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Date: MAY 03 2012
Refer To: ENV-RCRA-12-0101
LAUR: 12-20766

Mr. John E. Kieling
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

RECEIVED
MAY 2012
NMED Hazardous Waste Bureau

Dear Mr. Kieling:

SUBJECT: SUBMITTAL OF THE REVISED INTERIM STATUS CLOSURE PLAN FOR THE OPEN BURNING TREATMENT UNIT AT THE TECHNICAL AREA 16-399 BURN TRAY

The purpose of this letter is to transmit the enclosed revised closure plan for the interim status hazardous waste treatment unit known as the Technical Area (TA) 16-399 Burn Tray. The National Nuclear Security Administration and Los Alamos National Security, LLC (NNSA/LANS) propose to discontinue use of the unit and hereby request review and approval of this amendment to the closure plan for the TA-16-399 Burn Tray by the New Mexico Environment Department – Hazardous Waste Bureau (NMED-HWB).

The enclosed plan includes modifications based on conversation with NMED-HWB staff on September 29, 2011 and October 27, 2011. Revisions are also consistent with those made to the open burning/open detonation treatment unit closure plans for the TA-14-23 Open Burning and Open

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Detonation Unit and the TA-39-57 Open Detonation Unit submitted on March 1, 2012. Below is a general outline of the major changes in the revised closure plan.

General Changes

Revision 1

In Section 1.0, *Introduction*, the second paragraph was removed entirely and was replaced with the following language: "Closure of the OD Unit will be completed in accordance with Section 4.1 of this closure plan." Removal of the language was based on the determination that the language was repetitive to language in Section 4.1 and not necessary within both sections.

Revision 2

Within Section 4.1, *Closure Performance Standard*, pages 2 & 3 were modified to incorporate language from the regulations at 40 CFR § 265.111. The section was modified to give a clear, step-by-step logic for how closure of the unit will be deemed complete by the Facility. This section was modified to state that closure will be in accordance with the closure requirements of 40 CFR Subparts G and P and the Facility will conduct a human health and ecological risk evaluation as part of closure activities. Post-closure requirements were also included in the event that risk-based closure standards could not be met. It is not anticipated that post-closure care of the unit will be necessary; however, the requirements have been included to facilitate the development of a post-closure care plan for review and approval by the NMED-HWB if post-closure care is required.

Revision 3

Section 4.2, *Closure Schedule*, was updated to refer to the regulations and to remove the dates from the section. Table 1, *Closure Schedule for the Technical Area 16-399 Open Burning Treatment Unit*, was also revised to reflect the changes to Section 4.2.

Revision 4

Section 5.2, *Decontamination and Removal of Structures and Equipment*, and the associated subsection have been updated to indicate that the concrete pad at the TA-16-399 Burn Tray may be decontaminated and left in place after closure of the unit.

Revision 5

Section 6.0, *Sampling and Analysis*, and its subsections have been revised to add decontamination verification samples for the concrete pad and update the soil sampling and surface water monitoring requirements for closure activities at the unit. The approach for surface water monitoring and the soil sampling strategy were updated to be consistent with other closure plans for open burning/open detonation units currently under NMED-HWB review. The number of individual soil samples that will be collected during closure has decreased and the locations chosen for soil sample collection have been focused within the boundary of the unit and around

the unit in locations where storm water run-off or deposition from the unit was likely to have occurred. The revised sampling approach allows for risk evaluation to be conducted as part of closure activities and focuses data gathering for closure directly around and relevant to the unit, as both units within the area will no longer be closed concurrently.

Additional changes to the closure plan have been made for internal consistency and to correct terms of art that are commonly used for the unit or operations at the unit. It is the intention that these changes will provide clarification. Modifications have been made as follows:

1. Changes to the name of the unit have been made in the title, footer, Section 1.0, Section 3.0, Section 4.1, Table 1, Table 2, Figure 2, and Figure 3.
2. Clarifying language has been added to Section 5.1.1, Section 5.2, Section 6.4, Section 7.0, Section 8.0, and Table 2.
3. Table 3 was revised to remove a waste stream that could not be generated during the closure of this unit.
4. The table of contents has been updated to reflect the changes.

Enclosed with this letter is a hard copy of the revised closure plan for review and approval. Also attached is a CD with electronic copies of the enclosed document in Portable Document Format and in MS Word format with editing marks to highlight the changes. Please contact Mark Haagenstad at (505) 665-2014 of the Water Quality and RCRA Group (ENV-RCRA) if additional information would be helpful.

Sincerely,

Anthony R. Grieggs
Group Leader
Water Quality & RCRA Group (ENV-RCRA)

Sincerely,

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Site Office
U.S. Department of Energy

ARG:GET:LVH/lm

Enclosure:

1. Revised Interim Status Closure Plan for the Open Burning Treatment Unit Technical Area 16-399 Burn Tray

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ENCLOSURE 1

Revised Interim Status Closure Plan for the Open burning Treatment Unit TA-16-399 Burn Tray

ENV-RCRA-12-0101

LAUR-12-20766

Date: MAY 0 3 2012

INTERIM STATUS CLOSURE PLAN
OPEN BURNING TREATMENT UNIT
TECHNICAL AREA 16-399 BURN TRAY

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close one of the interim status 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-16-399 Burn Tray" 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 (*see* Figure 1). It was managed by the owner/operator's high explosives engineering personnel who are responsible for the safe treatment, storage, and handling of high explosives (HE) waste and HE contaminated wastes generated by the HE production facilities at LANL.

2.1 Description of the Unit and the Wastes Treated at the Unit

The unit (*see* Figure 2) is comprised of a four foot wide by 16 foot long steel tray supported by 1.5-foot-high legs and is lined with firebricks (*see* Figure 3). Explosives were packed in cardboard and wooden boxes and transported to the unit for treatment. Padding was placed on the tray while the explosives were removed from the boxes and set on the padding. The padding was then dampened with kerosene. Electric matches (*e.g.*, squibs) were then connected to the firing cables and a train of excelsior saturated with kerosene was run from the squibs to the padding for ignition.

3.0 ESTIMATE OF MAXIMUM WASTE TREATED

Approximately 155,500 pounds of HE waste has been treated at the TA-16-399 Burn Tray since 1980.

4.0 GENERAL CLOSURE INFORMATION

4.1 Closure Performance Standard

The TA-16-399 Burn Tray 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 in the New Mexico Environment Department's (NMED's) *Technical Background Document for Development of Soil Screening Levels* (as updated) (NMED, 2009), and in LANL's *Screening Level Ecological Risk Assessment Methods* (LANL, 2011) (as updated and approved by the NMED). For soils, the cleanup levels shall be established based on residential use. The owner/operator must also demonstrate that there is no potential to contaminate groundwater; 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;

- 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; and

- comply with the closure requirements of 40 CFR Part 265 Subparts G and P.

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 cause 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 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 Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the TA-16-399 Burn Tray. The following section provides the schedule of closure activities (see also Table 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, and 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.

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 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 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, or both and managed according to Section 7.0 of this closure plan. 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, metal cover, cover tracks, and the electronic ignition assembly will be removed from the unit at closure (but after the structural assessment) and will be recycled or disposed.

5.2.2 Decontamination of Structures and Related Equipment

The unit's concrete pad will be decontaminated by hot water 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. If results of the solid concrete chip or soil samples (see Section 6.1) from below

the pad indicate contamination, 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 steam cleaning 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. Residue, disposable equipment, and small reusable equipment that cannot or will not 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 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 2) for which soil, wipe, 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 4 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 4).

7) This SAP includes a description of the quality assurance and quality control (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 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.

One wipe sample will be collected from each piece of decontaminated equipment related to the unit.

One chip sample will be collected from the concrete pad.

Soil samples will be collected from locations in and around the unit from the sample locations depicted in Figure 4.

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 is not included as part of the TA-16-399 Burn Tray 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-16-399 Burn Tray 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. Section 1.6.1 of the 2008 MSGP notes, that there may be situations in which EPA may require a discharger to apply for and/or obtain authorization to discharge under either an IP or alternative NPDES general permit. EPA required the Department of Energy (DOE) to apply for an individual NPDES permit for LANL by December 31, 2004, pursuant to the Federal Facility Compliance Agreement - Administrative Order Docket No. CWA-06-205-1701 (FFCA/AO) entered into between the EPA and the Department of Energy (DOE) in February 2005 (EPA, 2005). Further, Section 1.6.1 of the 2008 MSGP explains that for existing dischargers authorized to discharge under the MSGP, EPA's "notice will set a deadline to file the permit

application, and will include a statement that on the effective date of the individual NPDES permit, or the alternative general permit as it applies to you, coverage under this general permit will terminate."

LANL's IP contains non-numeric technology-based effluent limitations, coupled with a comprehensive, coordinated monitoring program and corrective action where necessary, to minimize pollutants in LANL's storm water discharges. LANL is also 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 after installation and certification of baseline and certification of baseline control measures.

Groundwater in the vicinity of TA-16-399 is monitored as part of the LANL Interim Facility-Wide Groundwater Monitoring Plan (IFGMP). Under the 2010 IFGMP (LANL, 2010), surface water and groundwater are monitored down gradient of TA-16-399.

6.2.2 Soil Sampling

Soil samples will be collected from the soil surface (0-6 inches below ground surface) and shall be analyzed to determine if hazardous constituents are present in soils at, or in the vicinity of, the unit.

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). 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 5.

6.2.3 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain in the surfaces or related equipment at the unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994, as revised). 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 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 shall 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 Solid Chip Sampling

Solid chip samples will be collected 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 5.

6.2.5 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:

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 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.

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.

6.4 Sample Analysis Requirements

Samples will be analyzed for all the hazardous constituents listed in Table 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 4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table 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 4 is based on the following considerations:

e. the physical form of the waste;

f. constituents of interest;

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 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 are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table 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. 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 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:

f) a copy of the certification pursuant to 40 CFR § 265.115;

g) any variance, and the reason for the variance, from the activities approved in this closure plan;

h) documentation of the records review and structural assessment conducted;

i) 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;

j) a QA/QC statement on analytical data validation and decontamination verification;

k) 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;

l) storage or disposal location of hazardous waste resulting from closure activities;

m) 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

n) a certification statement of the accuracy of the closure certification report.

Documentation supporting the independent registered professional engineer's certification must be furnished to the Department before the owner/operator is released from the closure financial assurance requirements in 40 CFR § 265.143. If the owner/operator leaves waste in place, they shall submit to the Department a survey plat as required by 40 CFR § 265.116 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. 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.

EPA, 2005. Federal Facility Compliance Agreement - Administrative Order Docket No. CWA-06-205-1701 (FFCA/AO) *U.S. Environmental Protection Agency Region 6, In the Matter of United States Department of Energy and the Los Alamos National Laboratory, NPDES Nos. NMR05A735, NMR05A734, and NM0028355, Federal Facility Compliance Agreement. (February 2005)*, U.S. Environmental Protection Agency, Office of Solid Waste, U.S. Government Printing Office, Washington, DC.

LANL, 2010. *2010 Interim Facility-Wide Groundwater Monitoring Plan*, Los Alamos National Laboratory document LA-UR-10-1777, Los Alamos, New Mexico.).

LANL, 2011. *Ecorisk Database (Release 3.0)*, on CD, LA-UR-11-5650, Los Alamos National Laboratory, Los Alamos, New Mexico.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

NMED, 2009. *Technical Background Document for Development of Soil Screening Levels* (Revision 5.0), New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program.

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 1

Closure Schedule for the Technical Area 16-399 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 2

Hazardous Waste Constituents of Concern at the TA-16-399 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 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	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

[a] Based on the unit operating record.
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 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 HE 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

Table 3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
		Subtitle C or D landfill, 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.

Table 4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Antimony	6010, 7010	ICP-AES, GFAA	20 ug/L	Determine the metal concentration in the samples.
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Beryllium	6010, 7010	ICP-AES, GFAA	0.2 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Cobalt	6010, 7010	ICP-AES, GFAA	5 ug/L	
Copper	6010, 7010	ICP-AES, GFAA	5 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Thallium	6010, 7010	ICP-AES, GFAA	30 ug/L	
Vanadium	6010, 7010	ICP-AES, GFAA	5 ug/L	
Zinc	6010, 7010	ICP-AES, GFAA	1 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	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 Parameters				
Cyanide	9010, 9012	Colorimetric	20 ug/L	Determine cyanide concentration
Other Analysis				
Dioxins/Furans	8290	GC/MS	1.0 to 200 µg/L	Determine the dioxin/furan concentration in the 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] 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.

Table 4

Summary of Analytical Methods

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter
ug/L = micrograms per liter.

Table 5

Recommended 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	
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*, U.S. Environmental Protection Agency, 1986 and all approved updates.

°C = degrees Celsius
HCl = hydrochloric acid
mL = milliter
HNO_3 = nitric acid
L = Liter
TCLP = Toxicity Characteristic Leaching Procedure

Table 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.

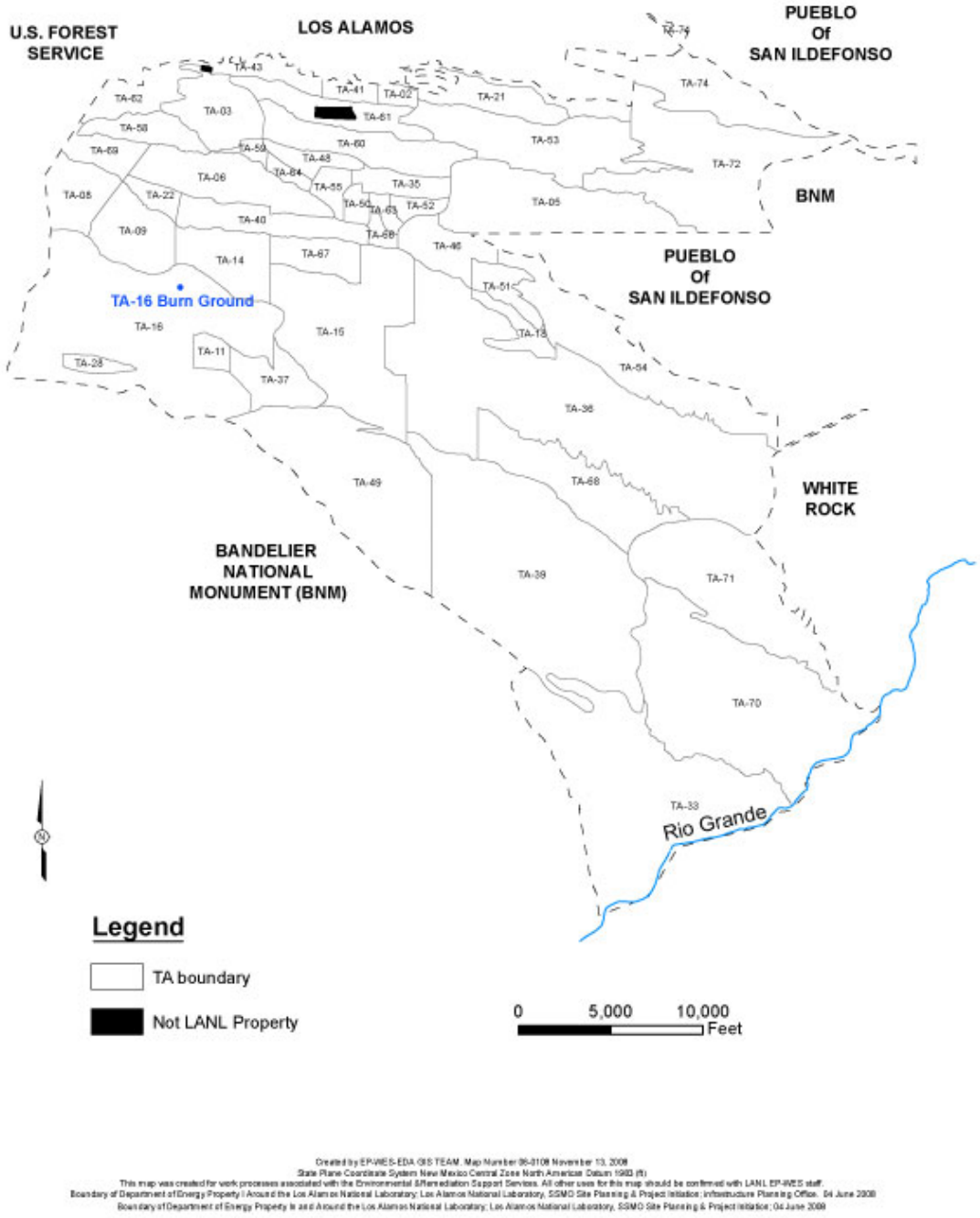


Figure 1: Technical Area 16 (TA-16) Location Map

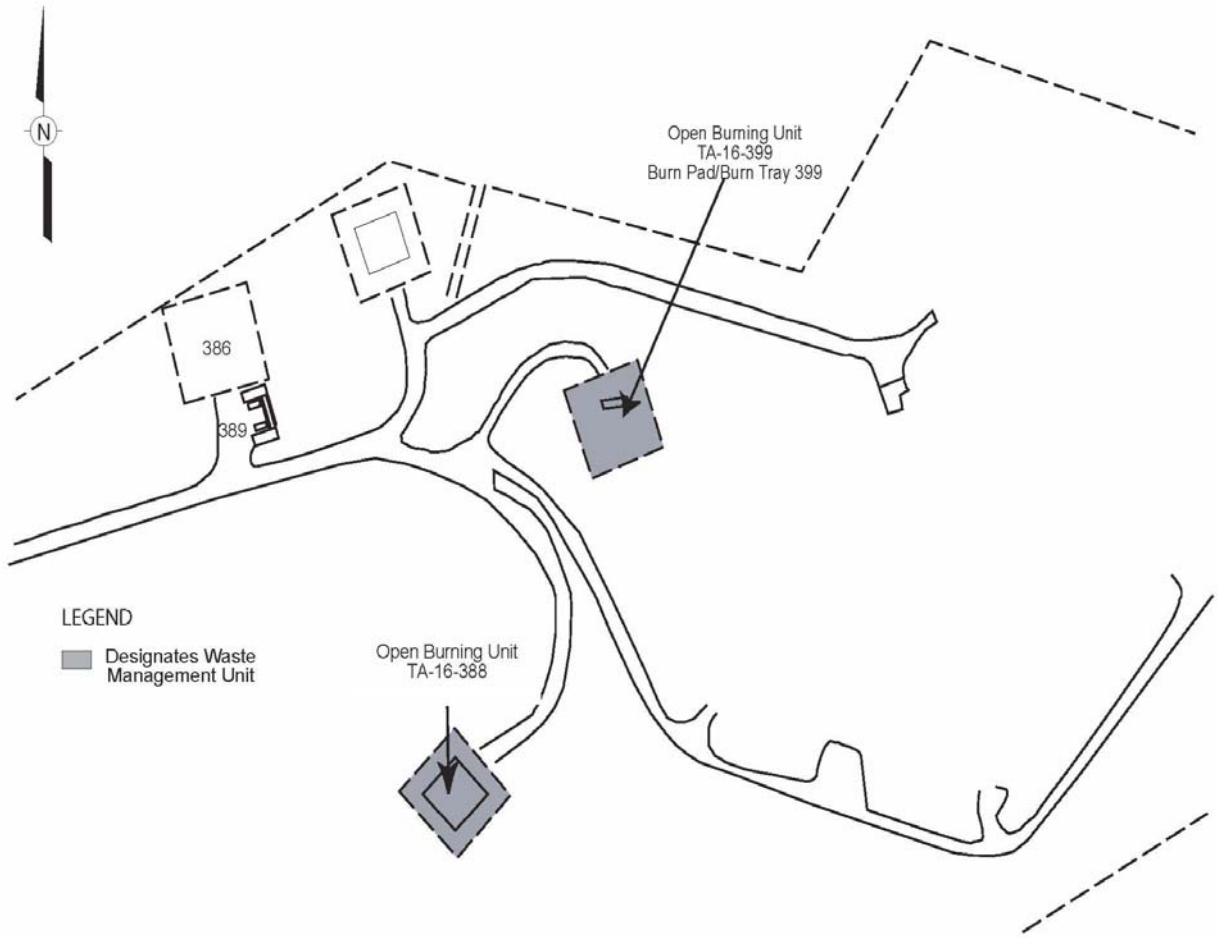


Figure 2: Technical Area 16-399 Open Burning Treatment Unit Layout

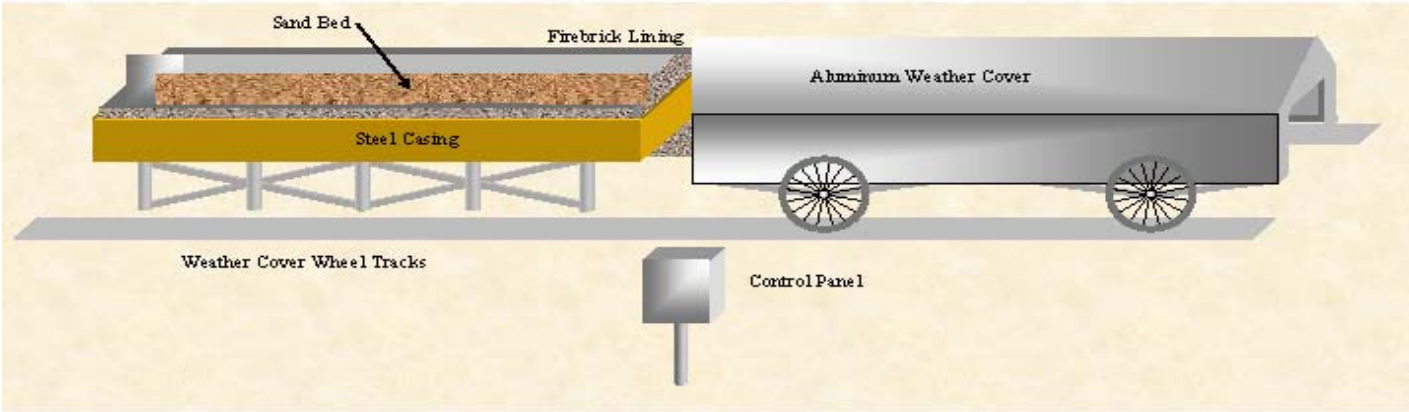
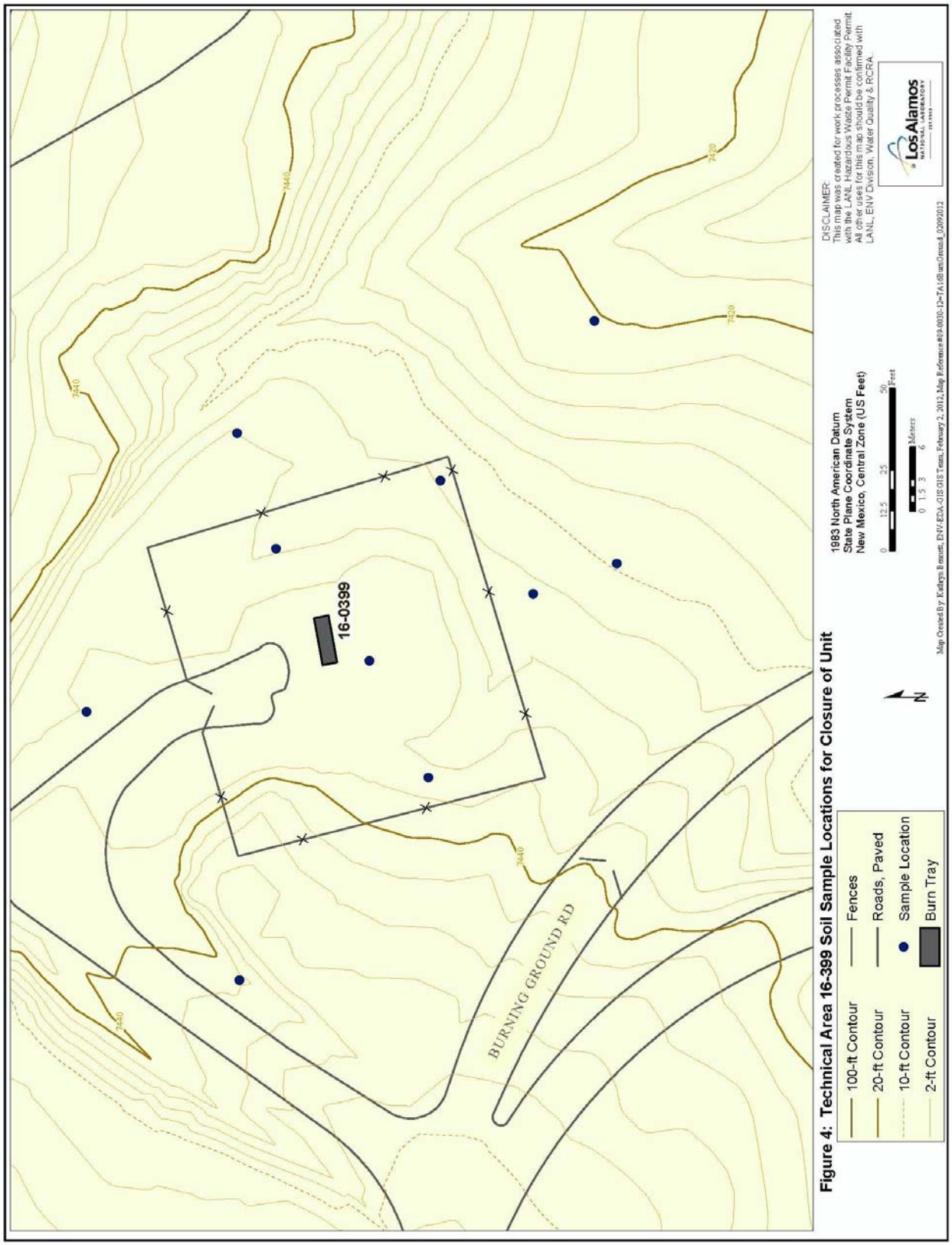


Figure 3: Technical Area 16-399 Open Burning Treatment Unit Configuration


16-0399
BURNING GROUND RD
7440
7420
7430
Figure 4: Technical Area 16-399 Soil Sample Locations for Closure of Unit
100-ft Contour
20-ft Contour
10-ft Contour
2-ft Contour
Fences
Roads, Paved
Sample Location
Burn Tray
N
1983 North American Datum
State Plane Coordinate System
New Mexico, Central Zone (US Feet)
0 12.5 25 50 Feet
0 1.5 3 6 Meters
Map Created By: Kathryn Bennett, ENV-EDA-GIS GIS Team, February 2, 2012, Map Reference #19-0030-12-TA16BurnGround_02092012
DISCLAIMER:
This map was created for work processes associated with the LANL Hazardous Waste Permit Facility Permit. All other uses for this map should be confirmed with LANL, ENV Division, Water Quality & RCRA.
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CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with 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.

4/30/12

Alison M. Dorries
Division Leader
Environmental Protection Division
Los Alamos National Laboratory
Operator

Date Signed

5/03/12

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