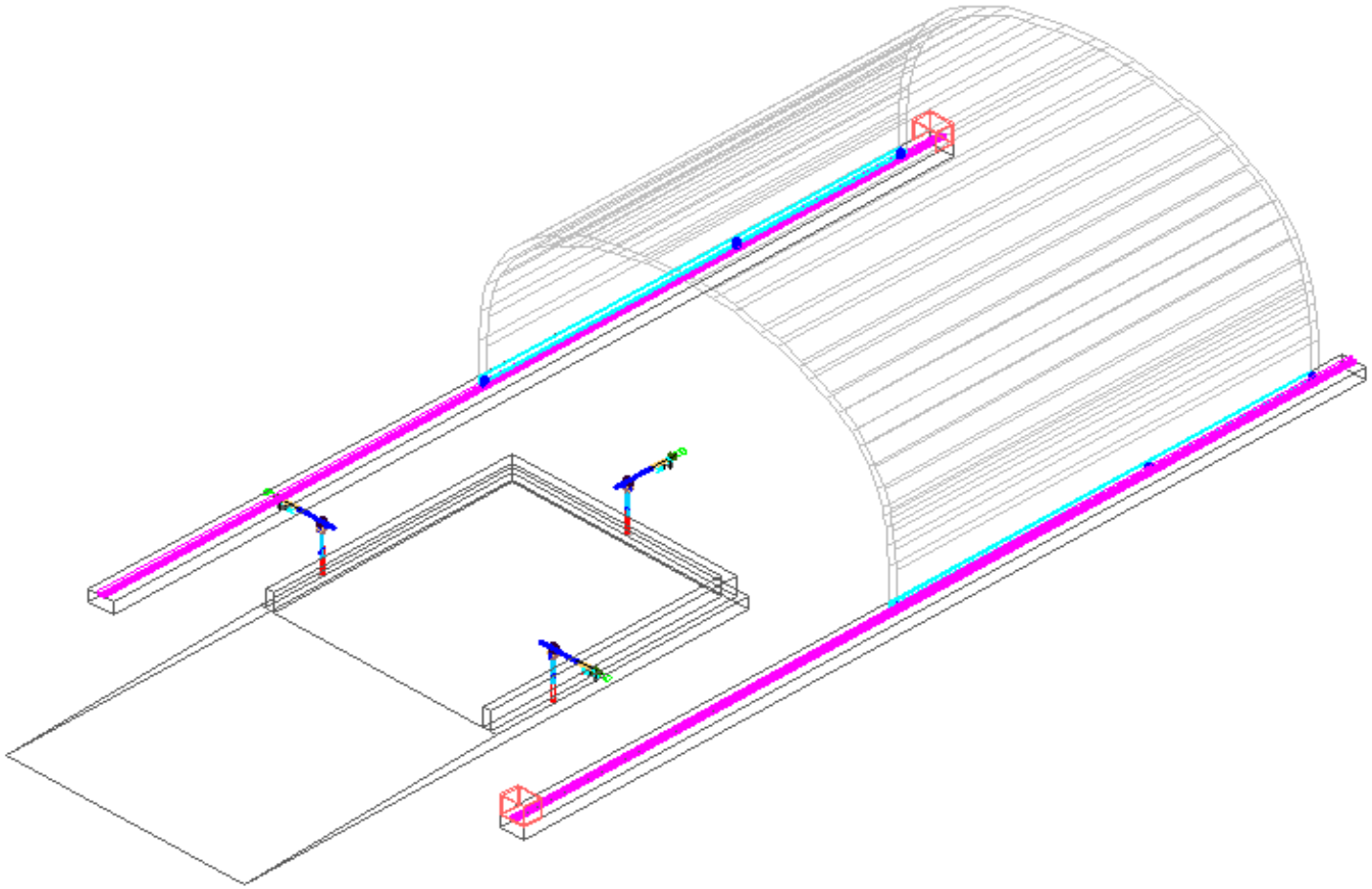


Figure 16: Diagram of the TA-16-388 Flash Pad Showing Location of Burners and Retractable Metal Roof

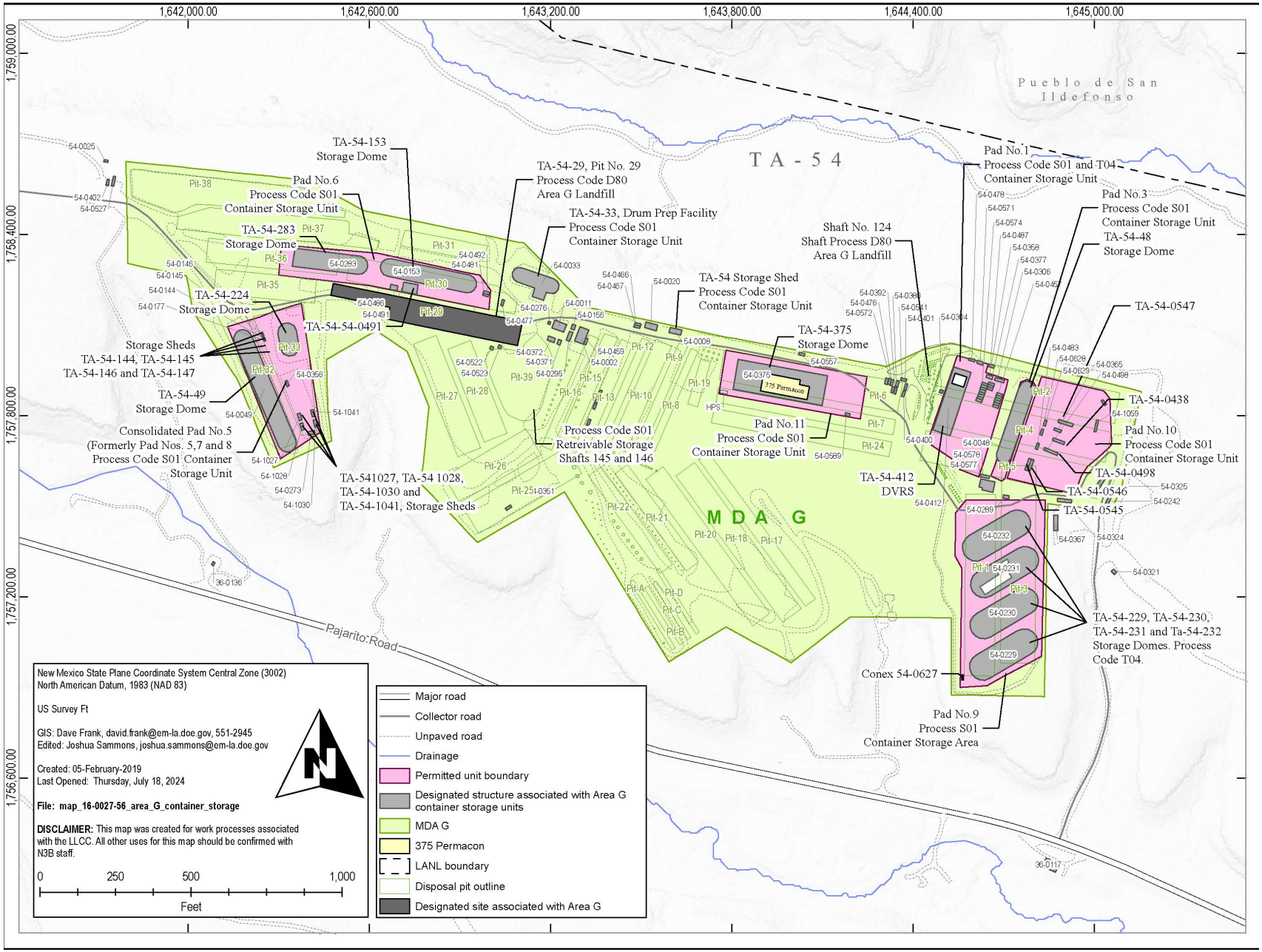


Figure 17: TA-54, Area G, Container Storage and Treatment Units

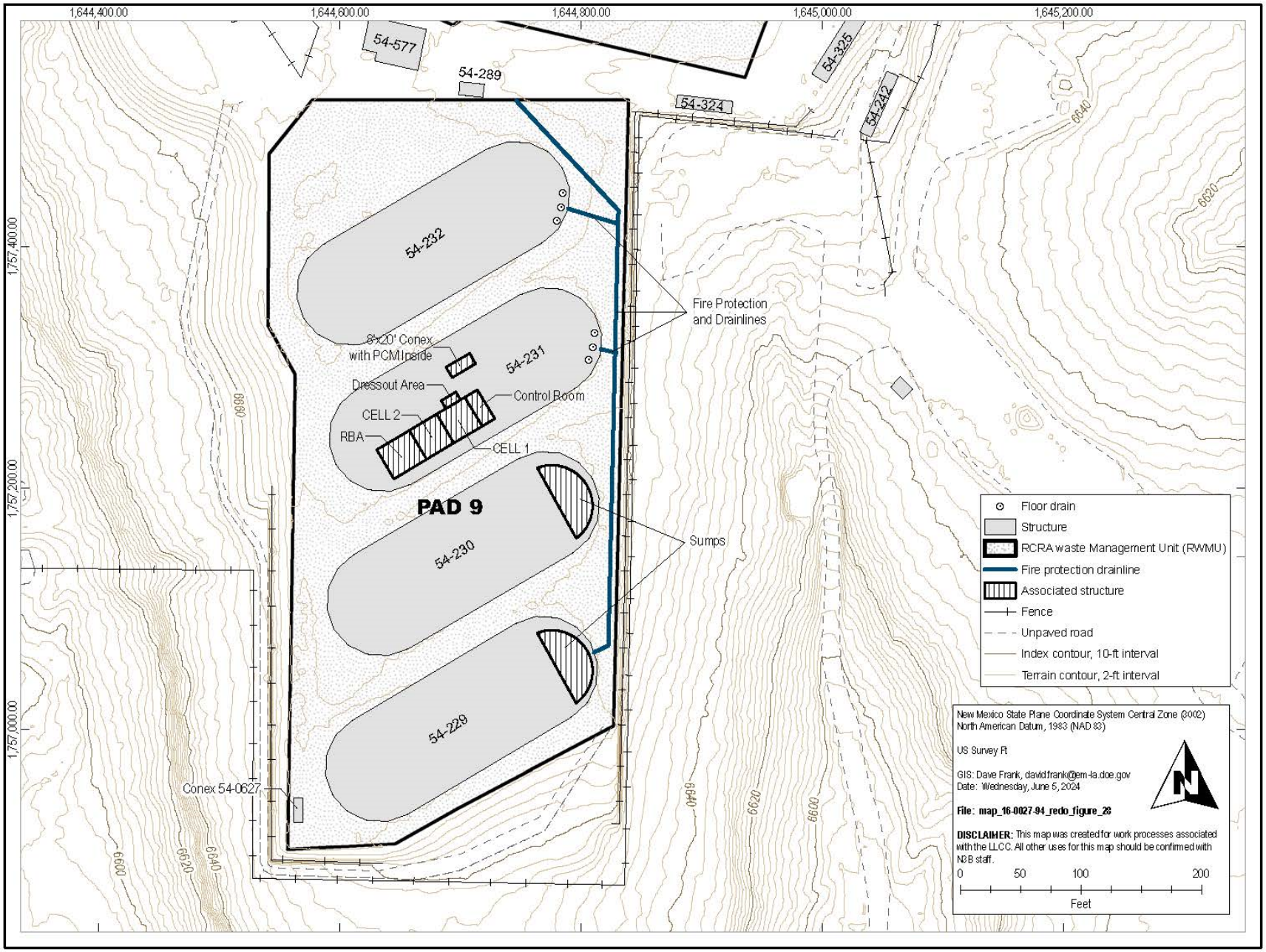


Figure 18: TA-54, Area G, Pad 9 (Transuranic Waste Inspectable Storage Project (TWISP) Domes 229, 230, 231 & 232)

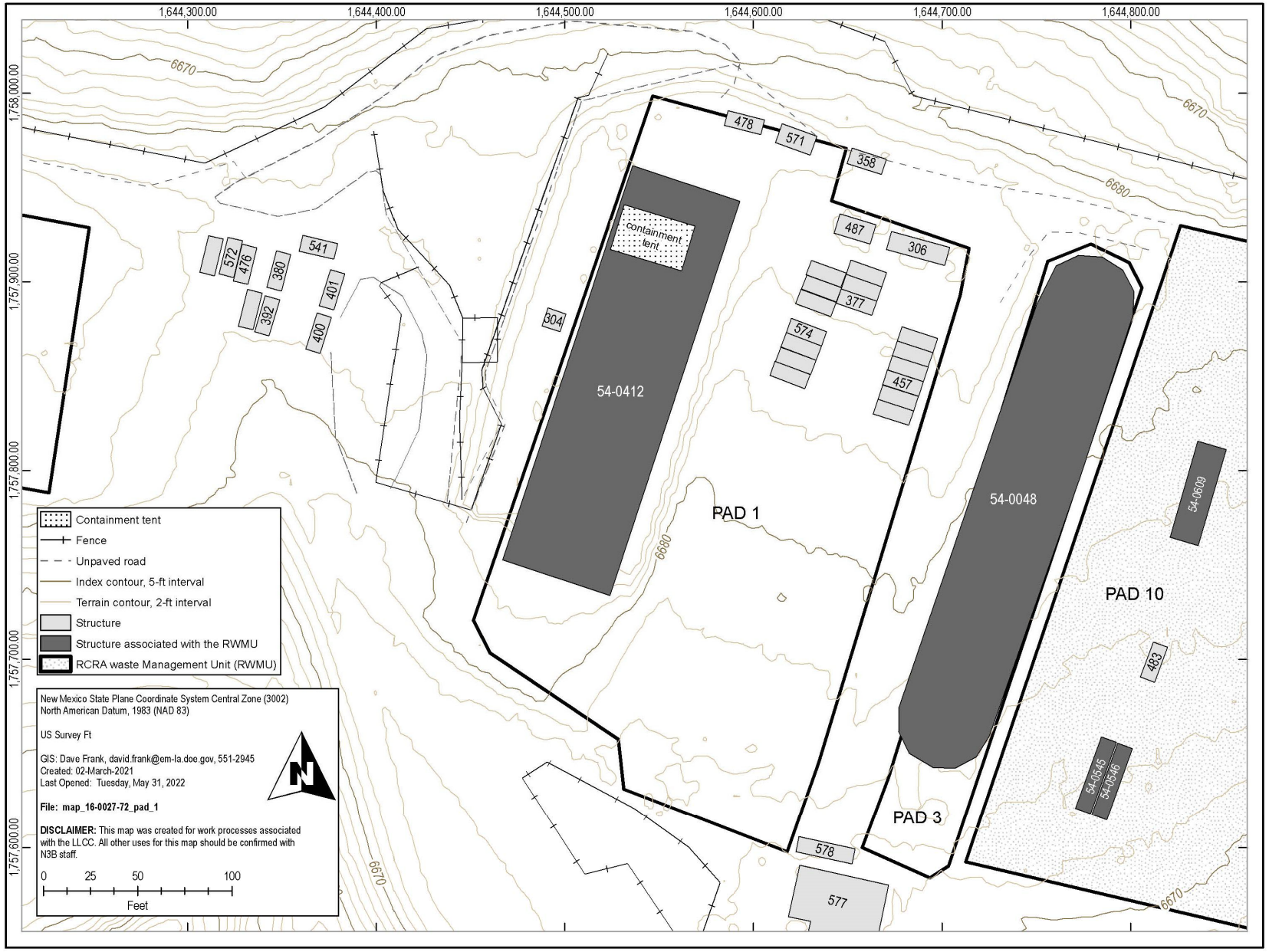


Figure 19: TA-54, Area G, Pad 1

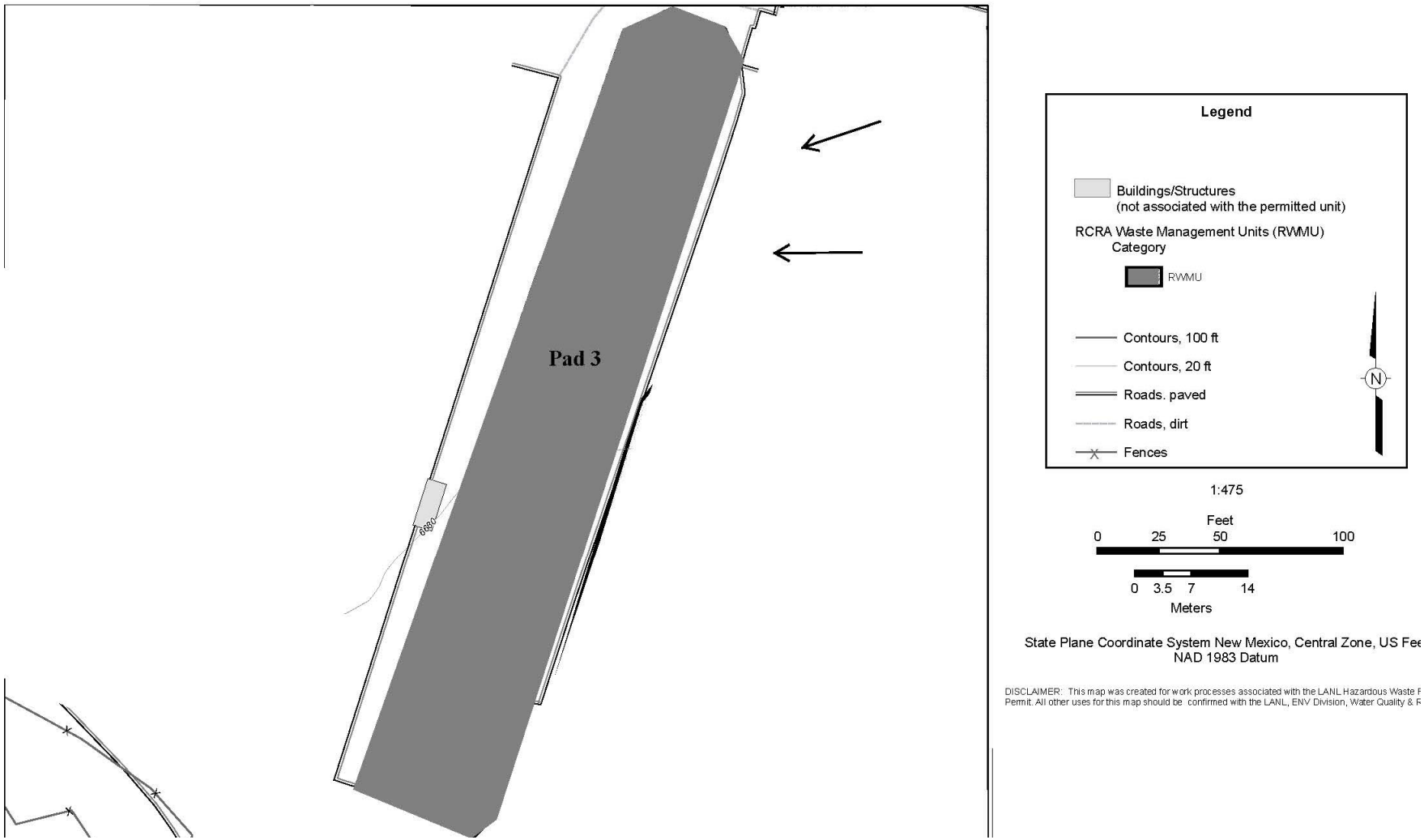


Figure 20: TA-54, Area G, Pad 3

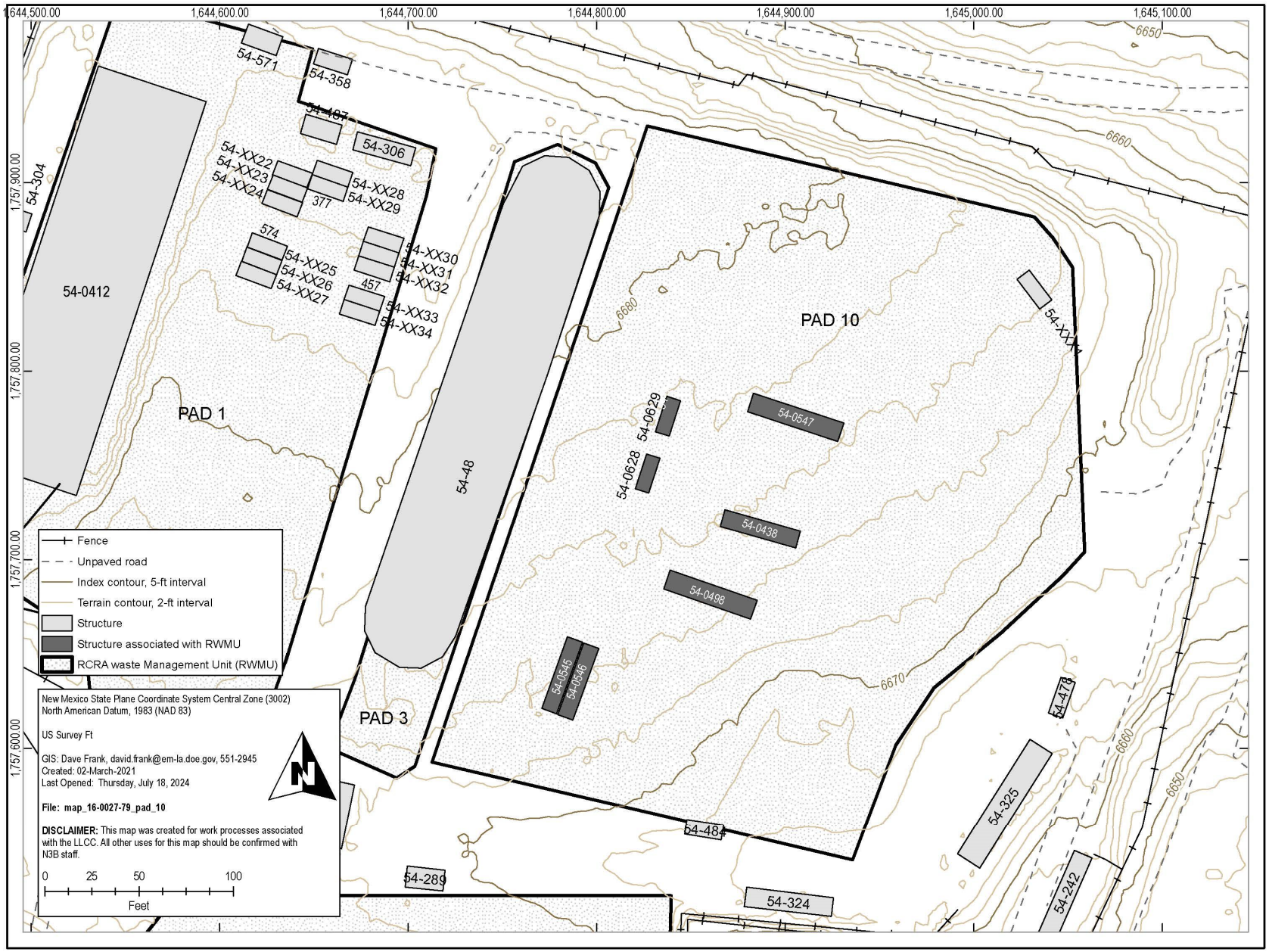


Figure 21: TA-54, Area G, Pad 10

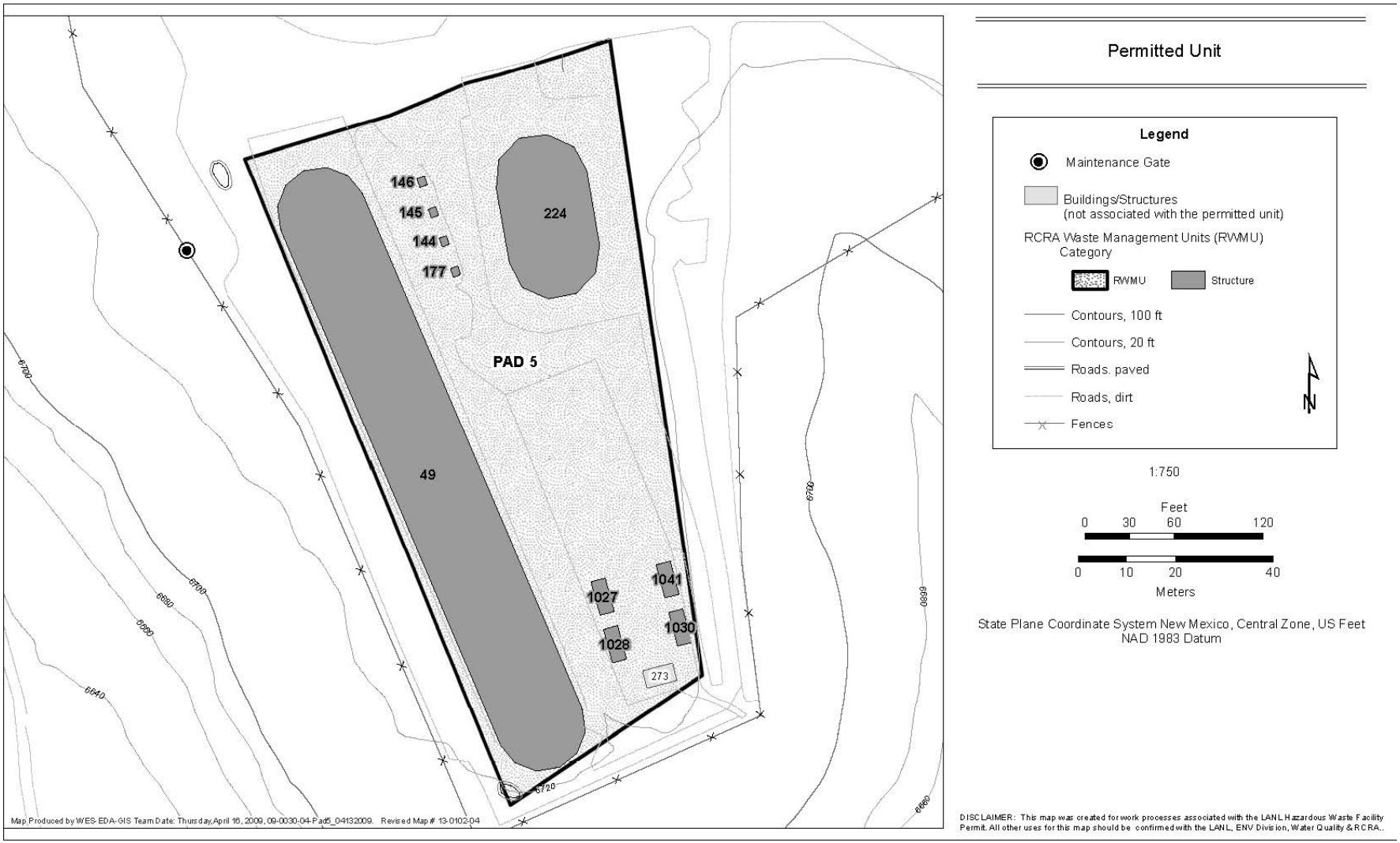


Figure 22: TA-54, Area G, Pad 5 (Domes 49 and 224; and Storage Sheds 114, 145, 146, 177, 1027, 1028, 1030, and 1041)

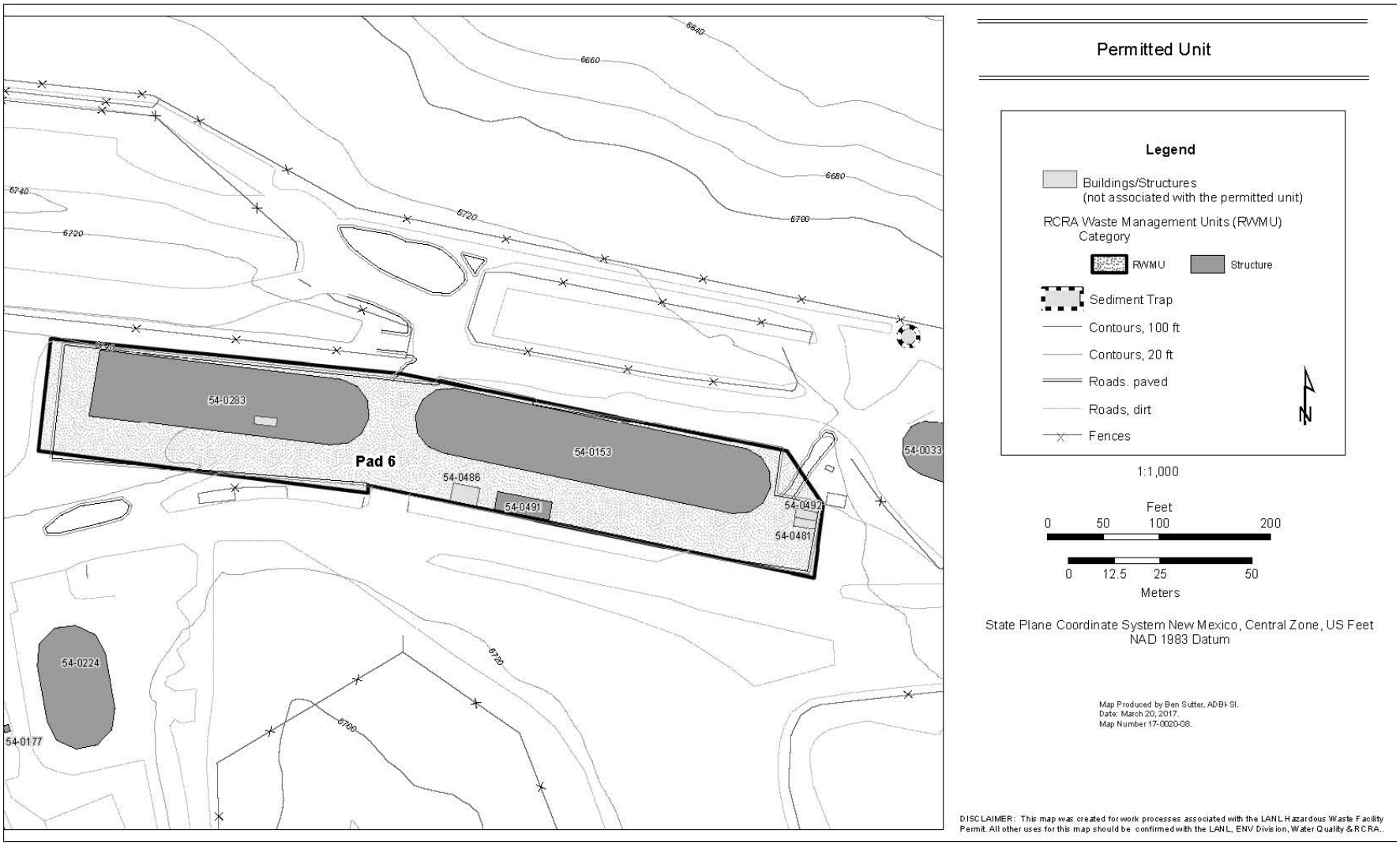


Figure 23: TA-54, Area G, Pad 6, Domes 153 & 283

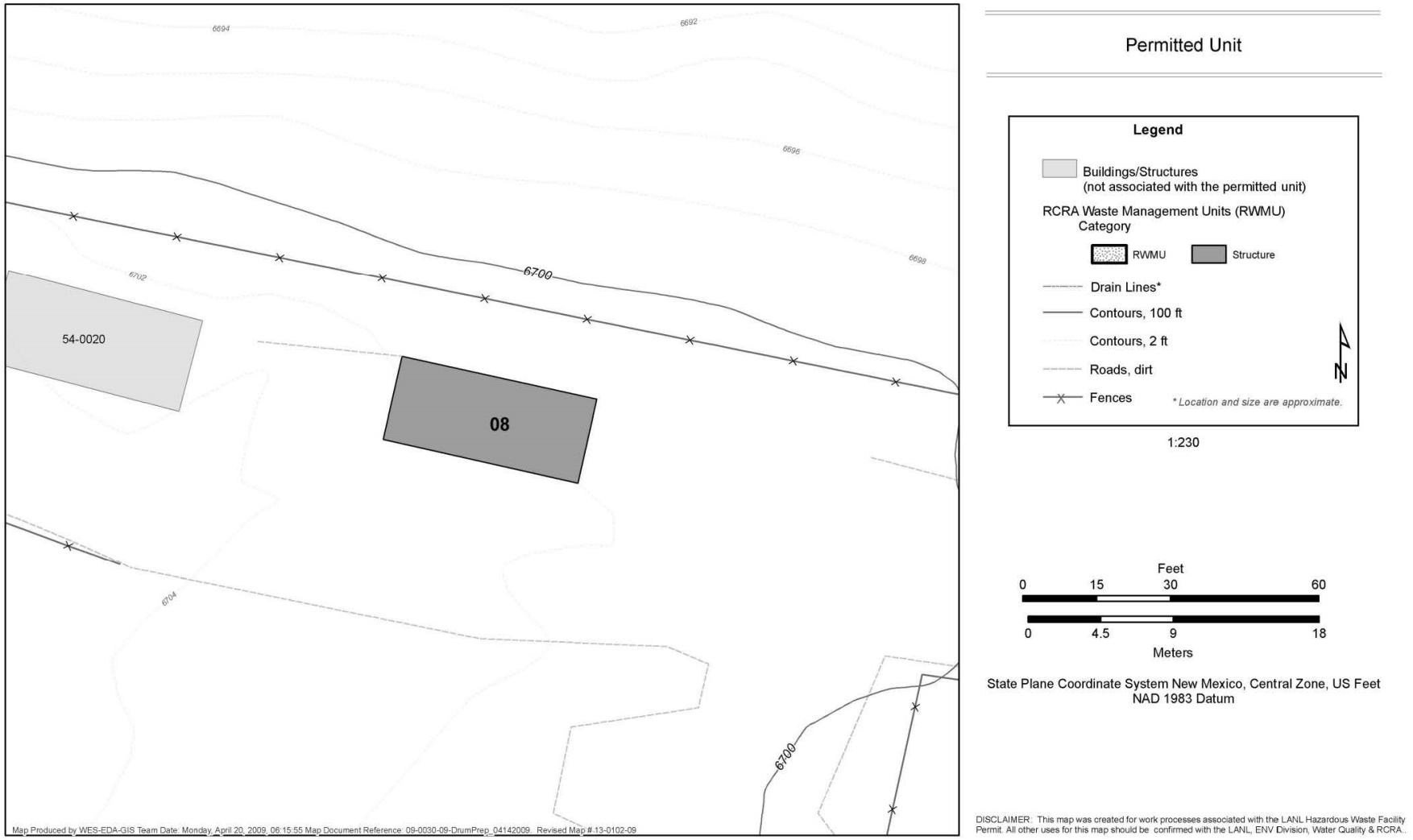


Figure 24: TA-54, Area G, Storage Shed 8

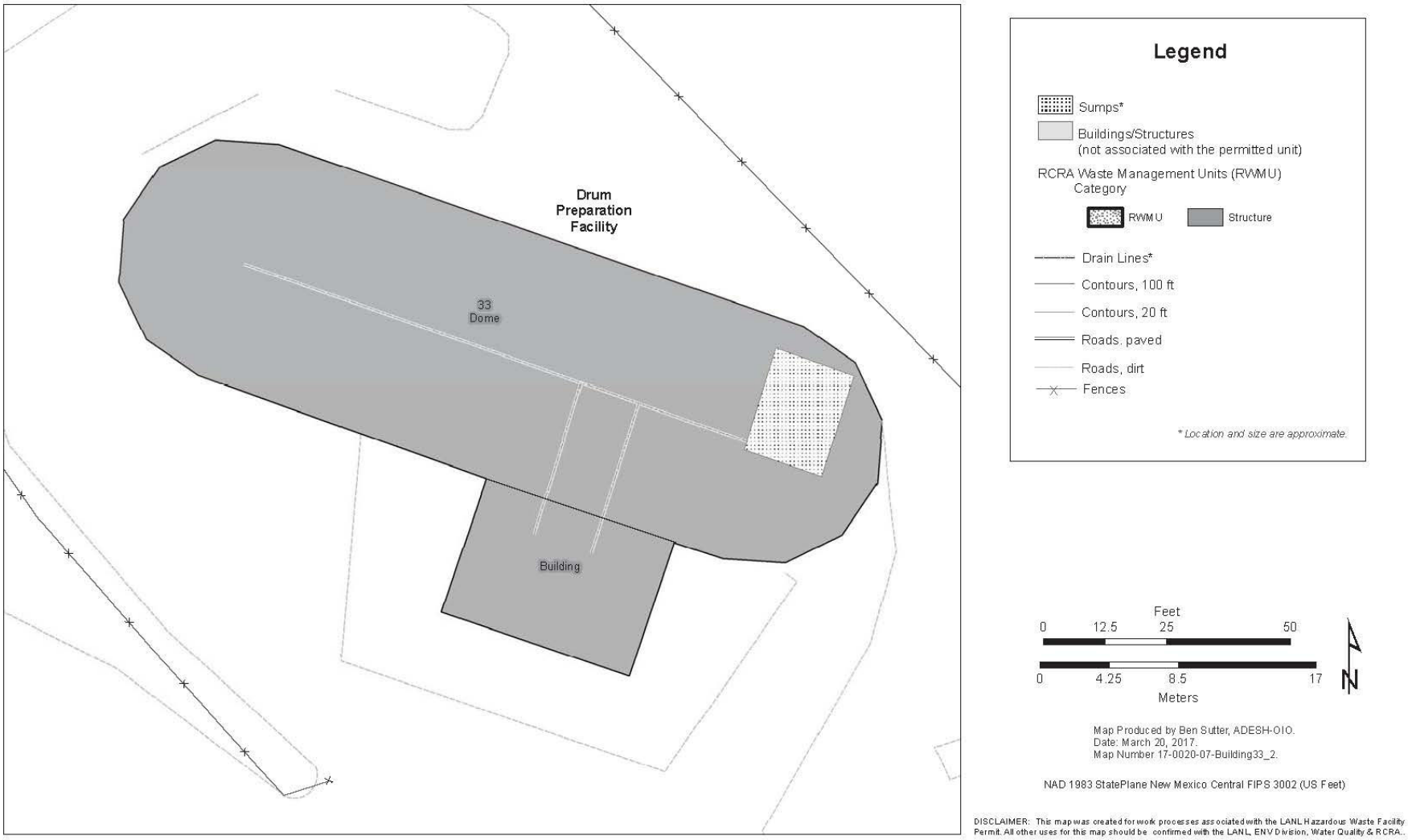


Figure 25: TA-54, Area G, Building 33

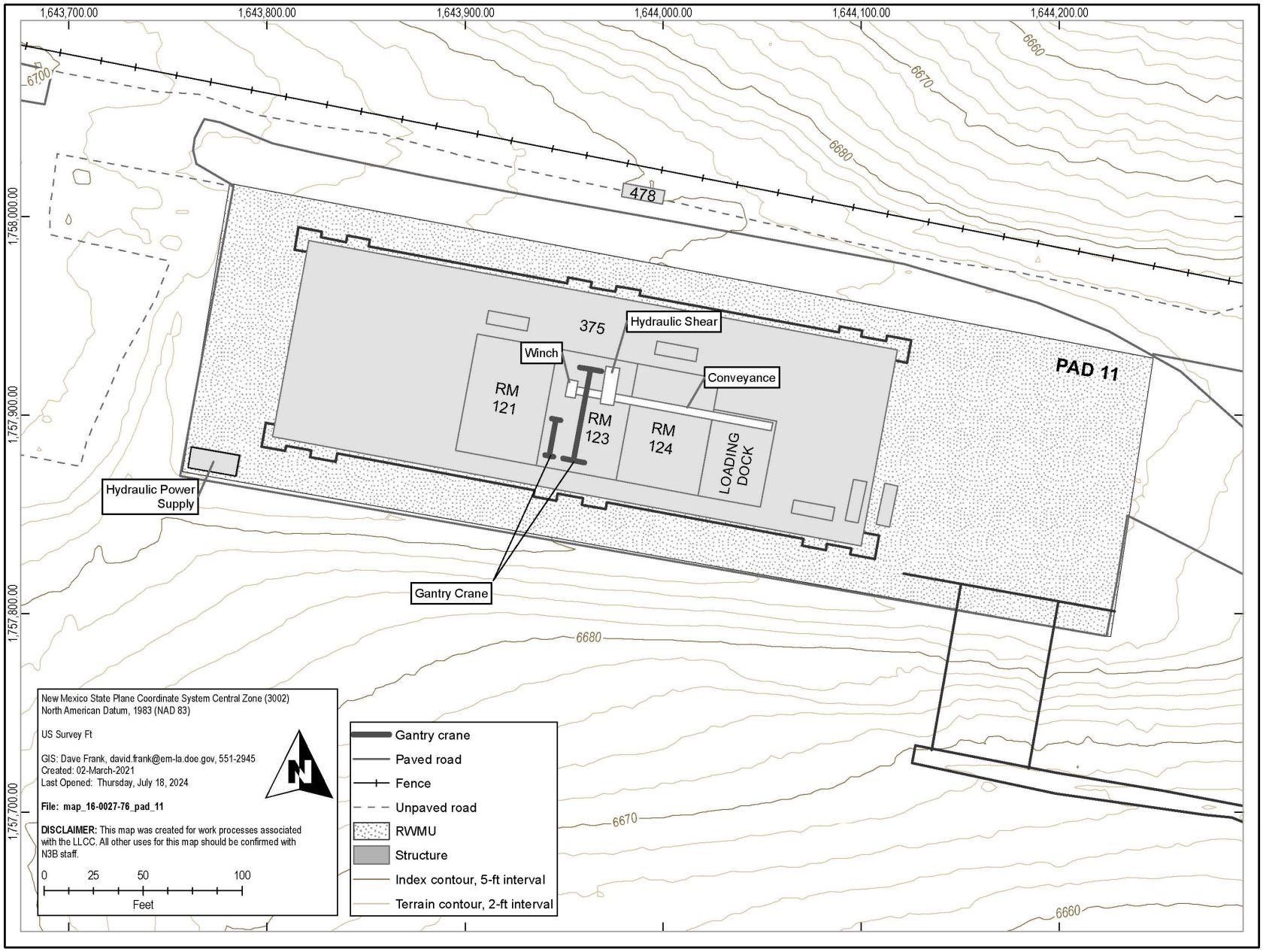


Figure 26: TA-54, Area G, Pad 11

[This figure has been provided to the New Mexico Environment Department under separate cover as Unclassified Controlled Nuclear Information (UCNI) defined by Section 148 of the Atomic Energy Act.]

Figure 27: TA-55, Basement Floor Plan

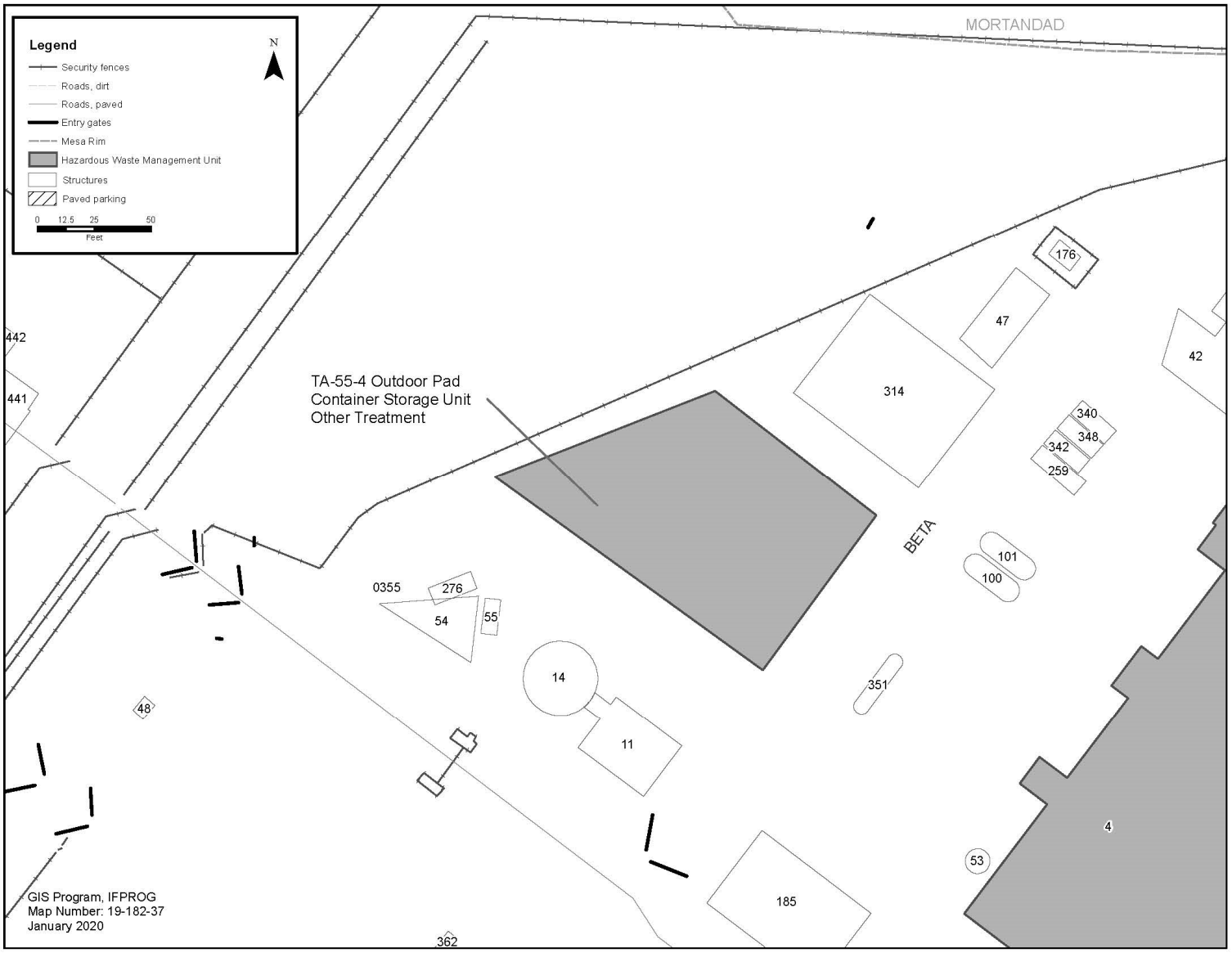


Figure 28: TA-55, Building 4, Outdoor Storage Pad

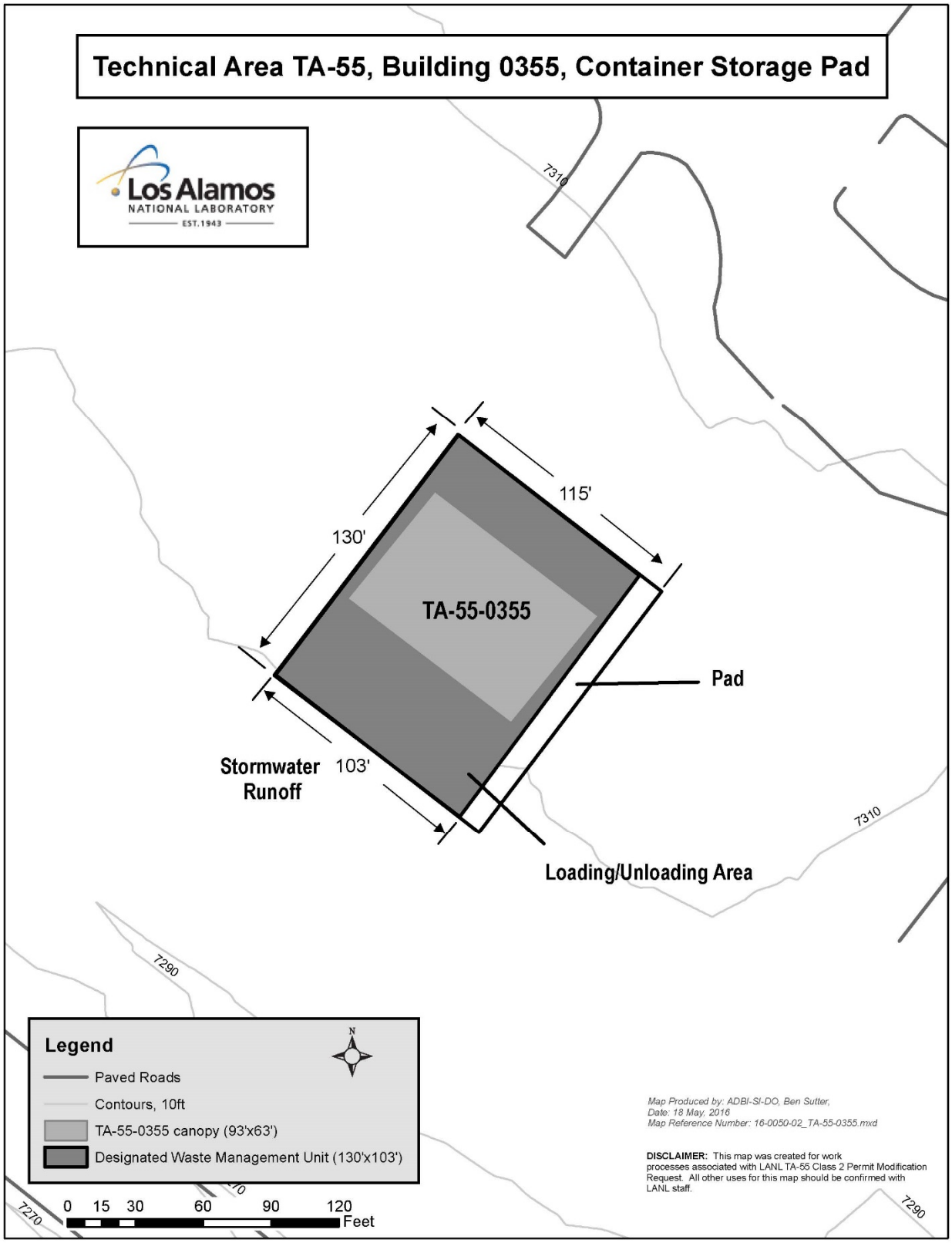


Figure 29: TA-55-355 Container Storage Pad

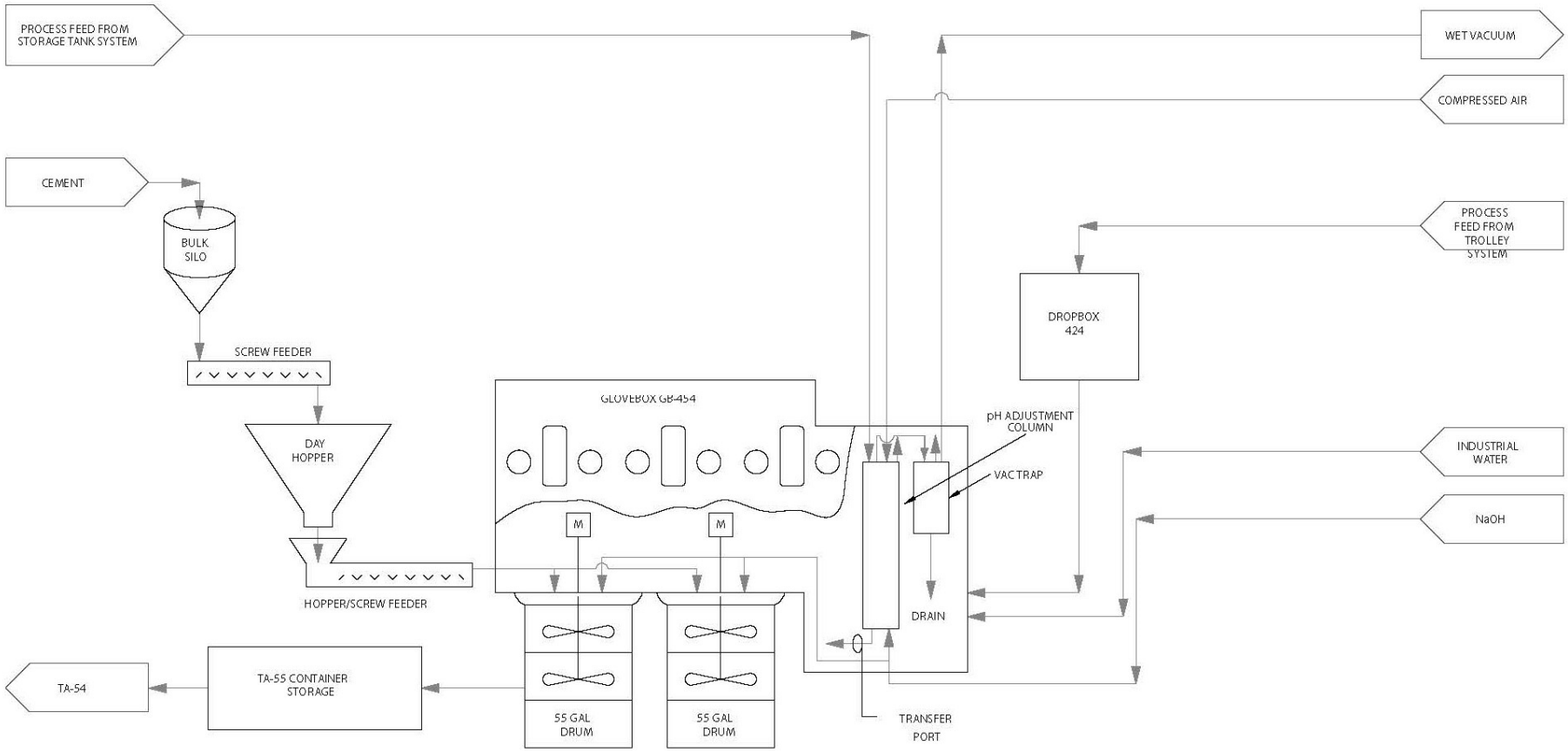


Figure 30: TA-55, Building 4 Storage Tank System Process Flow Diagram

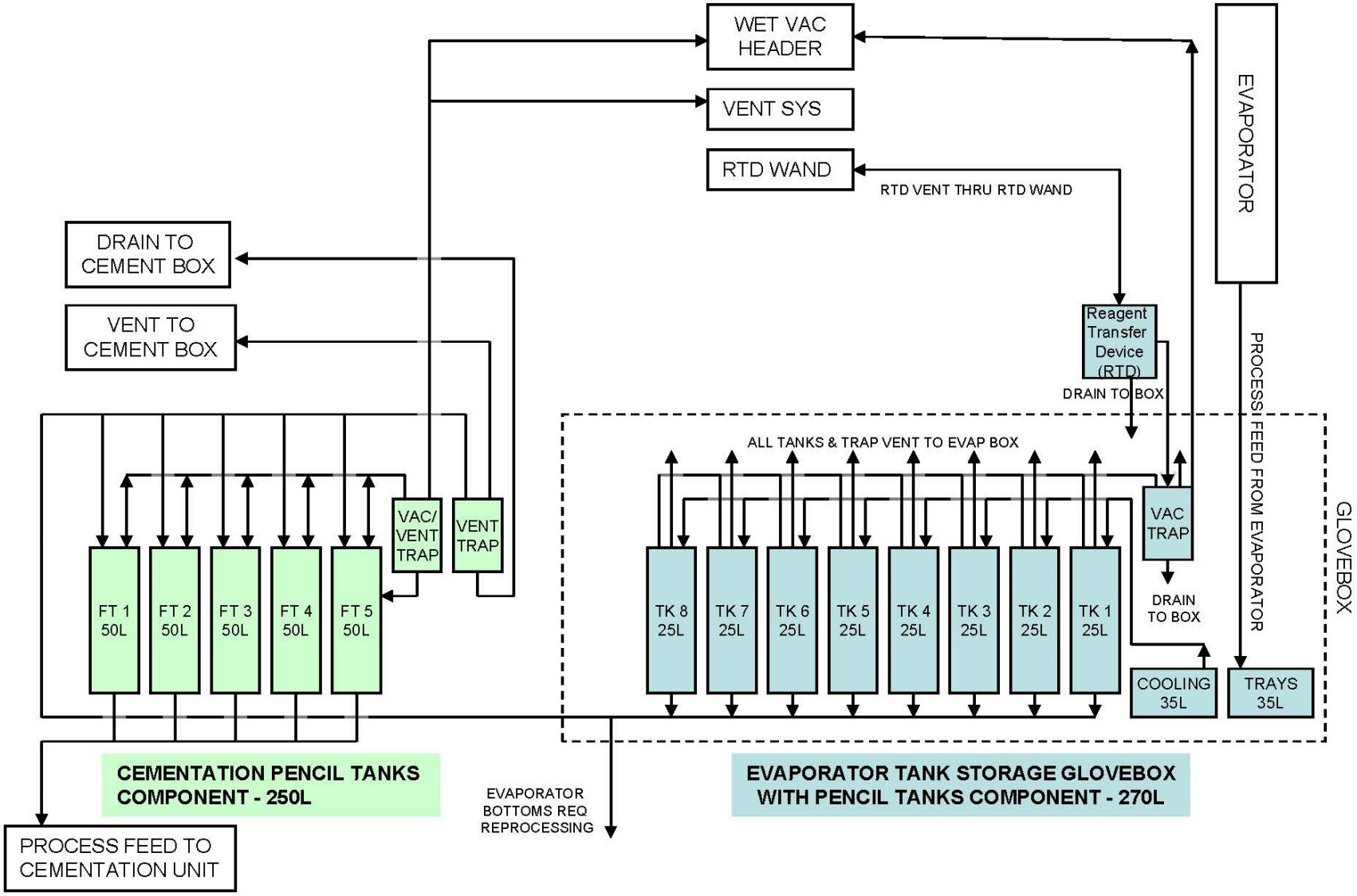


Figure 31: TA-55, Building 4, Cementation Unit Process Flow Diagram

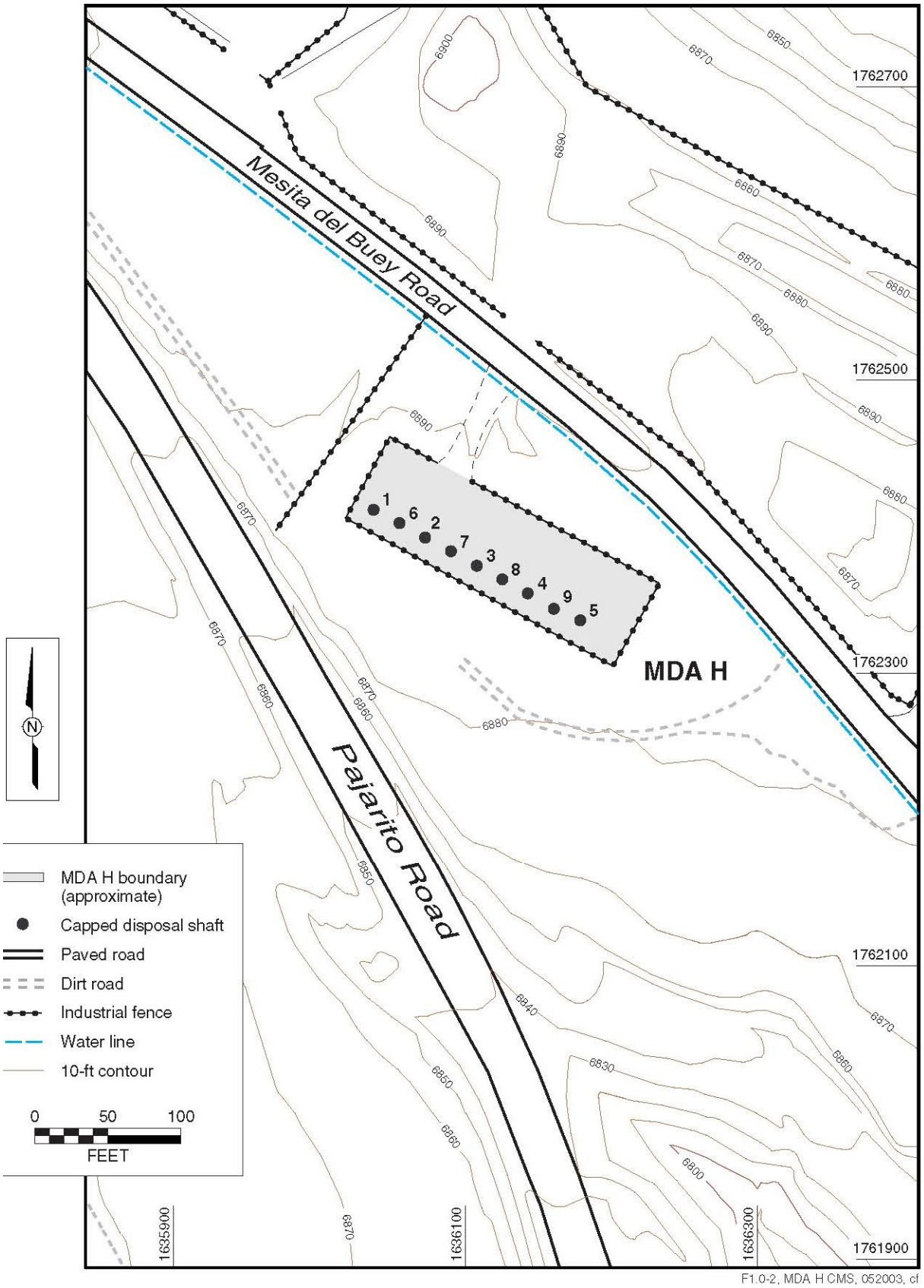


Figure 32: TA-54, Material Disposal Area (MDA) H

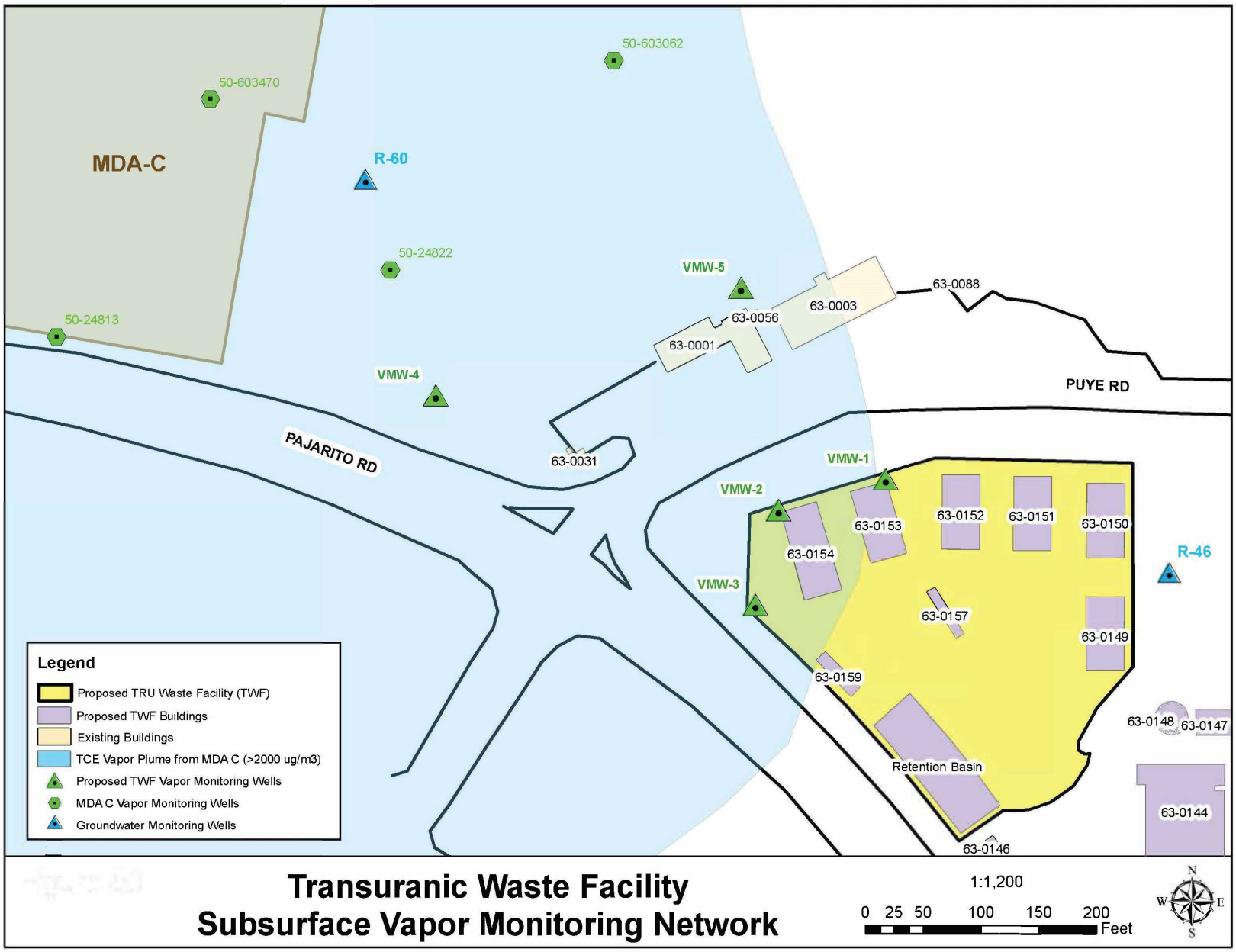


Figure 33: TA-63 Transuranic Waste Facility Subsurface Vapor Monitoring Network

Appendix 2

Evidence of Public Notice, Summary of Comments, and Public Comment Response for Public Information Meeting on Los Alamos National Laboratory Permit Renewal Application

Evidence of Public Notice for 2019 Pre-application Meeting

TRAPPING //

FROM PAGE 1

where domestic animals are being trapped, information that could be helpful to both pet-owners and the state Department of Game and Fish. He noted that each game warden is tasked with overseeing activities on 2,200 square miles of public land.

The map is marked by colored dots, each color representing a different kind of trapping incident. For instance, blue dots mark the spots where recorded illegal trappings of protected furbearing animals have occurred since 2016, from information procured through a public records request to Game and Fish. Yellow dots show where endangered Mexican gray wolves have been caught in traps, while red dots identify spots where dogs were snagged. Green dots indicate where other incidents occurred, like when a raven was caught in a leg hold trap near Farmington, and where a woman stepped in a trap near Albuquerque.



Chris Smith

Other humans have been injured while attempting to free dogs or other animals from traps.

By clicking on a dot, a description of the incident, the date it occurred and, in some cases, a photograph of the trapped animal is shown.

"A dog named Sammy was out with his owner when he got caught in two traps — one foot in each trap," says the description for one incident that happened near Santa Fe. "The owner was able to release him and Sammy ended up being OK."

But not all incidents end so happily.

"Roxy was out for a walk with her owner when she got caught in a neck snare. Her owner was unable to figure out how to release her quickly enough and she strangled to death in his arms," says the description for what became a high-profile incident last November.

Dave Clark had taken 8-year-old heeler mix Roxy out to the Santa Cruz Lake Recreation Area, Bureau of Land Management land, where he had taken her for walks many times before. But, this time, Roxy was snagged by a neck snare and strangled to death while Clark struggled to free her.

Months later, a bill that proposed to ban trapping on public lands was introduced in the state Legislature by state Reps. Christine Chandler of Los Alamos, Bobby Gonzales of Taos and Matthew McQueen of Galisteo. The bill was christened "Roxy's law" after Clark's beloved heeler, but it was postponed and never made it to the House floor. Advocates of the bill hope to revive it in 2021, as next year's session is focused on the state budget.

The New Mexico Game and Fish Department is also considering a proposal that would ban traps and snares in some high-use areas and at hiking trailheads, but trapping opponents say that's not enough. They want traps banned from all public land in New Mexico, especially now that New Mexico has established a new Office of Outdoor Recreation under the state's Economic Development Department.

Mary Katherine Ray is with the Sierra Club. Two of the dots on the map represent experiences she had while out enjoying the outdoors in Socorro County. One was when her own dog got caught in a trap. Fortunately, it survived.

"No one should have to worry about their dog being caught, but the sad truth is that until these things are prohibited from public lands, they are a worry," she said. "I don't want anyone else to have to go through what Roxy's family did."

The other incident occurred when she and a group of friends came across a coyote caught in a trap. It was languishing, she said, and suffering from injuries.

"No one should bear witness to the cruelty to wildlife," she said. "I'm still haunted by that."

Coyotes and some types of skunks are two species that can legally be trapped year-round, even without a trapping license. That's because they are considered nuisances and the state Legislature has not listed them among the protected furbearers, which are subject to trapping regulations established by the Game Commission.

Trapping season for protected furbearing animals, like badgers, beavers, bobcats, muskrats, ringtail cats and raccoons, began Friday and, for most of them, runs through March 15.

Efforts to reach the New Mexico Trappers Association through email and the contact page on its website for comment for this story were unsuccessful.

According to the website, the group serves to educate and train trappers in the wise use of renewable fur resources, as well as proper methods for taking targeted animals, regulations and laws, and ways to increase fur marketability.

It says that trapping is a tradition for many New Mexicans, especially those living in rural areas.

"Trapping for them is a way of life and, for some, trapping is a sole source of income. If we lose our right to trap in New Mexico, these families and hundreds of other trappers will lose their income and their heritage," it says. "Trapping in New Mexico is a tradition. The continuation of our freedom to trap here is in constant jeopardy and threatened by those that are not educated in the benefits of trapping."

James Pitman, assistant chief of information with New Mexico Department of Game and Fish, said more than 2,000 licenses to trap furbearing animals were issued last season. The licenses cost $20 for New Mexico residents and $345 for those who live out of state.

The department's harvest report from the 2017-18 trapping season shows that 5,185 protected furbearing animals were trapped. The 2,353 grey foxes trapped accounted for 45% of the total. Bobcats were the next most trapped animal, with 1,814 caught that season.

That's just the catches that were recorded, says WildEarth Guardian's Smith, and it doesn't include countless other trapping incidents that go unrecorded and the roughly 5,000 coyotes caught each year. Nor does it reflect the 37 Mexican gray wolves, a protected endangered species, caught since 1998, mostly in the Gila National Forest.

Traps are often set by ranchers to protect cattle from wolves. While most wolves caught in traps are freed and released, some are euthanized due to the severity of their injuries. As of last year, there were only about 130 Mexican gray wolves in the wild.

But Smith says the main intent of creating the map is to shed light on illegal trapping that puts pets and people at risk.

"My hope is that people will find it empowering, and help people to understand the scope and that it ultimately puts an end to trapping," he said. "In some ways, this is really illuminating, but we know that it still represents just a tiny fraction of the illegal trapping incidents that occur."

Pitman at Game and Fish said the map could prove beneficial to them, as well.

"We haven't seen it, but any reliable data that can assist the commission in the rule-making process could be useful," he said.

movie listings

Times and shows subject to change without notice. Contact theaters for information.

SANTA FE

REGAL SANTA FE STADIUM 14

3474 Zafarano Dr., 424-0799

Arctic Dogs (PG); **Harriet** (PG-13); **Terminator: Dark Fate** (R); **Black and Blue** (R); **Countdown** (PG-13); **Current War: Director's Cut** (PG-13); **Maleficent: Mistress of Evil** (PG); **Zombieland: Double Tap** (R); **The Addams Family** (PG); **Gemini Man** (PG-13); **Joker** (R); **Abominable** (PG); **Slayer: The Repentless Killogy** (NR); **Midway** (PG-13); **Doctor Sleep** (R); **Playing with Fire** (PG); **Last Christmas** (PG-13).

REGAL SANTA FE PLACE

4250 Cerrillos Road, 424-6109

Terminator: Dark Fate (R); **Countdown** (PG-13); **Maleficent: Mistress of Evil** (PG); **The Addams Family** (PG); **Joker** (R); **Abominable** (PG); **Hustlers** (R); **Doctor Sleep** (R).

VIOLET CROWN

1606 Alcaldesa St., 216-5678 or santafe.violetcrown.com

A Night With Janis Joplin (NR); **Harriet** (PG-13); **JoJo Rabbit** (PG-13); **Joker** (R); **Judy** (PG-13); **The Lighthouse** (R); **Maleficent: Mistress of Evil** (PG); **Parasite** (R); **REEL ROCK 14** (NR); **Royal Opera 2019/2020: Don Giovanni** (NR); **Terminator: Dark Fate** (R); **Western Stars** (PG); **Zombieland: Double Tap** (R).

CCA

1050 Old Pecos Trail, 982-1338 or www.ccasantafe.org.

Parasite (R); **JoJo Rabbit** (PG-13).

THE SCREEN

1600 St. Michael's Dr., 982-1338 or www.ccasantafe.org.

Gift (NR); **Fantasic Fungi** (NR); **Linda Ronstadt: The Sound of My Voice** (PG-13); **Parole & Silent Medicine with Live Comedy Show** (NR).

JEAN COCTEAU CINEMA

418 Montezuma Ave., 466-5528 or www.jeancocteau-cinema.com.

Murderous Trance (NR); **The Love That Would Not Die: Episodes 1-3** (NR).

ESPAÑOLA

DREAMCATCHER 10

33771 S. US 285, Española, 753-0087

Arctic Dogs (PG); **Terminator: Dark Fate** (R); **Countdown** (PG-13); **Maleficent: Mistress of Evil** (PG); **Zombieland Double Tap** (R); **Gemini Man** (PG-13); **The Addams Family** (PG); **Joker** (R); **Abominable** (PG); **Rambo: Last Blood** (R).

LOS ALAMOS

REEL DEAL

2551 Central Ave., Los Alamos, 662-0617

Motherless Brooklyn (R); **Terminator: Dark Fate** (R); **Zombieland: Double Tap** (R); **Maleficent: Mistress of Evil** (PG).

TAOS

STORYTELLER CINEMA 7

110 Old Talpa Cañon Road, Taos, 575-751-4245

Arctic Dogs (PG); **Terminator: Dark Fate** (R); **Maleficent: Mistress of Evil** (PG); **Zombieland: Double Tap** (R); **Gemini Man** (PG-13); **The Addams Family** (PG); **Joker** (R).

calendar

FROM PAGE 7

ards Ave. Free.

ARTIFICIAL INTELLIGENCE & ROBOTICS IN AGRICULTURE Learn all about the new technology and artificial intelligence in robotics being used in modern agriculture. 3-4:30 p.m., Upstairs Conference Room, Udall Building, 725 Camino Lejo, Museum Hill. $5-$10. 471-9103 or santafebotanicalgarden.org.

"THE TRUMPET LESSON" Author Dianne Romain sits down to talk about her new book that explores how societal attitudes about teenage pregnancy, race, adoption, family and homosexuality affect personal integrity. 6 p.m., Collected Works Bookstore, 202 Galisteo St. Free. 988-4226.

FRIDAY

ONSTAGE

BILLY CHILDS QUARTET Celebrated as one of the most diversely prolific and inventive pianists, composers and arrangers at work today, this polymath has collaborated with Wynton Marsalis, Wayne Shorter, Sting, Chick Corea, Kronos Quartet, Yo-Yo Ma and Renée Fleming. Childs comes to Santa Fe ably supported by his quartet for an evening of jazz. 7:30 p.m., Lensic Performing Arts Center, 211 W. San Francisco St. $29-$115. 988-1234



COURTESY OF LAURIE ANTONIOLI

Laurie Antonioli & The American Dreams Band present an evening of jazz and more at GiG Performance Space on Friday, Nov. 8.

or ticketssantafe.org.

LAURIE ANTONIOLI & THE AMERICAN DREAMS BAND Laurie Antonioli is one of the era's definitive jazz vocalists, but she's got a little rock 'n' roll in her soul too. She performs songs

SEE **CALENDAR** // PAGE 14

Los Alamos NATIONAL LABORATORY EST. 1943

Notice of Public Meeting
Los Alamos National Laboratory Hazardous Waste Facility Permit Renewal Application
EPA ID NO. NM0890010515

The Department of Energy (DOE), Triad National Security, LLC and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) will be holding a public information meeting prior to the submittal of the Los Alamos National Laboratory Hazardous Waste Facility Permit Renewal Application. The meeting will discuss the permit renewal application for the 27 units included in the current operating permit and application for inclusion of three units in interim status at LANL.

The purpose of the meeting is to solicit questions from the community and inform the community of the proposed hazardous waste management activities at LANL.

Meeting Information

Date: Wednesday, December 4, 2019

Location: Cities of Gold Hotel & Casino Conference Center, Tribal Room
10 Cities of Gold Road, Santa Fe, NM 87506

Time: 5:30pm – 7:30pm

If you will need special assistance to participate in this meeting, please notify the contact below at least 72 hours before the meeting so that arrangements can be made.

If you have questions, please contact us.
Los Alamos National Laboratory
Environmental Communication & Public Involvement
P.O. Box 1663, MS K491
Los Alamos, NM 87545
Phone: 505-667-3792
envoutreach@lanl.gov

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NNSA National Nuclear Security Administration

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Fri 11am-9pm
Saturday 12pm-9pm
Sunday 5pm-9pm
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Masa menu



are bigger challenges that won't be as simple to resolve.

Whatever they come up with, opportunities to earn huge sums of money could very well be the exception, not the rule, according to those who observe and work in the markets.

The board of governors for the nation's largest governing body met Tuesday and set a January 2021 deadline to have rules and regulations finalized across three divisions covering more than 1,100 schools and 460,000 athletes.

Lawmakers in California and other states would like to lift all restrictions, letting the free market decide. But NCAA leaders, concerned about possible corruption and the use of endorsement deals to lure top recruits, are likely to take a far more cautious approach.

"It's really hard to play the speculation game as to what an athlete would be worth in the world the NCAA is envisioning because as best I can tell, their announcement essentially said that they will treat athletes like the plaintiffs argued that name, image and likeness rights extended to television broadcasts.

"There's no difference in name, image and likeness rights, whether they are for individual endorsements of the product or appearance in a broadcast," said Michael Hausfeld, the lead attorney in the O'Bannon case.

Bargaining agreements for professional athletes include compensation for using the athletes' name, image and likeness in a broadcast, Hausfeld said. "There's no reason that college athletes should be exempt from that."

A group licensing agreement directly with players could be a path to bringing back a version of the popular NCAA football video game that was suspended during the O'Bannon case.

Game maker EA Sports settled for $60 million to cover the 12 years in which the game was available. If such compensation were allowed in the future, each player could potentially be paid about $450 per year.

"The only reason why those video games don't exist is because sponsors much greater reach for their dollar, said Jim Cavale, founder of the INFLCR company, which works with teams at Duke, Miami, Oregon, Auburn, and dozens of other schools that want to help athletes promote their brands on social media.

Cavale said such exposure "becomes just as valuable, if not more valuable, than the stadium signage."

It's doubtful the NCAA and its schools will be willing to allow players to sign sponsorship deals. The NCAA says it will never allow students to be paid as if they were employees. So if group licensing is going to be a challenge and even local endorsement deals are unlikely to fly, what's the market for real money going to be for a college athlete?

"You've got what I call nominal opportunities, and those will probably be quite a few," said former congressman and NBA basketball player Tom McMillen, who is now president of LEAD1 Association, representing athletic directors from major college football schools.

Most notably, the B for racial hiring practices broke a streak of nine consecutive years of earning an A-minus or higher. The NFL's score for race was 82.3%, 6.7 percentage points lower than last year's score of 89%. The score for gender was 76%, a two-percentage point increase from 2018.

"Almost all of this is attributed to a drop in head coach of color and general managers of color, because we put additional weight on those positions," Lapchick told the AP.

Lapchick noted there are currently only four people of color in head coaching positions, down from a record-tying eight to start the 2017 and 2018 seasons.

Also, there were only GMs who are people of color to start the 2019 season, a decrease from tegically lead all of the various initiatives related to diversity and inclusion across the league. This role highlights the increased emphasis on continuing the League's progress when it comes to improving diversity and inclusion as a workplace and in all aspects of its business, according to Lapchick.

Lapchick also said hiring trends tend to be cyclical, so he's optimistic more people of color will be added in the next hiring cycle in 2020.

If not, he said, it might be time for players to get involved.

The report notes that more than 70 percent of the players in the league are people of color, representing a major discrepancy in comparisons to the number of coaches and general managers who are people of color.

Los Alamos
NATIONAL LABORATORY
EST. 1943

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EPA ID NO. NM0890010515

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Phone: 505-667-3792
envoutreach@lanl.gov

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Broncos haven't found playoff QB since Peyton Manning

ENGLEWOOD, Colo. (AP) — When Brandon Allen takes his first NFL snap against the Browns on Sunday he'll become the sixth QB to start for the Denver Broncos since Peyton Manning retired four years ago, demonstrating once more the degree of difficulty in replacing an iconic quarterback.

That's something John Elway has seen from both the inside as the Denver Broncos' top football executive and from the outside after his Hall of Fame playing career ended in 1999.

Although there are notable outliers — the 49ers moved seamlessly from Joe Montana to Steve Young and Aaron Rodgers succeeded Brett Favre in Green Bay — teams typically struggle to remain relevant when their elite QB moves on.

"It's a hard position to fill," Elway said this summer. "We tried to shake all these trees around here the last four years and quarterbacks didn't fall out of it. It's difficult, but we've taken a lot of shots."

Trevor Siemian. Paxton Lynch. Brock Osweiler. Case Keenum. Joe Flacco.

The Broncos, to a lesser degree, also had a hard time replacing Elway upon his retirement in 1999. Brian Griese started the next four seasons as the core of the two-time champions' roster dissolved and he missed 13 games over that span with Chris Miller (3), Gus Frerotte (7) and Steve Beuerlein (3) filling in. Frerotte also started a playoff game at Baltimore in 2000.

Jake Plummer arrived in 2003 but only started 11 games with Beuerlein (2), Danny Kanell (2) and Jarious Jackson (1) also starting that year. Plummer returned against Indianapolis in the playoffs, beginning a streak of 46 consecutive starts before he was benched for rookie Jay Cutler down the stretch in 2006.

Elway was feeling pretty good about acquiring Flacco and drafting Drew Lock this year, but those fuzzy feelings quickly faded.

A sprained thumb in the preseason landed Lock on IR, stunting his growth in Denver's pro-set offense after he operated almost exclusively out of the shotgun and in the spread at Missouri.

Lock hasn't practiced since Aug. 16, relying on virtual reality headsets that simulate on-field action but do nothing to improve one's footwork.

Lock was eligible to return to practice two weeks ago, but the Broncos haven't rushed him back to gauge his prospects of playing this year.

"I'm anxious for it to happen — at the right time," coach Vic Fangio said Wednesday, shortly after Elway said on his weekly KOA radio show in Denver that the plan is to bring Lock back for Week 11, starting a 21-day clock for the team to decide whether to activate him or declare his 2019 season over.

Rookie Brett Rypien, who also has zero NFL regular season experience, will be promoted from the practice squad to serve as Allen's backup Sunday when the Broncos (2-6) host Cleveland (2-5).

Flacco joined Lock on the sideline this week when he was diagnosed with a herniated disk in his neck, one day after ripping his coaches' conservative play-calling in a 15-13 loss at Indianapolis.

Allen, a sixth-round pick by Jacksonville in 2016, gets his shot just two months after the Broncos claimed him off waivers from the Los Angeles Rams.

The Broncos have gone 22-34 since Manning's retirement in the wake of Denver's last Super Bowl title.

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SPORTS

How much are college athletes' names and images worth?

BY RALPH D. RUSSO
ASSOCIATED PRESS

How much are a college athlete's name, image and likeness worth? And who would want to pay for them?

The questions are front and center now that the NCAA, pressured by individual states that have started acting on their own, has taken a major step toward allowing athletes to make money off their fame.

Deciding to reverse the prohibition on earning money was the easy part; determining how much athletes can make, under what circumstances and in a way that doesn't permit abuses are bigger challenges that won't be as simple to resolve.

Whatever they come up with, opportunities to earn huge sums of money could very well be the exception, not the rule, according to those who observe and work in the markets.

The board of governors for the nation's largest governing body met Tuesday and set a January 2021 deadline to have rules and regulations finalized across three divisions covering more than 1,100 schools and 460,000 athletes.

Lawmakers in California and other states would like to lift all restrictions, letting the free market decide. But NCAA leaders, concerned about possible corruption and the use of endorsement deals to lure top recruits, are likely to take a far more cautious approach.

"It's really hard to play the speculation game as to what an athlete would be worth in the world the NCAA is envisioning because as best I can tell, their announcement essentially said that they will treat athletes like other students — except when they won't," said Andy Schwarz, an economist who helped craft the California bill signed into law last month that helped push the NCAA toward rewriting its regulations.

There are some who believe there is a potential to unlock real riches — if the athletes can somehow get organized.

At the top of the wish list: getting players a piece of the billions being paid by TV networks to the NCAA and conferences for the rights to televise games.

That might seem far-fetched, but when the NCAA was sued in 2014 by former UCLA basketball star Ed O'Bannon, attorneys for the plaintiffs argued that name, image and likeness rights extended to television broadcasts.

"There's no difference in name, image and likeness rights, whether they are for individual endorsements of the product or appearance in a broadcast," said Michael Hausfeld, the lead attorney in the O'Bannon case.

Bargaining agreements for professional athletes include compensation for using the athletes' name, image and likeness in a broadcast, Hausfeld said. "There's no reason that college athletes should be exempt from that."

A group licensing agreement directly with players could be a path to bringing back a version of the popular NCAA football video game that was suspended during the O'Bannon case.

Game maker EA Sports settled for $60 million to cover the 12 years in which the game was available. If such compensation were allowed in the future, each player could potentially be paid about $450 per year.

"The only reason why those video games don't exist is because the schools didn't want to let the players have their fair share," Huma said.

It's unclear whether the NCAA will allow athletes to strike endorsement deals with local businesses (think car dealership or pizza joint), to charge for their autographs or sell memorabilia the way professional athletes do. Those who work in college athletics expect the most plentiful opportunities will be online: Raying social media gigs could be a natural fit for many college athletes, they say.

Schools would be wise to combine their players' social media power with their own accounts, giving advertisers or sponsors much greater reach for their dollar, said Jim Cavale, founder of the INFLCR company, which works with teams at Duke, Miami, Oregon, Auburn, and dozens of other schools that want to help athletes promote their brands on social media.

Cavale said such exposure "becomes just as valuable, if not more valuable, than the stadium signage."

It's doubtful the NCAA and its schools will be willing to allow players to sign sponsorship deals. The NCAA says it will never allow students to be paid as if they were employees. So if group licensing is going to be a challenge and even local endorsement deals are unlikely to fly, what's the market for real money going to be for a college athlete?

"You've got what I call nominal opportunities, and those will probably be quite a few," said former congressman and NBA basketball player Tom McMillen, who is now president of LEAD1 Association, representing athletic directors from major college football schools.

NFL earns its lowest score for racial, gender hiring in 15 years

ASSOCIATED PRESS

The NFL received its lowest overall score in racial and gender hiring practices in 15 years, according a new diversity report.

The Institute for Diversity and Ethics in Sport released its annual racial and gender report card Wednesday, giving the NFL a B for racial hiring practices and a C-plus for gender hiring practices. This gave the NFL a combined B-minus grade for its overall score of 79.3%, a notable decrease from its score of 81.6% last year.

Most notably, the B for racial hiring practices broke a streak of nine consecutive years of earning an A-minus or higher. The NFL's score for race was 82.3%, 6.7 percentage points lower than last year's score of 89%. The score for gender was 76%, a two-percentage point increase from 2018.

"Almost all of this is attributed to a drop in head coach of color and general managers of color, because we put additional weight on those positions," Lapchick told the AP.

Lapchick noted there are currently only four people of color in head coaching positions, down from a record-tying eight to start the 2017 and 2018 seasons.

Also, there were only GMs who are people of color to start the 2019 season, a decrease from four in 2018 and six in 2017.

"That's concerning," Lapchick said.

In an attempt to progressively continue diversity and inclusion efforts, the NFL made improvements to the Rooney Rule forcing teams to go outside their own organizations to interview a candidate of color or to interview a candidate who is on the league's career development advisory panel list, Lapchick said.

Lapchick also noted that NFL is preparing to announce an executive vice president and chief people officer to strategically lead all of the various initiatives related to diversity and inclusion across the league. This role highlights the increased emphasis on continuing the League's progress when it comes to improving diversity and inclusion as a workplace and in all aspects of its business, according to Lapchick.

Lapchick also said hiring trends tend to be cyclical, so he's optimistic more people of color will be added in the next hiring cycle in 2020.

If not, he said, it might be time for players to get involved.

The report notes that more than 70 percent of the players in the league are people of color, representing a major discrepancy in comparisons to the number of coaches and general managers who are people of color.

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Notice of Public Meeting
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EPA ID NO. NM0890010515

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Broncos haven't found playoff QB since Peyton Manning

ENGLEWOOD, Colo. (AP) — When Brandon Allen takes his first NFL snap against the Browns on Sunday he'll become the sixth QB to start for the Denver Broncos since Peyton Manning retired four years ago, demonstrating once more the degree of difficulty in replacing an iconic quarterback.

That's something John Elway has seen from both the inside as the Denver Broncos' top football executive and from the outside after his Hall of Fame playing career ended in 1999.

Although there are notable outliers — the 49ers moved seamlessly from Joe Montana to Steve Young and Aaron Rodgers succeeded Brett

The Broncos, to a lesser degree, also had a hard time replacing Elway upon his retirement in 1999. Brian Griese started the next four seasons as the core of the two-time champions' roster dissolved and he missed 13 games over that span with Chris Miller (3), Gus Frerotte (7) and Steve Beuerlein (3) filling in. Frerotte also started a playoff game at Baltimore in 2000.

Jake Plummer arrived in 2003 but only started 11 games with Beuerlein (2), Danny Kanell (2) and Jarious Jackson (1) also starting that year. Plummer returned against Indianapolis in the playoffs, beginning a streak of 46 consecutive starts before he was

Lock hasn't practiced since Aug. 16, relying on virtual reality headsets that simulate on-field action but do nothing to improve one's footwork.

Lock was eligible to return to practice two weeks ago, but the Broncos haven't rushed him back to gauge his prospects of playing this year.

"I'm anxious for it to happen — at the right time," coach Vic Fangio said Wednesday, shortly after Elway said on his weekly KOA radio show in Denver that the plan is to bring Lock back for Week 11, starting a 21-day clock for the team to decide whether to activate him or declare his 2019 season over.

How much are college athletes' names and images worth?

BY RALPH D. RUSSO
ASSOCIATED PRESS

How much are a college athlete's name, image and likeness worth? And who would want to pay for them?

The questions are front and center now that the NCAA, pressured by individual states that have started acting on their own, has taken a major step toward allowing athletes to make money off their fame [illegible] other students — except when they won't," said Andy Schwarz, an economist who helped craft the California bill signed into law last month that helped push the NCAA toward rewriting its regulations.

There are some who believe there is a potential to unlock real riches — if the athletes can somehow get organized.

At the top of the wish list: getting players a [illegible] cause the schools didn't want to let the players have their fair share," Huma said.

It's unclear whether the NCAA will allow athletes to strike endorsement deals with local businesses (think car dealership or pizza joint), to charge for their autographs or sell memorabilia the way professional athletes do. Those who work in [illegible]

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Although there are notable outliers — the 49ers moved seamlessly from Joe Montana to Steve Young and Aaron Rodgers succeeded Brett Favre in Green Bay — teams typically struggle to remain relevant when their elite QB moves on.

"It's a hard position to fill," Elway said this summer. "We tried to shake all these trees around here the last four years and quarterbacks didn't fall out of it. It's difficult, but we've taken a lot of shots."

Trevor Siemian. Paxton Lynch. Brock Osweiler. Case Keenum. Joe Flacco.

The Broncos, to a lesser degree, also had a hard time replacing Elway upon his retirement in 1999. Brian Griese started the next four seasons as the core of the two-time champions' roster dissolved and he missed 13 games over that span with Chris Miller (3), Gus Frerotte (7) and Steve Beuerlein (3) filling in. Frerotte also started a playoff game at Baltimore in 2000.

Jake Plummer arrived in 2003 but only started 11 games with Beuerlein (2), Danny Kanell (2) and Jarious Jackson (1) also starting that year. Plummer returned against Indianapolis in the playoffs, beginning a streak of 46 consecutive starts before he was benched for rookie Jay Cutler down the stretch in 2006.

Elway was feeling pretty good about acquiring Flacco and drafting Drew Lock this year, but those fuzzy feelings quickly faded.

A sprained thumb in the preseason landed Lock on IR, stunting his growth in Denver's proset offense after he operated almost exclusively out of the shotgun and in the spread at Missouri.

Lock hasn't practiced since Aug. 16, relying on virtual reality headsets that simulate on-field action but do nothing to improve one's footwork.

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Rookie Brett Rypien, who also has zero NFL regular season experience, will be promoted from the practice squad to serve as Allen's backup Sunday when the Broncos (2-6) host Cleveland (2-5).

Flacco joined Lock on the sideline this week when he was diagnosed with a herniated disk in his neck, one day after ripping his coaches' conservative play-calling in a 15-13 loss at Indianapolis.

Allen, a sixth-round pick by Jacksonville in 2016, gets his shot just two months after the Broncos claimed him off waivers from the Los Angeles Rams.

The Broncos have gone 22-34 since Manning's retirement in the wake of Denver's last Super Bowl title.

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Location: Cities of Gold Hotel & Casino Conference Center, Tribal Room, 10 Cities of Gold Road, Santa Fe, NM 87506
Time: 5:30pm – 7:30pm

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Environmental Communication & Public Involvement
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Los Alamos, NM 87545
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Nov. 11-Nov.14 & Nov. 18-Nov.21
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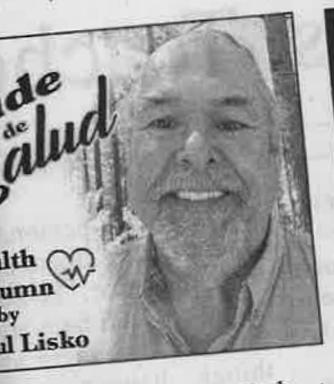
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Patrick Padilla
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Los Alamos National Laboratory
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Los Alamos, NM 87545

he Medical Roots of
easts of Halloween M





While the character of dracula was i
horror novel "Dracula" and popularized
1931 film by the same name, the myth
may have had its origin in a rare disea
porphyria."

Not one to pass up such an opportunity, on Halloween I thought I'd focus on dical abnormalities upon ich society's historic notions werewolves, vampires and er monsters are based.

You have probably heard of erewolves. But have you ever ard of werewolf syndrome? It roduction of body hair.

Another rare disease for consideration is called "erythropoietic protoporphyria" or EPP. This condition disrupts the synthesis of a protein that is an essential component of hemoglobin, which helps to carry oxygen to the cells of the body.

People who suffer from this condition have two notable symptoms. First, they are anemic, which means they have a lack of red blood cells. Second, they are extremely sensitive to ultraviolet light. If exposed to sunlight, their sensitivity can cause cells to burst and die off, leading to painful blisters.

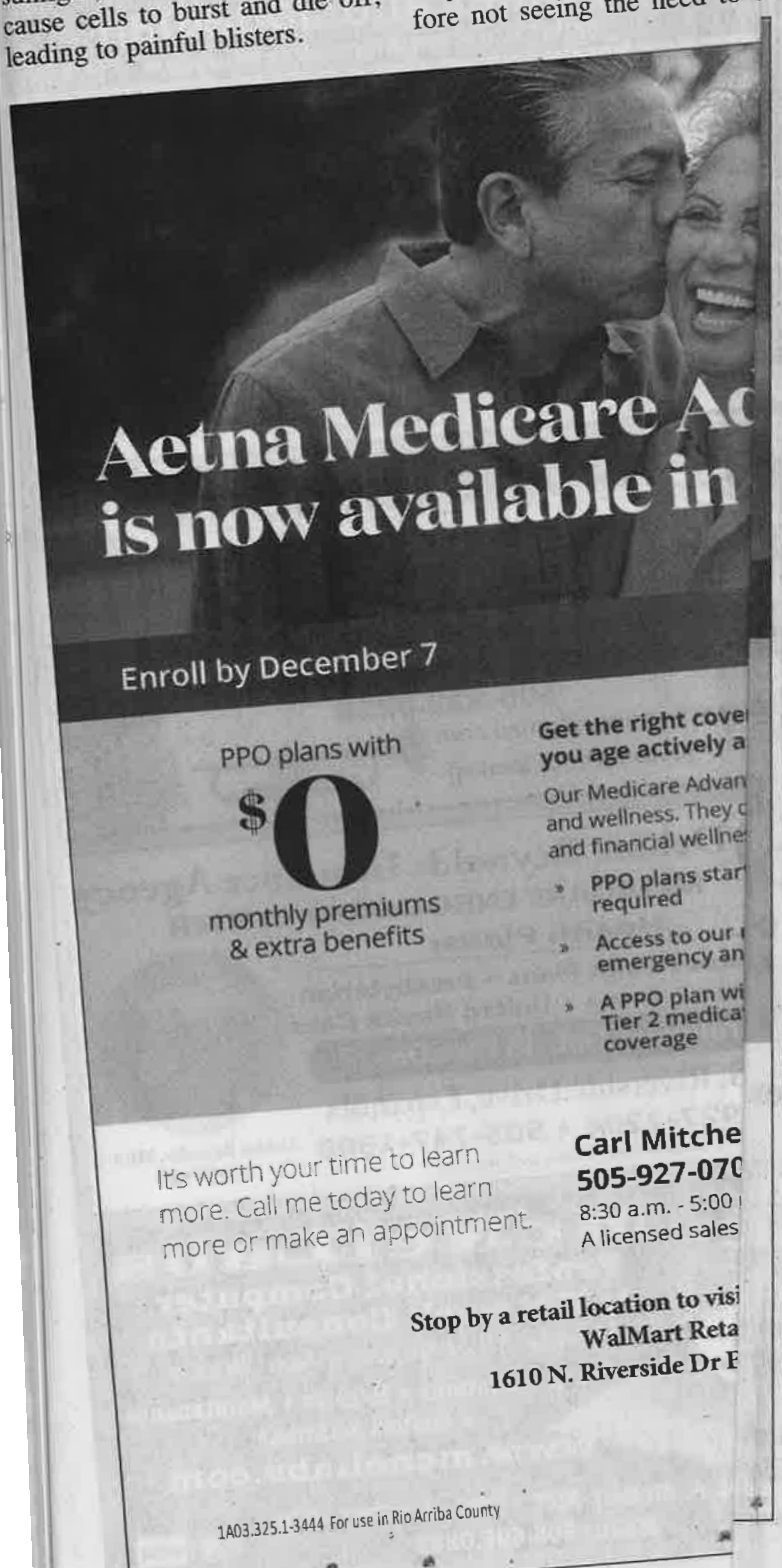
Sound familiar?

This is also the myth of the with this distant relative.

The genetic form of EPP is suspected to have been suffered by both King George III and Mary, Queen of Scots.

Another B-movie monster, who is all the current rage, is the zombie or walking dead. Real zombies may exist through either a psychological or toxicological condition. The psychological condition is referred to in the medical field as Cotard's Syndrome or "walking corpse disease." This condition is extremely rare.

The afflicted person believes they are actually dead and, therefore not seeing the need to e



Siblings Seek Immunity in Bloodless Shooting Trial

By Tabitha Clay
SUN Staff Writer

"If given immunity, (the siblings) will testify that they chased (Hice) by driving in an aggressive manner ... and that they shot at (Hice) first."

Sheri Raphaelson
Defense Attorney

The defense for two siblings wants a judge to issue an order granting them use immunity in the upcoming trial of Mark Hice. He faces charges following two separate shooting incidents in October 2018.

The first shooting resulted in no injuries but involves siblings Angelica and Nathaniel Maestas.

Prosecutors charged Hice after witnesses said he fired a gun at a black Cadillac Escalade driven by Angelica Maestas around 3:30 p.m. on Oct. 4, 2018 on State Road 68 in Ohkay Owingeh. The shooting was first reported by William

their grandmother in Arroyo Seco after being released by the juvenile court system on electronic monitoring.

In the Oct. 17 motion for immunity, Española-based Defense Attorney Sheri Raphael-

Hice and his co-defendant Brittany Garcia have alleged that Angelica and Nathaniel Maestas chased after and then fired at them on the afternoon of Oct. 4 north of Española on State Road 68.

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NNSA National Nuclear Security Administration



Rescue workers look for survivors following a train damaged Thursday by a fire in Liaquatpur, Pakistan. The massive fire engulfed three carriages of the train traveling in the country's eastern Punjab Province. SIDDIQUE BALUCH/ASSOCIATED PRESS

PAKISTAN

Survivors say burning train that killed 74 took 20 minutes to stop

By Asim Tanveer
Associated Press

MULTAN, Pakistan — A raging fire swept through a train in Pakistan's eastern Punjab Province on Thursday, killing 74 people, and survivors said afterward it took nearly 20 minutes for the train to stop amid contradictory reports about the condition of the train's brakes.

Three carriages were consumed by flames from a fire caused by a cooking gas stove, and dozens of people jumped in panic from the speeding train.

Conductor Sadiue Ahmed Khan told the Associated Press the train's emergency breaking system was in perfect working order and the train stopped within three minutes after the first signs of fire.

"This is the worst tragedy in my life as a driver," he said.

Investigators said they will be looking at the train's braking system to determine its condition at the time of the fire. Survivors recounted pulling at emergency cords that weave through the train to notify the conductor, but they said the train continued to speed down the tracks.

Ghulam Abbas, a passenger who had gotten on the train in the town of Nawabshah in neighboring Sindh Province with his wife and two children, echoed other passengers who said it took nearly 20 minutes for the train to stop. He recounted watching panicked passengers jumping off the speeding locomotive.

"We learned afterward that most of them had died," he said.

Abbas' wife, Sulai Khan Bibi, said she was horrified what would happen to their two small children. "We were so close to death, but Allah saved us," she said, clutching the children.

The train, which was traveling from the southern Arabian Sea port city of Karachi to Rawalpindi, just six miles from the federal capital, was carrying 857 passengers. Most of the dead were members of Tableeqi-e-Jamaat, an organization of Islamic missionaries. The fire was believed to have started in their compartment.

Mufti Wahab, a district chief of the Tableeqi-e-Jamaat, said as many as 52 members of his organization were "martyred because of the fire."

The fire apparently started after one of several small stoves brought on to the train by the the Tableeqi members exploded, setting other gas cylinders used to fuel the stoves on fire, said Deputy Railways Commissioner Jamil Ahmed.

Flames roared through the train, engulfing three carriages as it approached the town of Liaquarpur in Punjab. Survivors recounted horrific scenes of fellow passengers screaming as they jumped through windows and off the train, flames billowing from the carriages. "We could hear people crying and screaming for help," said Chaudhry Shujaat, who had boarded the train just a few hours earlier with his wife and two children. "I thought we would die. The next car was on fire. We felt so helpless."

Islamic State names new leader, confirms al-Baghdadi's death

Rukmini Callimachi and Karam Shoumali
New York Times

Days after the Islamic State group's leader, Abu Bakr al-Baghdadi, and his heir apparent were killed in back-to-back attacks by U.S. forces in northern Syria, the group broke its silence Thursday to confirm their deaths, announce a new leader and warn the United States: "Do not be happy."

In an audio recording uploaded on the Telegram app, the Islamic State mourned the loss of al-Baghdadi, who led the organization for nearly a decade, and its spokesman, Abu Hassan al-Muhajir, who was killed a day after al-Baghdadi and who had widely been considered a potential successor.

The audio recording was the first word from the Islamic State confirming the death of its leader, which President Donald Trump triumphantly announced Sunday as a huge blow to the world's most fearsome terrorist group.

Trump and Pentagon officials said al-Baghdadi had blown himself up with a suicide vest, also killing two children, after he had been cornered Saturday in a dead-end tunnel during a U.S. military raid in a northern Syrian village. Al-Muhajir was killed Sunday in an airstrike elsewhere in northern Syria.

Al-Baghdadi's death came eight months after U.S.-led forces in Syria seized the last remnants of the territory once held by the Islamic State, which at its height spanned an area the size of Britain across parts of Syria and Iraq.

The Islamic State announcement said that al-Baghdadi had been succeeded as leader by Ibrahim al-Hashemi al-Qurayshi, whom it identified as the "emir of the believers" and "caliph."

Almost nothing is publicly known about al-Qurayshi, including his real name, and counterterrorism analysts were scrambling Thursday to try to figure out who he is.

"Nobody — and I mean nobody outside a likely very small circle within ISIS — have any idea who their new leader 'Abu Ibrahim al-Hashimi al-Qurayshi' is," Paul Cruickshank, editor of the CTC Sentinel at the Combating Terrorism Center, said in a tweet Thursday. "The group has not yet released any meaningful biographical details which might allow analysts to pinpoint his identity."

Daniele Raineri, a journalist and analyst who has been studying the Islamic State's leadership structure for more than a decade, said the group's leaders often acquire a new nom de guerre with the appointment to a new position, meaning al-Qurayshi may have had a completely different name last week.

The al-Qurayshi appellation at the end of his name indicates that he is being portrayed as a descendant of the Quraysh tribe of the Prophet Muhammad, a lineage that the Islamic State considers to be a prerequisite for becoming a caliph or ruler of a Muslim theocracy.

Its use indicates that the Islamic State continues to see itself as a caliphate — even if one with practically no territory.

"It shows that while the world is ready to pronounce the Islamic State dead and finished, the group's core leadership continues to believe it can operate much as it has in the past," said Colin Clarke, a senior fellow at the Soufan Center, a research organization in New York.

"The suggestion is that nothing changes, allegiance should still be to the leadership, and affiliates and franchises should continue to look to al-Qurayshi for guidance on how to operate," he said.

The announcement, in a seven-minute, 37-second recording, was coupled with a warning to the United States not to gloat over killing al-Baghdadi, who oversaw beheadings of American hostages and other atrocities.

"Do not be happy O America, for the death of Sheikh al-Baghdadi, and do not forget the cups of death at his hands, may God accept him," the announcement said.

It boasted of the group's disciples and expansion beyond the Middle East, even as its core territory in Iraq and Syria was reduced to nil: "Don't you see America that the State is now on the threshold of Europe and Central Africa?"

Records of wire transfers and the testimony of captured fighters in the Democratic Republic of Congo indicate that the group has set up a base of operation in the Central African country.

The announcement also took aim at the leadership of Trump, admonishing the United States: "Don't you see how you became the laughingstock of the nations, and an old and crazy man controls your fate, whose opinion changes between morning and evening?"

The announcement implied that the Islamic State hierarchy had convened in order to discuss the successor question and suggested that he had been handpicked in advance by al-Baghdadi.

TIERRA CONTENTA EXPANSION PLANS

The public is invited to view and comment on plans for new homes, parks, trails, a school, community facilities, and preserved open space on 227 acres of undeveloped land southeast of Capital High School. Choose from four meeting times:

Nov. 7 – 5:00-6:00 p.m. or 6:00-7:00 p.m.
Nov. 9 – 1:00-2:00 p.m. or 2:00-3:00 p.m.

Host: the nonprofit Tierra Contenta Corp.
Southside Library, 6599 Jaguar Dr., Santa Fe
For details, see www.tierracontenta.org



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Sample Ballot For Taos County Voters

November 5, 2019 Special Election – 5 de Noviembre, 2019 Elección Especial

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TAOS MUNICIPAL SCHOOL DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ PASCUALITO M. MAESTAS

SCHOOL BOARD MEMBER POSITION 2
TAOS MUNICIPAL SCHOOL DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ WHITNEY E. CONOVER-GOLER

SCHOOL BOARD MEMBER POSITION 4
TAOS MUNICIPAL SCHOOL DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ SUSAN K. TRUJILLO

SCHOOL BOARD MEMBER POSITION 1
QUESTA INDEPENDENT SCHOOL DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ JUAN J. CISNEROS
☐ DARYL J. ORTEGA

SCHOOL BOARD MEMBER POSITION 2
QUESTA INDEPENDENT SCHOOL DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ VIVIAN N. APODACA
☐ ELLIS I. GARCIA
☐ REBECCA R. GRIEGO
☐ CORI D. JENKINS

SCHOOL BOARD MEMBER POSITION 4
PENASCO INDEPENDENT SCHOOL DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ DORTHY LOPEZ-SHERMAN

SCHOOL BOARD MEMBER POSITION 5
PENASCO INDEPENDENT SCHOOL DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ CARLOS R. ABEYTA
☐ LEROY A. LOPEZ

WATER AND SANITATION BOARD MEMBER POSITION 1
EL PRADO WATER & SANITATION DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ TRUDY SUFRIN ABRAMS

WATER AND SANITATION BOARD MEMBER POSTION 3
EL PRADO WATER AND SANITATION DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ KATHRYN M. CORDOVA

SOIL AND WATER SUPERVISOR POSITION 1
TAOS SOIL AND WATER CONSERVATION DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ DENNIS D. CRUZ

SOIL AND WATER SUPERVISOR POSITION 2
TAOS SOIL AND WATER CONSERVATION DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ MAUREEN E. JOHNSON

SOIL AND WATER SUPERVISOR POSITION 5
TAOS SOIL AND WATER CONSERVATION DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ STEPHEN C. TRUJILLO

TAX INCREMENT DEVELOPMENT DIRECTOR POSITIONS 1-2
TAOS SKI VALLEY TID
VOTE FOR ONE / VOTE POR UNO
☐ BENJAMIN K. COOK
☐ RICHARD E. DUFFY
☐ NEAL KING

WATER AND SANITATION DIRECTOR AT LARGE
EL VALLE DE LOS RANCHOS WATER & SANITATION DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ ANSELMO CHEMO VALERIO
☐ F R BOB ROMERO

GROSS RECIEPTS TAX QUESTION
Shall a one-fourth ¼ percent gross receipts tax be imposed on business within the El Valle de los Ranchos Water and Sanitation District, the proceeds to go to the District?
☐ YES ☐ NO

SCHOOL BOARD MEMBER POSITION 1
MESA VISTA CONSOLIDATED SCHOOL DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ BRANDI NICOLE DARBY
☐ KISHA ELIZABETH MAESTAS

SCHOOL BOARD MEMBER POSITION 2
MESA VISTA CONSOLIDATED SCHOOL DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ ANTHONY XAVIER VIGIL
☐ CINDY C. ARCHULETA

SCHOOL BOARD MEMBER POSITION 3
MESA VISTA CONSOLIDATED SCHOOL DISTRICT
VOTE FOR ONE / VOTE POR UNO
☐ MARGARET ALIRE
☐ JOHN G. GARCIA

MESA VISTA CONSOLIDATED SCHOOL DISTRICT
NO. 6 CAPITAL IMPROVEMENTS TAX
Shall the Mesa Vista Consolidated School District No. 6 continue to impose a property tax of $2.00 per each $1,000 of net taxable value of property allocated to the Mesa Vista Consolidated School District No. 6 for the property tax years of 2019, 2020, 2021, 2022, and 2023 for the purpose of (1) erecting, remodeling, making additions to, providing equipment for or furnishing school buildings; (2) purchasing or improving school grounds; (3) maintenance of public school buildings or school grounds, including the purchasing or repairing of maintenance equipment, participating in the facility information management system as required by the Public School Capital Outlay Act and including payments under contracts with regional education cooperatives for maintenance support services and expenditures for technical training and certification for maintenance and facilities management personnel, but excluding salary expenses of school district employees; (4) purchasing activity vehicles for transporting students to extracurricular school activities; (5) purchasing computer software and hardware for student use in public school classrooms; and (6) purchasing and installing education technology improvements?
☐ YES ☐ NO

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Notice of Public Meeting
Los Alamos National Laboratory Hazardous Waste Facility Permit Renewal Application
EPA ID NO. NM0890010515

The Department of Energy (DOE), Triad National Security, LLC and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) will be holding a public information meeting prior to the submittal of the Los Alamos National Laboratory Hazardous Waste Facility Permit Renewal Application. The meeting will discuss the permit renewal application for the 27 units included in the current operating permit and application for inclusion of three units in interim status at LANL.

The purpose of the meeting is to solicit questions from the community and inform the community of the proposed hazardous waste management activities at LANL.

Meeting Information

Date: Wednesday, December 4, 2019

Location: Cities of Gold Hotel & Casino Conference Center, Tribal Room
10 Cities of Gold Road, Santa Fe, NM 87506

Time: 5:30pm – 7:30pm

If you will need special assistance to participate in this meeting, please notify the contact below at least 72 hours before the meeting so that arrangements can be made.

If you have questions, please contact us.
Los Alamos National Laboratory
Environmental Communication & Public Involvement
P.O. Box 1663, MS K491
Los Alamos, NM 87545
Phone: 505-667-3792
envoutreach@lanl.gov

LA-UR-19-30062

An Equal Opportunity Employer / Managed by Triad National Security, LLC for the U.S. Department of Energy's NNSA NNSA

FACILITY NAME	FACILITY ADDRESS	FACILITY CITY	FACILITY STATE	ZIP
City of Espanola	405 N. Paseo de Onate	Espanola	NM	87532
Governor, Kewa Pueblo	P.O. Box 99	Santo Domingo Pueblo	NM	87052
Governor, Pueblo de Cochiti	P.O. Box 70	Cochiti	NM	87072
Governor, Pueblo of Isleta	P.O. Box 1270	Isleta	NM	87022
Governor, Pueblo of Jemez	P.O. Box 100	Jemez Pueblo	NM	87024
Governor, Pueblo of Laguna	P.O. Box 194	Laguna Pueblo	NM	87026
Governor, Pueblo of Picuris	P.O. Box 127	Penasco	NM	87553
Governor, Pueblo of Pojoaque	78 Cities of Gold Road	Santa Fe	NM	87506
Governor, Pueblo of San Felipe	P.O. Box 4339	San Felipe Pueblo	NM	87001
Governor, Pueblo of San Ildefonso	02 Tunyo Po	Santa Fe	NM	87506
Governor, Pueblo of San Juan	P.O. Box 1099	San Juan Pueblo	NM	87566
Governor, Pueblo of Taos	P.O. Box 1846	Taos	NM	87571
Governor, Pueblo of Zuni	P.O. Box 339	Zuni	NM	87327
Governor, Sandia Pueblo	481 Sandia Loop	Bernalillo	NM	87004
Governor, Santa Ana Pueblo	2 Dove Road	Bernalillo	NM	87004
Governor, Santa Clara Pueblo	P.O. Box 580	Espanola	NM	87532
Governor, Santo Domingo Pueblo	P.O. Box 99	Santo Domingo Pueblo	NM	87052
Los Alamos County	1000 Central Ave.	Los Alamos	NM	87544
NM Dept. of Game & Fish	P.O. Box 25112	Santa Fe	NM	87504
NMED	121 Tijeras NE, Suite 1000	Albuquerque	NM	87201
NMED - DOE Oversight Bureau	P.O. Box 5469	Santa Fe	NM	87502
NMED - HWB	2905 Rodeo Park Dr. East, Bldg 1	Santa Fe	NM	87505
NMED/ Solid Waste Bureau	P.O. Box 5469	Santa Fe	NM	87502
Pueblo of Tesuque, Environment Dept.	Route 42, Box 360-T	Santa Fe	NM	87506
Rio Arriba Board of Cty. Commissioners	P.O. Box 127	Tierra Amarilla	NM	87575
San Juan Pueblo/Office of Envir. Affairs	P.O. Box 717	San Juan Pueblo	NM	87566


LOS ALAMOS NATIONAL LABORATORY
Communications and
Community Partnerships
762


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Education
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Community
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Notice of Pre-Submittal Public Meeting
Los Alamos National Laboratory Hazardous Waste Facility Permit Renewal Application
December 4, 2019
Cities of Gold Hotel & Casino
Conference Center
Tribal Room
10 Cities of Gold Road
Santa Fe, NM 87506
5:30pm - 7:30pm
If you have questions or need special assistance, please contact us at:
Los Alamos National Laboratory
Environmental Communication & Public Involvement
P.O. Box 1663, MS K491
Los Alamos, NM 87545
505-667-3792
envoutreach@lanl.gov
Environmental Management Los Alamos Field Office:
505-665-5658
publicaffairs.emla@em.doe.gov
The permit application is a renewal application for the 27 units included in the current operating permit and application for inclusion of three units in interim status at LANL.
The purpose of the meeting is to solicit questions from the community and inform the community of the proposed hazardous waste management activities at LANL.
LA-UR-19-30021

KRSN AM 1490 Order Confirmation

Frijoles Canyon Trading Company LLC
KRSN AM 1490
3801 Arkansas Ave. Ste. E
Los Alamos, NM, 87544

OrderID: 0229-008

Sponsor:	Los Alamos National Laboratory Communications O
Product:	Los Alamos National Laboratory Communications O
Estimate/PO:	
AccountRep:	David Sutton
BillingCycle:	Calendar Month
InvoiceType:	Detail Affidavit
Run Dates:	11/4/2019 - 11/25/2019
Items Ordered:	05
Gross Amount:	195.00
Discounts:	0.00
Agency Commission:	0.00
Net Amount:	195.00
+Gross Receipts Tax	14.26
Total Amount	209.26

LOS ALAMOS NATIONAL LABORATORY
MAIL STOP K491, TA-59 BUILDING 3 - RM 201
LOS ALAMOS NM 87544

Scheduled Station(s): KRSN AM 1490

Los Alamos National Laboratory Communications Office

Printed 11/4/2019 1:19:50 PM **Page 1**

	Run Dates	Run Weeks	Run Times	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Week Total	Length	Description	Avail Type	Copy ID	Qty	Item Cost	Total Cost
01	11/4/2019 - 11/25/2019	All Weeks	07:00 AM - 09:00 AM	1							1	:60	Spot		21499	4	30.00	120.00
02	11/4/2019 - 11/4/2019	All Weeks	07:00 AM - 09:00 AM	1							1	:60	production fee		21132	1	75.00	75.00

Calendar Month Projected Billing:

Oct-19	0.00	Nov-19	195.00	Dec-19	0.00	Q4-2019	195.00

Confirmed Correct; Payment Guaranteed

Accepted for Station1

Summary of December 2019 Pre-application Public Information Meeting

Los Alamos National Laboratory Hazardous Waste Facility Permit Renewal Application Pre-application Public Information Meeting

- The meeting focus is on permit renewal and is limited to hazardous waste management and the application.
- This is only the first opportunity at public comment for this application. There are more to come.
- The purpose of this meeting is to share information and obtain questions and comments from members of the public.
- We will be collecting questions and comments on cards provided. All cards submitted will be addressed in the permit application.
- We will answer as many questions as time allows.
- If you have suggestions to improve the meeting, please use cards provided.
- Please …
  - Wait your turn to provide comments or to ask questions
  - Keep your questions short, remember there may be others waiting to ask questions
  - Honor the process by keeping questions and comments civil and by using appropriate language
  - Yield the floor if requested by the facilitator

Active Hazardous Waste Management Units at Los Alamos National Laboratory

Active Units				
Location	**Co-Operator**	**Quantity**	**Type**	**In the Permit?**
TA-3-29 Room 9010 and portions of Rooms 9020 and 9030	*NNSA[a]/Triad[b]*	*1*	*Container Storage/Treatment Unit*	*Yes*
TA-16-388 Flash Pad	*NNSA/Triad*	*1*	*Open Burn*	*Interim Status*
TA-36-8	*NNSA/Triad*	*1*	*Open Detonation*	*Interim Status*
TA-39-6	*NNSA/Triad*	*1*	*Open Detonation*	*Interim Status*
TA-50-69 Rooms 102 and 103	*NNSA/Triad*	*2*	*Container Storage/Treatment Unit*	*Yes*
TA-54, Area L	*EM[c]/N3B[d]*	*1*	*Container Storage/Treatment Unit*	*Yes*
TA-54, Area G (Pads 1,3,5,6,9,10,11 &TA-54-33)	*EM/N3B*	*8*	*Container Storage/Treatment Unit*	*Yes*
TA-54, Area G (Storage Shed 8)	*EM/N3B*	*1*	*Container Storage Unit*	*Yes*
TA-54 West (Indoor) High Bay and Low Bay	*NNSA/Triad*	*1*	*Container Storage Unit*	*Yes*
TA-54 West (Outdoor)[e] Loading dock and Pad surrounding	*NNSA/Triad*	*1*	*Container Storage/Treatment Unit*	*Yes*
TA-55 (4 Locations) Within Building 4 and Outside	*NNSA/Triad*	*4*	*Container Storage/Treatment Unit*	*Yes*
TA-55 (5 Locations) Within Building 4	*NNSA/Triad*	*5*	*Container Storage Unit*	*Yes*
TA-55 Mixed Waste Storage Tank Within Building 4	*NNSA/Triad*	*1*	*Storage Tank*	*Yes*
TA-55 Mixed Waste Stabilization Unit Within Building 4	*NNSA/Triad*	*1*	*Stabilization Unit*	*Yes*
TA-63 Buildings 153, 154, 155 and 157 and Outside Storage Pad	*NNSA/Triad*	*1*	*Container Storage/Treatment Unit*	*Yes*

8 Technical Areas

30 Total Units

27 Permitted Units

Summary	
Active Unit Type	**Quantity**
Container Storage Unit/Treatment Units	*18*
Container Storage Units	*7*
Open Detonation Units	*2*
Open Burn Units	*1*
Storage Tank	*1*
Stabilization Unit	*1*
Total	**30**

[a] - National Nuclear Security Administration

[b] - Triad National Security, LLC

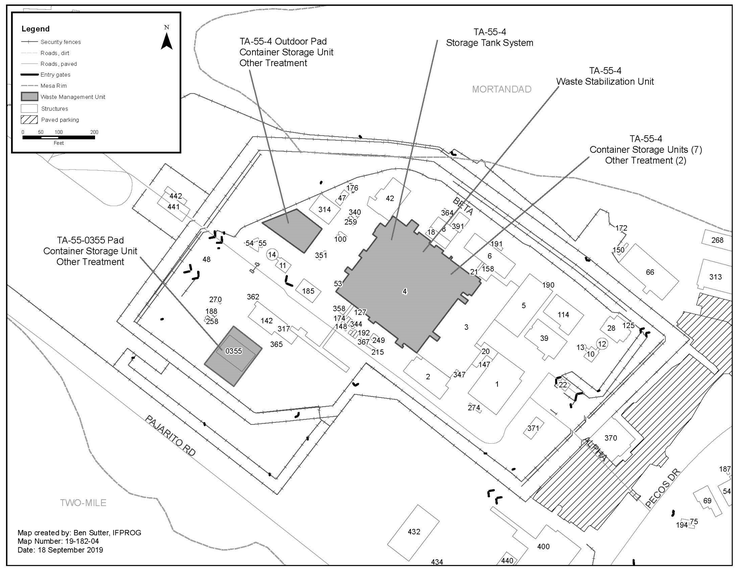
[c] - Environmental Management Los Alamos Field Office

[d] - Newport News Nuclear BWXT Los Alamos

[e] - Has excess storage capacity of 13,410 gallons

Unclassified

Chemistry Metallurgy Research Facility & Technical Area 55



TA-55 Site Plan



TA-55, Outdoor Storage Pad

10 container storage units at CMR and TA-55 are currently included in the Los Alamos National Laboratory Hazardous Waste Facility Permit

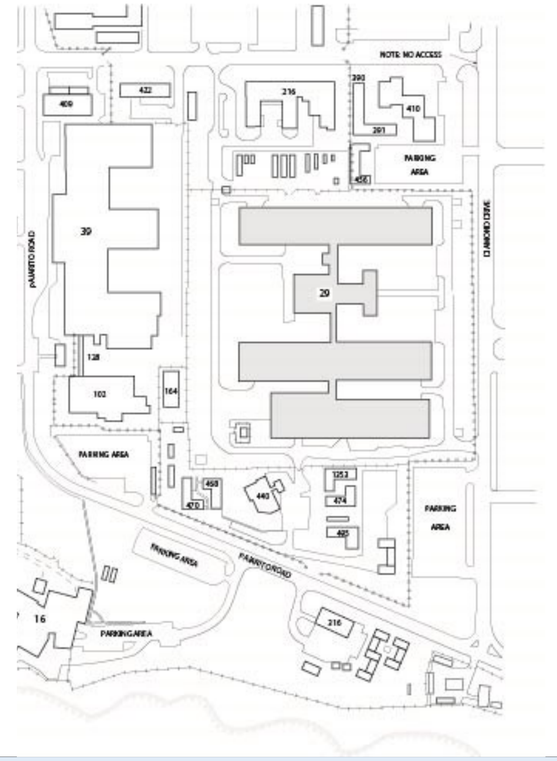
The container storage units at the Chemistry Metallurgy Research Facility (CMR) and Technical Area (TA) 55 are utilized to ensure the safe storage of hazardous waste and to protect human health and the environment.

The container storage units support the characterization certification process for shipment to the Waste Isolation Pilot Plant (WIPP).

The container storage units are utilized for mobile loading of transuranic waste containers that enables shipment to the WIPP.



TA-55, 0355 Pad

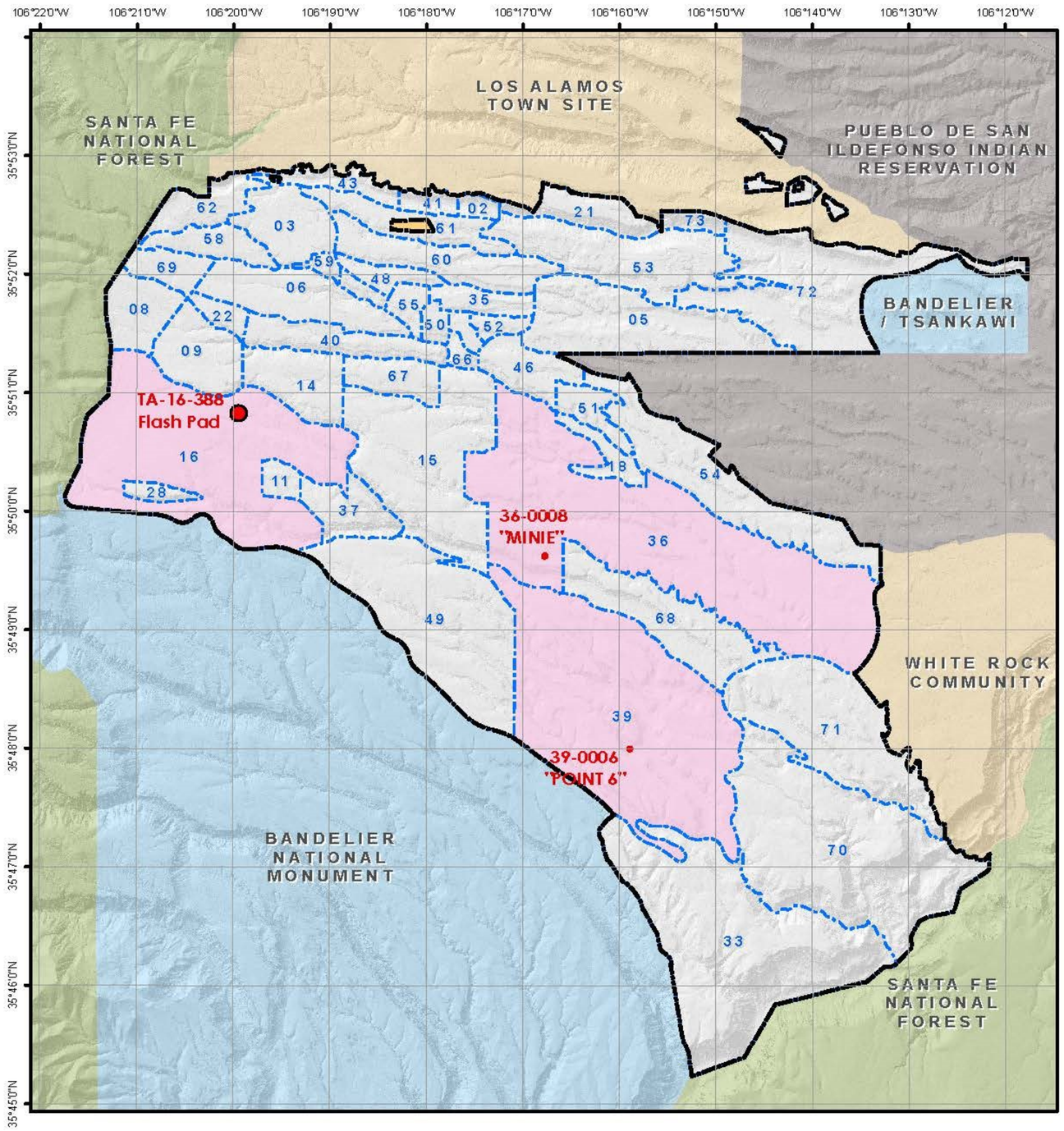


TA-3, Building 29 Site Plan



Container Storage at TA-3, Building 29

Open Detonation and Open Burn Unit Locations



Legend

- Not LANL property
- Technical Area of Open Burn & Open Detonation Unit
- Tecnical Area Boundaries
- LANL Boundary

N, W, E, S

0 0.5 1 Miles

0 1 2 Kilometers

New Mexico State Plane Coordinate System, Central Zone (3002)
North American Datum, 1983 (NAD 83), US Survey Ft.

Map Number: 19-229-01 November 2019
Bethann McVicker, IFPROG

GIS Program

Los Alamos NATIONAL LABORATORY EST.1943

TA-16 is located in the southwestern portion of LANL at the west end of the Pajarito Plateau near the foothills of the Jemez Mountains. The hazardous waste management unit at TA-16 consists of a 22ft by 22ft concrete pad that measures 12 inches thick at the base and sits atop a 45-milliliter Hypalon secondary containment liner that is situated 6 inches below the bottom of the pad. The pad is also equipped with a retractable steel roof that covers the unit when it is not in use.

The TA-36-8 Open Detonation Unit is located in a remote area of LANL. The location and design of the Open Detonation pit and the surrounding firing pit improves storm water runoff controls; improves fragment capture; reduces the potential for “kick-out”; addresses vegetation/fuels control concerns; and reduces noise impacts.

Technical Area 39 is located in the southern portion of LANL. The hazardous waste management unit at TA-39-6 consists of a relatively flat, sand-covered area that measures approximately 40 feet by 40 feet, and is located directly to the north and above Building 6 (the control building). Steep canyon walls that rise to heights of 100 feet or higher form a semicircle around the TA-39-6 OD Unit and act to attenuate the force of the detonations.

Aerial Photograph of TA-16-388 and TA-16-399

Document: LANL General Part A
Revision No: 10.0
Date: June 2020



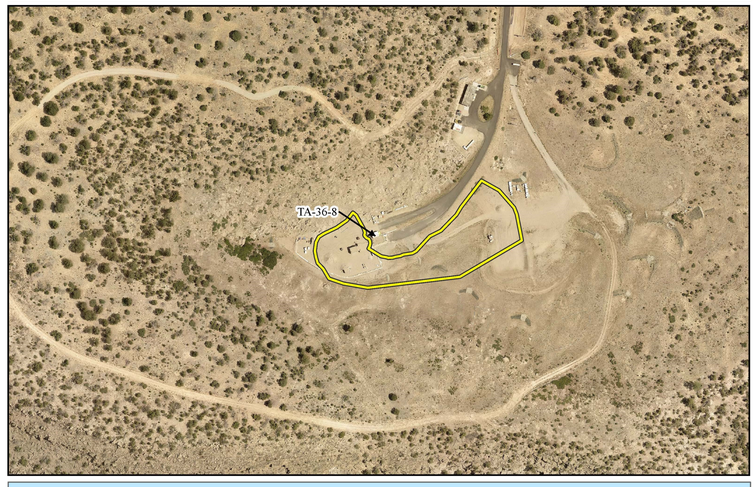
New Mexico State Plane Coordinate System
Central Zone US Ft
North American Datum 1983
2018 Orthophotography, July 2018
Map # 19-0182-08

N

0 100 200 400 Feet
0 20 40 80 Meters

Aerial Photograph of TA-36-8

Document: LANL General Part A
Revision No: 10.0
Date: June 2020



New Mexico State Plane Coordinate System
Central Zone US Ft
North American Datum 1983
2018 Orthophotography, July 2018
Map # 19-0182-09

Permitted Unit Boundary

N

0 100 200 400 Feet
0 20 40 80 Meters

Aerial Photograph of TA-39-6

Document: LANL General Part A
Revision No: 10.0
Date: June 2020



New Mexico State Plane Coordinate System
Central Zone US Ft
North American Datum 1983
2018 Orthophotography, July 2018
Map # 19-182-12

N

0 125 250 500 Feet
0 25 50 100 Meters

Open Burning Flash Pad Unit at Technical Area 16-388

- *Quonset-type cover is moved back*
- *Material placed in wire cage and covered with screen*
- *Three barriers to prevent access of unauthorized entry*
- *High-efficiency propane burners remotely ignited*
- *Burn monitored remotely by cameras or periscope*



TA-16-388 Flash Pad Unit in use and uncovered





TA-16-388 Flash Pad Unit covered

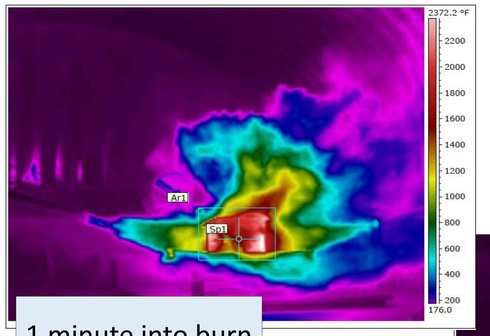
— Safest treatment method for workers and the public
- less handling
- less transportation
- less accumulation
- most knowledgeable workers

— Only allowable treatment for some explosives-contaminated debris

— Extremely Efficient (usually no ash residue)

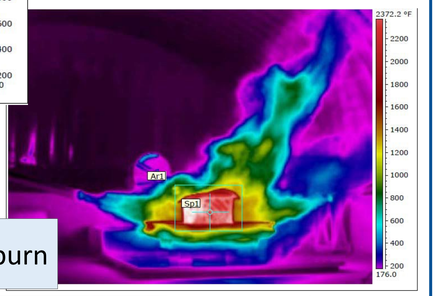
— Proven technology that is environmentally responsible

Over 80% of waste treated by open burning is generated by the machining of explosives components

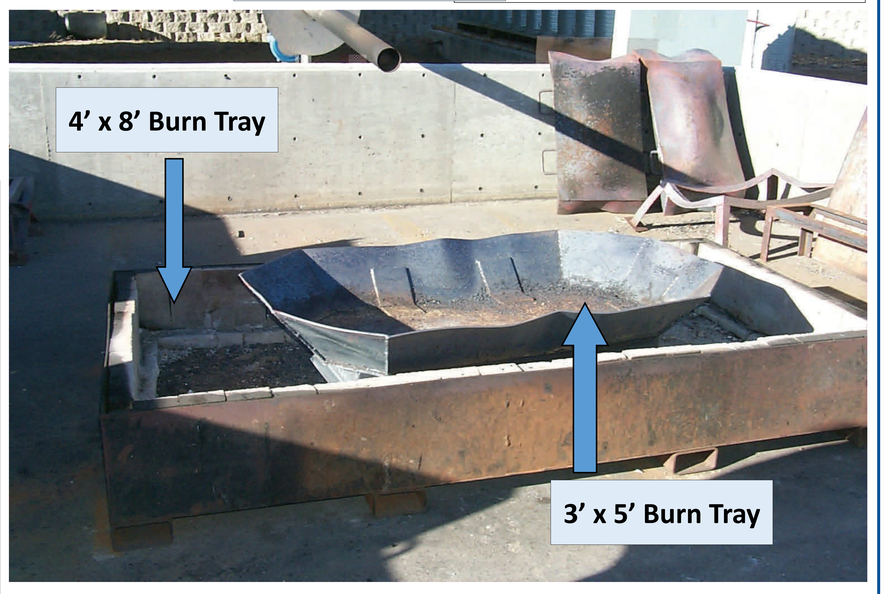


1 minute into burn

Thermographs of open burning using two burners



13 minutes into burn





TA-16-388 Flash Pad Unit in use and uncovered, left burner igniting

Open Detonation Units at Technical Areas 39-6 & 36-8



TA-36
View is looking west from east of the unit

“Minie” site

TA-36
View is looking south towards unit



Open detonation treatment of high explosives waste is conducted in remote and secure locations.

Restrictions for Operations include:

- Noise Concentration
- Weather Conditions
  - Lightning, wind, precipitation
- Fire Danger
- Daylight hours





Protecting troops against improvised explosive devices



TA-39

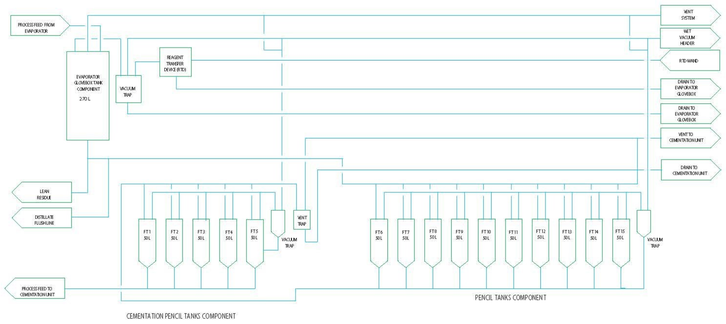
Aging explosives are not safe to transport





Transporting certain High Explosive wastes is dangerous

Technical Area 55 Waste Storage Tank and Stabilization Units & Technical Area 50-69 Stabilization Process

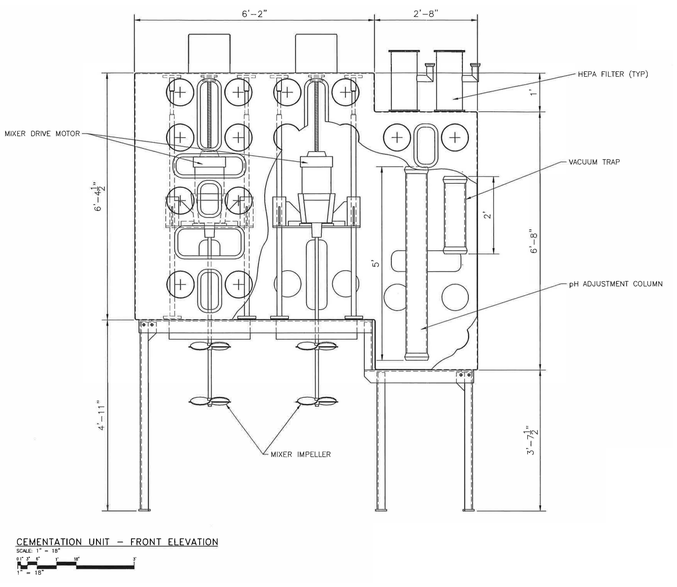


Waste Storage Tank System Process Flow

The waste storage tank and waste stabilization units at Technical Area 55 are utilized to safely ensure that evaporator bottom waste, unrecyclable evaporator distillate waste, and analytical residuals are cemented and solidified to ensure the waste is no longer corrosive and metals within the matrix will not leach out.

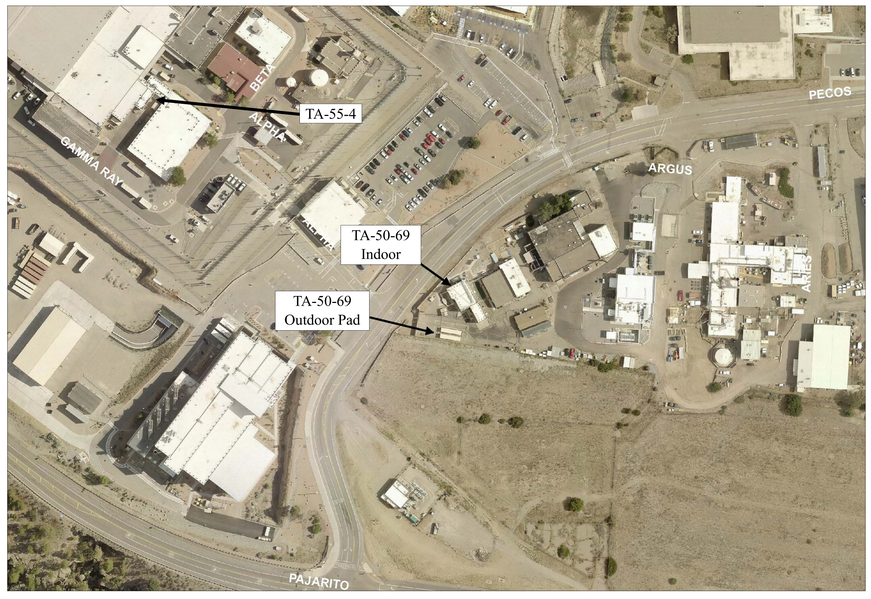
The storage tank and stabilization processes occur in a safe and secure facility with secondary containment available to ensure protection of human health and the environment.

The stabilization process in containers at Technical Area 50 ensures the safe treatment of wastes that exhibit the hazardous waste characteristics of ignitability and and/or corrosivity. In a protected environment, waste is mixed with zeolite in a measured way to ensure the characteristics of ignitability and corrosivity are removed from the treated waste. This treatment process makes wastes with no previous path forward amenable to enter the waste certification process for shipment to the Waste Isolation Pilot Plant (WIPP).

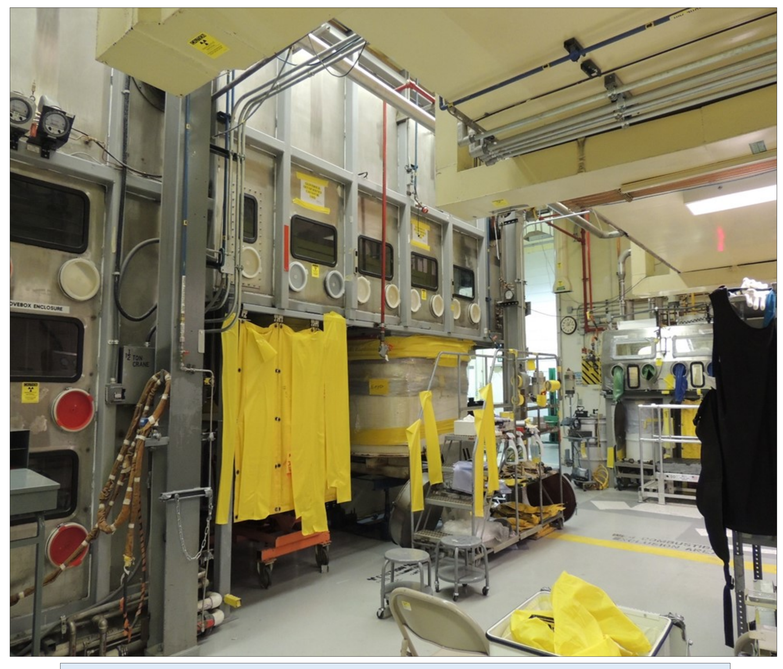


Waste Stabilization Unit Diagram

Both treatment processes are currently included in the Los Alamos National Laboratory Hazardous Waste Facility Permit



Aerial Photograph of TA-55 and TA-50



TA-50-69 Indoor, Rooms 102 and 103, Waste Characterization, Reduction, and Repackaging Facility (WCRRF)

Explosives Waste Treatment Alternatives

Types of waste	Open Burning*	Contained Burning	Incineration Rotary Kiln	Flash Furnace	Open Detonation*	Contained Detonation	Off-site Disposal
Safety issues							
Explosives machining waste							
Excess explosives							
Contaminated combustible debris							
Contaminated noncombustible debris							
Contaminated solvent							

Meets criteria. Does not increase risk.

Does not meet criteria. Increases risk.

Outside of LANL control. Criteria determined offsite.

Safety

- Multiple handling
- Hazardous residue
- Residue amount
- Maintenance
- Potential for explosion
- Transportation risk

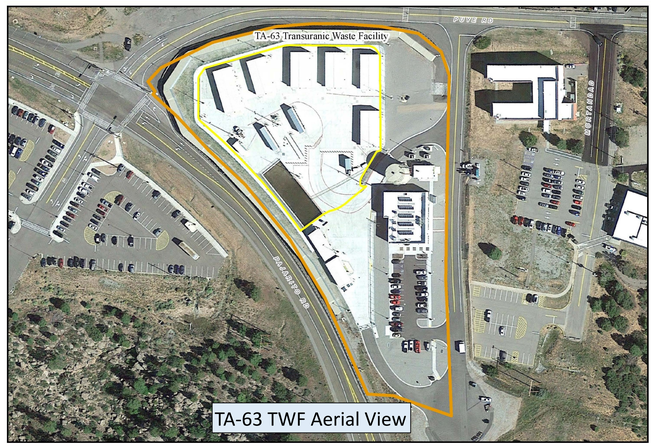
Treatability

- Proven technology
- Completeness of combustion
- Size

* Treatment technology currently available on-site

Los Alamos NATIONAL LABORATORY EST. 1943

Technical Area 63 Transuranic Waste Facility & Technical Area 54-38 West



TA-63 TWF Aerial View



Storage Building


Inside Storage Building



Characterization Trailer

Main mission: Storage and certification of transuranic and mixed transuranic waste for shipment to the Waste Isolation Pilot Plant in Carlsbad (WIPP).

TA-63-Transuranic Waste Facility

- Protective storage and characterization of waste containers.
- Five storage buildings, a storage and characterization building, and two characterization trailers.
- X-ray scanning, radionuclide assay and head-space gas characterization.

TA-54-38 West

- Protective storage and shipping of waste containers.
- Waste container consolidation and loading into transport packages for shipment to the WIPP.
- Indoor waste container storage in High and Low Bays
- Outdoor Pad and Loading Dock.
- Staging of transport trucks for manifesting and shipment.



TA-54-38 West Aerial View



High Bay


Low Bay


Outdoor Pad

Attendees at December 2019 Pre-application Public Information Meeting

Los Alamos

Wednesday, December 4, 2019

Los Alamos National Laboratory Hazardous Waste Facility Permit Renewal Application Pre-Application Public Information Meeting @ Cities of Gold Casino & Hotel Tribal Room

SIGN-IN SHEET

Name (please print)	Organization	E-mail Address	Do you want to be on LANL E-mail list?	
			YES	NO
Scott Kovac	Nuclear Watch NM	scott@nukewatch.org yes		
Chuck Mielke	LANL	cmielke@lanl.gov		X
Oral Saulters	LANL	osaulters@lanl.gov	✓	
Jesse Beiza	LANL	jesseb@lanl.gov	✓	
Amanda Martinez	LANL	amandamar@lanl.gov		
Tony Grieggs	Public	—	—	—
Maddie O'Neill	Los Alamos Reporter			
Simran Thapa	St. John's College	simy225@gmail.com	✓	
Onysha Boake	St John's College	onyshaboake@yahoo.com		✓
Joni Arends	CCNS	jarends@nuclearactive	✓	
Siona Briley	NMED - HWB	siona.briley@state.nm.us	✓	
Jennifer Payne	Environment Group			✓
Kathy Sanchez	IWU	Kathy@tewawomenunited.org	✓	
Scott Wyland	SF New Mexican	sdwyland@gmail.com	✓	
Steve Pierett	LANL	spierett@lanl.gov	✓	
Vanessa Padilla	Public	Vanessa.padilla@hotmail.com		X
Holly Wheeler	Public	11 Christmas Lane, Santa Fe, NM	—	

Comments Received at December 2019 Pre-application Public Information Meeting

Los Alamos
NATIONAL LABORATORY
EST 1943

Los Alamos National Laboratory

Hazardous Waste Facility Permit Renewal Application

COMMENT AND QUESTION CARD

Please provide an acronym list as a handout at the next public meeting

(Optional) Name: S. imam Organization: _____ E-mail: S.imy225@gmail.com

Do you want to be on the e-mail list? YES ✓ NO ____

Comments from the public are below.

Peter Alden Hyde
Deployed Communications Specialist
ESHQSS
Office: (505) 667-3792
Cell: (505) 695-6571
Mail Stop K491
TA-59 Building 3 – RM 201
Visit our newsroom

"The single biggest problem with communication is the illusion that it has taken place."

-George Bernard Shaw

Los Alamos
NATIONAL LABORATORY
EST.1943

From: <owner-envoutreach@maillist.lanl.gov> on behalf of Cynthia McNamara via <envoutreach@lanl.gov>
Reply-To: Cynthia McNamara <cynthia_mcnamara@yahoo.com>
Date: Monday, December 9, 2019 at 5:02 PM
To: "envoutreach@lanl.gov" <envoutreach@lanl.gov>
Cc: "neelam.dhawan@state.nm.us" <neelam.dhawan@state.nm.us>
Subject: LANL Hazardous Waste Facility Permit Renewal Application

December 9, 2019

By email to: envoutreach@lanl.gov

Los Alamos National Laboratory
Environmental Communication & Public Involvement
P. O. Box 1663, MS K491
Los Alamos, NM 87545

Re: LANL Hazardous Waste Facility Permit Renewal Application

Dear LANL Staff:

I provide the following comments regarding the hazardous waste facility permit renewal application for Los Alamos National Laboratory (LANL). My comments and concerns encompass more than what can fit on the half-page card for public comments and questions provided at the December 4, 2019, public meeting. Even if I filled out a comment card, it is unknown if and when LANL

might respond. For those reasons, I am writing this letter (and copying the New Mexico Environment Department) to provide comments that would not fit on a postcard.

I am extremely concerned about the narrow scope of the LANL application to renew the ten-year hazardous waste facility permit issued by the New Mexico Environment Department. The federal Resource Conservation and Recovery Act (RCRA) law and regulations, as implemented in New Mexico by the Hazardous Waste Act and its regulations, provide additional protections for human health and the environment. These include addressing the increasing seismic threat on the Pajarito Plateau where LANL is located, as well as the tank systems that treat hazardous and radioactive liquid wastes. Further, LANL needs to address the hazardous and toxic pollution released through open burning and open detonation activities by installing and operating contained burn facilities and contained detonation facilities.

Pursuant to the RCRA, LANL's application must include the following:

First:

Permit information for the Radioactive Liquid Waste Treatment Facility (RLWTF) at Technical Area 50, which handles, manages, treats, and stores hazardous waste. It has been operating without a hazardous waste permit for decades. It was bootstrapped in by the New Mexico Environment Department in violation of RCRA and the NM Hazardous Waste Act.

The Radioactive Liquid Waste Treatment Facility treats and stores hazardous as well as radioactive liquid wastes from the Plutonium Facility at Technical Area 55. The two facilities are located across the street from one another and are subject to similar seismic impacts.

On November 15, 2019, the Defense Nuclear Facilities Safety Board (DNFSB), an independent federal agency that oversees LANL nuclear weapons operations, issued its Staff Report about the *Safety Basis for the Plutonium Facility at Los Alamos National Laboratory* (dated August 16, 2019). They discuss the delays in implementing upgrades and modification to deficient safety systems. Releases of hazardous and radioactive materials in the event of an earthquake are possible. Those releases increase three fold when unsecured heavy equipment falls on equipment, including treatment facilities, following a fire. The estimated public exposure is between 24 rems to 77 rems, depending upon the release scenario. The Department of Energy Evaluation Guideline is 25 rem. I ask that their important report be attached to these comments. https://www.dnfsb.gov/documents/letters/pf-4-safety-basis

Evidence must be provided in the renewal application that the hazardous waste treatment facilities and tank systems are secured and that there is no potential for surrounding equipment to fall on those facilities and systems during an anticipated seismic, and possible resulting fire, event.

Second:

Proposals to install contained burn and contained detonation facilities to replace the antiquated and polluting open burn and detonation facilities. The installation and operation of contained burn and detonation facilities at LANL would basically stop toxic and hazardous pollution from being released into the environment.

During the 2010 hazardous waste permit hearing, CCNS presented Ralph Hayes as a technical expert on contained burn and contained detonation facilities. He is the founder of El Dorado Engineering – The World Experts in Demilitarization. https://www.eldoradoengineering.com/ For example, Hayes and his company designed and installed a contained burn system to dispose of 16 million pounds of M6 propellant and clean burning igniters abandoned and left deteriorating on site at Camp Minden, Louisiana.

LANL is unable to answer the following question: Why won't DOE contract with El Dorado Engineering for them to design contained burn and contained detonation facilities – with no emissions – for LANL.

Thank you for your careful consideration of my comments.

Sincerely,
Cynthia McNamara

cc: Ms. Neelam Dhawan, LANL Group Leader
New Mexico Environment Department

Via email to: neelam.dhawan@state.nm.us

From: <owner-envoutreach@maillist.lanl.gov> on behalf of Joni Arends via <envoutreach@lanl.gov>
Reply-To: Joni Arends <jarends@nuclearactive.org>
Date: Tuesday, January 21, 2020 at 8:42 AM
To: "envoutreach@lanl.gov" <envoutreach@lanl.gov>
Cc: "Stringer, Stephanie, NMENV" <stephanie.stringer@state.nm.us>, "Dhawan, Neelam, NMENV" <neelam.dhawan@state.nm.us>
Subject: [EXTERNAL] CCNS Comments LANL HWFP renewal application & 12/4/19 pre-submittal meeting

January 21, 2020

By email to: envoutreach@lanl.gov

Los Alamos National Laboratory
Environmental Communication & Public Involvement
P. O. Box 1663, MS K491
Los Alamos, NM 87545

Re: LANL Hazardous Waste Facility Permit Renewal Application and December 4, 2019 Pre-Submittal Meeting

Dear LANL Staff:

Concerned Citizens for Nuclear Safety (CCNS), a Santa Fe - based non-governmental organization, provides the following comments regarding the hazardous waste facility permit renewal application for Los Alamos National Laboratory (LANL). Our comments and concerns encompass more than what could fit on the half-page card that was provided at the December 4, 2019 meeting for public comments and questions. Even if CCNS filled out a comment card, it is unknown if and when LANL might respond. For those reasons, CCNS is writing this letter – and copying the New Mexico Environment Department - to provide comments and concerns about the scope and format of the meeting, as well as facilities that must be covered by the renewal application and alternatives to open burning and open detonation activities.

CCNS is extremely concerned about the narrow scope of the LANL application to renew the ten-year hazardous waste facility permit (HWFP) to be submitted the New Mexico Environment Department (NMED). The federal Resource Conservation and Recovery Act (RCRA) statute and regulations, as implemented in New Mexico by the Hazardous Waste Act (NM HWA) and its regulations, provide additional protections for human health and the environment. Such protections include addressing the increasing seismic threat on the Pajarito Plateau which LANL occupies, as well as the tank systems used to treat hazardous and radioactive liquid wastes. Further, LANL must use the latest and best technology to prevent hazardous and toxic pollution released through open burning and open detonation activities which impact human health and the environment. It is time for LANL to propose in the renewal application the installation and operation of contained burn facilities and contained detonation facilities, which have proved effective for substantially reducing the amount of pollution released to the air and settling on soil and in waterways that flow to the Rio Grande.

Pursuant to RCRA as implemented by the NM HWA, LANL's renewal application must include:

1. The required permitting information for the Radioactive Liquid Waste Treatment Facility (RLWTF) at Technical Area 50, which handles, manages, treats, and stores hazardous waste. The RLWTF has been operating since 1963 without a New Mexico permit. The RLWTF has been bootstrapped in by NMED in violation of RCRA and the NM HWA.

A new Low-Level Radioactive Liquid Waste Treatment Facility has been built next door to the RLWTF without the required enhanced public participation processes required by RCRA and the NM HWA.

The RLWTF treats and stores hazardous as well as radioactive liquid wastes from the Plutonium Facility at Technical Area 55, among other sites. The Plutonium Facility is located across the street from the RLWTF. Both are subject to similar seismic impacts.

On November 15, 2019, the Defense Nuclear Facilities Safety Board (DNFSB), an independent federal agency that oversees LANL nuclear weapons operations, issued its Staff Report about the *Safety Basis for the Plutonium Facility at Los Alamos National Laboratory* (dated August 16, 2019). The Board discusses the delays in implementing upgrades and modifications to deficient safety systems. Releases of hazardous and radioactive materials in the event of an earthquake are possible. **The last surface rupture on the Pajarito Plateau was 1,400 years ago., during the Holocene.** Those releases increase three fold when unsecured heavy equipment falls on other equipment following a fire. Depending upon the release scenario, the estimated public exposure is between 24 rems and 77 Rem. The Department of Energy Evaluation Guideline is 25 Rem. CCNS has attached this important DNFSB Staff Report to these comments and request that they be incorporated into our comments. https://www.dnfsb.gov/documents/letters/pf-4-safety-basis

Under RCRA, Los Alamos County is designated as a political jurisdiction in which compliance with 40 C.F.R. §264.18(a) must be demonstrated. 40 C.F.R. Part 264, Appendix VI - *Political Jurisdictions in Which Compliance with § 264.18(a) Must Be Demonstrated.* Specific requirements are found at 40 C.F.R. § 270.14(b)(11).

Further, LANL must provide information in the renewal application that the RLWTF hazardous waste treatment facilities, including the new Low-Level Radioactive Liquid Waste Treatment Facility, and tank systems are secured, as well as those found in the new Low-Level Radioactive Liquid Waste Treatment Facility. Further, information must be provided that there is no potential for surrounding equipment to fall in those facilities and that structures, systems, and components (SSC) systems are protected during an anticipated seismic, and possible resulting fire, event as described in the 2019 DNFSB report.

2. Proposals to install state-of-the-art contained burn and contained detonation facilities to replace the antiquated and polluting "interim status" open burn and open detonation facilities (concrete pads, burn trays, experimental areas, etc.). The installation and operation of state-of-the-art contained burn and detonation facilities at LANL would basically eliminate toxic and hazardous pollution from being released into the environment. For example, recently a contained burn facility was designed, installed, and successfully operated at Camp Minden, Louisiana to dispose of 16 million pounds of M6 propellant and clean burning igniters abandoned and left deteriorating on-site. For over a decade, LANL has refused to answer the question why such a facility could not be built for the open burning of hazardous waste, as well as a facility for open detonation.

At the December 4, 2019 public meeting, CCNS expressed its concerns about the limited scope and meeting format. There was no presentation by either DOE or LANL about the proposed renewal application. The subject matter experts stationed at the posters did not have name tags. They did not have business cards to share with the public who may have had follow-up questions. There was no opportunity to hear, as a group, the concerns of the individual members of the public.

When asked, no LANL representative could say when LANL would submit their application to NMED, despite public comments over the past year encouraging LANL to submit their application earlier than July 2020. As you know, both the Waste Isolation Pilot Plant (WIPP) and LANL permits are up for renewal in 2020. The proposed WIPP renewal application is over 1,250 pages with a 99 page fact sheet. Public meetings about the proposed renewal application take place this week in Santa Fe and next week in Carlsbad. WIPP plans to submit their renewal application in March 2020.

Since the December 4, 2019 meeting, CCNS has learned about other public meetings at DOE facilities, specifically at the Santa Susana Field Laboratory, which had similar limited scope and format. In meetings last fall, the federal agencies did not provide chairs. There was no opportunity for public comments to be public - thus no opportunity for the group to hear the concerns of the individual members of the public. Below are links to newspaper articles about the meetings.

November 22, 2019 *Ventura County Star:*
https://www.vcstar.com/story/news/local/communities/simi-valley/2019/11/22/fireworks-erupt-nasa-meeting-cleaning-up-nuke-meltdown-site/4266401002/ and

November 29, 2019 *Simi Valley Acorn:*
https://www.simivalleyacorn.com/articles/ssfl-stalemate/

We offer these links to the articles in the spirit of LANL improving its public meetings so that everyone can hear the community concerns; that public comments are not restricted to written cards; and that the subject matter experts have name tags and business cards, etc., as well as the need to provide *hospitality* to those attending the meeting to learn and provide public comments.

Thank you for your careful consideration of our comments. Please contact CCNS with any questions or concerns.

Sincerely,

Joni Arends, Co-founder and Executive Director
Concerned Citizens for Nuclear Safety
P. O. Box 31147
Santa Fe, NM 87594-1147
505 986-1973
nuclearactive.org

cc: Ms. Stephanie Stringer, Resource Protection Division Director
Ms. Neelam Dhawan, LANL Group Leader
New Mexico Environment Department

Response to Comments Received at December 2019 Pre-application Public Information Meeting

Los Alamos National Laboratory Hazardous Waste Facility Permit
Pre-Application Public Meeting Written Comments – December 4, 2019
Transcription of Handwriting on One Comment and Question Card and Two e-mail Submittals

Below are responses to written comments that were received during a pre-application public information meeting about forthcoming renewal of the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit. Comment card and email transcription are presented in italics and the U.S. Department of Energy and the Triad National Security, LLC (Permittees) response follows:

Simran Thapa *– St. John's College, Email: simy225@gmail.com*

Comment: *Please provide an acronym list as a handout at the next public meeting.*

Response: Thank you for your comment. An acronym master list for LANL is available at: http://the-puzzle-palace.com/AML.html. Additionally, the Applicants will endeavor to be better at plain language during public meetings.

Cynthia McNamara *– Email: cynthia_mcnamra@yahoo.com*

Comment: *Dear LANL Staff:*
I provide the following comments regarding the hazardous waste facility permit renewal application for Los Alamos National Laboratory (LANL). My comments and concerns encompass more than what can fit on the half-page card for public comments and questions provided at the December 4, 2019, public meeting. Even if I filled out a comment card, it is unknown if and when LANL might respond. For those reasons, I am writing this letter (and copying the New Mexico Environment Department) to provide comments that would not fit on a postcard. I am extremely concerned about the narrow scope of the LANL application to renew the ten-year hazardous waste facility permit issued by the New Mexico Environment Department. The federal Resource Conservation and Recovery Act (RCRA) law and regulations, as implemented in New Mexico by the Hazardous Waste Act and its regulations, provide additional protections for human health and the environment. These include addressing the increasing seismic threat on the Pajarito Plateau where LANL is located, as well as the tank systems that treat hazardous and radioactive liquid wastes. Further, LANL needs to address the hazardous and toxic pollution released through open burning and open detonation activities by installing and operating contained burn facilities and
contained detonation facilities.

Pursuant to the RCRA, LANL's application must include the following:

First: Permit information for the Radioactive Liquid Waste Treatment Facility (RLWTF) at Technical Area 50, which handles, manages, treats, and stores hazardous waste. It has been operating without a hazardous waste permit for decades. It was bootstrapped in by the New Mexico Environment Department in violation of RCRA and the NM Hazardous Waste Act. The Radioactive Liquid Waste Treatment Facility treats and stores hazardous as well as radioactive liquid wastes from the Plutonium Facility at Technical Area 55. The two facilities are located across the street from one another and are subject to similar seismic impacts. On November 15, 2019, the Defense Nuclear Facilities Safety Board (DNFSB), an independent

federal agency that oversees LANL nuclear weapons operations, issued its Staff Report about the Safety Basis for the Plutonium Facility at Los Alamos National Laboratory (dated August 16, 2019). They discuss the delays in implementing upgrades and modification to deficient safety systems. Releases of hazardous and radioactive materials in the event of an earthquake are possible. Those releases increase three fold when unsecured heavy equipment falls on equipment, including treatment facilities, following a fire. The estimated public exposure is between 24 rems to 77 rems, depending upon the release scenario. The Department of Energy Evaluation Guideline is 25 rem. I ask that their important report be attached to these comments.
https://www.dnfsb.gov/documents/letters/pf-4-safety-basis
Evidence must be provided in the renewal application that the hazardous waste treatment facilities and tank systems are secured and that there is no potential for surrounding equipment to fall on those facilities and systems during an anticipated seismic, and possible resulting fire, event.

Response: Thank you for your comment. The RLWTF accepts radioactive wastewater for treatment and is being addressed separately in collaboration with NMED. It does not meet the criteria for regulation as a hazardous waste management unit, and is the beyond the scope of the current RCRA permit renewal effort. With respect to the DNFSB report, the link in your comment is duly noted and recorded in this response. However, that information is not included in the regulatory requirements for a RCRA permit application and is not included herein. LANL is committed to excellence in terms of operational mission while being dedicated to protecting human health, ecosystems, and advancing safety culture.

Comment: *Second: Proposals to install contained burn and contained detonation facilities to replace the antiquated and polluting open burn and detonation facilities. The installation and operation of contained burn and detonation facilities at LANL would basically stop toxic and hazardous pollution from being released into the environment. During the 2010 hazardous waste permit hearing, CCNS presented Ralph Hayes as a technical expert on contained burn and contained detonation facilities. He is the founder of El Dorado Engineering – The World Experts in Demilitarization. https://www.eldoradoengineering.com/ For example, Hayes and his company designed and installed a contained burn system to dispose of 16 million pounds of M6 propellant and clean burning igniters abandoned and left deteriorating on site at Camp Minden, Louisiana. LANL is unable to answer the following question: Why won't DOE contract with El Dorado Engineering for them to design contained burn and contained detonation facilities – with no emissions – for LANL.*

Response: Thank you for your comment. The Applicants continue to evaluate the latest research and best practices for explosive waste treatment activities. As presented with the poster of summarized decision matrix, *Explosives Waste Treatment Alternatives* at the December 4th meeting, LANL has rigorously investigated potential options and tradeoffs for various technologies including contained burning and detonation. Building on safety principles and analysis of safety associated with treatment on-site versus off-site waste shipment such as included within Supplement I-1 *Treatment Justification for Open Detonation and Open Burning Activities*, the currently proposed approaches by LANL have been determined to be safe, effective, feasible, and protective. The alternatives assessment in this permit application includes evaluations of the wastes treated through open burning and open detonation at the LANL sites; the availability of

off-site treatment and the safety hazards associated with transport and handling of explosives wastes; and the availability of alternative technologies for on-site treatment and the feasibility, explosives safety hazards, and potential human health and environmental impacts/benefits. Each of the technologies that can treat waste that is presently treated through open burning and open detonation is included within the assessments. No single alternative technology can treat all of the waste streams that are extant treated through open burning and open detonation on-site; otherwise, multiple thermal treatment units would still be necessary for on-site treatment of explosives waste and the Applicants would still require open burning and open detonation treatment units. The addition of more treatment units (alternate technology) at the Facility is not a feasible option compared to the use of the existing treatment processes available on-site.

Joni Arends* – *Concerned Citizens for Nuclear Safety, *[Telephone (505) 986-1973; Email: jarends@nuclearactive.org; P.O. Box 31147, Santa Fe, NM 87594]*

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A new Low-Level Radioactive Liquid Waste Treatment Facility has been built next door to the RLWTF without the required enhanced public participation processes required by RCRA

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Response: Thank you for your comment. The RLWTF accepts radioactive wastewater for treatment and is being addressed separately in collaboration with NMED. It does not meet the criteria for regulation as a hazardous waste management unit, and is the beyond the scope of the current RCRA permit renewal effort. With respect to the DNFSB report, the link in your comment is duly noted and recorded in this response. However, that information is not included in the regulatory requirements for a RCRA permit application and is not included herein. LANL is committed to excellence in terms of operational mission while being dedicated to protecting human health, ecosystems, and advancing safety culture.

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November 22, 2019 Ventura County Star:
https://www.vcstar.com/story/news/local/communities/simi-valley/2019/11/22/fireworks-erupt-nasa-meeting-cleaning-up-nuke-meltdown-site/4266401002/ and
November 29, 2019 Simi Valley Acorn:
https://www.simivalleyacorn.com/articles/ssfl-stalemate/

We offer these links to the articles in the spirit of LANL improving its public meetings so that everyone can hear the community concerns; that public comments are not restricted to written cards; and that the subject matter experts have name tags and business cards, etc., as well as the need to provide hospitality to those attending the meeting to learn and provide public comments.

Thank you for your careful consideration of our comments. Please contact CCNS with any questions or concerns.

Response: Thank you for your comments. In terms of contained burn and detonation technologies, LANL continues to evaluate the latest research and best practices for explosive waste treatment activities. As presented with the poster of summarized decision matrix, *Explosives Waste Treatment Alternatives* at the December 4th meeting, LANL has rigorously investigated potential options and tradeoffs for various technologies including contained burning and detonation. Building on safety principles and analysis of safety associated with treatment on-site versus off-site waste shipment such as included within Supplement I-1 *Treatment Justification for Open Detonation and Open Burning Activities*, the currently proposed approaches by LANL have been determined to be safe, effective, feasible, and protective.

With respect to the December 4, 2019 meeting format, this was considered the first of multiple public events and opportunities for stakeholder participation. The Applicants appreciate the

feedback on the alternate meeting format and moving forward will explore various formats for community outreach and engagement. Consideration will be made to ensure clear communication of Facility representatives and those individuals who may provide answers to questions from the public.

Finally, the Applicants appreciate the suggestions and information on other Facilities regarding public participation.

Appendix 3

Summary Table of Proposed Changes to Hazardous Waste Management Unit Closure Plans

Summary Table of Proposed Changes to Hazardous Waste Management Unit Closure Plans

Appendix 3 Summary Table of Changes to the Hazardous Waste Management Unit Closure Plans

Permit Attachment	Attachment Section	Proposed modification	Justification
List of Closure Plans		Update to include titles for Attachments G.2, G.3, and G.28.	Addition of plans for proposed units.
Attachment G.1 Technical Area 3 Building 29 Indoor Container Unit Closure Plan	Table G.1-5, Potential Waste Materials, Waste Types, and Disposal Options	DOE-N3B are proposing specific changes to Permit Attachments G.1 through G.30 hazardous waste management unit closure plans in the Permit to be made in accordance with the Settlement Agreement reached in *U.S. v. Curry*, DC NM Case No. 10-01251, dated April 21, 2017. As described in the *U.S. v. Curry* modification request, the changes to the closure plans involve the removal of language describing potential waste types associated with or generated by unit closure activities. The waste type notation for "low-level radioactive solid waste" and the associated disposal options listing text are proposed for removal from the relevant table ("Potential Waste Materials, Waste Types, and Disposal Options") in Permit Attachments G.1 through G.30.	Each closure plan includes a table listing potential waste materials, waste types, and disposal options that may be generated by closure activities at the site. This may include wastes derived from residue collection, decontamination procedures, housekeeping, personnel protective equipment, or soil and surface sampling. The table summarizes these waste types by categories such as the regulatory authority (e.g., solid waste, hazardous waste, and nonregulated waste) and by the available disposal options. This information is provided pursuant to the closure plan information requirements of 40 CFR 264.112. Those requirements as described by the regulation are limited to information regarding hazardous waste materials. The waste type notation for "low-level radioactive solid waste" and the associated disposal options listing text are proposed for removal from the relevant table ("Potential Waste Materials, Waste Types, and Disposal Options") in Permit Attachments G.1 through G.30 pursuant to the
Attachment G.4 Technical Area 50 Building 69 Indoor Container Storage/Treatment Unit Closure Plan	Table G.4-6, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.5 Technical Area 50 Building 69 Outdoor Container Storage Unit Closure Plan	Table G.4-6, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.6 Technical Area 54 Area G Pad 1 Outdoor Container Storage Unit Closure Plan	Table G.6-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.7 Technical Area 54 Area G Pad 3 Outdoor Container Storage Unit Closure Plan	Table G.7-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.8 Technical Area 54 Area G Pad 5 Outdoor Container Storage Unit Closure Plan	Table G.8-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.9 Technical Area 54 Area G Pad 6 Outdoor Container Storage Unit Closure Plan	Table G.9-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.10 Technical Area 54 Area G Pad 9 Outdoor Container Storage Unit Closure Plan	Table G.10-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.11 Technical Area 54 Area G Pad 10 Outdoor Container Storage Unit Closure Plan	Table G.11-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.12 Technical Area 54 Area G Pad 11 Outdoor Container Storage Unit Closure Plan	Table G.12-2, Potential Waste Materials, Waste Types, and Disposal Options		

Summary Table of Proposed Changes to Hazardous Waste Management Unit Closure Plans

Permit Attachment	Attachment Section	Proposed modification	Justification
Attachment G.13 Technical Area 54 Area G Storage Shed 8 Indoor Container Storage Unit Closure Plan	Table G.13-3, Potential Waste Materials, Waste Types, and Disposal Options	Please see Permit Section 2.12, Closure Plan, and Attachments G.1 through G.31 and their respective tables titled Potential Waste Materials, Waste Types, and Disposal Options.	settlement agreement reached in *U.S. v. Curry*, DC NM Case No. 10-01251, dated April 21, 2017.
Attachment G.14 Technical Area 54 Area G Building 33 Indoor Container Storage Unit Closure Plan	Table G.14-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.15 Technical Area 54 Area L Outdoor Container Storage Unit Closure Plan	Table G.15-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.16 Technical Area 54 West Building 38 Indoor Container Storage Unit Closure Plan	Table G.16-4, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.17 Technical Area 54 West Outdoor Container Storage Unit Closure Plan	Table G.17-3, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.18 Technical Area 55 Building 4 Room B40 Indoor Container Storage Unit Closure Plan	Table G.18-3, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.19 Technical Area 55 Building 4 Room K13 Indoor Container Storage Unit Closure Plan	Table G.19-3, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.20 Technical Area 55 Building 4 Room B05 Indoor Container Storage Unit Closure Plan	Table G.20-3, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.21 Technical Area 55 Building 4 Room B45 Indoor Container Storage Unit Closure Plan	Table G.21-3, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.22 Technical Area 55 Building 4 Vault Indoor Container Storage Unit Closure Plan	Table G.22-3, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.23 Technical Area 55 Building 4 ,Indoor Storage Tank Unit Closure Plan	Table G.23-3, Potential Waste Materials, Waste Types, and Disposal Options		

Summary Table of Proposed Changes to Hazardous Waste Management Unit Closure Plans

Permit Attachment	Attachment Section	Proposed modification	Justification
Attachment G.24 Technical Area 55 Building 4 Indoor Mixed Waste Stabilization Treatment Unit Closure Plan	Table G.24-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.25 Technical Area 55 0355 Pad Closure Plan	Table G.25-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.26 Technical Area 55 Outdoor Storage Pad Closure Plan	Table G.26-3, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.27 Technical Area 63 Transuranic Waste Facility Closure Plan	Table G.27-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.29 Technical Area 55 Building 4 Room B13 Closure Plan	Table G.29-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.30 Technical Area 55 Building 4 Room G12 Closure Plan	Table G.30-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.31 Technical Area 60, Building 17 Indoor Container Storage Unit Closure Plan	Table G.31-2, Potential Waste Materials, Waste Types, and Disposal Options		
Attachment G.2 Technical Area 36-8 Open Detonation Unit Closure Plan	Complete Plan	Complete Plan	Addition of plan proposed by the Permittees to incorporate the operations for open detonation treatment unit at TA-36. Application requirements for these units are described or included in Section 4 of this permit renewal application.

Summary Table of Proposed Changes to Hazardous Waste Management Unit Closure Plans

Permit Attachment	Attachment Section	Proposed modification	Justification
Attachment G.3 Technical Area 39-6 Open Detonation Unit Closure Plan	Complete Plan	Complete Plan	Addition of plan proposed by the Permittees to incorporate the operations for open detonation treatment unit at TA-39. Application requirements for these units are described or included in Section 4 of this permit renewal application.
Attachment G.23 Technical Area 55 Building 4, Indoor Storage Tank Unit Closure Plan	Complete Plan	The Permittees propose updates to facility descriptions for units at TA-55.	The Permittees propose updates to descriptions of units located at TA-55.
Attachment G.24 Technical Area 55 Building 4, Indoor Mixed Waste Stabilization Treatment Unit Closure Plan	Complete Plan	The Permittees propose updates to facility descriptions for units at TA-55.	The Permittees propose updates to descriptions of units located at TA-55.
Attachment G.28 Closure Plan Open Burning Treatment Unit Technical Area 16-388 Flash Pad	Complete Plan	Complete Plan	Addition of plan proposed by the Permittees to incorporate the operations for an open burning treatment unit at TA-16. Application requirements for these units are described or included in Section 5 of this permit renewal application.

Supplement 3-1

Permittees' Proposed Changes to Attachments G.1 through G.31, Closure Plans

G.1 - TECHNICAL AREA 3, BUILDING 29 INDOOR CONTAINER STORAGE UNIT

G.2 - TECHNICAL AREA 36-8 OPEN DETONATION UNIT CLOSURE PLAN

G.3 - TECHNICAL AREA 39-6 OPEN DETONATION UNIT CLOSURE PLAN

G.4 - TECHNICAL AREA 50, BUILDING 69, INDOOR CONTAINER STORAGE UNIT

G.5 - TECHNICAL AREA 50, BUILDING 69, OUTDOOR CONTAINER STORAGE UNIT

G.6 - TECHNICAL AREA 54, AREA G, PAD 1, OUTDOOR CONTAINER STORAGE UNIT

G.7 - TECHNICAL AREA 54, AREA G, PAD 3, OUTDOOR CONTAINER STORAGE UNIT

G.8 - TECHNICAL AREA 54, AREA G, PAD 5, OUTDOOR CONTAINER STORAGE UNIT

G.9 - TECHNICAL AREA 54, AREA G, PAD 6, OUTDOOR CONTAINER STORAGE UNIT

G.10 - TECHNICAL AREA 54, AREA G, PAD 9, OUTDOOR CONTAINER STORAGE UNIT

G.11 - TECHNICAL AREA 54, AREA G, PAD 10, OUTDOOR CONTAINER STORAGE UNIT

G.12 - TECHNICAL AREA 54, AREA G, PAD 11, OUTDOOR CONTAINER STORAGE UNIT

G.13 - TECHNICAL AREA 54, AREA G, STORAGE SHED 8, INDOOR CONTAINER STORAGE UNIT

G.14 - TECHNICAL AREA 54, AREA G, BUILDING 33, INDOOR CONTAINER STORAGE UNIT

G.15 - TECHNICAL AREA 54, AREA L, OUTDOOR CONTAINER STORAGE UNIT

G.16 - TECHNICAL AREA 54 WEST, BUILDING 38, INDOOR CONTAINER STORAGE UNIT

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G.21 - TECHNICAL AREA 55, BUILDING 4, ROOM B45, INDOOR CONTAINER STORAGE UNIT

G.22 - TECHNICAL AREA 55, BUILDING 4, VAULT, INDOOR CONTAINER STORAGE UNIT

G.23 - TECHNICAL AREA 55, BUILDING 4, INDOOR STORAGE TANK UNIT

G.24 - TECHNICAL AREA 55, BUILDING 4, INDOOR MIXED WASTE STABILIZATION TREATMENT UNIT

G.25 - TECHNICAL AREA 55, 0355 PAD

G.26 - TECHNICAL AREA 55, OUTDOOR STORAGE PAD

G.27 - TECHNICAL AREA 63, TRANSURANIC WASTE FACILITY

G.28 - OPEN BURNING TREATMENT UNIT TECHNICAL AREA 16-388 FLASH PAD CLOSURE PLAN

G.29 – TECHNICAL AREA 55, BUILDING 4 ROOM B13 INDOOR CONTAINER STORAGE UNIT

G.30 – TECHNICAL AREA 55, BUILDING 4 ROOM G12 INDOOR CONTAINER STORAGE UNIT

G.31 – TECHNICAL AREA 60, BUILDING 17 INDOOR CONTAINER STORAGE UNIT

ATTACHMENT G.1
TECHNICAL AREA 3, BUILDING 29
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.1-5

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

Table G.1-5

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.2
TECHNICAL AREA 36-8
OPEN DETONATION UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the open detonation (OD) treatment unit at Technical Area 36 (TA-36) at the Los Alamos National Laboratory (LANL), hereinafter referred to as the TA-36-8 OD Unit. The information provided in this closure plan addresses the closure requirements specified in Part 9 of the Los Alamos National Laboratory Hazardous Waste Facility Permit (NMED 2010) (the Permit), and Title 40 Code of Federal Regulations (CFR) Part 264, Subparts G and X for hazardous waste management units operated at LANL under RCRA and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the Permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at LANL and at the DOE Los Alamos Site Office. Prior to closure of the TA-36-8 OD Unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans will be submitted to NMED for approval prior to implementing closure activities.

The TA-36-8 OD Unit is collocated with solid waste management units not yet scheduled for clean-up activities; therefore, if closure performance standards listed in Section 4.1 cannot be attained, the TA-36-8 OD Unit will undergo RCRA clean closure activities in conjunction with the corrective action processes at TA-36. Final closure of the TA-36-8 OD Unit will be conducted in accordance with the requirements set forth in 40 CFR 264 Subpart G and X.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

This section provides an overview of past operations and waste management practices at the TA-36-8 OD Unit. It includes the location of the unit, a description of the unit and operational and waste management practices associated with the unit.

2.1 Description of the Treatment Unit

The unit is located near Building TA-36-8 and is used to treat solid and liquid hazardous explosives waste. A list of waste explosives that have been treated by OD at the unit to date is presented in Table G.2-2. This table will be updated, as necessary at the time of closure. The TA-36-8 OD Unit consists of a sand- and grass-covered area that measures approximately 500 feet east to west and 300 feet north to south. The western portion is relatively flat; the eastern portion is concave to minimize fragment dispersion. The unit is used primarily for non-treatment-related experimental test detonations, sanitization of classified parts, and treatment of hazardous explosives waste. Following waste placement at the unit, detonation operations are conducted from Building TA-36-8, the control building.

2.2 Description of the Wastes Treated at the Unit

The TA-36-8 OD Unit has a maximum treatment capacity of 2,000 pounds of explosives waste per detonation and an annual treatment limit of 15,000 pounds. The wastes are treated to remove the characteristic of reactivity, although other characteristic hazardous waste (e.g., toxicity for barium) may be present in the wastes being treated.

There are two basic categories of explosives that may be treated at the TA-36-8 OD Unit. The first category consists of explosives-contaminated waste; the second category consists of explosives

waste. Generally, explosives-contaminated waste includes make-up room wastes and infrequently firing site debris. Make-up room waste can consist of explosives-contaminated debris such as paper towels, gloves, swabs, and similar materials that contain no tangible pieces of explosives but are used in the preparation of shots in the preparation building. Firing site debris that is potentially contaminated with explosives consists of wood scraps, cardboard, burlap, Plexiglas®/Lexan®, plastic, glass, styrofoam, electrical cables, and metallic foils used for pin switches or metals such as target plates. Explosives waste generally includes identifiable scrap explosives that are safe to handle. These materials include explosives assemblies and explosives, identifiable booster charge scrap, and any other process wastes that have the potential to react.

3.0 ESTIMATE OF MAXIMUM WASTE TREATED

Since RCRA Subtitle C regulations became effective in November 1980, an average of approximately 1100 pounds of waste has been treated annually at the TA-36-8 OD Unit. Based on the 1100 pound per year rate for treated wastes, it is estimated that approximately 33,000 pounds of waste have been treated at the TA-36-8 OD Unit through 2010.

4.0 GENERAL CLOSURE INFORMATION

4.1 Closure Performance Standard

As required by Permit Section 9.2, the TA-36-8 OD Unit will be closed to meet the following performance standards:

a. Remove all hazardous waste residues and hazardous constituents; and

b. Ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils, the cleanup levels will be established based on residential use. LANL will also demonstrate that there is no potential to contaminate groundwater.

If LANL is unable to achieve either of the clean closure standards above, they will:

c. Coordinate cleanup closure activities for the TA-36-8 OD Unit with the corrective action cleanup processes at TA-36 in its entirety;

d. Comply with Closure Requirements in 40 CFR 265.113(b)(1)(ii)(C) and (2);

e. Minimize the need for further maintenance;

f. Control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

g. Comply with the closure requirements of Permit Part 9 (Closure) and 40 CFR Part 264 Subparts G and X for miscellaneous units.

Closure of the TA-36-8 OD Unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, NMED.

4.2 Closure Schedule

This closure plan schedule is intended to address closure requirements for the TA-36-8 OD Unit within the authorized timeframe of the Permit (see Permit Section 9.4). The following section provides the schedule of closure activities (see also Table G.2-1 of this closure plan).

Notification of closure will occur at least 45 days prior to when LANL expects to begin closure (see 40 CFR § 264.112(d)(1)). Closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, will occur in accordance with Permit Section 9.4.6.2.

Within 100 days of the final treatment of hazardous waste, LANL will conduct the records review (review) and assessment and submit an amended closure plan, if necessary, to the NMED for review and approval as a permit modification. Upon approval of the modified closure plan, if applicable, LANL will decontaminate unit structures, surfaces, and equipment.

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted to demonstrate that surfaces, related equipment, and media, if applicable, at the TA-36-8 OD Unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the NMED for review and approval, will be completed within 180 days after the final treatment of waste. Submittal of the final closure report and certification will be submitted to NMED 240 days after initiating closure. In the event that closure of the TA-36-8 OD Unit cannot proceed according to schedule, LANL will notify the NMED in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the TA-36-8 OD Unit will include: proper management and disposal of hazardous waste residues and contaminated surfaces and equipment associated with the unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the TA-36-8 OD Unit.

5.1 Records Review and Structural Assessment

Prior to commencing closure decontamination and sampling activities, the TA-36-8 OD Unit Operating and Inspection Records will be reviewed and a structural assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.1.1 Records Review

The TA-36-8 OD Unit Operating Record (including, but not limited to, inspection and contingency plan implementation records) will be reviewed at the time of closure and in accordance with the schedule in Section 4.2 of this closure plan. The goals of the review will be to:

1. Confirm the specific hazardous waste constituents of concern listed in Table G.2-2 of this closure plan; and

2. identify additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the TA-36-8 OD Unit Operating and Records).

A determination will be made on whether any spills or releases, defects, deterioration, damage, or hazards affecting waste containment or treatment occurred or developed during the operational life of the TA-36-8 OD Unit. If the records indicate any such incidents, LANL will amend this closure plan (Section 4.3) in order to update the Sampling and Analysis Plan (SAP) (Section 6.0) to incorporate the locations of these incidents as additional sampling locations. All additional sampling procedures, as applicable, will be included in the amended closure plan.

5.1.2 Structural Assessment

The structural assessment is an evaluation of the unit's physical condition. The assessment will include inspecting the unit for any conditions that indicate a potential for release of hazardous constituents. If the assessment reveals any evidence of a release (*e.g.*, stains), this closure plan will be amended in order to update the SAP (Section 6.0) to incorporate these additional sampling locations. All additional sampling procedures, as applicable, will be included in the amended closure plan. This assessment will be documented with photographs, drawings, and other documentation, as necessary.

5.2 Decontamination and Removal of Structures and Related Equipment

In accordance with Permit Section 9.4.3, all remaining hazardous waste residues will be removed from the TA-36-8 OD Unit. The TA-36-8 OD Unit's equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (Waste Analysis Plan), Permit Section 9.4.5, and LANL's waste management procedures.

5.2.1 Removal of Structures and Related Equipment

Building TA-36-8 will not be removed as part of closure of the TA-36-8 OD Unit, but will be assessed as part of the clean-up activities at TA-36 in its entirety. At the time of closure of TA-36, the removal of these structures will be in accordance with Section 7.0 of this closure plan. Any related equipment will be removed as part of closure of the TA-36-8 OD Unit.

5.2.2 Decontamination of Structures and Related Equipment

Equipment at the unit is not expected to be left in place at final closure of TA-36. However, if equipment, identified during the assessment, is expected to be left in place, it will be decontaminated by pressure washing or steam cleaning and sampled according to Section 6.1. The steam cleaning or pressure washing solution will consist of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations. Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools) will collect excess wash water and provide complete containment during the decontamination process.

5.2.3 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste in accordance with Section 7.0.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP identifies the specific sampling and analysis requirements for this unit and ensures the closure requirements of 40 CFR Part 264 Subparts G and X are met. It also describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that LANL has met the closure performance standards in Section 4.1 of this closure plan. LANL will comply with all the requirements in this closure plan section (6.0) as well as the requirements in Part 11.10 of the Permit.

This SAP is designed to verify decontamination of surfaces, equipment, and materials; and determine whether a release of hazardous constituents to any environmental media has occurred. It includes:

1. The hazardous waste constituents of concern listed in Table G.2-2 that will be included in the analysis for soil, wipe, and chip samples. This list includes all hazardous constituents defined as:
   a. any constituent identified in 40 CFR Part 261 Appendix VII that caused the United States Environmental Protection Agency (EPA) to list a hazardous waste in 40 CFR Part 261 Subpart D;
   b. any constituent identified in 40 CFR Part 261, Appendix VIII; or
   c. any constituent identified in 40 CFR Part 264 Appendix IX, and perchlorate.
2. The list of hazardous constituents of concern will be utilized to select the EPA approved analytical methods capable of detecting those constituents.
3. A site plan for verification and soil samples. The site plan includes:
   a. Figure G.2-1 depicting the boundaries of the unit and verification and soil sampling locations;
   b. locations of known spills or other releases of hazardous waste or hazardous constituents during operation of the unit;
   c. other potential release locations; and
   d. a rationale for the number and locations of samples.
4. Type of samples. The type of samples to be collected (*e.g.*, wipe, soil) and the rationale for the selection of the sample type.
5. Sampling methods including a description of the EPA-approved sampling methods and procedures that will be used to collect each type of sample as specified in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846) (EPA 1986) and other methods approved by NMED as listed within the Waste Analysis Plan (Attachment C) of the permit.
6. A description of the EPA approved laboratory analytical methods that will be used to measure hazardous constituent concentrations (see Table G.2-4).
7. QA/QC procedures. This SAP includes a description of the QA/QC procedures that include, but are not limited to:
   a. duplicates, trip blanks, equipment blanks;
   b. a description of methods for decontamination of re-usable sampling equipment; and
   c. a description of all sample preservation, handling, labeling, and chain-of-custody procedures.

6.1 Sampling Activities

Sampling activities will be conducted to demonstrate that the units' related equipment, surfaces, and soils meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan. Soil samples will be collected from the TA-36-86 OD Unit according to the sampling grid shown in Figure G.2-1. These locations include, but are not limited to, soils surrounding the units; soils in the vicinity of the units; and soils at the storm water discharge point.

- Wipe sample(s) will be collected from each piece of decontaminated equipment related to the unit.
- Systematic composite samples will be collected from soils within and near the unit to include topographic lows or drainages. These samples will be analyzed for the applicable analytes in Table G.2-2.
    - Additional discrete soil samples will also be collected from locations where contamination is detected by composite sampling.
- Discrete soil samples will be collected from soils within the unit. These samples will be analyzed for volatile organic compounds, as these cannot be composited.
- One wipe sample will be collected from each piece of decontaminated equipment related to the unit.
- One verification wipe sample will be collected from the floor at the entry way of Building TA-36-8.

Removal of the associated structures at TA-36-8 OD Unit will occur at the time of closure of TA-36 in its entirety. Prior to removal of the Building TA-36-8 chip samples will be collected the concrete walls and floors.

Decontamination verification sampling activities will be conducted at the TA-36-8 OD Unit in order to verify that equipment at the unit meets the closure performance standards in Permit Section 9.2.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the EPA (EPA, 2002), DOE (DOE, 1995), and other NMED-approved procedures.

6.2.1 Surface Water and Groundwater Sampling

Surface water sampling is not included as part of the TA-36-8 OD Unit closure activities because surface water compliance is demonstrated as part of compliance with the Clean Water Act (CWA) and the National Pollutant Discharge Elimination System (NPDES) permit program. The TA-36-8 OD unit was subject to the 2008 CWA Multi-Sector General Permit (MSGP) for storm water until the modified LANL Storm water Individual Permit (IP) became effective on November 1, 2010. LANL is required to implement site-specific control measures (including best management practices [BMPs]) to address the non-numeric technology-based effluent limits contained in the IP, followed by confirmation monitoring against New Mexico water-quality criteria-equivalent target action levels (TALs) to determine the effectiveness of the site-specific measures. If TALs are exceeded, corrective actions detailed in the IP are initiated and additional confirmation

monitoring is conducted following completion of corrective actions. Monitoring for the IP will start in 2011.

6.2.2 Soil Sampling

Systematic composite and discrete grab soil samples will be collected to demonstrate that soils within and in the vicinity of the TA-36-8 OD Unit meet the closure performance standards. Approximately 45 decision units will be established in the area and will consist of areas no greater than 3,600 ft^2 (see Figure G.2-1). Individual soil samples (no less than 30 subsamples per decision unit) will be collected from 0-6 inch depths (soil/tuff interface). The individual soil samples will then be composited into one sample, resulting in a total of approximately 35 composite samples (EPA 2002). Two discrete soil samples will be collected from each decision unit for volatile organic compound (VOC) analysis. Discrete soil samples will be collected from within the OD pits, from depths of 0-6 inches and at the soil/rock interface (see Figure G.2-1). Soil samples will be analyzed to determine if hazardous constituents are present in soils at, or in the vicinity of, the units and to determine if there is an immediate threat to the environment. Soil samples will be collected using a spade, scoop, auger, trowel or other tool as specified in approved methods for the type of analyte to be sampled (i.e., EPA 1986 or EPA 2002). All samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.2-5.

6.2.3 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on surfaces and equipment at the unit. One wipe sample will also be collected from the floor, near the entry way for Building TA-36-8. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled, the solution used, and the desired constituent detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe or Ghost Wipes, whichever is prescribed by the analytical laboratory, wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory will be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.4 Cleaning of Sampling Equipment

A disposable sampler is considered clean only when directly removed from a factory-sealed wrapper. Reusable decontamination equipment, including protective clothing and tools, and sampling equipment used during closure activities will be scraped, as necessary, to remove residue, cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include: sample labels and custody seals; sample identification numbers; chain-of-custody forms; analysis requested; sample logbooks detailing sample collection activities; and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of sample possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

1. in a person's physical possession;
2. in view of the person in possession; or
3. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to LANL and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

- a unique sample identification number;
- name of the sample collector;
- date and time of collection;
- type of preservatives used, if any; and
- location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels will be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort will be recorded in a bound logbook. Information will be recorded in indelible ink and any cross outs will be made with a single line and the change initialed and dated by the author. The sample logbook will include the following information:

- the sample location;
- suspected composition;
- sample identification number;
- volume/mass of sample taken;
- purpose of sampling;
- description of sample point and sampling methodology;
- date and time of collection;
- name of the sample collector;
- sample destination and how it will be transported;
- observations; and
- name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.2-5 presents the requirements in SW-846 (EPA 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE requirements, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate LANL documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, or air carrier. All off-site transportation will be processed through the LANL packaging and transportation organization unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Table G.2-2; if at closure it has been determined that other constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 were managed or treated at the units over their operational history, this closure plan will be amended to include those constituents for sampling and analysis. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.2-4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and

organic analyses are presented in Table G.2-4. If any of the information from these tables has changed at the time of closure, LANL will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

- a documented comprehensive QA/QC program;
- technical analytical expertise;
- a document control/records management plan; and
- the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.2-4 is based on the following considerations:

- the physical form of the waste;
- constituents of interest;
- required detection limits (*e.g.*, regulatory thresholds); and
- information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of SW-846 (EPA 1986) or other NMED-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and the potential for sample contamination associated with the sampling and analysis process which is described in the following sections. Information on calculations necessary to evaluate the QC results is also described below.

6.4.2.1 Field Quality Control

The field QC samples that may be collected include trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.2-6 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory Quality Control Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between

recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample as-received. Analytical reports will include:

- a summary of analytical results for each sample;
- results from QC samples such as blanks, spikes, and calibrations;
- reference to standard methods or a detailed description of analytical procedures; and
- raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

By removing any hazardous waste or hazardous waste constituents during closure, LANL may become a generator of hazardous waste. LANL will control, handle, characterize, and dispose of all wastes generated during closure activities in accordance with this Section (7.0), LANL waste management procedures, and in compliance with applicable state, federal, and local requirements (*see* 40 CFR § 264.114). These wastes include, but are not limited to:

1. demolition debris;
2. concrete;
3. containerized waste;
4. decontamination wash water;
5. decontamination waste; and
6. soil

The different types of wastes generated at closure, including the units' decontaminated structures and related equipment, and their disposition options are listed in Table G.2-3 of this closure plan.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the units, LANL will submit, by registered mail, a closure certification report (Report) for NMED review and approval. The Report will document that the units have been closed in compliance with the specifications in this closure plan. The Report will summarize all activities conducted during closure including, but not limited to:

- the results of all investigations;
- remediation waste management;
- decontamination;
- decontamination verification and soil sampling activities; and
- results of all chemical analyses and other characterization activities.

LANL will submit the Report to NMED no later than 60 days after completion of closure of the unit. NMED may require interim reports that document the progress of closure. The certification

will be signed by LANL and by an independent professional engineer registered in the State of New Mexico (*see* 40 CFR § 264.115).

The report will document the units' closure and contain, at a minimum, the following information:

1. a copy of the certification pursuant to 40 CFR § 264.115;
2. any variance, and the reason for the variance, from the activities approved in this closure plan;
3. documentation of the records review and structural assessment conducted;
4. a summary of all sampling results, showing:
    a. sample identification;
    b. sampling location;
    c. data reported;
    d. detection limit for each analyte;
    e. a measure of analytical precision (*e.g.*, uncertainty, range, variance);
    f. identification of analytical procedure;
    g. identification of analytical laboratory;
5. a QA/QC statement on analytical data validation and decontamination verification;
6. the location of the file of supporting documentation, including:
    a. field logbooks;
    b. laboratory sample analysis reports;
    c. QA/QC documentation; and
    d. chain-of-custody forms;
7. storage or disposal location of hazardous waste resulting from closure activities;
8. a copy of the Human Health and Ecological Risk Assessment Reports, if a site-specific risk assessment was conducted pursuant to Section 11.5 of the Permit, for the units; and
9. a certification statement of the accuracy of the Closure Report.

Documentation supporting the independent registered professional engineer's certification must be furnished to NMED before LANL is released from the closure financial assurance requirements in 40 CFR § 264.143. If LANL leaves waste in place, they will submit to NMED a survey plat as required by 40 CFR § 264.116 in conjunction with the closure certification report.

9.0 REFERENCES

DOE 1995. *DOE Methods for Evaluating Environmental and Waste Management Samples*, DOE/EM-0089T, Rev. 2, Pacific Northwest Laboratory, Richland, Washington.

EPA 2002. *RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment*, EPA530-D-02-002, U.S. Environmental Protection Agency, Office of Solid Waste, U.S. Government Printing Office, Washington, DC.

EPA 1986 (and all approved updates). *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, EPA-SW-846, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, DC.

NIOSH 1994. *NIOSH Manual of Analytical Methods*, National Institute for Occupational Health and Safety 4th ed. Issue 1.

NMED 2010. *Los Alamos National Laboratory Hazardous Waste Facility Permit*, EPA No. NM0890010515, New Mexico Environment Department, Santa Fe, NM.

Table G.2-1
Schedule for Closure of the TA-36-8 OD Unit

Closure Activity	Schedule
Notify the Department of the initiation of closure.	Day 0
Remove all wastes including hazardous, mixed, and solid waste	No later than Day 90
Conduct records review	After initiating closure and before Structural Assessment
Conduct structural assessment	After removal of all wastes and before decontamination
Submit a request to modify the Closure Plan and the records review and structural assessment report	After conducting the records review and structural assessment and before decontamination
Complete all closure activities	No later than Day 180
Submit final Closure Report and Certification to the Department.	No later than Day 240

Note: The schedule above indicates calendar days in which the listed activities shall be completed from the day closure activities are initiated. Some activities may be conducted simultaneously.

Table G.2-2

Hazardous Waste Constituents of Concern at the TA-36-8 OD Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
HE and associated compounds	D001, D003	HMX, RDX, TNT, PETN, Tertyl and Other Nitrobenzenes and Nitrotoluenes
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
Semi-volatile Organic Compounds	D030, D036, F004, D038	2,4-Dinitrotoluene, Nitrobenzene, Pyridine
Volatile Organic Compounds	F001, F002, F003, F004, F005, D018, D022, D028, D029, D035; D040	Acetone, Ethanol, Benzene, Methyl ethyl ketone, Methylene Chloride, Toluene, methyl isobutyl ketone, Xylene, Ethyl Acetate, Methanol, 1,2 dichloroethane, 1,1 dichloroethylene Trichloroethylene, Chloroform
Other constituents of concern		Dioxins/Furans, Perchlorates, PFAS, kerosene, and depleted uranium

[a] Based on the unit operating record.
PETN = pentaerythrioltetranitrate (2,2-bis[(nitroxy)methyl]-1,3-propanediol dinitrate
HMX = cyclotetramethylene - tetranitramine
RDX = Cyclotrimethylene - trinitramine
TNT = trinitrotoluene

Table G.2-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plan (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	High Explosives Waste Treatment Facility (HEWTF) or sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Soil and tuff	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Discarded concrete	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Discarded sampling and decontamination equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.2-4
Summary of Analytical Methods

Analyte	EPA SW-846 Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	Determine the metal concentration in the samples.
Cadmium	6010, 7010	ICP-AES,GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES,GFAA	10 ug/L	
Lead	6010, 7010	ICP-AES,GFAA	5 ug/L	
Mercury	6010, 7010, 7471B	ICP-AES,GFAA, CVAA	0.2 ug/L	
Silver	6010, 7010	ICP-AES,GFAA	10 ug/L	
Organic Analysis				
Target compound list VOCs plus 10 TICs	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.
Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.
Other Analysis				
Perchlorates	6850	HPLC-ESI/MS or MS/MS	1 µg/L	Determine concentration of perchlorate in the samples.

[a] EPA, 1986, and all approved updates, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846).

[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.

CVAA = Cold-vapor atomic absorption spectroscopy
GC/MS = gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
HPLC = high performance liquid chromatograph
ESI/MS = electrospray ionization/mass spectrometry
MS/MS = tandem mass spectrometry
SVOC = semi-volatile organic compound
TIC = tentatively identified compound
VOC = volatile organic compound
mg/L = milligrams per liter
ug/L = micrograms per liter.

Table G.2-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Barium, Cadmium, Chromium, Lead, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to preparative extraction. 40 days from preparative extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4 °C	

[a] Smaller sample containers may be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations.

[b] Information obtained from *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846), EPA, 1986, and all approved updates.

°C = degrees Celsius
L=Liter
mL = milliter
HNO_3 = nitric acid
HCL-hydrochloric acid
TCLP = Toxicity Characteristic Leaching Procedure

Table G.2-6

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis[a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

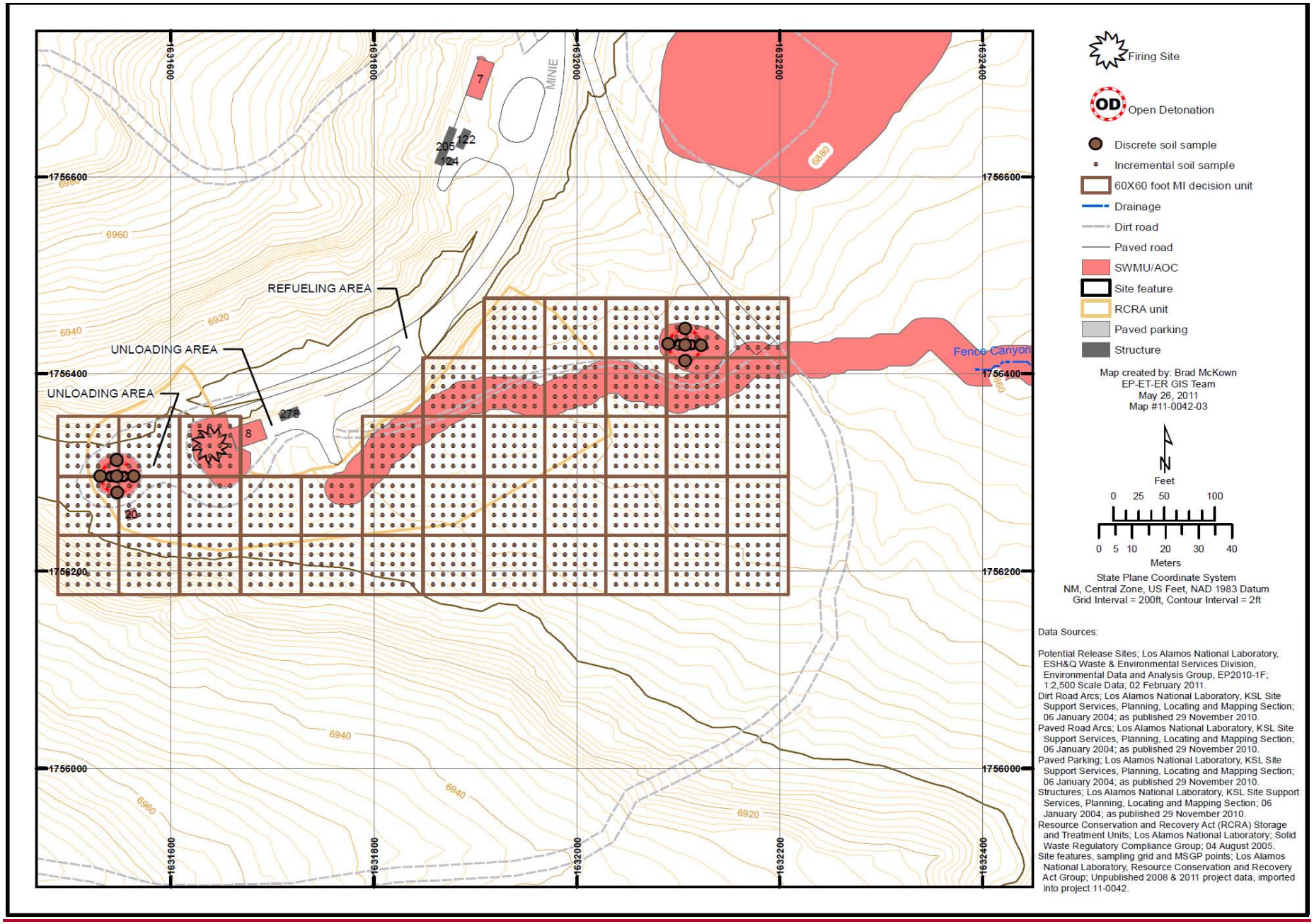


Figure G.2-1. Sampling Locations for Closure of the TA-36-8 Open Detonation Unit

ATTACHMENT G.3
TECHNICAL AREA 39-6
OPEN DETONATION UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the open detonation (OD) treatment unit at Technical Area 39 (TA-39) at the Los Alamos National Laboratory (LANL), hereinafter referred to as the TA-39-6 OD Unit. The information provided in this closure plan addresses the closure requirements specified in Part 9 of the Los Alamos National Laboratory Hazardous Waste Facility Permit (NMED 2010) (the Permit), 40 CFR Part 264, Subparts G and X for hazardous waste management units operated at LANL under RCRA and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the Permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at LANL and at the Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the TA-39-6 OD Unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans will be submitted to NMED for approval prior to implementing closure activities.

The TA-39-6 OD Unit is collocated with solid waste management units not yet scheduled for clean-up; therefore, if closure performance standards listed in Section 4.1 cannot be attained, TA-39-6 OD Unit will undergo RCRA clean closure activities in conjunction with the corrective action processes at TA-39. Final closure of the TA-39-6 OD Unit will be conducted in accordance with the requirements set forth in 40 CFR 264 Subpart G and X.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

This section provides an overview of past operations and waste management practices at the TA-39-6 OD Unit. It includes the location of the unit, a description of the unit and operational and waste management practices associated with the unit.

2.1 Description of the Treatment Unit

The TA-39-6 OD unit consists of a relatively flat, sand-covered area that measures approximately 40 feet by 40 feet in Ancho Canyon. Steep canyon walls rise to heights of 100 feet or more in the immediate vicinity of the TA-39-6 OD Unit, roughly forming a semicircle around the unit. The canyon walls serve to attenuate the force of the detonations. The TA-39-6 OD unit is used to treat solid and liquid hazardous explosives waste, including unexploded ordnance. The unit is used primarily for non-treatment-related experimental test detonations and is also occasionally used for treatment of explosive hazardous waste. Following waste placement at the unit, detonation operations are conducted from Building TA-39-6. Building TA-39-6 is a reinforced concrete structure extending partially beneath the detonation area.

2.2 Description of the Wastes Treated at the Unit

The TA-39-6 OD Unit has a maximum waste treatment capacity of 250 pounds of explosives waste per detonation. Up to four detonations may be performed per hour. Since 1980, an average of approximately 500 pounds of waste has been treated annually at the TA-39-6 OD unit.

The TA-39-6 OD Unit is used for thermal treatment of explosive hazardous waste and explosive-contaminated hazardous waste that exhibits the characteristic of reactivity in accordance with 40 CFR Part 265, Subpart P. The purpose of waste treatment at the unit is to remove the characteristic

of reactivity by OD. OD of waste is accomplished by using a predetermined amount of explosive (fuel) to initiate the detonation. The detonation may create temperatures ranging from 4,500 to 9,000 degrees Fahrenheit (2,500 to 5,600 degrees Celsius) (Erickson et. al., 2005).

There are two basic categories of explosives waste that may be managed at the TA-39-6 OD Unit. The first category consists of explosives-contaminated waste; the second category consists of explosives waste. Generally, explosives-contaminated waste includes make-up room wastes and infrequently firing site debris. Make-up room waste can consist of explosives contaminated debris such as paper towels, gloves, swabs, and similar materials that contain no tangible pieces of explosives but are used in the preparation of shots in the preparation building. Firing site debris that is potentially contaminated with explosives consists of wood scraps, cardboard, burlap, Plexiglas®/Lexan®, plastic, glass, styrofoam, electrical cables, and metallic foils used for pin switches or metals such as target plates. Explosives waste generally includes identifiable excess explosives that are safe to handle. These materials include explosives assemblies and explosives, identifiable booster charge scrap, and any other process wastes that have the potential to react.

3.0 ESTIMATE OF MAXIMUM WASTE TREATED

Since RCRA Subtitle C regulations became effective in November 1980, an average of approximately 260 pounds of waste has been treated annually at the TA-39-6 OD Unit. Based on the 260 pound per year rate for treated wastes, it is estimated that 7,800 pounds of waste have been treated at the TA-39-6 OD Unit through 2010.

4.0 GENERAL CLOSURE INFORMATION

4.1 Closure Performance Standard

As required by Permit Section 9.2, the TA-39-6 OD Unit will be closed to meet the following performance standards:

a. Remove all hazardous waste residues and hazardous constituents; and

b. Ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels will be established based on residential use. LANL will also demonstrate that there is no potential to contaminate groundwater.

If LANL is unable to achieve either of the clean closure standards above, they will:

c. Coordinate cleanup closure activities for the TA-39-6 OD Unit with the corrective action cleanup processes at TA-39 in its entirety;

d. Comply with Closure Requirements in 40 CFR 265.113(b)(1)(ii)(C) and (2);

e. Minimize the need for further maintenance;

f. Control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

g. Comply with the closure requirements of Permit Part 9 (Closure) and 40 CFR Part 264 Subparts G and X for miscellaneous units.

Closure of the TA-39-6 OD Unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the NMED.

4.2 Closure Schedule

This closure plan schedule is intended to address closure requirements for the TA-39-6 OD Unit within the authorized timeframe of the Permit (see Permit Section 9.4). The following section provides the schedule of closure activities (see also Table G.3-1 of this closure plan).

Notification of closure will occur at least 45 days prior to when LANL expects to begin closure (see 40 CFR § 264.112(d)(1)). Closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, will occur in accordance with Permit Section 9.4.6.2.

Within 100 days of the final treatment of hazardous waste, LANL will conduct the records review (review) and assessment and submit an amended closure plan, if necessary, to the NMED for review and approval as a permit modification. Upon approval of the modified closure plan, if applicable, LANL will decontaminate unit structures, surfaces, and equipment.

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted to demonstrate that surfaces, related equipment, and media, if applicable, at the TA-39-6 OD Unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the NMED for review and approval, will be completed within 180 days after the final treatment of waste. Submittal of the final closure report and certification will be submitted to NMED 240 days after initiating closure. In the event that closure of the TA-39-6 OD Unit cannot proceed according to schedule, LANL will notify the NMED in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the TA-39-6 OD Unit will include: proper management and disposal of hazardous waste residues and contaminated surfaces and equipment associated with the unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the TA-39-6 OD Unit.

5.1 Records Review and Structural Assessment

Prior to commencing closure decontamination and sampling activities, the TA-39-6 OD Unit Operating and Inspection Records will be reviewed and a structural assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.1.1 Records Review

The TA-39-6 OD Unit Operating Record (including, but not limited to, inspection and contingency plan implementation records) will be reviewed at the time of closure and in accordance with the schedule in Section 4.2 of this closure plan. The goals of the review will be to:

1. Confirm the specific hazardous waste constituents of concern listed in Table G.3-2 of this closure plan; and
2. identify additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the TA-39-6 OD Unit Operating and Inspection Records).

A determination will be made on whether any spills or releases, defects, deterioration, damage, or hazards affecting waste containment or treatment occurred or developed during the operational life of the TA-39-6 OD Unit. If the records indicate any such incidents, LANL will amend this closure plan (Section 4.3) in order to update the Sampling and Analysis Plan (SAP) (Section 6.0) to incorporate the locations of these incidents as additional sampling locations. All additional sampling procedures, as applicable, will be included in the amended closure plan.

5.1.2 Structural Assessment

The structural assessment is an evaluation of the unit's physical condition. The assessment will include inspecting the unit for any conditions that indicate a potential for release of hazardous constituents. If the assessment reveals any evidence of a release (*e.g.*, stains), the closure plan will be amended in order to update the SAP (Section 6.0) to incorporate these additional sampling locations. All additional sampling procedures, as applicable, will be included in the amended closure plan. This assessment will be documented with photographs, drawings, and other documentation, as necessary.

5.2 Decontamination and Removal of Structures and Related Equipment

In accordance with Permit Section 9.4.3, all remaining hazardous waste residues will be removed from the TA-39-6 OD Unit. The TA-39-6 OD Unit's equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (Waste Analysis Plan), Permit Section 9.4.5, and Facility waste management procedures.

5.2.1 Removal of Structures and Related Equipment

Building TA-39-6 will not be removed as part of closure of the TA-39-6 OD Unit, but will be assessed as part of the clean-up activities at TA-39 in its entirety. At the time of closure of TA-39, the removal of these structures will be in accordance with Section 7.0 of this closure plan. Any related equipment will be removed as part of closure of the TA-39-6 OD Unit.

5.2.2 Decontamination of Structures and Related Equipment

Equipment at the unit is not expected to be left in place at final closure of TA-39. However, if equipment, identified during the assessment, is expected to be left in place, it will be decontaminated by pressure washing or steam cleaning and sampled according to Section 6.1. The steam cleaning or pressure washing solution will consist of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations. Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools) will collect excess wash water and provide complete containment during the decontamination process.

5.2.3 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste in accordance with Section 7.0.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP identifies the specific sampling and analysis requirements for this unit and ensures the closure requirements of 40 CFR Part 264 Subparts G and X are met. It also describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that LANL has met the closure performance standards in Section 4.1 of this closure plan. LANL will comply with all the requirements in this closure plan section (6.0) as well as the requirements in Part 11.10 of the Permit.

This SAP is designed to verify decontamination of surfaces, equipment, and materials; and determine whether a release of hazardous constituents to any environmental media has occurred. It includes:

1. The hazardous waste constituents of concern listed in Table G.3-2 that will be included in the analysis for soil, wipe, and chip samples. This list includes all hazardous constituents defined as:
   a. any constituent identified in 40 CFR Part 261 Appendix VII that caused the United States Environmental Protection Agency (EPA) to list a hazardous waste in 40 CFR Part 261 Subpart D;
   b. any constituent identified in 40 CFR Part 261, Appendix VIII; or
   c. any constituent identified in 40 CFR Part 264 Appendix IX, and perchlorate.
2. The list of hazardous constituents of concern will be utilized to select the EPA approved analytical methods capable of detecting those constituents.
3. A site plan for verification and soil samples. The site plan includes:
   a. Figure G.3-1 depicting the boundaries of the unit and verification and soil sampling locations. The locations include:
      i. locations of known spills or other releases of hazardous waste or hazardous constituents during operation of the units;
      ii. other potential release locations; and
      iii. a rationale for the number and locations of samples.
4. Type of samples. The type of samples to be collected (*e.g.*, wipe, soil) and the rationale for the selection of the sample type.
5. Sampling methods including a description of the EPA-approved sampling methods and procedures that will be used to collect each type of sample as specified in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846) (EPA 1986) and other methods approved by NMED as listed within the Waste Analysis Plan (Attachment C) of the Permit.
6. A description of the approved EPA laboratory analytical methods that will be used to measure hazardous constituent concentrations (see Table G.3-4).

7. QA/QC procedures. This SAP includes a description of the QA/QC procedures that include, but are not limited to:
   a. duplicates, trip blanks, equipment blanks;
   b. a description of methods for decontamination of re-usable sampling equipment; and
   c. a description of all sample preservation, handling, labeling, and chain-of-custody procedures.

6.1 Sampling Activities

Sampling activities will be conducted to demonstrate that the units' related equipment, surfaces, and soils meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 5.6.2, 5.6.3, and 5.6.4 of this closure plan. Soil samples will be collected from the TA-39-6 OD Unit according to the sampling grid shown in Figure G.3-1. These locations include, but are not limited to, soils surrounding the units; soils in the vicinity of the units; and soils at the storm water discharge point.

- Wipe sample(s) will be collected from each piece of decontaminated equipment related to the units.
- Systematic composite samples will be collected from soils within and near the unit to include topographic lows or drainages. These samples will be analyzed for volatile organic compounds, as these cannot be composited.
  - Additional discrete soil samples will also be collected from locations where contamination is detected by composite sampling.
- Discrete soil samples will be collected from soils within the unit.
- One wipe sample will be collected from each piece of decontaminated equipment related to the unit.
- One verification wipe sample will be collected from the floor at the entry way of the Building TA-39-6.

Removal of the associated structures at the TA-39-6 OD Unit will occur at the time of closure of TA-39 in its entirety. Prior to removal of the Building TA-39-6 chip samples will be collected along the concrete walls and floors.

Decontamination verification sampling activities will be conducted at the TA-39-6 OD Unit in order to verify that equipment at the unit meets the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 5.6.2, 5.6.3, and 5.6.4 of this closure plan.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the EPA (EPA, 2002), DOE (DOE, 1995), and other NMED-approved procedures.

6.2.1 Surface Water and Groundwater Sampling

Surface water sampling is not included as part of the TA-39-6 closure activities because surface water compliance is demonstrated as part of compliance with the Clean Water Act (CWA) and the

National Pollutant Discharge Elimination System (NPDES) permit program. The TA-39-6 OD unit was subject to the 2008 CWA Multi-Sector General Permit (MSGP) for storm water until the modified LANL Storm water Individual Permit (IP) became effective on November 1, 2010. LANL is required to implement site-specific control measures (including BMPs) to address the non-numeric technology-based effluent limits contained in the IP, followed by confirmation monitoring against New Mexico water-quality criteria-equivalent target action levels (TALs) to determine the effectiveness of the site-specific measures. If TALs are exceeded, corrective actions detailed in the IP are initiated and additional confirmation monitoring is conducted following completion of corrective actions. Monitoring for the IP will start in 2011. Therefore, surface water sampling is not required as part of closure activities.

6.2.2 Soil Sampling

Systematic composite and discrete grab soil samples will be collected to demonstrate that soils within and in the vicinity of the TA-39-6 OD Unit meet the closure performance standards. Approximately nine decision units will be established in the area and will consist of areas no greater than 2,500 ft^2 (see Figure G.3-1). Individual soil samples (no less than 25 subsamples per decision unit) will be collected from 0-6 inch depths (soil/tuff interface). The individual soil samples will then be composited into one sample, resulting in a total of approximately nine composite samples (EPA 2002). Two discrete soil samples will be collected from random locations from within each decision unit for volatile organic compound (VOC) analysis. Discrete soil samples have been collected from nearby drainages. Discrete soil samples will be collected from within the OD pit, from depths of 0-6 inches and at the soil/rock interface. Soil samples will be analyzed to determine if hazardous constituents are present in soils at, or in the vicinity of, the units and to determine if there is an immediate threat to the environment. No soil samples have been collected to date in this area. Sampling of the drainage and bone yard at the Potrillo/Fence Canyon Aggregate Area has been completed and the Investigation Report is due to the NMED in May 2011.

Soil samples will be collected using a spade, scoop, auger, trowel or other tool as specified in approved methods for the type of analyte to be sampled (i.e., EPA 1986 or EPA 2002). All samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.3-5.

6.2.3 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on surfaces and equipment at the unit. One wipe sample will also be collected from the floor, near the entry way for Building TA-39-6. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled, the solution used, and the desired constituent detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe or Ghost Wipes, whichever is prescribed by the analytical laboratory, wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory will be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.4 Cleaning of Sampling Equipment

A disposable sampler is considered clean only when directly removed from a factory-sealed wrapper. Reusable decontamination equipment, including protective clothing and tools, and sampling equipment used during closure activities will be scraped, as necessary, to remove residue, cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include: sample identification numbers; chain-of-custody forms; analysis requested; sample logbooks detailing sample collection activities; and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

1. in a person's physical possession;
2. in view of the person in possession; or
3. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to LANL and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

- a unique sample identification number;
- name of the sample collector;
- date and time of collection;

- type of preservatives used, if any; and
- location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels will be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort will be recorded in a bound logbook. Information will be recorded in indelible ink and any cross outs will be made with a single line and the change initialed and dated by the author. The sample logbook will include the following information:

- the sample location;
- suspected composition;
- sample identification number;
- volume/mass of sample taken;
- purpose of sampling;
- description of sample point and sampling methodology;
- date and time of collection;
- name of the sample collector;
- sample destination and how it will be transported;
- observations; and
- name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.3-5 presents the requirements in SW-846 (EPA 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE requirements, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate LANL documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, or air carrier. All off-site transportation will be processed through LANL packaging and transportation organization unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Table G.3-2; if at closure it has been determined that other constituents listed in Appendix VIII of 40 CFR Part 261 and in

Appendix IX of 40 CFR Part 264 were managed or treated at the units over their operational history, this closure plan will be amended to include those constituents for sampling and analysis. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.3-4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.3-4. If any of the information from these tables has changed at the time of closure, LANL will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

- a documented comprehensive QA/QC program;
- technical analytical expertise;
- a document control/records management plan; and
- the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.3-4 is based on the following considerations:

- the physical form of the waste;
- constituents of interest;
- required detection limits (*e.g.*, regulatory thresholds); and
- information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of SW-846 (EPA 1986) or other NMED-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and the potential for sample contamination associated with the sampling and analysis process which is described in the following sections. Information on calculations necessary to evaluate the QC results is also described below.

6.4.2.1 Field Quality Control

The field QC samples that may be collected include trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.3-6 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory Quality Control Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample as-received. Analytical reports will include:

- a summary of analytical results for each sample;
- results from QC samples such as blanks, spikes, and calibrations;
- reference to standard methods or a detailed description of analytical procedures; and
- raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

By removing any hazardous waste or hazardous waste constituents during closure, LANL may become a generator of hazardous waste. LANL will control, handle, characterize, and dispose of all wastes generated during closure activities in accordance with this Section (7.0), LANL waste management procedures, and in compliance with applicable state, federal, and local requirements (*see* 40 CFR § 264.114). These wastes include, but are not limited to:

1. demolition debris;
2. concrete;
3. containerized waste;
4. decontamination wash water;
5. decontamination waste; and
6. soil

The different types of wastes generated at closure, including the units' decontaminated structures and related equipment, and their disposition options are listed in Table G.3-3 of this closure plan.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the units, LANL will submit, by registered mail, a closure certification report (Report) for NMED review and approval. The Report will document that the units have been closed in compliance with the specifications in this closure plan. The Report will summarize all activities conducted during closure including, but not limited to:

- the results of all investigations;
- remediation waste management;
- decontamination;
- decontamination verification and soil sampling activities; and

- results of all chemical analyses and other characterization activities.

LANL will submit the Report to NMED no later than 60 days after completion of closure of the units. NMED may require interim reports that document the progress of closure. The certification will be signed by LANL and by an independent professional engineer registered in the State of New Mexico (*see* 40 CFR § 264.115).

The report will document the units' closure and contain, at a minimum, the following information:

1. a copy of the certification pursuant to 40 CFR § 264.115;
2. any variance, and the reason for the variance, from the activities approved in this closure plan;
3. documentation of the records review and structural assessment conducted;
4. a summary of all sampling results, showing:
    a. sample identification;
    b. sampling location;
    c. data reported;
    d. detection limit for each analyte;
    e. a measure of analytical precision (*e.g.*, uncertainty, range, variance);
    f. identification of analytical procedure;
    g. identification of analytical laboratory;
5. a QA/QC statement on analytical data validation and decontamination verification;
6. the location of the file of supporting documentation, including:
    a. field logbooks;
    b. laboratory sample analysis reports;
    c. QA/QC documentation; and
    d. chain-of-custody forms;
7. storage or disposal location of hazardous waste resulting from closure activities;
8. a copy of the Human Health and Ecological Risk Assessment Reports, if a site-specific risk assessment was conducted pursuant to Section 11.5 of the Permit, for the units; and
9. a certification statement of the accuracy of the Closure Report.

Documentation supporting the independent registered professional engineer's certification must be furnished to NMED before LANL is released from the closure financial assurance requirements in 40 CFR § 264.143. If LANL leaves waste in place, they will submit to NMED a survey plat as required by 40 CFR § 264.116 in conjunction with the closure certification report.

9.0 REFERENCES

DOE 1995. *DOE Methods for Evaluating Environmental and Waste Management Samples,* DOE/EM-0089T, Rev. 2, Pacific Northwest Laboratory, Richland, Washington.

EPA 2002. *RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment*, EPA530-D-02-002, U.S. Environmental Protection Agency, Office of Solid Waste, U.S. Government Printing Office, Washington, DC.

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Erickson, E.D., A. P. Chafin, T.L. Boggs, L.A. Zellmer, and B.M. Abernathy, 2005: *Emissions from the Energetic Component of Energetic Wastes During Treatment by Open Detonation*, NAWCWD TP 8603, June 2005, Naval Air Warfare Center Weapons Division, China Lake, California.

NIOSH 1994. *NIOSH Manual of Analytical Methods*, National Institute for Occupational Health and Safety 4th ed. Issue 1.

NMED 2010. *Los Alamos National Laboratory Hazardous Waste Facility Permit*, EPA No. NM0890010515, New Mexico Environment Department, Santa Fe, NM.

Table G.3-1
Schedule for Closure of the TA-39-6 OD Unit

Closure Activity	Schedule
Notify the Department of the initiation of closure.	Day 0
Remove all wastes including hazardous, mixed, and solid waste	No later than Day 90
Conduct records review	After initiating closure and before Structural Assessment
Conduct structural assessment	After removal of all wastes and before decontamination
Submit a request to modify the Closure Plan and the records review and structural assessment report	After conducting the records review and structural assessment and before decontamination
Complete all closure activities	No later than Day 180
Submit final Closure Report and Certification to the Department.	No later than Day 240

Note: The schedule above indicates calendar days in which the listed activities shall be completed from the day closure activities are initiated. Some activities may be conducted simultaneously.

Table G.3-2

Hazardous Waste Constituents of Concern at the TA-39-6 OD Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
HE and associated compounds	D001, D003	HMX, RDX, TNT, PETN, Tertyl and Other Nitrobenzenes and Nitrotoluenes
Toxic Metals	D005, D006, D007, D008, D009, D011	Barium, Cadmium, Chromium, Lead, Mercury, , Silver
Semi-volatile Organic Compounds	D030, D036, F004, D038	2,4-Dinitrotoluene, Nitrobenzene, Pyridine
Volatile Organic Compounds	F001, F002, F003, F004, F005, D018, D022, D028, D029, D035; D040	Acetone, Ethanol, Benzene, MEK, Methylene Chloride, Toluene, MIBK, Xylene, Ethyl Acetate, Methanol, 1,2 dichloroethane (D028), 1,1 dichloroethylene Trichloroethylene, chloroform
Other constituents of concern		Perchlorates, Dioxins/Furans, PFAS, and depleted uranium

[a] Based on the unit operating record.
PETN = pentaerythrioltetranitrate (2,2-bis[(nitroxy)methyl]-1,3-propanediol dinitrate
HMX = cyclotetramethylene - tetranitramine
RDX = cyclotrimethylene - trinitramine
MEK= methyl ethyl ketone
TNT = trinitrotoluene
MIBK = 4-methyl-2-pentanone

Table G.3-3
Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plan (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	High Explosives Waste Treatment Facility (HEWTF) or sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Soil and tuff	Non-regulated solid waste	Subtitle D landfill

Potential Waste Materials	Waste Types	Disposal Options
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Discarded concrete	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Discarded sampling and decontamination equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.3-4
Summary of Analytical Methods

Analyte	EPA SW-846 Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Barium	6010, 7010	ICP-AES,GFAA	200 µg/L	Determine the metal concentration in the samples.
Cadmium	6010, 7010	ICP-AES,GFAA	2 µg/L	
Chromium	6010, 7010	ICP-AES,GFAA	10 µg/L	
Lead	6010, 7010	ICP-AES,GFAA	5 µg/L	
Mercury	6010, 7010, 7471B	ICP-AES,GFAA, CVAA	0.2 µg/L	
Silver	6010, 7010	ICP-AES,GFAA	10 µg/L	
Organic Analysis				
Target compound list VOCs plus 10 TICs	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.
Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.
Other Analysis				
Perchlorates	6850	HPLC-ESI/MS or MS/MS	1 µg/L	Determine concentration of perchlorate in the samples.

[a] EPA, 1986, and all approved updates, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846).

[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.

CVAA = Cold-vapor atomic absorption spectroscopy
GC/MS = gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
SVOC = semi-volatile organic compound
TIC = tentatively identified compound
VOC = volatile organic compound
HPLC = high performance liquid chromatograph
ESI/MS = electrospray ionization/mass spectrometry
MS/MS = tandem mass spectrometry
mg/L = milligrams per liter
µg/L = micrograms per liter.

Table G.3-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Barium, Cadmium, Chromium, Lead, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to preparative extraction. 40 days from preparative extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4 °C	

[a] Smaller sample containers may be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations.

[b] Information obtained from *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846), EPA, 1986, and all approved updates.

°C = degrees Celsius
L=Liter
mL = milliter
HNO_3 = nitric acid
HCL-hydrochloric acid
TCLP = Toxicity Characteristic Leaching Procedure

Table G.3-6

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis[a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

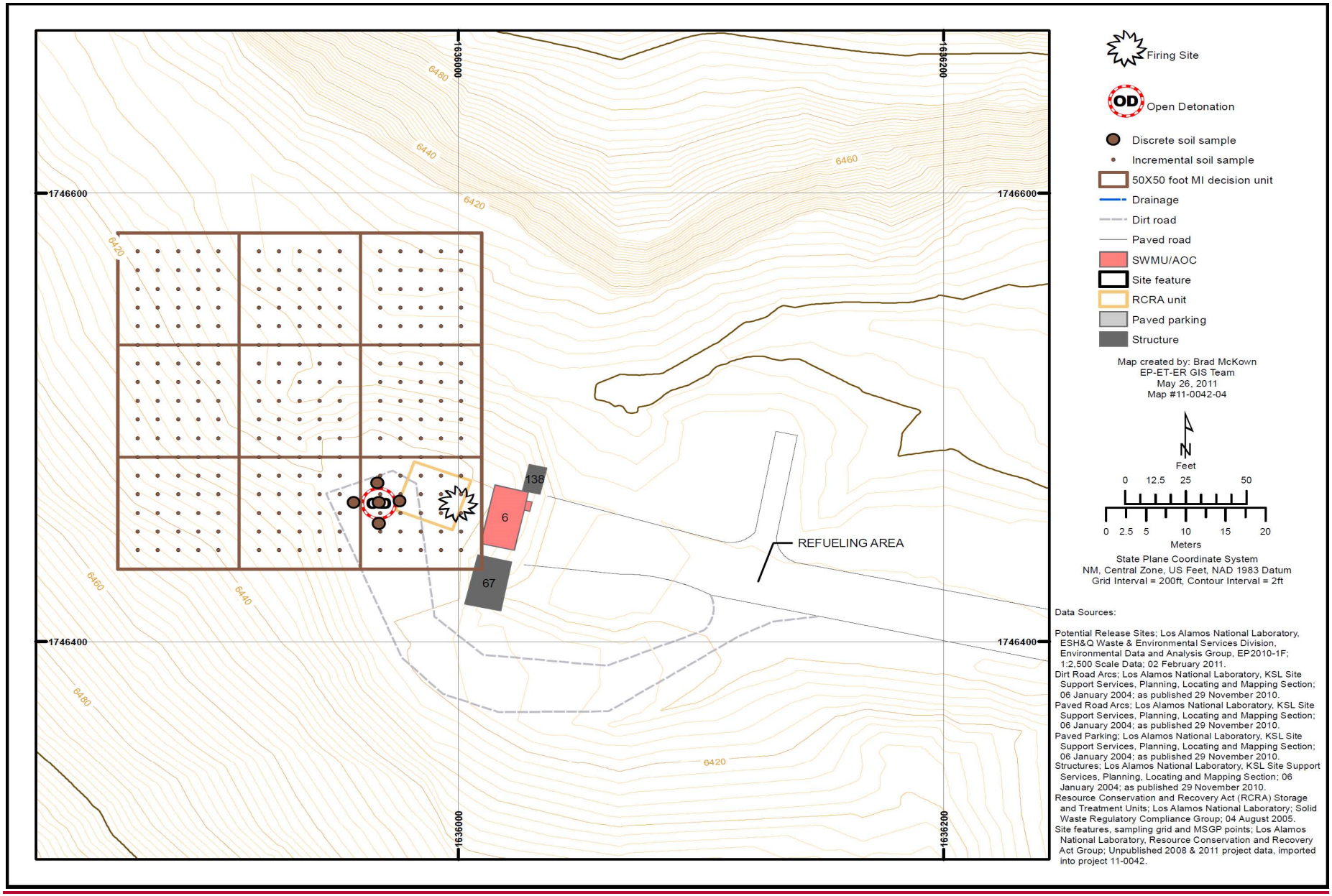


Figure G.3-1. Sampling Locations for Closure of the TA-39-6 Open Detonation Unit

ATTACHMENT G.4
TECHNICAL AREA 50, BUILDING 69
INDOOR CONTAINER STORAGE/TREATMENT UNIT
CLOSURE PLAN

Table G.4-6

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid	Subtitle D landfill

ATTACHMENT G.5
TECHNICAL AREA 50, BUILDING 69
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.5-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt and concrete	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid~~	~~Either an authorized on-site radioactive waste~~

Potential Waste Materials	Waste Types	Disposal Options
	~~waste~~	~~disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.6
TECHNICAL AREA 54, AREA G, PAD 1
OUTDOOR CONTAINER STORAGE AND TREATMENT UNIT
CLOSURE PLAN

Table G.6-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.7
TECHNICAL AREA 54, AREA G, PAD 3
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.7-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill

Potential Waste Materials	Waste Types	Disposal Options
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.8
TECHNICAL AREA 54, AREA G, PAD 5
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.8-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.9
TECHNICAL AREA 54, AREA G, PAD 6
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.9-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Verification water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	RLWTF

Table G.9-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.9-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

ATTACHMENT G.10
TECHNICAL AREA 54, AREA G, PAD 9
OUTDOOR CONTAINER STORAGE AND TREATMENT UNIT
CLOSURE PLAN

Table G.10-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill

Potential Waste Materials	Waste Types	Disposal Options
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.11
TECHNICAL AREA 54, AREA G, PAD 10
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.11-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.12
TECHNICAL AREA 54, AREA G, PAD 11
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.12-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.12-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

Table G.12-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.13
TECHNICAL AREA 54, AREA G, STORAGE SHED 8
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.13-3

Potential Waste Materials, Waste Types, and Disposal Options

Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

Table G.13-3

Waste Materials, Waste Types, and Disposal Options

Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.14
TECHNICAL AREA 54, AREA G, BUILDING 33
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.14-2

Potential Waste Materials, Waste Types, and Disposal Options

Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Waste Materials	Waste Types	Disposal Options
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.15
TECHNICAL AREA 54, AREA L
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.15-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.16
TECHNICAL AREA 54 WEST, BUILDING 38
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.16-4

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its~~

Figure G.16-4 (cont.)

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
		~~state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

ATTACHMENT G.17
TECHNICAL AREA 54, WEST
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.17-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid~~	~~Either an authorized on-site radioactive waste~~

Potential Waste Materials	Waste Types	Disposal Options
	~~waste~~	~~disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.18
TECHNICAL AREA 55, BUILDING 4 ROOM B40
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.18-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste~~

Table G.18-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
		~~disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

ATTACHMENT G.19
TECHNICAL AREA 55, BUILDING 4 ROOM K13
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.19-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards,

Potential Waste Materials	Waste Types	Disposal Options
		if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

ATTACHMENT G.20
TECHNICAL AREA 55, BUILDING 4, ROOM B05
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.20-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste~~

Table G.20-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
		~~disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

ATTACHMENT G.21
TECHNICAL AREA 55, BUILDING 4, ROOM B45
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.21-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste~~

Potential Waste Materials	Waste Types	Disposal Options
		~~disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill

ATTACHMENT G.22
TECHNICAL AREA 55, BUILDING 4, VAULT
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.22-3

Waste Materials, Waste Types, and Disposal Options

Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

Table G.22-3

Waste Materials, Waste Types, and Disposal Options

Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.23
TECHNICAL AREA 55, BUILDING 4
INDOOR STORAGE TANK UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste storage unit known as the 'Mixed Waste Storage Tank Unit' which is located in Technical Area 55, Building 4 (TA-55-4) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and J for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). The permitted unit is a storage tank system that has been used for storage of hazardous waste in liquid form. The room is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is comprised of a glovebox and six tanks which consist of two waste storage tank components (*i.e.*, the Evaporator Glovebox Tank (one tank) and the Cementation Unit Pencil Tanks (five tanks)). This tank system, which is discussed in Permit Attachment A (*Technical Area Unit Descriptions*), shares a common piping and pumping system. The permitted unit has been in operation since 1989 and has been subject to waste management regulations under RCRA since July 25, 1990.

The permitted unit is used to store mixed transuranic evaporator bottoms solutions generated primarily from research and development activities and processing and recovery operations at TA-55 and the Chemistry and Metallurgy Research Building at TA-3. The liquid waste consists generally of concentrated nitric acid saturated with salts and metals and is stored in permitted unit prior to stabilization in the Mixed Waste Stabilization Treatment Unit (also located in the same room within TA-55-4). The evaporator bottoms solutions exhibit the hazardous characteristics of corrosivity and toxicity (for metals) as defined in 20.4.1 NMAC §261.22 and 261.24 [6-14-00], respectively.

Permit Part 4 (*TA-55 Storage in Tanks and Treatment by Stabilization*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include additional information regarding waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 27,824 liters of waste have been stored in the permitted unit. Throughout the life of this Permit it is estimated that an additional 11,000 liters of waste will be stored in the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and J for tank units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.23-2 of this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste the Permittees will conduct the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted to demonstrate that surfaces, related equipment, and media, if applicable, at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated structures and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed as outlined in Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the glovebox, the Evaporator Glovebox Tank, the five Cementation Unit Pencil Tanks, as well as the floor and walls of the entire room for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with Permit Section 9.4.3, all remaining hazardous waste and hazardous waste residues will be removed from the permitted unit. The permitted unit's structures and equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all waste residues and hazardous constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan. The storage tanks, piping and the glovebox and all materials associated with the permitted unit (tanks, ancillary equipment, glovebox, etc.) will be removed before the assessment.

5.3.2 Decontamination of Structures and Related Equipment

All surfaces, structures, and related equipment that will be left in place or reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. There is no equipment located at the permitted unit that is expected to be left in place; however, if equipment is identified during the assessment that is expected to be left in place, it will be decontaminated in accordance with this section.

Decontamination of the permitted unit and equipment related to the permitted unit will be conducted by first removing loose material (*e.g.*, dust, dirt) through sweeping followed by washing using a manual wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

Wipe-down washing of the equipment will be utilized because of the need to minimize potential for exposure to workers and the migration of cleaning solution to other areas outside of the permitted unit's boundary. Migration of the wash solution (in the form of splashing, condensation, or drainage) from steam cleaning or pressure washing may potentially contaminate or otherwise negatively affect ongoing operations within the basement. Migration can potentially be mitigated using plastic barriers taped to surfaces to enclose the area. However, areas enclosed in this manner will require workers to use additional personal protective equipment (PPE). This PPE will include fully enclosed protective wear and supplied air because of the increased risk of exposure to personnel due to potential release of radiological materials and organic compounds within the enclosure. Enclosure of the area increases the risk personnel exhaustion, because of the PPE, and the potential for workers to reach radiological work exposure limits. Therefore,

wipe-down washing, rather than steam cleaning or pressure washing, will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas of the basement outside the permitted unit's boundary.

The entirety of the unit's floors will be decontaminated. To ensure that decontamination of the walls is conducted to a sufficient height, all walls in the permitted unit will be decontaminated to a height of 11 ft. Ceilings of the permitted unit, walls above 11 ft, and the areas outside of the permitted unit will be presumed to be free of contamination unless there is some physical indication of contamination (*e.g.*, staining), the records review reveals that large amounts of liquid volatile or semi-volatile organic waste was stored in the permitted unit, or a spill or release occurred within the permitted unit that could have affected the ceiling or the walls above 11 ft.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of small containers. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the surfaces after being wetted in the wash solution or after spraying solution onto the surfaces. Only one cloth or absorbent cleaning device will be used at a time in a single area to prevent cross-contamination.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.23-3 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Decontamination Verification Sampling Activities

Decontamination verification sampling activities will be conducted at the permitted unit in order to verify that surfaces and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one verification wipe sample from the floor and from each wall of the permitted unit. Verification wipe samples will be collected from random locations within each of the sample areas indicated on Figure G.23-1 (provided under separate cover) of this closure plan. A total of five wipe samples will be collected: one from the floor and one from each wall.

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this sampling and analysis plan which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the surfaces and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Solid Chip Sampling

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 cm, or to an alternate depth specified in the assessment and transferred to an appropriate sampling container. The holding time and the preservation techniques to be used for each analysis will be determined from Table G.23-5.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.23-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history (*see* Table G.23-1). Table G.23-1 will be modified, as necessary, to incorporate changes as a result of the permitted unit's records review. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.23-4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.23-4. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.23-4 is based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling and analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.23-6 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the

analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe sample preparations that occur during the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.23-3 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.4-7, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.23-1

Hazardous Waste Constituents of Concern at the Technical Area 55, Building 4, Indoor Tank Storage Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D006, D007, D008, D009	Cadmium, Chromium, Lead, Mercury

[a] Based on the unit Facility Operating Record

Table G.23-2

Closure Schedule for the Technical Area 55, Building 4, Indoor Tank Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.23-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its

Table G.23-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
		state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Table G.23-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.23-4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	7060A [c], 7061A	FLAA, GFAA	10 ug/L	Determine the metal concentration in the samples.
Barium	7080A [d], 7081 [c]	FLAA,GFAA	200 ug/L	
Cadmium	7130 [d], 7131A [c]	FLAA, GFAA	2 ug/L	
Chromium	7190 [d], 7191 [c]	FLAA, GFAA	10 ug/L	
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	
Mercury	7470A, 7471A [e]	CVAA	0.2 ug/L	
Selenium	7740[c], 7741A	FLAA, GFAA	5 ug/L	
Silver	7760A[d], 7761 [c]	FLAA, GFAA	10 ug/L	

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846.*

[b] Detection limits listed for metals are for clean water. Actual detection limits may be higher depending on sample composition and matrix type.

[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.

[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.

[e] Method being revised to 7471B per the May 1998 *SW-846* Draft Update IVA.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GFAA = Graphite furnace atomic absorption spectroscopy
ug/L = micrograms per liter.

Table G.23-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	

[a] Smaller sample containers may be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations.

[b] Information obtained from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, U.S. Environmental Protection Agency, 1986 and all approved updates.

°C = degrees Celsius
mL = milliter
HNO_3 = nitric acid
TCLP = Toxicity Characteristic Leaching Procedure

Table G.23-6

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis	Frequency	Acceptance Criteria
Field Blank	Metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[a]	Metals	One sample daily	Not Applicable

[a] Collected only if reusable sampling equipment used

Figure G.23-1: Technical Area 55, Building 4, Indoor Tank Storage Unit Sampling Locations

[Provided under a separate cover.]

ATTACHMENT G.24
TECHNICAL AREA 55, BUILDING 4,
INDOOR MIXED WASTE STABILIZATION TREATMENT UNIT
CLOSURE PLAN

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G.24-1	Technical Area 55, Building 4, Indoor Mixed Waste Stabilization Treatment Sampling Locations

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste treatment unit called the 'Mixed Waste Stabilization Unit' which is located in Technical Area 55, Building 4 (TA-55-4) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Section 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subpart G and X for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit (as well as its components) can be found in Permit Attachment A (*Technical Area Unit Descriptions*). The permitted unit has been used for treatment of mixed waste and is located in TA-55-4. The room is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is located in a glovebox along a wall. It consists of a pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox.

The waste typically treated at the permitted unit consists generally of mixed waste in liquid and solid form. The permitted unit has been in operation since 1987 and has been subject to waste management regulations under RCRA since July 25, 1990. The unit is used to treat liquid and solid mixed waste generated primarily from research and development activities and processing and recovery operations at TA-55 and at the Chemistry and Metallurgy Research Building at TA-3. The liquid wastes consist of evaporator bottoms solutions and laboratory solutions that exhibit the hazardous characteristics of corrosivity and toxicity (for metals) as defined in 20.4.1 NMAC §261.22 and 261.24 [6-14-00], respectively. The solid process wastes consist of process residue from the evaporator and filter cake. These waste streams exhibit the hazardous characteristics of toxicity (for metals) and corrosivity and are classified as mixed waste.

Permit Part 4 (*TA-55 Storage in Tanks and Treatment by Stabilization*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include additional information regarding waste management procedures and hazardous waste constituents treated at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE TREATED

Approximately 27,824 liters of waste have been treated in the permitted unit. Throughout the life of this Permit it is estimated that an additional 11,000 liters of waste will be treated in the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and X for tank units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.24-1 of this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste the Permittees will conduct the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification if necessary. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted to demonstrate that surfaces, related equipment, and media, if applicable, at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated structures and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted units will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed as outlined in Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the glovebox and the floor and walls of the entire room for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's surfaces, structures, and equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards as outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan. The pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox and all other materials in the room associated with the permitted unit will be removed before the structural assessment.

5.3.2 Decontamination of Structures and Related Equipment

All structures and related equipment that will be left in place or reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. At this time there is no equipment located at the unit that is expected to be decontaminated; however, if equipment is identified during the assessment, it will be decontaminated in accordance with this section.

Decontamination of the surfaces of the permitted unit will include all features located directly below the unit. If a hazardous waste spill or release has occurred at the permitted unit, decontamination will be expanded to include all impacted surfaces within the room. The entirety of the unit's floors will be decontaminated. Walls up to 11feet will be decontaminated; ceilings and walls above 11 feet will be presumed to be free of contamination unless there is some indication of contamination or a spill or release occurred that could have affected high on the walls or on the ceiling. Equipment and surfaces within the permitted unit will also be decontaminated.

Decontamination of the permitted unit will be conducted by first removing loose material (*e.g.*, dust, dirt) through sweeping followed by washing using a manual wipe-down method with a solution consisting of a

surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations rather than steam cleaning or pressure washing.

Migration of the wash solution (in the form of splashing, condensation, or drainage) from steam cleaning or pressure washing may potentially contaminate or otherwise negatively affect ongoing operations in areas outside of the room within TA-55-4. Migration can potentially be mitigated using plastic barriers taped to surfaces to enclose the area. However, areas enclosed in this manner will require workers to use additional personal protective equipment (PPE). This PPE will include fully enclosed protective wear and supplied air because of the increased risk of exposure to personnel due to potential releases of radiological materials and organic compounds within the enclosure. Enclosure of the area increases the risk of personnel exhaustion, because of the additional PPE, and the potential for workers to reach radiological work exposure limits. Therefore, wipe-down washing, rather than steam cleaning or pressure washing will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas outside of the permitted unit's boundary.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of small containers. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the surfaces after being wetted in the wash solution or after spraying solution onto the surfaces. Only one cloth or absorbent cleaning device will be used at a time in a single area to prevent cross-contamination.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.24-2 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Decontamination Verification Sampling Activities

Decontamination verification sampling activities will be conducted at the permitted unit in order to verify that surfaces and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one wipe sample from the floor and from the walls (up to 11 feet) of the permitted unit. Verification wipe samples will be collected from random locations within each of the sample areas indicated on Figure G.24-1

(provided under separate cover) of this closure plan. A total of eight wipe samples will be collected; four from the walls and four from the floor.

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this sampling and analysis plan which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the surface and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Solid Chip Sampling

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 cm, or to an alternate depth specified in the assessment and transferred to an appropriate sampling container. The holding time and the preservation techniques to be used for each analysis will be determined from Table G.24-4.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, sample handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.24-4 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been treated at the permitted unit over its operational history. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.24-3. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.24-3. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.24-3 is based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling and analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.24-5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe sample preparations that occur during the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.24-2 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.1-5, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.24-1

Closure Schedule for the Technical Area 55, Building 4, Indoor Mixed Waste Stabilization Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal	Day 90
Complete records review and structural assessment.	Day 100
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.24-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete		
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.24-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment		
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.24-3

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	7060A [c], 7061A	FLAA, GFAA	10 ug/L	Determine the metal concentration in the samples.
Barium	7080A [d], 7081 [c]	FLAA,GFAA	200 ug/L	
Cadmium	7130 [d], 7131A [c]	FLAA, GFAA	2 ug/L	
Chromium	7190 [d], 7191 [c]	FLAA, GFAA	10 ug/L	
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	
Mercury	7470A, 7471A [e]	CVAA	0.2 ug/L	
Selenium	7740[c], 7741A	FLAA, GFAA	5 ug/L	
Silver	7760A[d], 7761 [c]	FLAA, GFAA	10 ug/L	

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

[b] Detection limits listed for metals are for clean water. Actual detection limits may be higher depending on sample composition and matrix type.

[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.

[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.

[e] Method being revised to 7471B per the May 1998 *SW-846* Draft Update IVA.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GFAA = Graphite furnace atomic absorption spectroscopy
ug/L = micrograms per liter.

Table G.24-4

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	

[a] Smaller sample containers may be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations.

[b] Information obtained from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, U.S. Environmental Protection Agency, 1986 and all approved updates.

°C = degrees Celsius
mL = milliter
HNO_3 = nitric acid
TCLP = Toxicity Characteristic Leaching Procedure

Table G.24-5

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis	Frequency	Acceptance Criteria
Field Blank	Metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[a]	Metals	One sample daily	Not Applicable

[a] Collected only if reusable sampling equipment used

Figure G.24-1: Technical Area 55, Building 4, Indoor Mixed Waste Stabilization Treatment Sampling Locations

[Provided under a separate cover.]

ATTACHMENT G.25
TECHNICAL AREA 55, 0355 PAD
CLOSURE PLAN

Table G.25-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)

Table G.25-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.25-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.25-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Concrete	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.26
TECHNICAL AREA 55
OUTDOOR STORAGE PAD
CLOSURE PLAN

Table G.26-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal~~

Table G.26-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
		~~facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.

Table G.26-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.26-6

Recommended Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

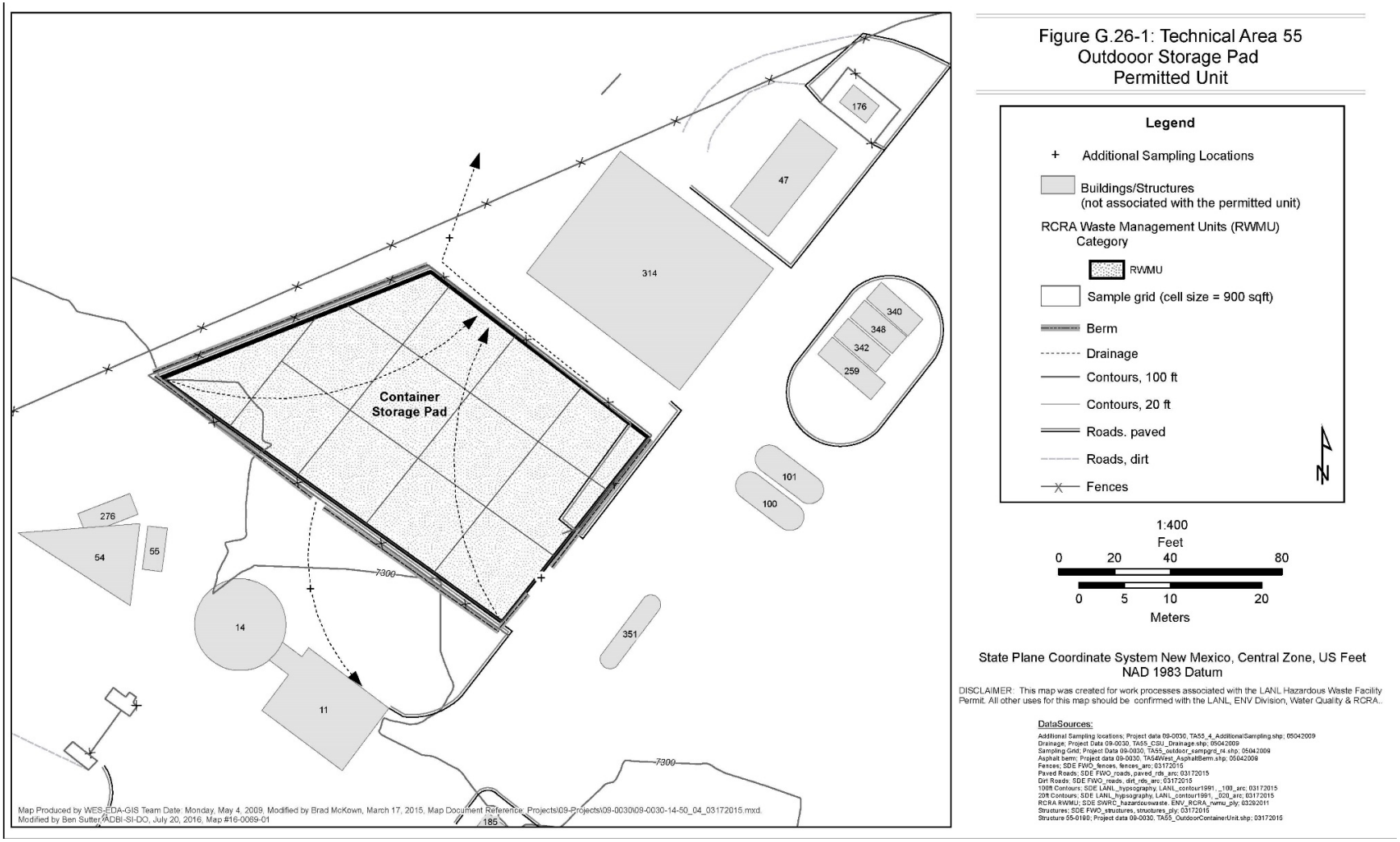


Figure G.26-1: Technical Area 55 Outdoor Container Storage Unit Grid Sampling and Additional Sampling Locations

ATTACHMENT G.27
TECHNICAL AREA 63
TRANSURANIC WASTE FACILITY
CLOSURE PLAN

Table G.27-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA, or an authorized off-site radioactive waste disposal facility.~~[a]
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or the WIPP, as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or WIPP, as appropriate.
Verification water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	RLWTF
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled

Potential Waste Materials	Waste Types	Disposal Options
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA, or an authorized off-site radioactive waste disposal facility.~~[a]
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA, or an authorized off-site radioactive waste disposal facility.~~[a]
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA , or an authorized off-site radioactive waste disposal facility.~~[a]
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or WIPP, as appropriate.
Storage Structures	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA, or an authorized off-site radioactive waste disposal facility.[a]~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or WIPP, as appropriate.
Concrete Pad	Non-regulated solid waste	Subtitle D landfill or potentially, re-use/recycle
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA, or an authorized off-site radioactive waste disposal facility.[a]~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or WIPP, as appropriate.

~~[a] This description of the disposal option for low-level waste may be subject to revision pending the resolution of the LANL Appeal of the November 2010 LANL Hazardous Waste Facility Permit.~~

ATTACHMENT G.28
OPEN BURNING TREATMENT UNIT
TECHNICAL AREA 16-388 FLASH PAD CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close one of the hazardous waste open burning treatment units at Technical Area (TA) 16 at the Los Alamos National Laboratory (LANL or the Facility), hereinafter referred to as the "TA-16-388 Flash Pad" or "the unit". The information provided in this closure plan addresses the closure requirements specified in the Code of Federal Regulations (CFR), Title 40, Part 265, Subparts G and P for the thermal treatment units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act. Closure of the open burning treatment unit will be completed in accordance with Section 4.1 of this closure plan.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

TA-16 is located in the southwestern quadrant of the Facility at the West end of the Pajarito Plateau near the foothills of the Jemez Mountains. It is managed by the owner/operator's high explosives engineering personnel who are responsible for the safe treatment, storage, and handling of explosives waste and explosives-contaminated wastes generated by the explosives production facilities at LANL.

2.1 Description of the Unit and the Wastes Treated at the Unit

The TA-16 Burn Ground is located in the northeast corner of TA-16. It is located on the mesa and drains to the north, east, and south and is bordered on the northern side by Cañon de Valle and on the southern side by Water Canyon.

The OB unit, known as the TA-16-388 Flash Pad, consists of a 22-foot (ft) by 22-ft concrete pad set on a secondary containment area. The base of the pad is 12 inches thick. The entire concrete pad is on a 45-mil Hypalon liner, which is 6 inches below the bottom of the pad and curved up to ground level on all 4 sides, extending out 2 ft from the pad perimeter. Inset one foot from the edge of the concrete pad along the two sides and back is a 3-ft-high, 8-inch-thick, integrally-poured concrete wall. The pad is slanted down toward the back concrete wall. The TA-16-388 Flash Pad is also equipped with a retractable steel cover that covers the unit when not in use (Figure G.28-1). The unit is surrounded by a chain-link fence and brick retaining wall. An entry gate is located directly in front of the loading area.

Three 5-ft long forced air propane burners with adjustable mounts are mounted on the concrete wall. These propane burners provide the heat source for treatment activities at the unit. A burner is mounted outside the wall on each side and the back of the pad. One to three burners can be used, depending on the amount and configuration of the material to be treated. Most treatment events utilize two burners. The total capacity of the propane supply system is approximately 7 million British thermal units per hour (BTU/hr). Therefore, the output of each burner is dependent on how many are used for a burn. Usually, they are operated at approximately 2 million BTU/hr. This provides adequate heat to bring the material being flashed to a temperature sufficient to destroy explosives, typically to a temperature above 400 degrees centigrade (ºC) (see Section 2.2.3). The burners and other components are maintained, modified, and/or replaced, as needed to ensure proper operation and treatment effectiveness.

The TA-16-388 Flash Pad is used to treat dry explosives; wet explosives; and waste that is contaminated with explosives to destroy the characteristic of reactivity (D003). Descriptions of waste streams that may be treated by OB at the unit are discussed in Section 2.4.1 of this permit modification request. The maximum treatment capacity of the TA-16-388 Flash Pad is 200 pounds (lbs) of explosives for each treatment; however, burns are usually much smaller to assure that all materials are sufficiently heated to destroy the explosives. The maximum treatment capacity for contaminated liquids (e.g., solvent) is approximately 100 gallons. However, the amount of liquid waste treated per burn is adjusted to the amount of liquid that can be treated in a single day. This amount is usually 5 to 30 gallons, considerably less than the maximum treatment capacity. Additionally, the treatment quantity is limited to the quantity

of waste treated and does not include the quantity of fuel (i.e. propane) or the weight of metal equipment when a large piece of equipment is treated for explosives contamination.

The TA-16-388 Flash Pad is used exclusively for OB waste treatment operations, and no other activities. Following waste placement at the unit, open burning operations are conducted from Building 16-389 (the control building). Operations at the unit require visual surveys and post-burn covering of the unit. This practice minimizes the potential for precipitation contacting untreated hazardous waste, if any exists.

3.0 ESTIMATE OF MAXIMUM WASTE TREATED

The maximum treatment capacity of explosives waste at the TA-16-388 Flash Pad was 1,000 pounds per burn or 50 gallons per burn until 2012, when it was reduced to 200 pounds per burn. Additionally, large pieces of equipment that are flashed at the unit may weigh in excess of 10,000 pounds. Only the estimated quantity of explosives are counted as the quantity treated by OB.

4.0 GENERAL CLOSURE INFORMATION

4.1 Closure Performance Standard

The TA-16-388 Flash Pad will be closed to meet the following performance standards (40 CFR § 265.111):

- minimize the need for further maintenance;
- control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters, or to the atmosphere; and
- comply with the closure requirements of 40 CFR Part 265 Subparts G and P.

This will be accomplished through one of two methods:

a) ensure that contaminated media do not contain concentrations of hazardous constituents that are greater than the clean-up levels established in the *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation* (updated 2012) (NMED, 2012), and in LANL's *Screening Level Ecological Risk Assessment Methods* (LANL, 2012a) (as updated and approved by the NMED). For soils, the cleanup levels shall be established based on residential use; or

b) conduct a human health and ecological risk evaluation utilizing the screening levels described above and utilizing the objectives set forth in the *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2012).

If the owner/operator is unable to achieve any one of the risk-based clean closure standards in (a) or (b) above, they must:

- control the migration of hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not pose an unacceptable risk to human health and the environment; and
- control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate,

contaminated run-off, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere.

The owner/operator shall demonstrate that the unit does not pose an unacceptable risk by complying with the post closure requirements in 40 CFR § 265.117 as well as conduct the following to protect human health and the environment:

- maintain the integrity and effectiveness of the unit by making repairs necessary to correct the effects of erosion, animal intrusion, or other events that compromise the unit;
- maintain surface water controls to prevent run-on and run-off from eroding or otherwise causing damage;
- conduct corrective action as necessary to protect human health and the environment;
- maintain fencing, security signs and locks;
- maintain training, operating, inspection, and monitoring, and other required records; and
- submit an annual report to the NMED providing the results of the required inspections, sampling results, and a summary of any needed repairs and whether repairs were effective.

Closure of the unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly managed as waste; 2) closure has been completed in accordance with the closure plan and been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the NMED.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the TA-16-388 Flash Pad. The following section provides the schedule of closure activities (see also Table G.28-1 in this closure plan).

Closure activities will begin according to the requirements in 40 CFR § 265.112 (d)(2). However, pursuant to 40 CFR § 265.112(e), removing hazardous wastes decontaminating or dismantling equipment, in accordance with an approved closure plan, may be conducted at any time before or after notification of closure.

The owner/operator shall complete the records review (review) and structural assessment (assessment), as described in Sections 5.1.1 and 5.1.2 of this closure plan, and shall notify the Department at least 20 days prior to the scheduled assessment so the Department may have the opportunity to participate in the assessment. The notification shall include the date on which the owner/operator expects to conduct the assessment.

The owner/operator shall complete all closure activities, including submittal of a final closure certification report to the Department for review and approval, in accordance with this closure plan (*see* 40 CFR § 265.113(b)). In the event that this timeframe cannot be met, the owner/operator may request from the Department an extension in accordance with 40 CFR § 265.113(c)(2) (*see* 40 CFR § 265.113(b)(1)(i)).

4.3 Amendment of the Closure Plan

The owner/operator may amend this closure plan in accordance with the requirements in 40 CFR § 265.112(c), which is incorporated herein by reference. If the results of the review or assessment require any changes to this closure plan (*e.g.*, the sampling and analysis plan), the owner/operator shall submit an amended closure plan to the Department, for review and approval, in accordance with this Section (4.3).

5.0 CLOSURE PROCEDURES

Closure activities at the unit shall include: a physical review of the unit and a review of the unit's records; proper management and disposal of hazardous waste residues, if applicable, contaminated surfaces and equipment associated with the unit; sampling to verify the closure performance standards in Section 4.1 of this closure plan have been achieved; and submittal of a final closure certification report. The following sections describe more specifically these closure activities applicable to the unit.

5.1 Records Review and Structural Assessment

Before starting closure decontamination and sampling activities, the Operating and Inspection Records for the unit will be reviewed and a structural assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations. Specific results of the records review and structural assessment will be included in the closure certification report.

5.1.1 Records Review

The Facility Operating Record (including, but not limited to, inspection and contingency plan implementation records) shall be reviewed at the time of closure and in accordance with the schedule in Section 4.2 of this closure plan. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern listed in Table G.28-2;

b. update the above-mentioned list as necessary;

c. update the estimated quantity of waste treated in Section 3.0; and

d. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

The owner/operator shall determine whether any spills or releases, defects, deterioration, damage, or hazards (*e.g.,* damage to the concrete pad or other unit materials) affecting waste containment or treatment occurred or developed during the operational life of the unit during which hazardous waste was treated. If the records indicate any such incidents, the owner/operator shall amend this closure plan (*see* Section 4.3) in order to update the sampling and analysis plan (SAP) (*see* Section 6.0) to incorporate the locations of these incidents as additional sampling locations. All additional sampling procedures, as applicable, shall be included in the amended closure plan.

5.1.2 Structural Assessment

The structural assessment is an assessment of the unit's physical condition. The assessment will include inspecting the unit's concrete pad (for any existing cracks or conditions that indicate a potential for release of hazardous constituents) and assessing the unit for evidence of any releases. If the assessment reveals any evidence of a release (*e.g.*, stains) or damage (*e.g.*, cracks, gaps, chips) to the pad, the owner/operator shall amend this closure plan (*see* Section 4.3) in order to update the SAP (*see* Section 6.0) to incorporate these additional sampling locations. All additional sampling procedures, as applicable, shall be included in the amended closure plan. This assessment will be documented with photographs and drawings, as necessary.

5.2 Decontamination and Removal of Structures and Equipment

In accordance with 40 CFR § 265.112(b)(4) (which is incorporated herein by reference), the unit's related equipment and materials (*e.g.*, concrete pad) will be decontaminated, or removed and managed according to Section 7.0 of this closure plan. The concrete pad and liner will remain at the unit and will be reused for other programmatic activities. All surfaces and related equipment that are removed and not intended for recycle will not require decontamination, will be considered solid and potentially hazardous waste when removed, and will be disposed of in accordance with Section 7.0. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous waste constituents from the unit to meet the closure performance standards in Section 4.1.

5.2.1 Removal of Structures and Related Equipment

The burn tray, the three propane burners, and the metal retractable cover (and its mechanisms) will all be removed from the unit at closure (but after the structural assessment) and may be recycled.

5.2.2 Decontamination of Structures and Related Equipment

The unit's concrete pad will be decontaminated by hot water/steam cleaning or pressure washing with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations. Portable berms or other devices (*e.g.*, absorbent socks, plastic sheeting, wading pools) will collect excess wash water and provide containment during the decontamination process; however, no excess water is expected to be generated. If results of the solid concrete chip or soil samples (see Section 6.1) from below the pad indicate contamination from the unit, the entire concrete pad will be removed and disposed of according to Section 7.0.

No equipment at the unit is expected to be left in place. However, if equipment, identified during the assessment, is expected to be left in place, it will be decontaminated by pressure washing or hot water and sampled according to Section 6.1.

5.2.3 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution that consists of a surfactant detergent and water mixed in accordance with the manufacturers recommendations. The tools and equipment will be wiped down with the wash water solution and rinsed. Residue and disposable equipment will be containerized, characterized, and managed as waste in accordance with Section 7.0.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP identifies the specific sampling and analysis requirements for this unit and describes the sampling, analysis, and quality assurance/ quality control (QA/QC) methods that will be used to demonstrate that the owner/operator has met the closure performance standards in Section 4.1. The owner/operator shall comply with all the requirements in Section 6.0.

This SAP is designed to verify decontamination of surfaces, equipment, and materials; and determine whether a release of hazardous constituents to any environmental media has occurred. The SAP includes:

1) A list of hazardous constituents of concern (*see* Table G.28-2) for which soil and chip samples will be analyzed. This list includes all hazardous constituents defined as:

   a) any constituent identified in 40 CFR Part 261 Appendix VII that caused the United States Environmental Protection Agency (USEPA) to list a hazardous waste in 40 CFR Part 261 Subpart D;

   b) any constituent identified in 40 CFR Part 261, Appendix VIII; or

   c) any constituent identified in 40 CFR Part 264 Appendix IX, perchlorate, and nitrates.

2) The list of hazardous constituents of concern shall be utilized to select the analytical methods capable of detecting those constituents.

3) A site plan for verification and soil samples. The site plan includes Figure G.28-2 depicting the boundaries of the unit and verification and soil sampling locations. The locations include ten grab sample locations that represent locations immediately around the unit, locations of known spills, or other releases of hazardous waste or hazardous constituents during operation of the unit, and locations where run-off likely occurred from the unit.

4) The type of samples to be collected (*e.g.*, wipe, soil, surface water) and the rationale for the selection of the sample type.

5) Sampling methods including a description of the approved EPA sampling methods and procedures that will be used to collect each type of sample as specified in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846) (EPA, 1986).

6) A description of the approved EPA SW-846 laboratory analytical methods that will be used to measure hazardous constituent concentrations (see Table G.28-4).

7) description of the quality assurance and quality control (QA/QC) procedures that include, but are not limited to:

   a) field duplicates, trip blanks, equipment blanks;

   b) a description of methods for decontamination of re-usable sampling equipment; and

   c) a description of all sample preservation, handling, labeling, and chain-of-custody procedures.

6.1 Sampling Activities

Sampling activities will be conducted in order to demonstrate that unit-related equipment and soils in and around the unit meet the closure performance standards in Section 4.1. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

- All metal equipment will be flashed prior to shipment off-site.
- The concrete pad will be hot water/steam cleaned or pressure washed.
- Soil samples will be collected from locations in and around the unit from the sample locations depicted in Figure G.28-2.

6.2 Sample Collection Procedures

Samples will be collected in accordance with the procedures identified in this SAP which incorporates guidance from the EPA (EPA, 1986 and EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures. Before samples are collected, the sampling plan must be approved by the area Explosives Safety Officer. The Explosives Safety Officer will evaluate the area to determine the potential for detonable explosives or explosives contamination, and whether or not any extracted samples may be released from the area without initial internal explosives analysis.

6.2.1 Surface Water and Groundwater Sampling

Surface water sampling and groundwater sampling are included as part of the TA-16-388 Flash Pad closure activities because compliance for these media are demonstrated as part of compliance with the Clean Water Act (CWA) and the National Pollutant Discharge Elimination System (NPDES). Sample locations, analytical suites, and sampling schedules for the groundwater monitoring network at LANL are identified in the LANL Interim Facility-Wide Groundwater Monitoring Plan (IFGMP) for the 2013 Monitoring Year, October 2012-September 2013 (LANL, 2012b). The IFGMP is a document that is updated annually with approval by NMED in accordance with the March 1, 2005 (and modified in 2008) Compliance Order on Consent.

6.2.2 Soil Sampling

Soil samples will be collected from 10 locations surrounding the unit. Ten samples will be collected from the top two inches of soil and ten samples will be collected from a 6-10 inch depth. The soil sample locates are based on areas of potential deposition from air to soil and areas of potential storm water runoff.

Soil samples will be collected using a non-ferrous spade, scoop, auger, trowel, or other tool as specified in approved methods for the type of analyte to be sampled (*i.e.*, EPA 1996 or 2002). The sample collection process will be completed in accordance with American Society for Testing and Materials (ASTM), Active Standard D4823-95 (2008) Standard Guide for Core Sampling and ASTM D5633-04 (2008) for scoop sampling. Global positioning system (GPS) data utilizing Trimble GeoExplorer Unit will be collected for each sample location.

Soil sample analysis will include the following:

- 10 surface (0-2 inch depth) samples and 2 subsurface samples (6-10 inch depth) at TA-16 to be analyzed for:
    - Target analyte list (TAL) metals analysis 24 analytes using *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)* Methods 6010B, 6020 (inductively coupled plasma – mass spectrometry), and 7471A (cold-vapor technique for mercury);
    - Dioxins/Furans analysis using SW-846 Method 8290A (high resolution gas chromatography/mass spectrometry (HRGC/MS));
    - High explosives analysis for 20 target compounds using SW-846 Method 8330B or 8321A with a modification to add explosives compounds generated specifically at LANL;
    - Analysis for ~~89 target~~ semi-volatile organic compounds (SVOCs) using SW-846 Method 8270C (GC/MS)~~, collected in a 500 mL amber glass container~~;

- Analysis for volatile organic compounds (VOCs) using SW-846 Method 8260B (GC/MS)~~, collected in a 125 mL amber glass container~~; ~~and~~
- Perchlorate anion (ClO_4^-) using SW-846 Method 6850 or 6860;
- DRO and GRO by EPA Method 8015B; and
- Nitrates by EPA Method 9056A.

- Field quality control samples: One field duplicate soil sample will be collected for each analytical suite. A single trip blank for VOC analysis will be submitted per day per shipping cooler.

The samples will be shipped to and analyzed by a LANL-contracted independent analytical laboratory using the methods described above. Results from the sample collection activity will be submitted with the closure certification report.

6.2.3 Solid Chip Sampling

Solid chip samples will be collected from and analyzed to verify if residual hazardous constituents remain on the concrete pad and side walls of the unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 centimeters or to an alternate depth specified in the assessment. The material will be transferred to an appropriate container and the holding time and the preservation techniques to be used for each analysis will be selected from those listed on Table G.28-5. A total of three chip samples will be collected and analyzed for:

- High explosives analysis for 24 target compounds using SW-846 Method 8321A (high performance liquid chromatography/thermospray/mass spectrometry) with a modification to add explosives compounds generated specifically at LANL, collected in a 500 mL amber glass container; and
- Analysis for 89 target semi-volatile organic compounds (SVOCs) using SW-846 Method 8270C (GC/MS), collected in a 500 mL amber glass container.

6.2.4 Cleaning of Sampling Equipment

A disposable sampler is considered clean only when directly removed from a factory-sealed wrapper. Reusable decontamination equipment, including protective clothing and tools, and sampling equipment used during closure activities will be scraped, as necessary, to remove residue, cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel and sample management personnel until the samples are relinquished to the analytical laboratory. Chain of custody protocols will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. Any deviations from the sampling plan will be noted in the sample logbook and reported in the closure certification report. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.28-5 presents the requirements in SW-846 (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

The samples are maintained at appropriate temperatures after collection and throughout the shipping process. All samples are chilled to 2 degrees Celsius before shipment occurs. Samples are then wrapped, placed in the DOT approved shipping container with ample blue ice to hold the required temperature. Temperature blanks are placed in the cooler and sealed with custody tape. Off-site transportation of samples will occur via contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers. All shipments are sent overnight delivery. Once received, the analytical laboratory verifies that the custody tape is still intact and measures the temperature of the cooler. All the information is recorded and presented in the analytical data package. For all discrepancies the sender is notified for resolution.

6.4 Sample Analysis Requirements

Samples will be analyzed for all the hazardous constituents listed in Table G.28- 2. These constituents have been determined to be applicable constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that were managed or treated at the unit over its operational history. If new information is discovered during the records review, this closure plan shall be amended to include additional constituents for sampling and analysis. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.28-4. Analytes, test methods and instrumentation, estimated quantitation limits, and rationale for metals and organic analyses are presented in Table G.28-4. If any of the information from these tables has changed at the time of closure, the owner/operator will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. The analytical laboratory will have:

a. a documented comprehensive QA/QC program;
b. technical analytical expertise;
c. a document control/records management plan; and
d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.28-4 is based on the following considerations:

a. the physical form of the waste;
b. constituents of interest;
c. required detection limits (*e.g.*, regulatory thresholds); and
d. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with quality assurance (QA)/quality control (QC) procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and the potential for sample contamination associated with the sampling and analysis process which is described in the following sections. Information on calculations necessary to evaluate the QC results is also described below.

6.4.2.1 Field Quality Control

The field QC samples that will be collected include trip blanks, and field duplicates. Table G.28-6 presents a summary of the field QC sample types, applicable analyses, frequency, and acceptance criteria. Field QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. Field QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory Quality Control Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures described in EPA SW-846 are the tools employed to measure the degree to which these QA objectives are met, and include method blank, matrix spike, and laboratory duplicate samples. The results for analytical laboratory QC samples will be reported along with the regular sample analyses.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

By removing any hazardous waste or hazardous waste constituents during closure, the owner/operator may become a generator of hazardous waste. The owner/operator shall control, handle, characterize, and dispose of all wastes generated during closure activities in accordance with this Section (7.0), Facility waste management procedures, and in compliance with applicable state, federal, and local requirements (*see* 40 CFR § 265.114). These wastes may include, but are not limited to:

(a) demolition debris;

(b) concrete;

(c) containerized waste;

(d) personnel protective equipment;

(e) soil;

(f) decontamination wash water; and

(g) decontamination waste.

The different types of wastes generated at closure, including the unit's decontaminated structures and related equipment, and their disposition options (*e.g.*, reuse, recycling, or disposal) are listed in Table G.28-3 of this closure plan.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the unit, the owner/operator shall submit, by registered mail, a closure certification report for Department review and approval. The Report shall document that the unit has been closed in compliance with the specifications in this closure plan. The Report shall summarize all activities conducted during closure including, but not limited to:

a) the results of the records review and structural assessment;

b) the results of all investigations;

c) remediation waste management;

d) decontamination;

e) decontamination verification and soil sampling activities; and

f) results of all chemical analyses and other characterization activities.

The owner/operator shall submit the closure certification report to the Department no later than 60 days after completion of closure of the unit. The Department may require interim reports that document the progress of closure. The certification must be signed by the owner/operator and by an independent professional engineer registered in the State of New Mexico (*see* 40 CFR § 265.115).

The report shall document the unit's closure and contain, at a minimum, the following information:

a) a copy of the certification pursuant to 40 CFR § 265.115;

b) any variance, and the reason for the variance, from the activities approved in this closure plan;

c) documentation of the records review and structural assessment conducted;

d) a summary of all sampling results, showing:

1. sample identification;
2. sampling location;
3. data reported;
4. detection limit for each analyte;
5. a measure of analytical precision (*e.g.*, uncertainty, range, variance);
6. identification of analytical procedure;
7. identification of analytical laboratory;

e) a QA/QC statement on analytical data validation and decontamination verification;

f) the location of the file of supporting documentation, including:

1. field logbooks;
2. laboratory sample analysis reports;
3. QA/QC documentation; and
4. chain-of-custody forms;

g) storage or disposal location of hazardous waste resulting from closure activities;

h) a copy of the Human Health and Ecological Risk Assessment Reports, if a site-specific risk assessment was conducted pursuant to Section 4.1 for the unit; and

i) a certification statement supporting the accuracy of the closure certification report.

Documentation supporting the independent registered professional engineer's certification must be furnished to the Department before the closure of the unit is approved.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2000. US Environmental Protection Agency, Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity, Authorization to Discharge under the NPDES, NPDES Permits No. NMR05A734 and NMR05A735, issued to the University of California and the DOE, respectively. Effective December 23, 2000.

EPA, 2002. *RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment*," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

LANL, 2012a. *Ecorisk Database (Release 3.1)*, on CD, ERID-228726, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2012b. *Interim Facility-Wide Groundwater Monitoring Plan for the 2013 Monitoring Year, October 2012-September 2013*. Los Alamos National Laboratory document LA-UR-12-21331, EP2012-0092. Los Alamos National Laboratory, Los Alamos, New Mexico. August 2012.

NMED, 2012. *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation.* February 2012, New Mexico Environment Department, Santa Fe, New Mexico.

Table G.28-1

Closure Schedule for the Technical Area 16-388 Open Burning Treatment Unit

Activity	Maximum Time Required
Notify the Department of initiation of closure	Day 0
Remove all waste including hazardous and solid waste	No later than Day 90
Complete records review and structural assessment	After removal of all waste and before decontamination
Complete all closure activities	No later than Day 180
Submit final closure certification report to the Department	No later than Day 240

Table G.28-2

Hazardous Waste Constituents of Concern at the TA-16-388 Open Burning Treatment Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
High explosives and associated compounds	D003	HMX, RDX, TNT, PETN, TATB, Tetryl, and mixtures of explosives including; ANFO, Composition B, Cyclotol, IMX-101, PBX 9404, PBX 9407, PBX 9501, PBX 9502, PBX 9601, X0233, X0533, XTX 8003, XTX 8004, LX-02, LX-07, LX-10, and LX-14
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
Semi-volatile Organic Compounds	D030, D036, F004	2,4-Dinitrotoluene, Nitrobenzene
Volatile Organic Compounds	F002, F003, F004, F005	Acetone, Ethanol, Benzene, MEK, Methylene Chloride, Toluene, MIBK, Xylene, Ethyl Acetate, Methanol
Other constituents of concern		Dioxins/Furans, Perchlorate, PFAS, and kerosene

[a] Based on the unit operating record.
ANFO = Ammonium nitrate/Fuel oil
PETN = pentaerythrioltetranitrate (2,2-bis[(nitroxy)methyl]-1,3-propanediol dinitrate
HMX = cyclotetramethylenetetranitramine (octahydro, 1,3,5,7-tetranitro, 1,3,5,7-tetrazocine)
RDX = cyclonite (cyclo-1,3,5-trimethylene-2,4,6-trinitramine)
MEK= methyl ethyl ketone (2-butanone)
TNT = 2,4,6-trinitrotoluene
MIBK = methyl isobutyl ketone (4-methyl-2-pentanone)
TATB = 1,3,5-triamino-2,4,6-trinitrobenzene

Table G.28-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Decontamination water	Non-regulated liquid waste	High Explosives Waste Treatment Facility (HEWTF) or sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Firebrick	Non-regulated solid waste	Subtitle D landfill or reuse
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Metal covers/trays	Non-regulated solid waste	Recycled
	Hazardous waste	Treated if necessary to remove explosives and recycled.
Soil and tuff	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Recycled, salvaged, or sent to a Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded concrete	Non-regulated solid waste	Subtitle D landfill or reuse
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded sampling and	Non-regulated solid waste	Subtitle D landfill

Table G.28-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
decontamination equipment	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.28-4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Analytical Technique	Estimated Quantitation Limits [b] (mg/kg)	Rationale
Metal Analysis				
Aluminum	6010B	ICP-AES	20	Determine the environmentally available metal concentration in the soil samples following strong acid digestion.
Antimony	6010B	ICP-AES	0.03	
Arsenic	6020	ICP-MS	1.5	
Barium	6010B	ICP-AES	0.5	
Beryllium	6020	ICP-MS	0.1	
Cadmium	6010B	ICP-AES	0.03	
Calcium	6010B	ICP-AES	30	
Chromium	6010B	ICP-AES	0.5	
Cobalt	6010B	ICP-AES	0.5	
Copper	6010B	ICP-AES	1	
Iron	6010B	ICP-AES	30	
Lead	6010B	ICP-AES	1	
Magnesium	6010B	ICP-AES	50	
Manganese	6010B	ICP-AES	1.0	
Mercury	7471A	CVAA	0.01	
Nickel	6020	ICP-MS	0.4	
Potassium	6010B	ICP-AES	30	
Selenium	6020	ICP-AES	1.5	
Silver	6020	ICP-MS	0.01	
Sodium	6010B	ICP-AES	20	
Thallium	6020	ICP-MS	0.2	
Vanadium	6010B	ICP-AES	0.5	
Zinc	6010B	ICP-AES	1	
Organic Analysis				
VOCs	8260B	GC/MS	0.001 to 0.005	Determine the solvent-extractable VOCs concentration in the soil samples.
SVOCs	8270C	GC/MS	0.033 to 0.33	Determine the solvent-extractable SVOCs concentration in the soil samples.
Other Analysis				
Dioxins/Furans	8290	HRGC/MS	0.00001 to 0.0003	Determine the solvent extractable dioxin/furan concentration in the soil samples.

Table G.28-4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Analytical Technique	Estimated Quantitation Limits [b] (mg/kg)	Rationale
Perchlorate [ClO_4^-]	6850	HPLC/ESI/MS	0.002	Determine the water-soluble [ClO_4^-] concentration in the soil samples.
High Explosives	8321A [c]	HPLC/TS/MS	0.5 to 2.0	Determine the solvent-extractable high explosives concentrations in the samples.
Nitrates	9056A	Ion Chromatography	1	Determine the water-soluble NO3 concentration in the soil samples.
Diesel range organics (DRO) and gasoline range organics (GRO)	8015C	GC		Determine the DRO and GRO concentration in the soil samples.

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

[b] Estimated quantitation limits listed for all methods are based LANL contract-required quantitation limits for subcontractor analytical laboratory services.

[c] Instrumentation published in Method SW-846-8321A can be used to identify the required analytes that would not be detected using Method SW-846-8330, thus a LANL-specific modification is used for Method SW-846-8321A to analyze for explosives compounds.

CVAA = Cold-vapor atomic absorption spectroscopy
ESI/MS = Electrospray ionization/mass spectrometry
GC/MS = Gas chromatography/mass spectrometry
HPLC = High performance liquid chromatography
HRGC/MS = High resolution gas chromatography/mass spectrometry
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
ICP/MS = Inductively coupled plasma/mass spectrometry
SVOC = Semivolatile organic compound(s)
TS/MS = Thermospray/mass spectrometry
VOC = Volatile organic compound(s)
mg/kg = milligrams per kilogram

Table G.28-5

Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analytical Suite	Container Type and Materials	Preservation	Holding Time
Metals			
	Solid Media: 250 - mL polyethylene		
	Solid Media: 250 - mL polyethylene	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
	Solid Media: 125 - mL Glass Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			
	Solid Media: 500 - mL Amber Glass	Solid Media: Cool to 4 °C	
Other Analysis			
Dioxins/Furans	2 - 125 mL Glass	Solid Media: Cool to 4 °C	30 days
Perchlorate [ClO_4^-]	250 - mL polyethylene	Solid Media: Protect from temperature extremes	28 days
High Explosives	500 – mL Amber Glass	Solid Media: Cool to 4 °C	14 days

[a] Smaller sample containers may be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations.

[b] Information obtained from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, U.S. Environmental Protection Agency, 1986 and all approved updates.

°C = degrees Celsius
mL = milliliter
TAL = Target Analyte List
TCLP = Toxicity Characteristic Leaching Procedure

Table G.28-6

Recommended Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis	Frequency	Acceptance Criteria
Trip Blank	VOCs	One set per shipping cooler containing samples to be analyzed for VOCs	Verify that external VOC contamination from bottle handling and analytical processes, independent of field sampling processes, has not occurred
Field Duplicate	All suites	One field duplicate for each analytical suite	Relative percent difference less than or equal to 20 percent
Cooler Temperature Blank	All suites	Included with each shipping cooler	Verify temperature preservation requirements have been maintained during sample transport

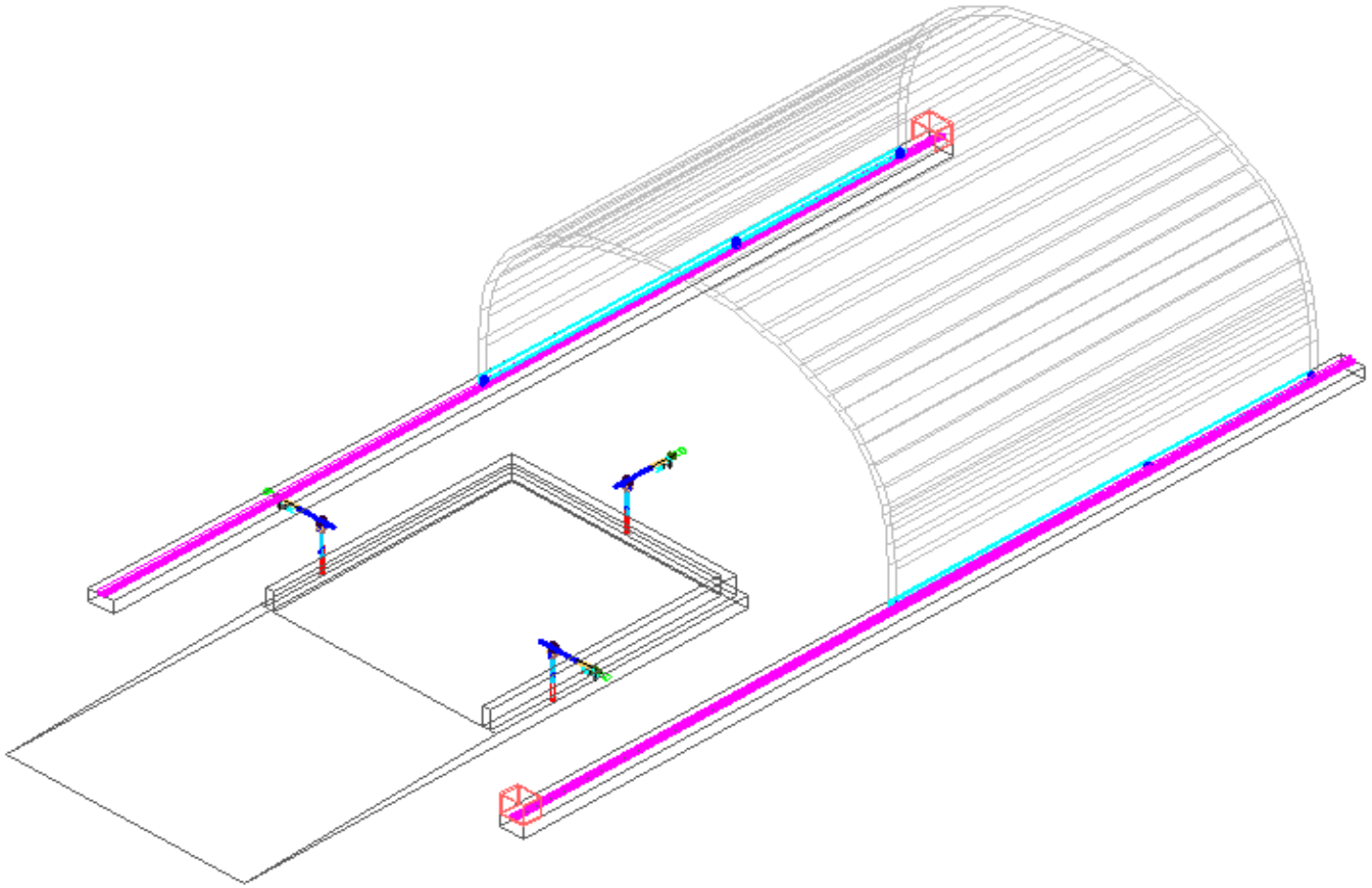


Figure G.28-1: Technical Area 16-388 Flash Pad

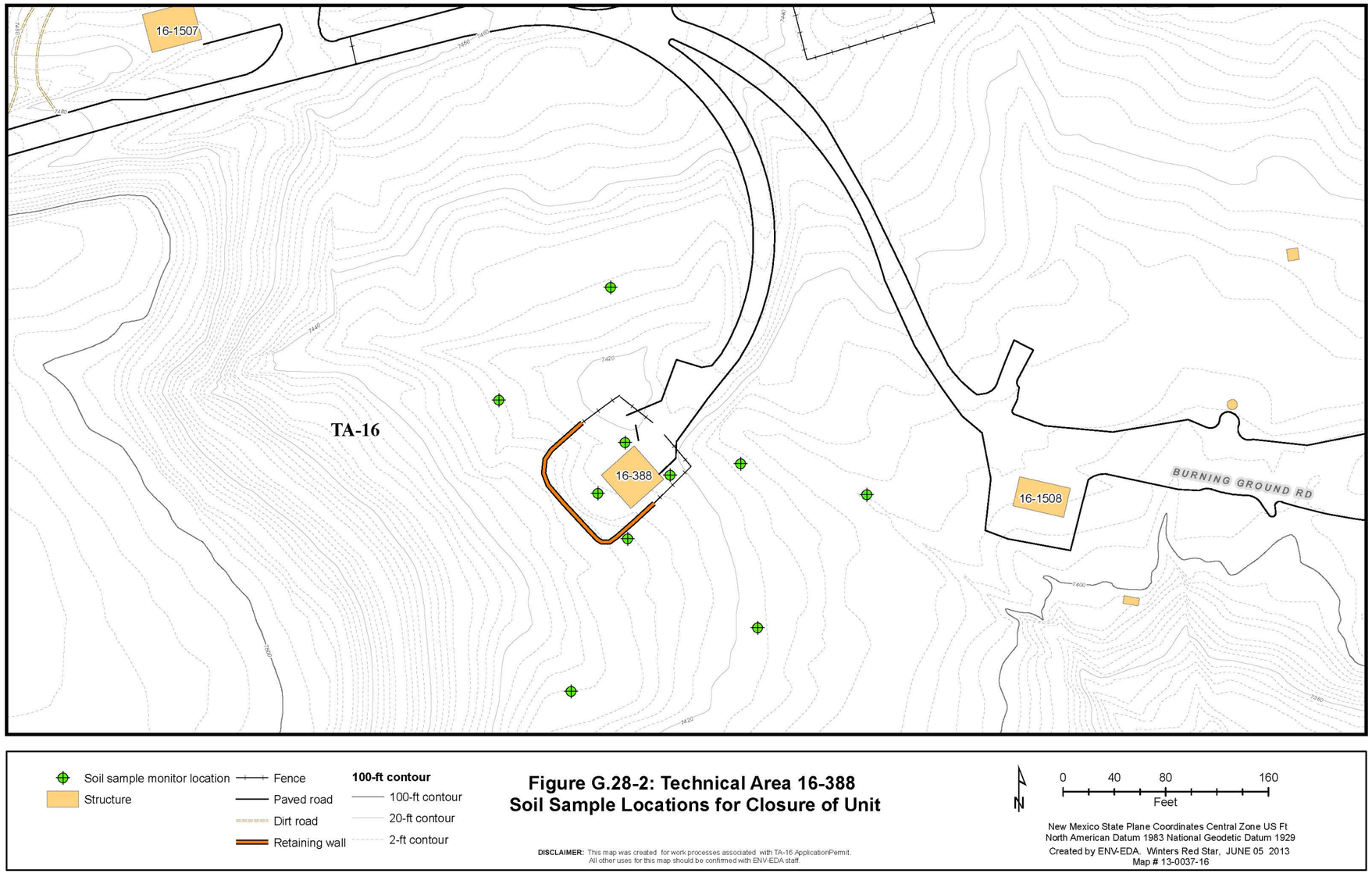


Figure G.28-2: Technical Area 16-388 Soil Sample Locations for Closure of Unit

ATTACHMENT G.29
TECHNICAL AREA 55, BUILDING 4 ROOM B13
CLOSURE PLAN

Table G.29-2
Potential Waste Materials, Waste Types, and Disposal Options

Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Decontamination wash water	Non-regulated solid waste	Sanitary sewer.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Water Treatment Facility (RLWTF).
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	The waste will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Discarded Concrete	Non-regulated solid waste	Subtitle D landfill, recycled or reused.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.30
TECHNICAL AREA 55, BUILDING 4 ROOM G12
CLOSURE PLAN

Table G.30-2
Potential Waste Materials, Waste Types, and Disposal Options

Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Decontamination wash water	Non-regulated solid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Water Treatment Facility (RLWTF).
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	The waste will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Discarded Concrete	Non-regulated solid waste	Subtitle D landfill, recycled or reused.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill

	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

ATTACHMENT G.31
TECHNICAL AREA 60, BUILDING 17
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

Table G.31-2
Potential Waste Materials, Waste Types, and Disposal Options

Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Decontamination wash water	Non-regulated solid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Water Treatment Facility (RLWTF).
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	The waste will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~

	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Discarded Concrete	Non-regulated solid waste	Subtitle D landfill, recycled or reused.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	~~Low-level radioactive solid waste~~	~~Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.~~
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.