TA 16

NO Cover Letter

June 2000
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Los Alamos National Laboratory
Hazardous Waste Facility Permit

Chapter 5

Technical Area 16 Conditions

Los Alamos National Laboratory
Hazardous Waste Facility Permit

Chapter 5

Technical Area 16 Conditions

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MODULE I—TECHNICAL AREA 16 CONDITIONS

Technical Area (TA) 16 is located in the southwestern portion of LANL (Figure I-1). 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 feet at the west end of the TA to approximately 6,800 feet at the lower east end. Topography is varied, ranging from steep precipitous canyon walls to sloping mesa tops.

The waste management units at TA-16 include the TA-16, Building 88 (TA-16-88), container storage unit (CSU) (Figure I-2) and the TA-16 Burn Ground Unit (Figure I-3). The CSU is for storage and handling of solid hazardous and mixed low-level waste and is addressed in Module II of this permit chapter. The TA-16 Burn Ground Unit is for treatment of waste by open burning and is addressed in Module III of this permit chapter.

I.A. MAINTENANCE AND OPERATION OF THE FACILITY

1. The Permittee shall maintain and operate the CSU and the Burn Ground Unit to minimize the possibility of a fire, explosion, or any unplanned, sudden or nonsudden release of hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment, as required by the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.31, revised June 14, 2000 [6-14-00].
2. The Permittee shall follow the conditions in Module II of this permit chapter for the TA-16-88 CSU.
3. The Permittee shall follow the conditions in Module III of this permit chapter for the TA-16 Burn Ground Unit.

I.B. REQUIRED NOTICES

The Permittee shall comply with the required notices conditions in permit paragraph II.B in Chapter 1 of this permit, as required by 20 NMAC 4.1, Subpart V, 264.12 [6-14-00].

I.C. WASTE ANALYSIS

The Permittee shall follow the waste analysis procedures described in Attachment A of this permit chapter and in Appendix A of Chapter 1 of this permit, as required by 20 NMAC 4.1, Subpart V, 264.13 [6-14-00].

I.D. SECURITY

The Permittee shall comply with the security provisions in permit paragraphs I.D.1 through I.D.4 below, as required by 20 NMAC 4.1, Subpart V, 264.14 [6-14-00].

1. Security at TA-16. Security at TA-16 shall be maintained with physical and administratively-controlled barriers to prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock into the active portions of the TA-16-88 CSU and the TA-16 Burn Ground Unit, in accordance with 20 NMAC 4.1, Subpart V, 264.14(a) and (b)(2) [6-14-00]. A security fence, barbed wire fence, and/or canyon walls surround the perimeter of TA-16.
2. Entry into TA-16. Entry stations into TA-16 shall be controlled 24 hours a day by security personnel and/or electronic equipment, in accordance with 20 NMAC 4.1, Subpart V, 264.14(b)(1) [6-14-00]. Appropriate entry and egress procedures shall be followed.
3. TA-16-88 CSU. Outside doors to TA-16-88 shall remain locked, and the building shall be equipped with a security alarm monitored by LANL's central alarm system. Only preauthorized or escorted personnel shall have access to the building. Required signage shall meet the conditions in permit paragraphs II.F.2.a through II.F.2.c of this permit chapter, in accordance with 20 NMAC 4.1, Subpart V, 264.14(c) [6-14-00].
4. TA-16 Burn Ground Unit. Entry into the burn ground shall be through an industrial fence with access granted through a controlled station. After clearing non-authorized personnel from the unit and prior to conducting open burning operations, a barrier shall be placed across the road to reduce the possibility of entry into the area. Required signage shall meet the conditions in permit paragraphs III.E.5.a through III.E.5.c of this permit chapter, in accordance with 20 NMAC 4.1, Subpart V, 264.14(c) [6-14-00].

I.E. INSPECTION REQUIREMENTS

The Permittee shall follow the inspection requirements in permit conditions II.F and III.E and in Attachment B of this permit chapter, and in permit condition II.E and in Appendix B of Chapter 1 of this permit, in accordance with 20 NMAC 4.1, Subpart V, 264.15 [6-14-00].

I.F. PERSONNEL TRAINING

The Permittee shall follow the personnel training requirements in Attachment C of this permit chapter and in permit condition II.F and Appendix C of Chapter 1 of this permit, in accordance with 20 NMAC 4.1, Subpart V, 264.16 [6-14-00].

I.G. SPECIAL PROVISIONS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

For the TA-16-88 CSU, the Permittee shall comply with the procedures for handling ignitable, reactive, and incompatible wastes in permit paragraphs II.I and II.J of this permit chapter, as required by 20 NMAC 4.1, Subpart V, 264.17 [6-14-00]. For the TA-16 Burn Ground Unit, the Permittee shall comply with the procedures for handling ignitable, reactive, and incompatible wastes in permit paragraph III.F of this permit chapter, as required by 20 NMAC 4.1, Subpart V, 264.17 [6-14-00].

I.H. PREPAREDNESS AND PREVENTION

The Permittee shall comply with the preparedness and prevention conditions listed below, as required by 20 NMAC 4.1, Subpart V, Part 264, Subpart C, and 20 NMAC 4.1, Subpart IX, 270.14(b) [6-14-00].

1. Required Equipment. At a minimum, the Permittee shall maintain the equipment listed in Tables D-1 and D-2 of Attachment D of this permit chapter, in accordance with 20 NMAC 4.1, Subpart V, 264.32 [6-14-00].
2. Testing and Maintenance of Equipment. The equipment listed in Tables D-1 and D-2 of Attachment D of this permit chapter shall be tested and maintained, as necessary, to assure its proper operation in time of emergency, as required by 20 NMAC 4.1, Subpart V, 264.33 [6-14-00].
3. Access to Communications or Alarm System. The Permittee shall maintain access to the communications and alarm systems listed in Tables D-1 and D-2 in Attachment D of this permit chapter, as required by 20 NMAC 4.1, Subpart V, 264.34 [6-14-00].
4. Required Aisle Space. Waste containers at the TA-16-88 CSU shall be stored in rows with a minimum aisle space of 24 inches.

I.I. CONTINGENCY PLAN

The Permittee shall immediately carry out the provisions of Attachment D of this permit chapter and Appendix D in Chapter 1 of this permit whenever there is an unplanned fire, explosion, or unpermitted release of hazardous waste or hazardous constituents from the TA-16-88 CSU or TA-16 Burn Ground Unit which could threaten human health or the environment. Amendments to Attachment D and Appendix D shall be made in accordance with permit paragraph II.I.2 of Module II in Chapter 1 of this permit. Copies of Attachment D and Appendix D shall be distributed in accordance with permit paragraph II.I.3 of Module II in Chapter 1 of this permit.

I.J. MANIFEST SYSTEM

At TA-16, hazardous wastes are not received from off site, nor are they shipped from TA-16 to off-site facilities.

I.K. RECORDKEEPING AND REPORTING

The Permittee shall comply with the recordkeeping and reporting permit conditions in permit paragraph II.K in Chapter 1 of this permit.

I.L. GENERAL CLOSURE REQUIREMENTS

The Permittee shall comply with the partial closure permit conditions in permit paragraph II.L in Chapter 1 of this permit. The TA-16-88 CSU shall be closed in accordance with the closure plan in Attachment E.1 of this permit chapter. The TA-16 Burn Ground Unit shall be closed in accordance with the closure plan in Attachment E.2 of this permit chapter.

I.M. GENERAL POST-CLOSURE REQUIREMENTS

If it is determined that clean closure of the TA-16 Burn Ground Unit cannot be achieved, the Permittee shall comply with the post-closure permit conditions in permit paragraph II.M in Chapter 1 of this permit and shall prepare a post-closure plan, in accordance with 20 NMAC 4.1, Subpart V, 264.118 [6-14-00].

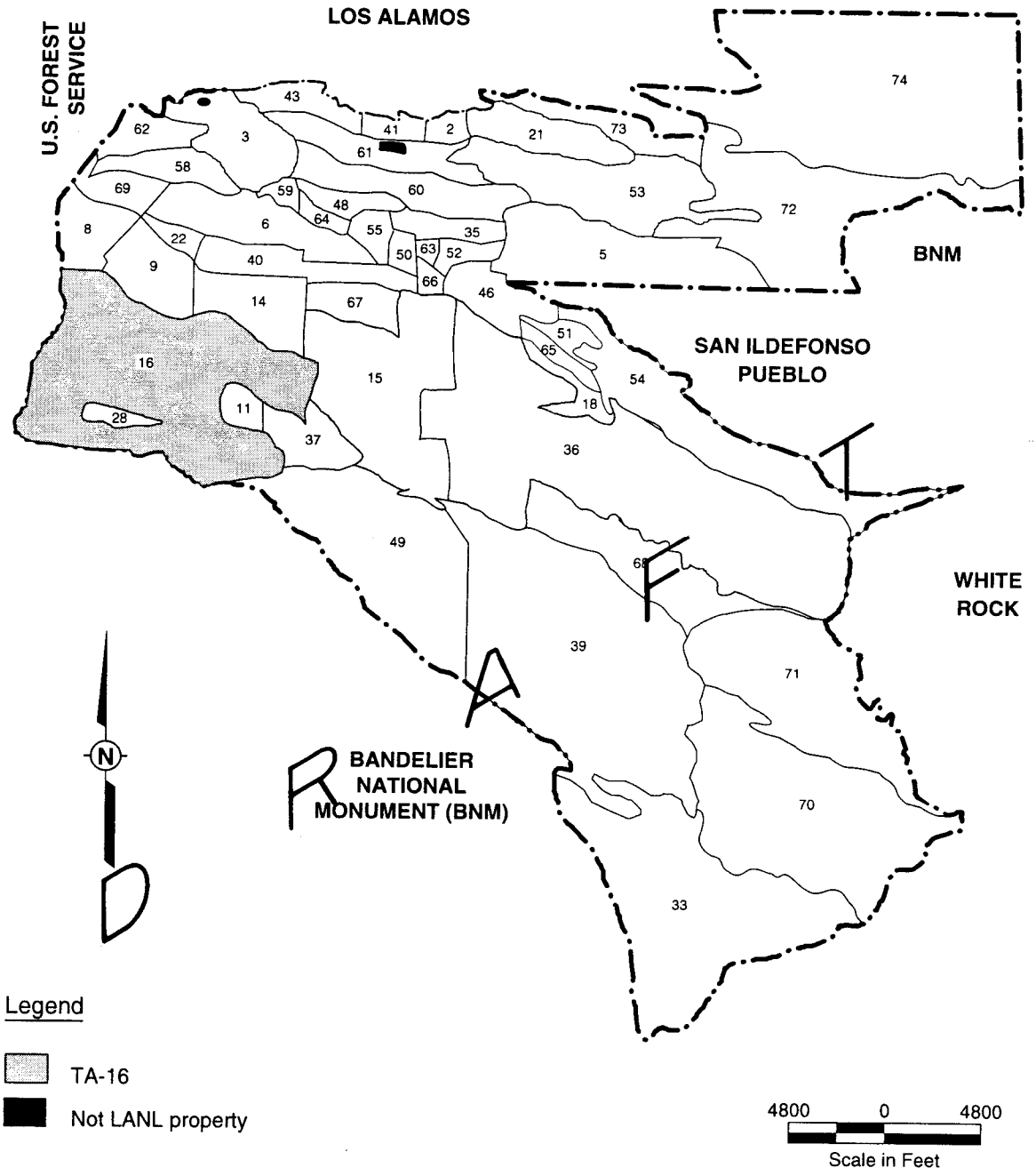

Figure I-1
Location Map of Technical Area (TA) 16 at Los Alamos National Laboratory (LANL)

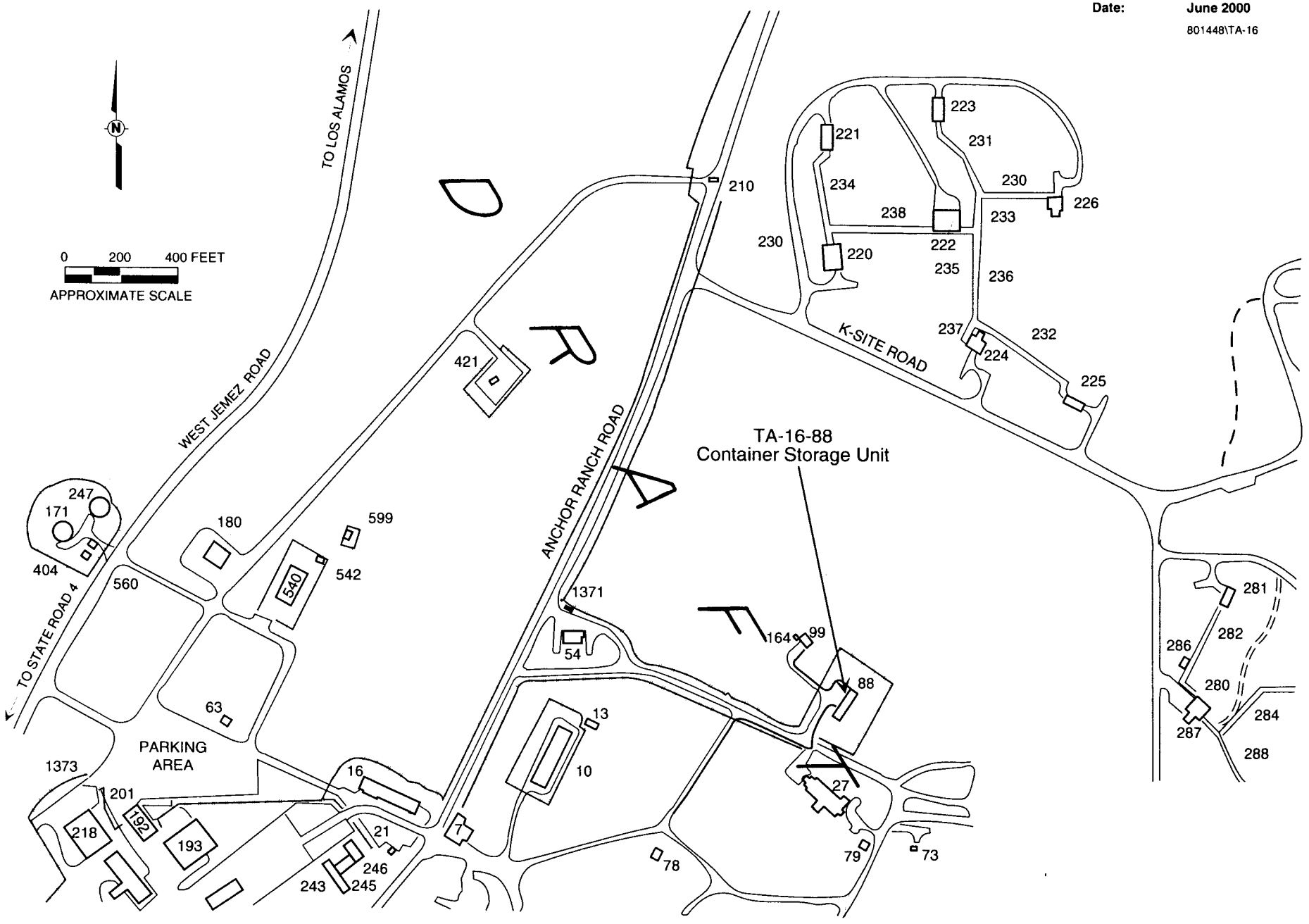

Figure I-2
Site Location Map for Technical Area (TA) 16, Building 88

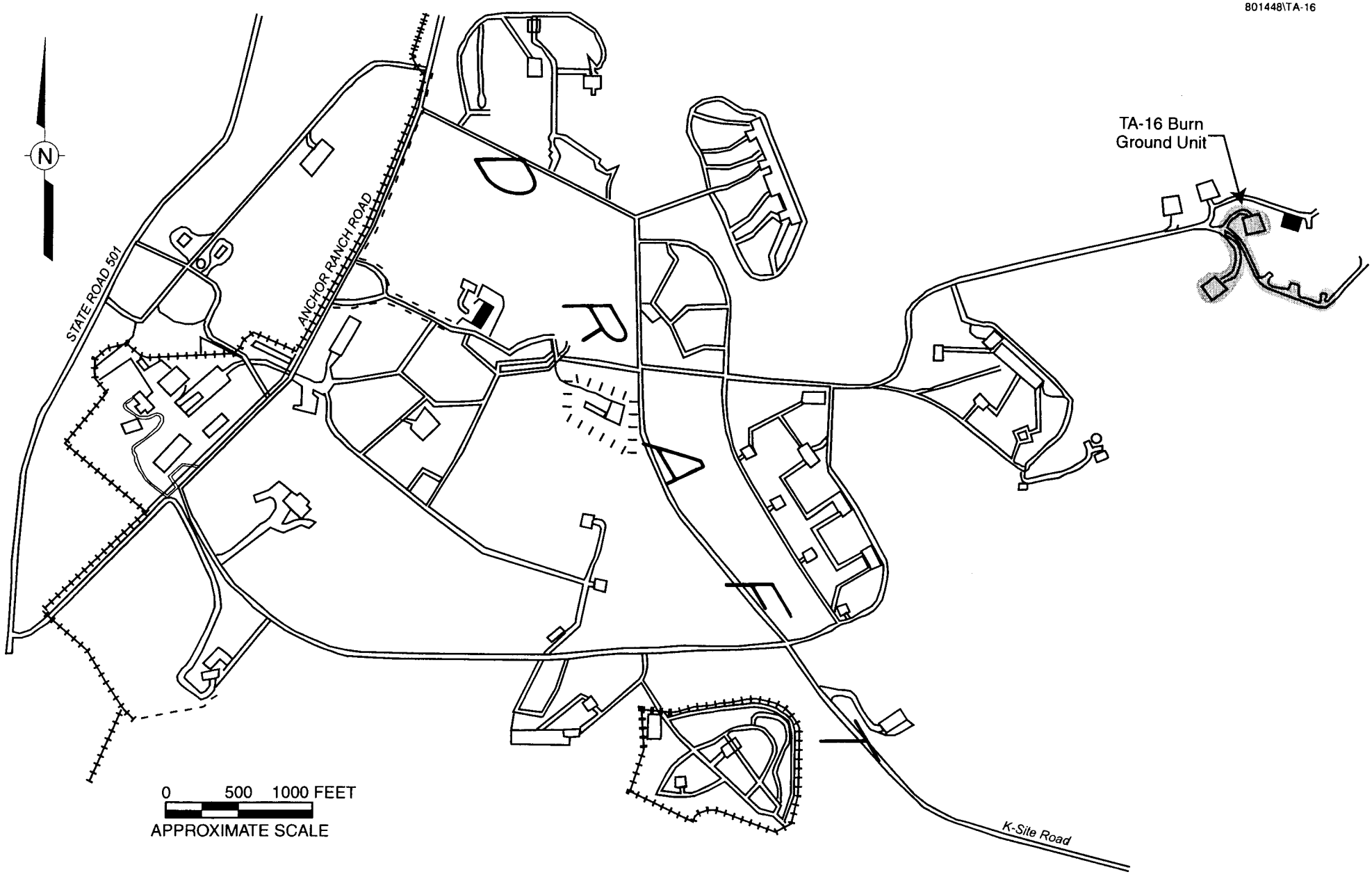

Figure I-3
Site Location Map for Technical Area (TA) 16 Burn Ground Unit

MODULE II—STORAGE IN CONTAINERS

II.A. CONTAINER STORAGE UNIT

1. The Permittee may store for more than ninety days hazardous and mixed low-level wastes in containers in the Technical Area 16, Building 88 (TA-16-88) container storage unit (CSU).
2. TA-16-88 is a single-room, 100 foot by 20 foot, metal building on a concrete slab. The CSU, which is approximately 10 feet by 15 feet, is located in the northwest corner of the building (Figure II-1). The concrete floor of the CSU is sealed with epoxy paint, and curbs extend upward at the walls.
3. The overall storage capacity of the TA-16-88 CSU is 275 gallons.
4. Only solid physical form hazardous and mixed low-level wastes may be stored at the TA-16-88 CSU. No liquid-bearing or potentially liquid-bearing wastes may be stored at the TA-16-88 CSU.
5. Containers that may be used for storage include, but are not limited to, 55-gallon drums; crates; metal, fiber, or wooden boxes; and various small containers and irregularly-shaped containers. Overpacks may be used when a container's integrity is suspect.
6. Because only solid physical form wastes may be stored at the TA-16-88 CSU, secondary containment (e.g., self-containment pallets) is not required. Any accumulated liquids (e.g., from fire-suppression activities) will generally be contained within the curbed portion of the building and will be removed and containerized as soon as possible.
7. Containers will be stored in rows with a minimum aisle space of 24 inches. Storage configuration of containers within a row depends upon the type of container, its size, and its weight restrictions. Drums may be stacked two high.

II.B. AUTHORIZED WASTES

1. The Permittee may store only hazardous and mixed low-level wastes identified with the process code of "S01" in Attachment G.1 of this permit chapter in the TA-16-88 CSU.
2. The Permittee is prohibited from storing hazardous and mixed low-level waste that is not identified in permit condition II.B.1.

II.C. CONDITION OF CONTAINERS

1. If a container holding hazardous or mixed low-level waste is not in good condition (e.g., severe rusting, structural defects) or if it begins to leak, the Permittee shall transfer the hazardous or mixed low-level waste from such container to a container that is in good condition or otherwise manage the waste in compliance with the conditions of this permit, in accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.171, revised June 14, 2000 [6-14-00].
2. The Permittee may use overpack containers of more than 55-gallon capacity to manage defective waste storage containers. Each overpacked container shall be recorded in the facility operating record.

II.D. COMPATIBILITY OF WASTE WITH CONTAINERS

The Permittee shall assure that the ability of the container to contain the waste is not impaired, as required by 20 NMAC 4.1, Subpart V, 264.172 [6-14-00]. Only containers made of or lined with materials that will not react with and are otherwise compatible with the waste stored in them shall be stored in the TA-16-88 CSU.

II.E. MANAGEMENT OF CONTAINERS

The Permittee shall keep all containers closed during storage, except when it is necessary to add or remove waste, and shall not open, handle, or store containers in a manner which may rupture the container or cause it to leak, as required by 20 NMAC 4.1, Subpart V, 264.173 [6-14-00].

II.F. INSPECTION SCHEDULES AND PROCEDURES

1. Inspection Plan. The Permittee shall inspect the CSU in accordance with the Inspection Plan in Attachment B of this permit chapter and Appendix B of Chapter 1 of this permit to detect leaking or deterioration of containers caused by corrosion and other factors.
2. Warning Signs. The legibility and condition of warning signs shall be included in weekly inspections. Missing or illegible signs shall be replaced promptly upon discovery.

a. Signs saying "Danger—Unauthorized Personnel Keep Out" shall be posted at the three entrances to TA-16-88 and shall be legible from a distance of 25 feet from the approaches to the building.

b. A sign saying "Hazardous Waste Storage Area" shall be posted at the CSU.

c. Signs shall be in both English and Spanish.

II.G. RECORDKEEPING

The Permittee shall place a copy of any documentation demonstrating compliance with permit condition II.J of this permit chapter and with 20 NMAC 4.1, Subpart V, 264.17(b) and 264.177 [6-14-00], in the facility operating record.

II.H. CLOSURE

1. The Permittee shall comply with the Closure Plan in Attachment E.1 of this permit chapter.
2. At closure of the TA-16-88 CSU, the Permittee shall remove all hazardous and mixed low-level waste from the unit and decontaminate any contaminated equipment associated with the unit.

II.I. SPECIAL PROVISIONS FOR IGNITABLE OR REACTIVE WASTE

1. The Permittee shall not locate containers holding ignitable waste within 15 meters (50 feet) of the LANL facility's property line, in accordance with 20 NMAC 4.1, Subpart V, 264.176 [6-14-00].
2. The Permittee shall take precautions to prevent accidental ignition of ignitable waste. Ignitable wastes shall be separated and protected from sources of ignition, such as welding activities, hot surfaces, frictional heat, and sources of sparks, in accordance with 20 NMAC 4.1, Subpart V, 264.17(a) [6-14-00].
3. Smoking shall not be allowed within TA-16-88. A "No Smoking" sign shall be conspicuously placed at the TA-16-88 CSU, in accordance with 20 NMAC 4.1, Subpart V, 264.17(a) [6-14-00].
4. Reactive wastes shall not be stored at the TA-16-88 CSU.

II.J. SPECIAL PROVISIONS FOR INCOMPATIBLE WASTE

1. The Permittee shall not place incompatible waste, or incompatible wastes and materials, in the same container, in accordance with 20 NMAC 4.1, Subpart V, 264.177(a) [6-14-00].
2. The Permittee shall not place hazardous or mixed low-level waste in an unwashed container that previously held an incompatible waste or material, in accordance with 20 NMAC 4.1, Subpart V, 264.177(b) [6-14-00].
3. The Permittee shall segregate containers of incompatible waste, if stored, in accordance with 20 NMAC 4.1, Subpart V, 264.177(c) [6-14-00].

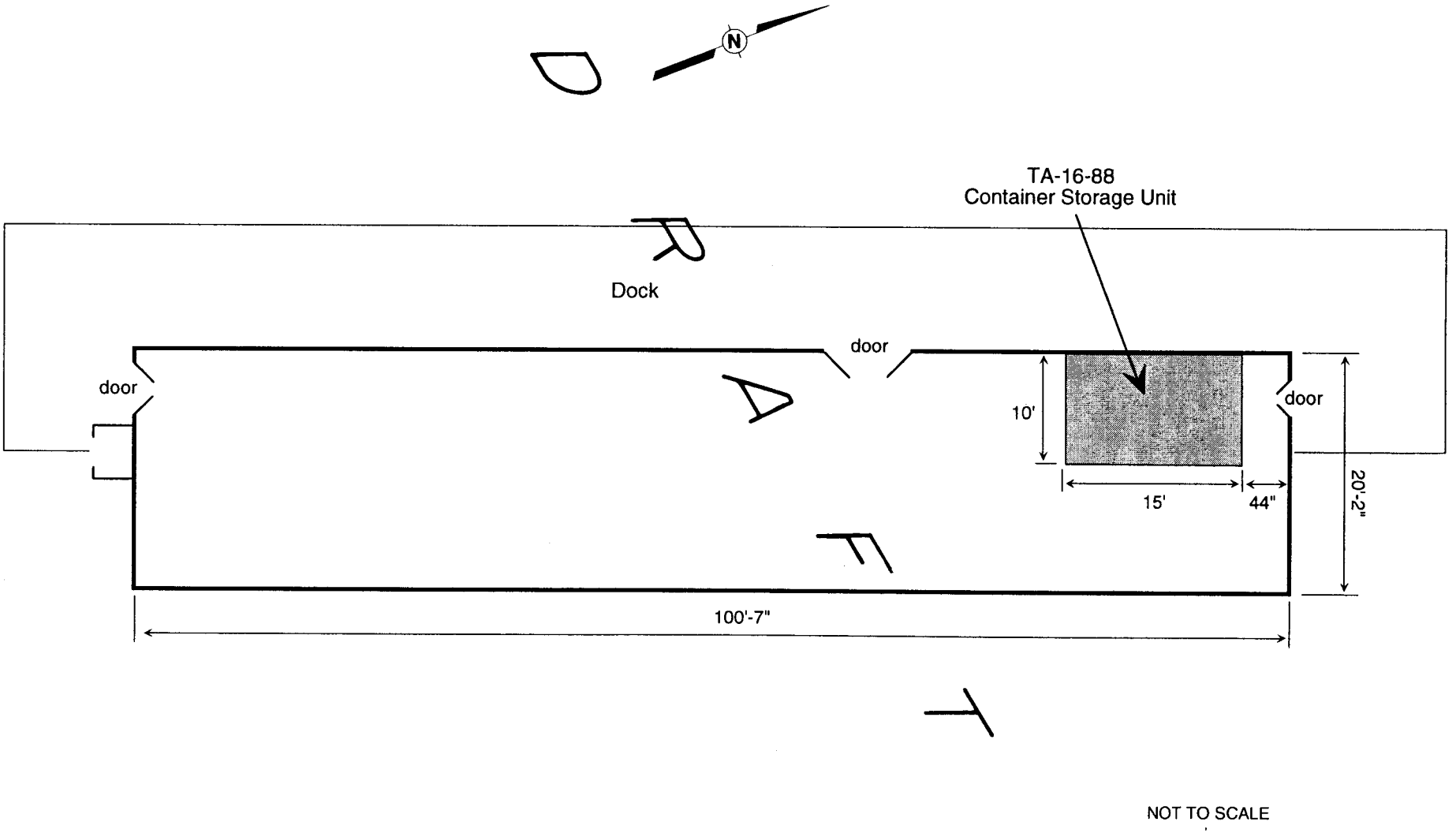

Figure II-1
Technical Area (TA) 16, Building 88, Container Storage Unit

MODULE III-OPEN BURNING

III.A. BURN GROUND UNIT

The Permittee may treat hazardous waste contaminated with high explosives (HE) by open burning (OB) at the Technical Area (TA) 16 Burn Ground Unit. This unit consists of the following structures: the TA-16-388 Flash Pad/Burn Tray, the TA-16-399 HE Burn Tray, and the TA-16-401 and TA-16-406 Sand Filters (Figure III-1).

1. TA-16-388 Flash Pad/Burn Tray.
   a. The TA-16-388 Flash Pad (Figures III-2 and III-3) consists of a 22-foot (ft) by 22-ft concrete pad/foundation with an enclosing wall set on a polypropylene-lined secondary containment area. The flash pad can be covered with a movable steel roof when the flash pad is not in use. The TA-16-388 Burn Tray (Figures III-2 and III-4) is a stainless-steel kettle with a 100-gallon capacity and propane burners. A retractable cover can be rolled over the burn tray assembly.
   b. The maximum treatment capacity of the TA-16-388 Flash Pad is 40,000 pounds per burn. The maximum treatment capacity of the TA-16-388 Burn Tray is 75 gallons per burn.
   c. The wastes that may be treated at the TA-16-388 Flash Pad/Burn Tray include, but are not limited to, HE-contaminated solvents and water/solvent mixtures, oils, particulate wastes, solid combustibles, and incombustible materials.
2. TA-16-399 HE Burn Tray.
   a. The TA-16-399 HE Burn Tray (Figure III-5) is an approximately 4-ft-wide, 16-ft-long steel tray, supported on 1.5-ft-high legs, and lined with firebricks. The HE Burn Tray has a movable cover that may be placed over the tray when it is not in use.
   b. The maximum treatment capacity of the TA-16-399 HE Burn Tray is 1,000 pounds of waste per burn.
   c. Waste treated at the TA-16-399 HE Burn Tray consists of, but is not limited to, bulk HE.

3. TA-16-401 and TA-16-406 Sand Filters.

a. The TA-16-401 and TA-16-406 Sand Filters (Figure III-6) are contained in steel vessels that are 8 ft, 9 inches in diameter and about 4 ft high. Each vessel is partially below ground level. Both sand filters have a heavy steel lid that is placed over the waste during the drying cycle. The lids are kept in place until the HE is burned.

b. The maximum treatment capacity of each sand filter is 1,000 pounds per burn.

c. Wastes that may be treated at the TA-16-401 and TA-16-406 Sand Filters may include, but are not limited to, HE-contaminated wastewater and particulate HE saturated with water.

Vehicles in the HE Access Area are limited to those with authorized business in the area. This ensures that traffic volumes are kept at the minimum level needed to conduct safe treatment operations.

III.B. AUTHORIZED WASTES

1. The Permittee may treat, by OB, hazardous wastes identified with the process code "X01" in Attachment G.2 of this permit chapter at the TA-16 Burn Ground Unit. The wastes that may be treated are identified by waste stream in Attachment G.2.

2. The Permittee is prohibited from treating, by OB, hazardous waste that is not identified in permit condition III.B.1.

III.C OPERATING REQUIREMENTS

1. Open Burning in a Containment Device.

The Permittee may treat hazardous waste by OB in a containment device (i.e., the TA-16-388 Flash Pad/Burn Tray, the TA-16-399 Burn Tray, and the TA-16-401 and TA-16-406 Sand Filters) as long as procedural permit conditions III.C.1.a through III.C.1.e and III.D of this permit chapter are met.

a. The Permittee shall operate and maintain the OB containment devices in accordance with the operating procedures in Attachment F.2 of this permit chapter.

b. The Permittee shall operate and maintain a precipitation cover at the OB containment devices in accordance with the operating procedures in Attachment F.2 of this permit chapter.

c. The Permittee shall manage accumulated precipitation at the OB containment devices in accordance with Attachment F.2 of this permit chapter.

d. The Permittee shall operate and maintain the OB containment devices in order to minimize air emissions or exposure of people, on site or off site, to toxic or hazardous emissions in accordance with Attachment F.2 of this permit chapter.

e. Ash/residue from the OB containment devices shall be managed in accordance with Attachment F.2 of this permit chapter.

2. Open Burning on a Pad.

The Permittee may treat hazardous waste by OB on a burn pad (i.e., the TA-16-388 Flash Pad) as long as procedural permit conditions III.C.2.a through III.C.2.e and III.D of this permit chapter are met.

a. The Permittee shall operate and maintain the TA-16-388 Flash Pad in accordance with the operating procedures in Attachment F.2 of this permit chapter.

b. The Permittee shall operate and maintain a precipitation cover at the TA-16-388 Flash Pad in accordance with the operating procedures in Attachment F.2 of this permit chapter.

c. The Permittee shall manage accumulated precipitation at the TA-16-388 Flash Pad in accordance with Attachment F.2 of this permit chapter.

d. The Permittee shall operate and maintain the TA-16-388 Flash Pad in order to minimize air emissions or exposure of people, on site and off site, to toxic or hazardous emissions in accordance with Attachment F.2 of this permit chapter.

e. Ash/residue from the TA-16-388 Flash Pad shall be managed in accordance with Attachment F.2 of this permit chapter.

III.D HANDLING AND STORAGE REQUIREMENTS

1. The Permittee shall handle/manage HE wastes in accordance with Attachment F.2 of this permit chapter.
2. The Permittee shall stage HE wastes, prior to treatment, in accordance with Attachment F.2 of this permit chapter.

III.E INSPECTION SCHEDULES AND PROCEDURES

1. Inspection Plan. The Permittee shall inspect the TA-16 Burn Ground Unit structures in accordance with the Inspection Plan in Attachment B of this permit chapter and Appendix B of Chapter 1 of this permit to check deteriorating equipment and systems.
2. Warning Signs. The legibility and condition of warning signs shall be included in weekly inspections. Missing or illegible signs shall be replaced promptly upon discovery.
   a. Signs saying "Danger—Explosives Area" shall be placed at the entrance to the TA-16 Burn Ground Unit.
   b. Signs saying "Authorized Personnel Only" shall be placed on the HE Exclusion Area access gates.
   c. Signs shall be in both English and Spanish and shall be legible from a distance of 25 ft.

III.F PREVENTION OF UNINTENDED IGNITION OR REACTION OF WASTES

1. Prior to treatment at the TA-16 Burn Ground Unit, the Permittee shall take precautions to prevent accidental ignition or reaction of ignitable and reactive wastes. The wastes shall be separated and protected from sources of ignition, such as welding activities, hot surfaces, frictional heat, and sources of sparks, in accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.17(a), revised June 14, 2000 [6-14-00].
2. Smoking shall not be allowed within the TA-16 Burn Ground Unit. A "No Smoking" sign shall be conspicuously placed at the entrance to the Burn Ground, in accordance 20 NMAC 4.1, Subpart V, 264.17(a) [6-14-00].

III.G FACILITY MODIFICATION/EXPANSION

1. Permit Modification. The New Mexico Environment Department reserves the right to modify this permit in accordance with 20 NMAC 4.1, Subpart IX, 270.41 [6-14-00].
2. Permit Modification at the Request of the Permittee. Modifications or expansions of the facility shall be accomplished in accordance with 20 NMAC 4.1, Subpart IX, 270.42 [6-14-00].

III.H CLOSURE

1. The Permittee shall comply with the Closure Plan in Attachment E.2 of this permit chapter for partial or final closure of the TA-16 Burn Ground Unit.
2. If, after closure of the TA-16 Burn Ground Unit, the Permittee finds that not all contaminated soils can be removed or decontaminated, the Permittee shall close the Burn Ground Unit and integrate and coordinate the final assessment and remediation of the unit as Resource Conservation and Recovery Act corrective actions.

III.I RECORDKEEPING

1. The Permittee shall develop and maintain all records required to comply with 20 NMAC 4.1, Subpart V, 264.73 and 264.602 [6-14-00], and permit paragraph I.K of this permit chapter.

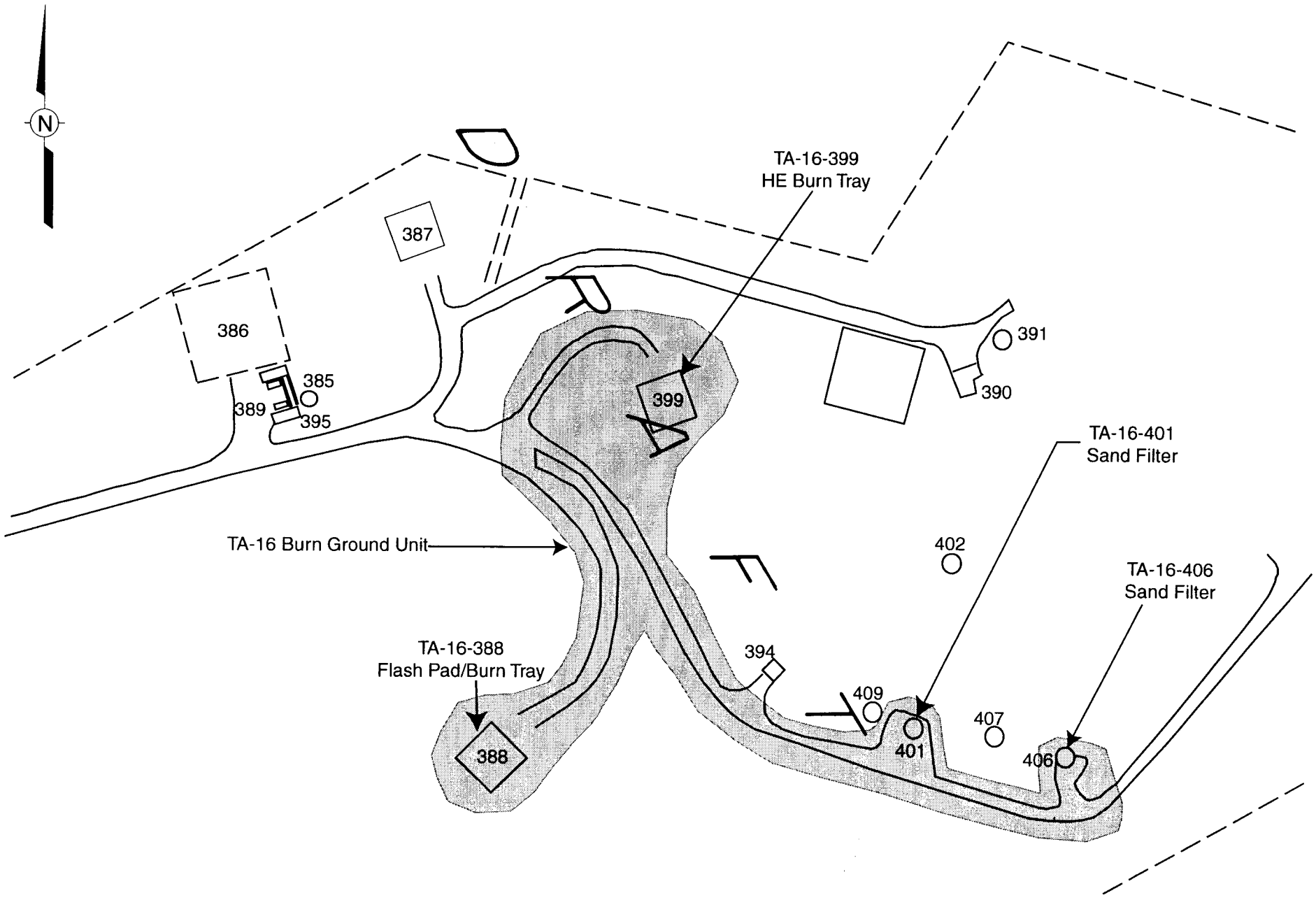

Figure III-1
Technical Area (TA) 16 Burn Ground Unit

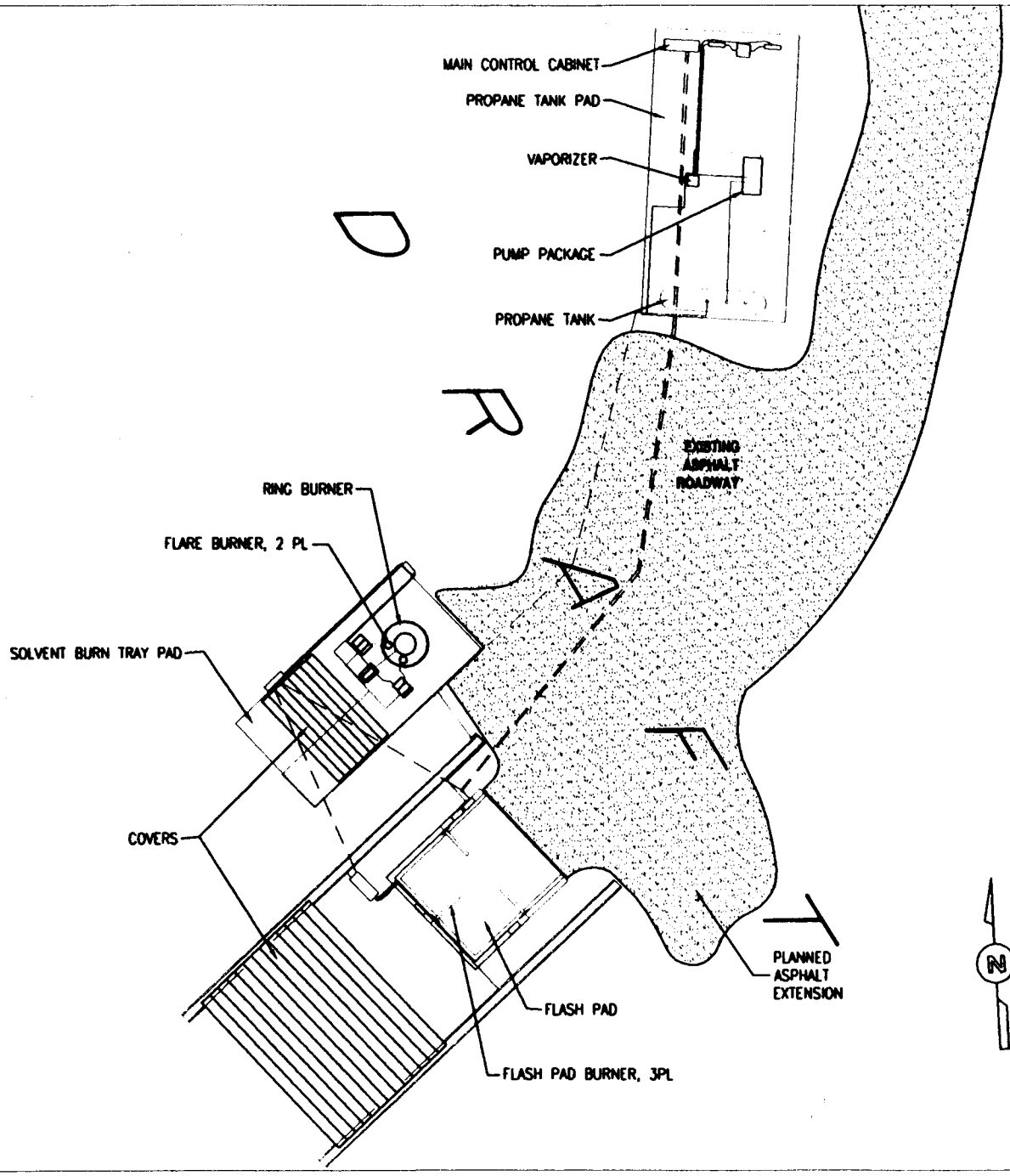

Figure III

Technical Area (TA) 16-388 Flash Pad/Burn Tray

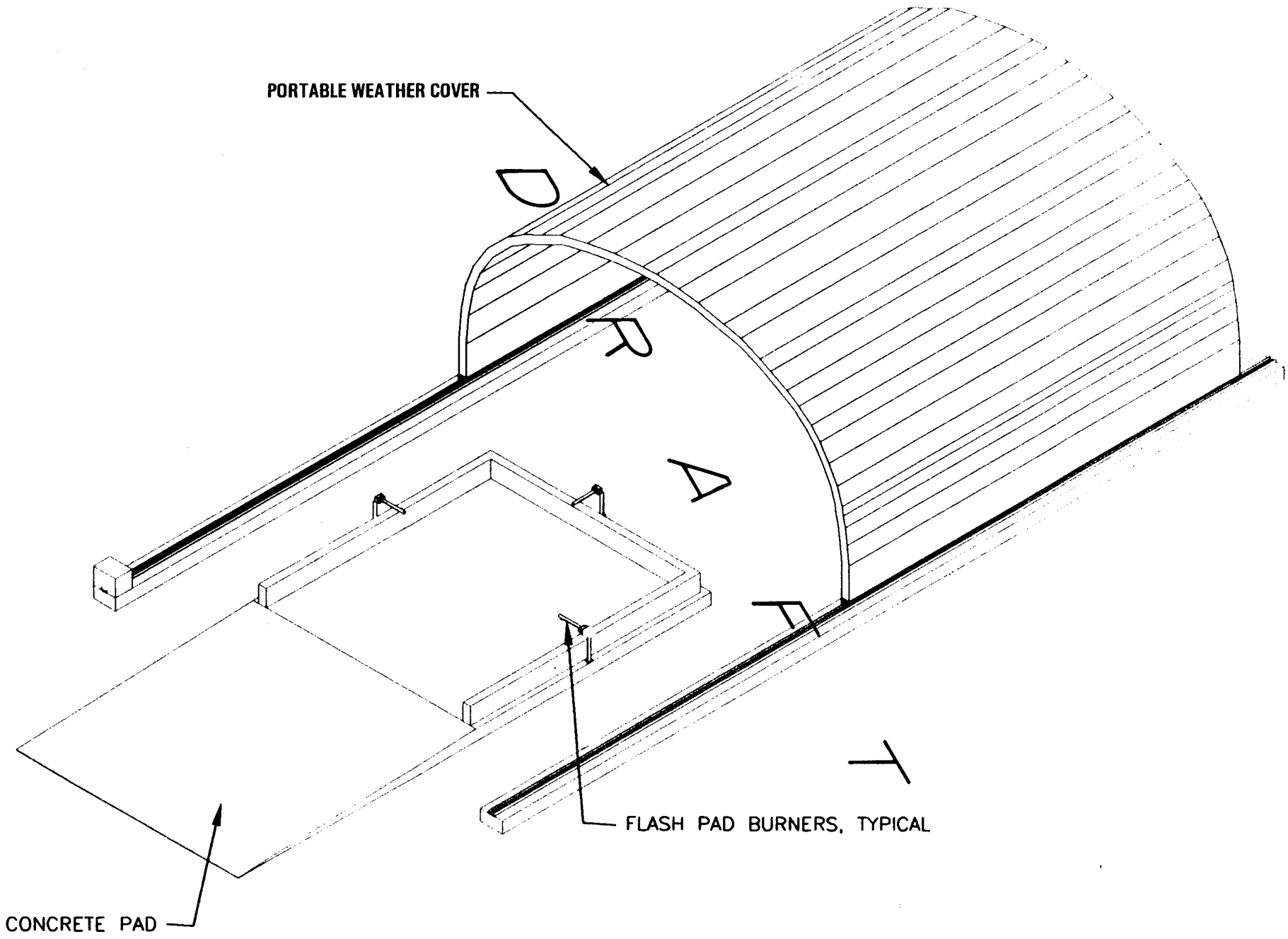

Figure III-3

Technical Area (TA) 16–388 Flash Pad

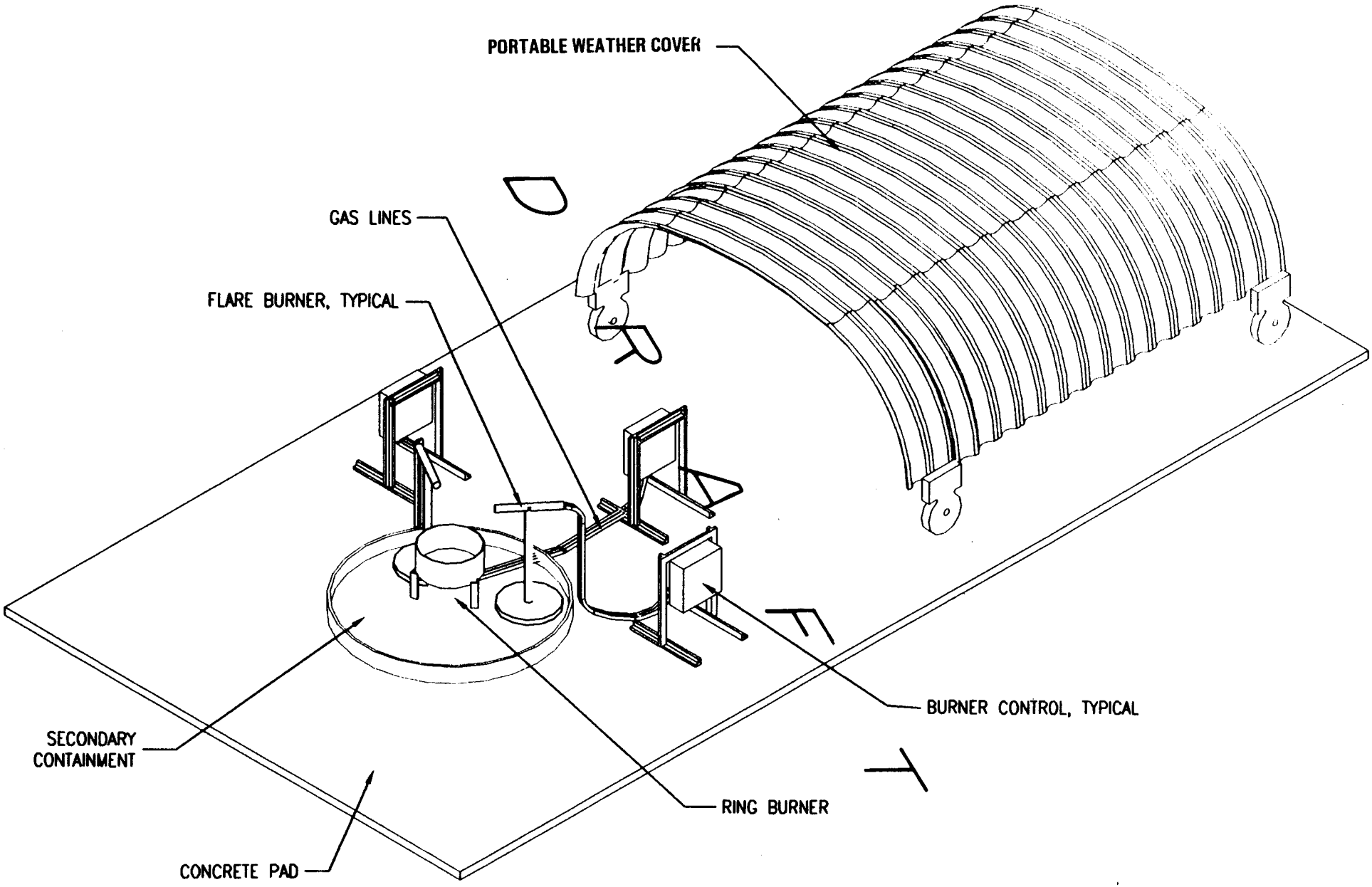

Figure III-4

Technical Area (TA) 16 88 Burn Tray

NOTE:
THE BURN TRAY IS METAL, & LINED WITH FIRE BRICK

ED HYDE
NEW MEXICO
10404
REGISTERED PROFESSIONAL ENGINEER

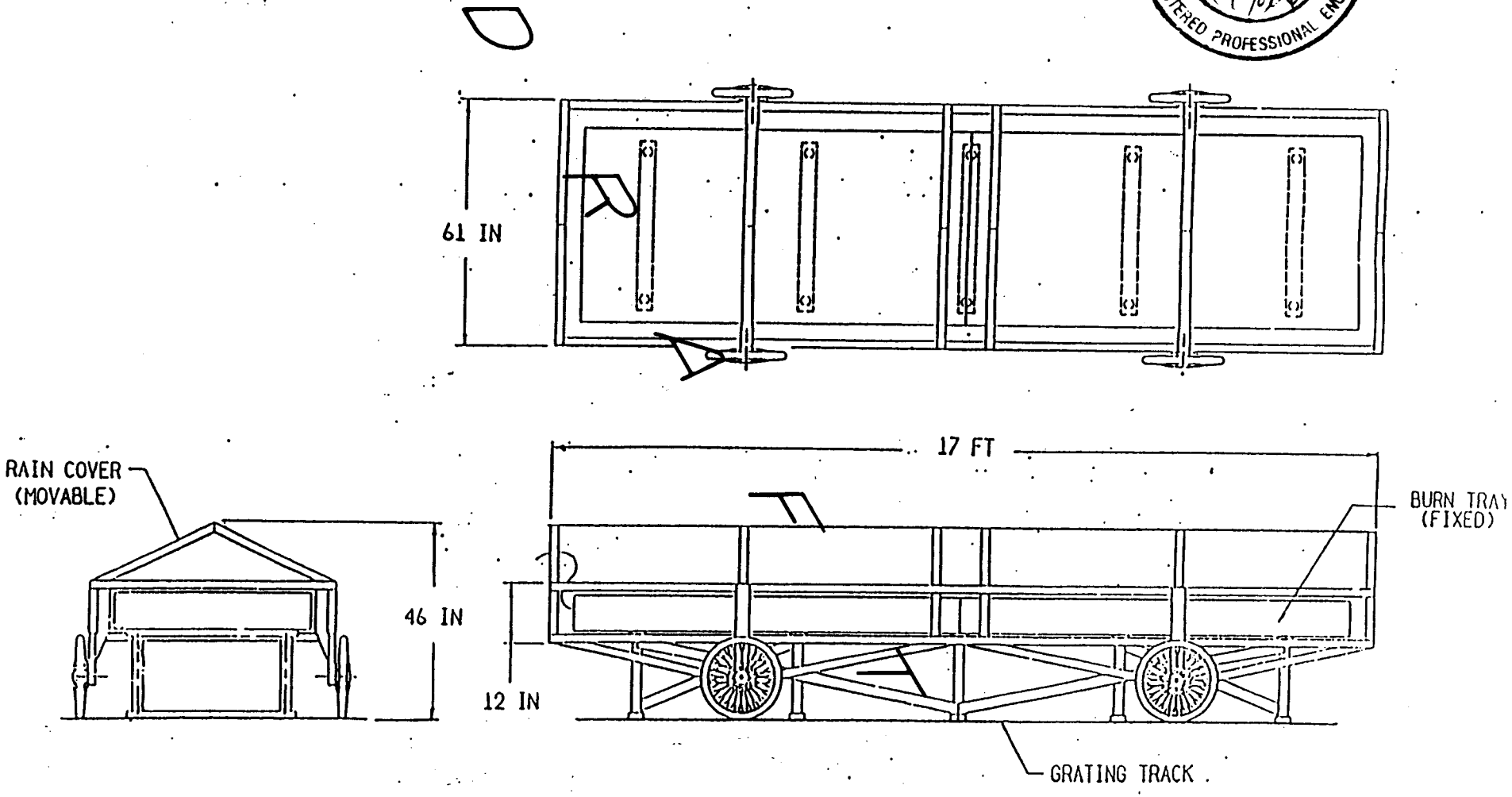

Figure III-5
Technical Area (TA) 16-399 HE Burn Tray

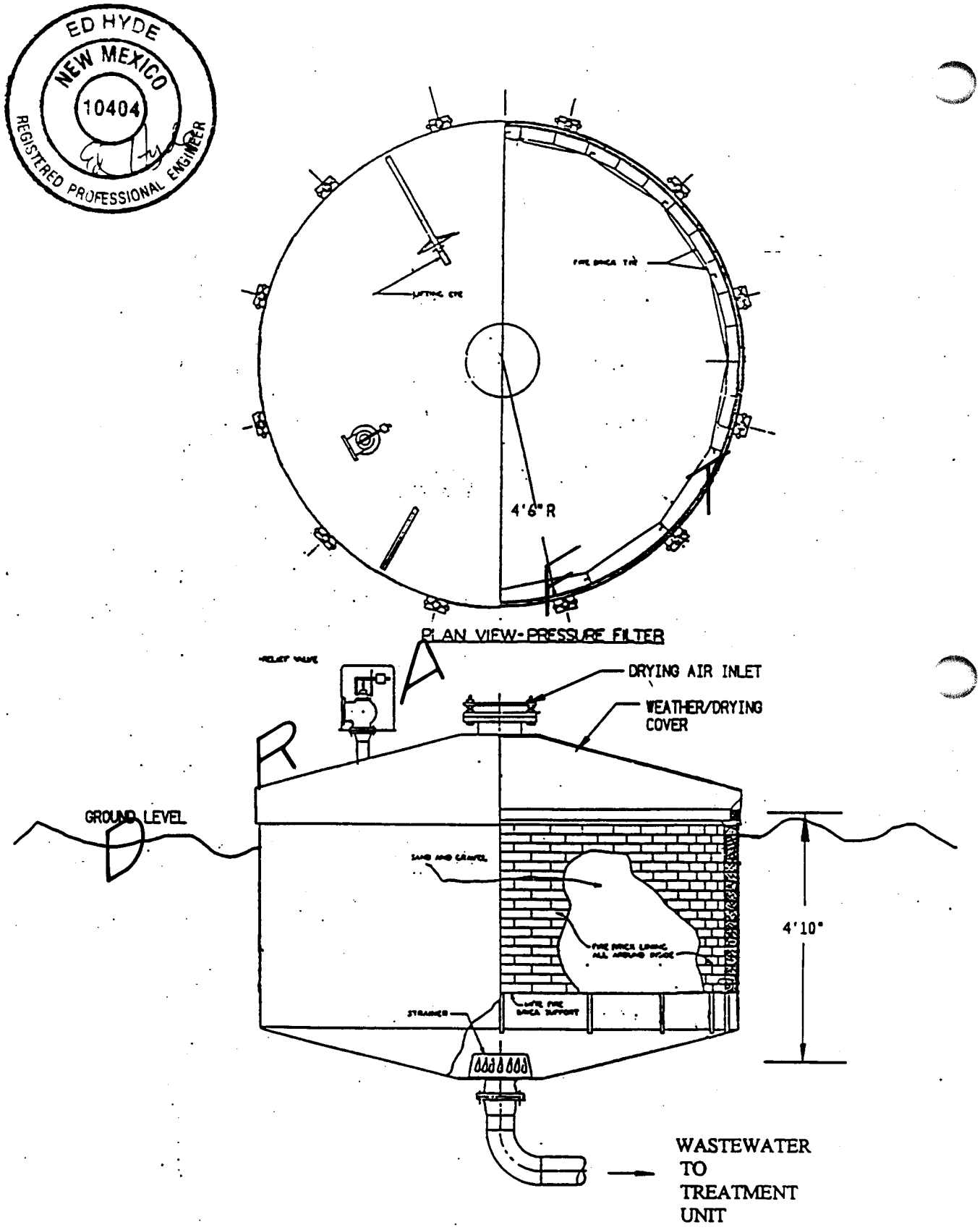

Figure III-6
Technical Area (TA) 16-401 and TA-16-406 Sand Filters

ATTACHMENT A

WASTE ANALYSIS PLAN

ATTACHMENT A
WASTE ANALYSIS PLAN

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.14(b)(2); 20 NMAC 4.1, Subpart V, 264.13, "General Waste Analysis;" and 20 NMAC 4.1, Subpart VIII, 268.7, "Waste Analysis and Record-Keeping," revised June 14, 2000, waste analysis requirements for hazardous and mixed low-level wastes managed at Technical Area 16 are addressed in Appendix A of Chapter 1 of this permit.

ATTACHMENT B

INSPECTION PLAN

ATTACHMENT B
INSPECTION PLAN

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.14(b)(5), and 20 NMAC 4.1, Subpart V, 264.15, "General Inspection Requirements," revised June 14, 2000, inspection requirements for the hazardous and mixed low-level waste management units at Technical Area 16 are addressed in Appendix B of Chapter 1 of this permit.

ATTACHMENT C

PERSONNEL TRAINING PLAN

ATTACHMENT C
PERSONNEL TRAINING PLAN

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.14(b)(12), and 20 NMAC 4.1, Subpart V, 264.16, "Personnel Training," revised June 14, 2000, training requirements for treatment, storage, and disposal facility workers who work at the hazardous and mixed low-level waste management units at Technical Area 16 are addressed in Appendix C of Chapter 1 of this permit.

ATTACHMENT D

CONTINGENCY PLAN

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LIST OF ABBREVIATIONS/ACRONYMS

20 NMAC 4.1	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
ESA	Engineering Sciences and Applications
TA	technical area

ATTACHMENT D

CONTINGENCY PLAN

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, Part 264, Subpart D, "Contingency Plan and Emergency Procedures," and 20 NMAC 4.1, Subpart IX, 270.14(b)(7), revised June 14, 2000, contingency measures applicable to the waste management units at Technical Area (TA) 16 are provided in Appendix D of Chapter 1 of this permit, hereinafter referred to as Appendix D. Specific information on emergency response resources and release prevention/mitigation at TA-16 is provided below.

Figures D-1 and D-2 show the evacuation routes and muster areas that may be used at the TA-16 container storage unit and burn ground unit, respectively, in the event of an emergency. In addition, a listing of emergency equipment currently available for use at the respective TA-16 waste management units is included as Tables D-1 and D-2. The evacuation routes, muster area locations, and emergency equipment are subject to change as conditions or facility procedures warrant.

D.1 EMERGENCY RESPONSE RESOURCES

The Engineering Sciences and Applications (ESA) Division is responsible for the waste management units at TA-16. Appropriate ESA personnel have been trained in emergency procedures.

D.2 RESPONSIBILITY

At TA-16, ESA Division is responsible for correction of a nonsudden release from the waste management units if the correction can be performed safely with normal maintenance and management procedures. Personnel from the Emergency Management and Response Office 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 New Mexico Environment Department.

D.3 REMEDIAL ACTION

Contingency or emergency measures are unanticipated "fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste . . ." for which a schedule of remedial actions cannot be reasonably ascertained. Any remedial actions carried out under the provisions of the contingency plan will be performed as soon as possible to ensure protection of human health and the environment, as described in Appendix D. These remedial actions may include site cleanup; proper

handling of recovered waste, contaminated soil, or contaminated surface water; decontaminating equipment, as needed; replacing or repairing equipment, as needed; and testing to verify successful cleanup.

ESA Division personnel conduct regularly scheduled inspections at TA-16 to detect deterioration and/or failure of containment at the TA-16 waste management units. If an inspection reveals deterioration or failure, personnel ensure that maintenance or replacement is performed, as appropriate.

Table D-1
Emergency Equipment near the Technical Area (TA) 16, Building 88 (TA-16-88), Container Storage Unit[a]

FIRE CONTROL EQUIPMENT

Fire extinguishers are mounted next to the west-facing door at TA-16-88.

General Capabilities

These portable units have a 30-pound capacity and may be used by any properly trained employee in the event of fire.

Several fire hydrants are located in the vicinity of TA-16-88.

General Capabilities

The fire hydrants will supply water to hoses or foam-producing equipment at adequate volume and pressure to satisfy the requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V, 264.32, revised June 14, 2000.

SPILL CONTROL

The floor of TA-16-88 has been sealed with epoxy paint to minimize contamination in the event of a spill. Material Safety Data Sheets are available to determine appropriate spill response.

COMMUNICATION EQUIPMENT

One telephone is located inside the west-facing door of TA-16-88.

One telephone is located just outside the west-facing door of TA-16-88.

General Capabilities

Telephones for internal and external communication are available for use by all employees.

DECONTAMINATION EQUIPMENT

Decontamination equipment is brought on site, as needed.

General Capabilities

The Health Physics Operations Group and the Hazardous Materials Response Office at Los Alamos National Laboratory have decontamination equipment and supplies available to respond in the event of a mixed low-level waste spill at TA-16-88.

PERSONAL PROTECTIVE EQUIPMENT

Respirators, coveralls, and safety glasses are available for TA-16 personnel to use during waste-handling operations.

[a] Equipment types and locations are subject to change.

Table D-2
Emergency Equipment near the Technical Area (TA) 16
Burn Ground Unit[a]

FIRE CONTROL EQUIPMENT

Fire extinguishers are located at or in:

The tank-truck garage (TA-16-1507)
The Control Building (TA-16-389)
The High Explosives Wastewater Treatment Facility (HEWTF) (TA-16-1508)
Each truck used to transport high explosives

General Capabilities

These portable units may be used by any properly trained employee in the event of fire.

Four fire hydrants are located within the TA-16 Burn Ground Unit.
Three additional fire hydrants are located at the TA-16 Burn Ground.

General Capabilities

The fire hydrants will supply water at adequate volume and pressure to satisfy the requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V, 264.32, revised June 14, 2000.

Water spigots are located at TA-16-388, TA-16-399, TA-16-401, and TA-16-406.
A fire alarm pull station is located at the HEWTF.
The Central Alarm Station is notified before all open burning operations. In dry conditions, when operations may result in a grass fire, the Los Alamos County Fire Department is notified and requested to prepare to respond.

SPILL CONTROL

Portable berms to contain spills are stored in an all-weather cabinet near the center of the TA-16 Burn Ground, at the less-than-90-day storage area (TA-16-386), and beside the Control Building.

COMMUNICATION EQUIPMENT

Telephones are available at the Control Building, at the TA-16-401 Sand Filter, at the HEWTF, and at the railroad gate at the entrance to the Burn Ground.

General Capabilities

Telephones for internal and external communication are available for use by all employees.

See footnotes at end of table.

Table D-2 (continued)
Emergency Equipment near the Technical Area (TA) 16
Burn Ground Unit[a]

DECONTAMINATION EQUIPMENT

Eyewash stations are located in the tank-truck garage and in the HEWTF.

Water spigots with hoses attached for general washdown are available at the TA-16-388 Flash Pad/Burn Tray, the TA-16-399 HE Burn Tray, and the TA-16-401 and TA-16-406 Sand Filters. Material Safety Data Sheets (MSDS) are available at the Control Building.

General Capabilities

Eyewashes are used by personnel who receive a chemical splash to the eyes. MSDSs for the chemical(s) should be obtained prior to working with hazardous waste or hazardous material to determine if the application water is indicated for decontamination. The MSDSs are also maintained to provide information during emergency response.

PERSONAL PROTECTIVE EQUIPMENT

Respirators, coveralls, and safety glasses are available for TA-16 personnel to use during waste-handling operations.
All vehicles are equipped with first-aid kits.

[a] Equipment types and locations are subject to change.

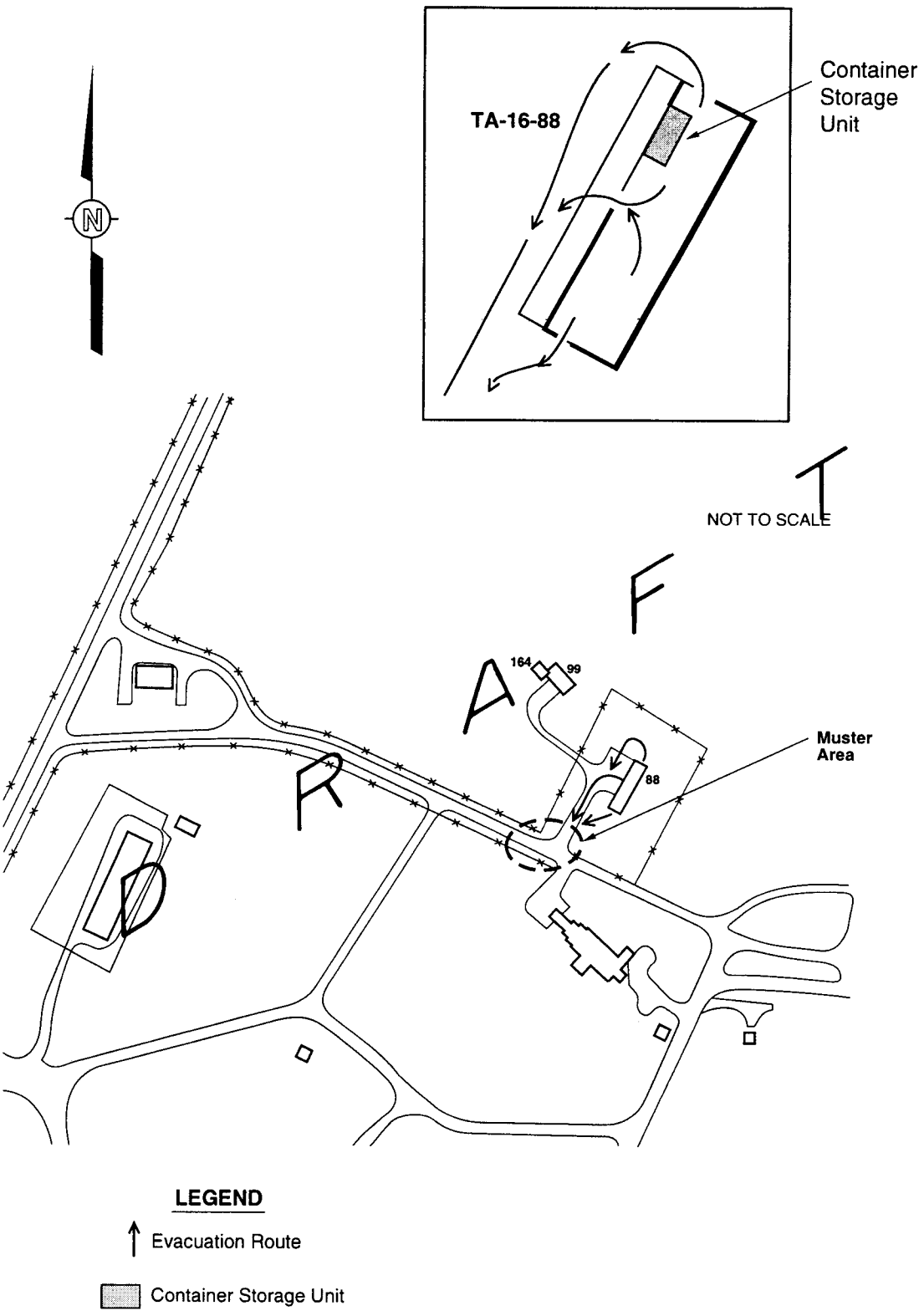

Figure D-1

Evacuation Routes and Muster Area at the Technical Area (TA) 16, Building 88, Container Storage Unit

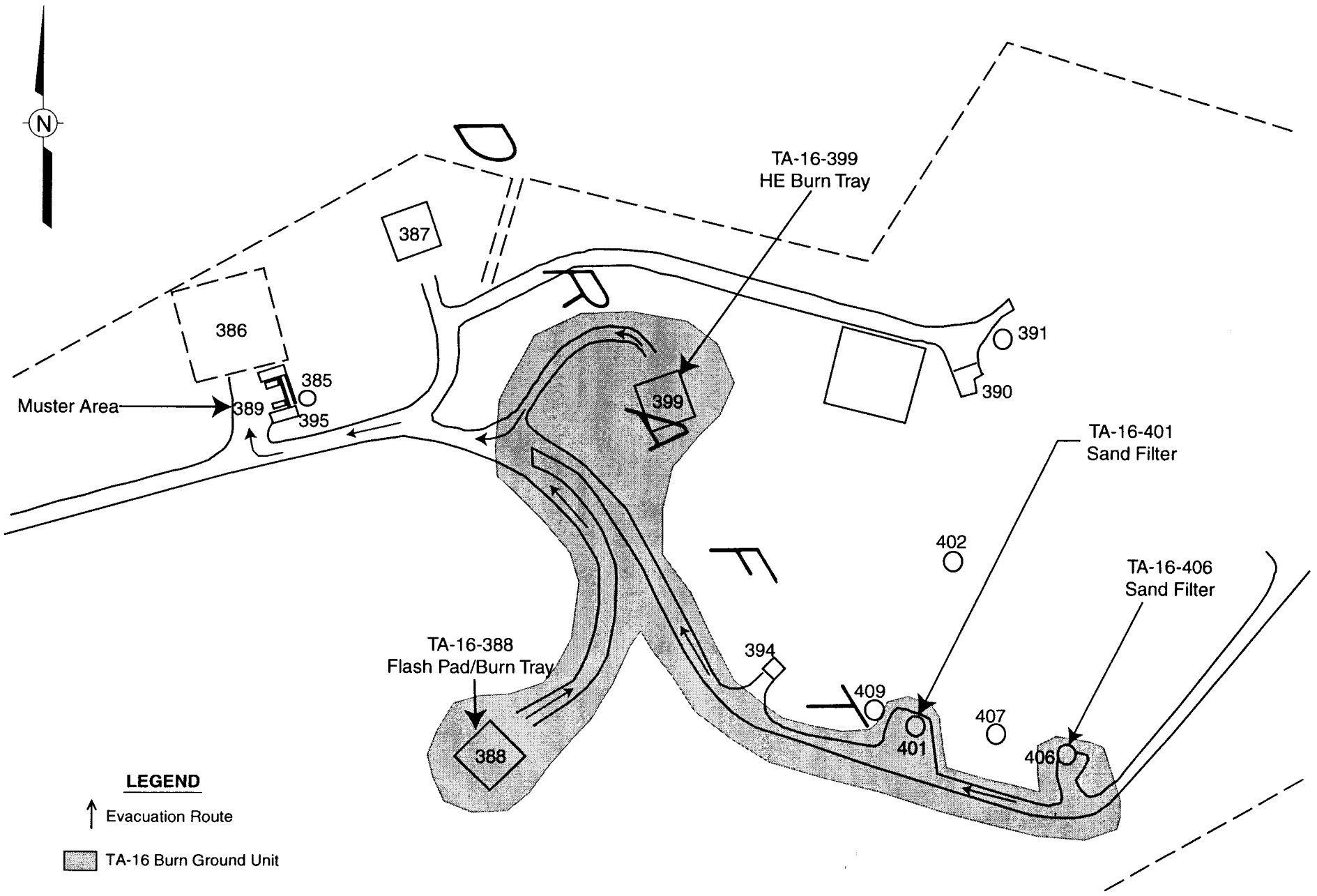

Figure D-2
Evacuation Routes and Muster Area at Technical Area (TA) 16 Burn Ground Unit

ATTACHMENT E.1

CLOSURE PLAN FOR THE TECHNICAL AREA 16, BUILDING 88, CONTAINER STORAGE UNIT

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DRAFT

LIST OF ABBREVIATIONS/ACRONYMS

20 NMAC 4.1	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
CSU	container storage unit
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
ESH-19	Hazardous and Solid Waste Group
ft	feet (foot)
LAAO	Los Alamos Area Office
LANL	Los Alamos National Laboratory
NMED	New Mexico Environment Department
PPE	personal protective equipment
QA	quality assurance
QAPP	quality assurance program plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
SOP	standard operating procedure
SW-846	EPA's "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods"
TA	technical area

ATTACHMENT E.1

CLOSURE PLAN FOR THE TECHNICAL AREA 16, BUILDING 88, CONTAINER STORAGE UNIT

This closure plan describes the activities necessary to close the container storage unit (CSU) at Los Alamos National Laboratory (LANL) Technical Area (TA) 16, Building 88 (TA-16-88). The information provided in this closure plan is submitted to address the applicable closure requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.14(b)(13), and 20 NMAC 4.1, Subpart V, Part 264, Subparts G and I, revised June 14, 2000 [6-14-00]. This attachment is organized as follows:

- General closure information applicable to the TA-16-88 CSU (Section E.1.1).
- Specific closure information applicable to the TA-16-88 CSU (Section E.1.2).
- Sampling and analytical procedures to be used during closure activities at the TA-16-88 CSU (Section E.1.3)

Closure will include removal of waste from the TA-16-88 CSU and decontamination of structures and equipment that have been contaminated by waste materials. Closure activities will minimize the need for further maintenance, preclude the release of hazardous waste or constituents to environmental media, and be protective of human health.

Until closure is complete and has been certified in accordance with 20 NMAC 4.1, Subpart V, 264.115 [6-14-00], as discussed in Section E.1.1.6, a copy of the approved closure plan and any approved revisions will be on file at LANL's Hazardous and Solid Waste Group (ESH-19) and at the U.S. Department of Energy (DOE) Los Alamos Area Office (LAAO).

E.1.1 GENERAL CLOSURE INFORMATION

This section is prepared in accordance with the requirements of 20 NMAC 4.1, Subpart IX, 270.14(b)(13), and 20 NMAC 4.1, Subpart V, Part 264, Subparts G and H [6-14-00], as applicable.

E.1.1.1 Closure Performance Standard [20 NMAC 4.1, Subpart V, 264.111]

The TA-16-88 CSU will be closed to meet the following performance standards:

- 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 runoff, or hazardous waste decomposition products to the ground or surface waters or atmosphere

- Comply with the applicable closure and post-closure requirements of 20 NMAC 4.1, Subpart V, Subparts G and I [6-14-00].

This will be accomplished by removal of waste from the TA-16-88 CSU and decontamination, if necessary, of the areas that may have come into contact with wastes. Decontamination activities will ensure the removal of hazardous waste residues from the TA-16-88 CSU to established cleanup levels.

E.1.1.2 Partial and Final Closure Activities [20 NMAC 4.1 Subpart V, 264.112(d)]

This closure plan has been written for partial closure rather than final closure of the entire LANL facility. Partial closure will consist of closing the TA-16-88 CSU at the LANL facility, while leaving the other regulated hazardous/mixed waste units at LANL in service. Partial closure (hereinafter referred to as closure) will be deemed complete when decontamination has been verified; the TA-16-88 CSU and related equipment and structures have been decontaminated, if necessary; the closure certification has been submitted to the New Mexico Environment Department (NMED); and the NMED has approved the closure. Final closure will occur when LANL's remaining regulated hazardous/mixed waste management units are closed either by waste removal and decontamination or by disposal of contaminated structures and equipment.

E.1.1.3 Closure Schedule [20 NMAC 4.1, Subpart V, 264.112(b)(6), 264.112(e), and 264.113]

Written notification will be provided to the NMED 45 days before the start of the TA-16-88 CSU closure. However, pursuant to 20 NMAC 4.1, Subpart V, 264.112(e) [6-14-00], 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. Closure activities will begin according to the requirements of 20 NMAC 4.1, Subpart V, 264.112(d)(2) [6-14-00]. Treatment, removal, or disposal of hazardous wastes will begin in accordance with the approved closure plan, as required by 20 NMAC 4.1, Subpart V, 264.113(a) [6-14-00], within 90 days after final receipt of waste at the TA-16-88 CSU. This timeframe will be met as long as facilities are available for treatment or disposal of these wastes. In the event that closure activities cannot begin within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements of 20 NMAC 4.1, Subpart V, 264.113(a) [6-14-00]. Closure activities and reporting requirements will then be completed within 180 days of receipt of the final volume of waste at the CSU. Closure will be conducted in accordance with the schedule presented in Table E.1-1. In the event that the

closure of the TA-16-88 CSU is prevented from proceeding according to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20 NMAC 4.1, Subpart V, 264.113(b) [6-14-00]. In addition, the demonstrations in 20 NMAC 4.1, Subpart V, 264.113(a)(1) and (b)(1), will be made in accordance with 20 NMAC 4.1, Subpart V, 264.113(c) [6-14-00].

E.1.1.4 Amendment of the Closure Plan [20 NMAC 4.1, Subpart V, 264.112(c)]

In accordance with 20 NMAC 4.1, Subpart IX, 264.112(c) [6-14-00], LANL will submit a written notification of or request for a permit modification to authorize a change in the approved closure plan whenever:

- There are changes in operating plans or facility design that affect the closure plan
- There is a change in the expected year of closure
- Unexpected events occur during closure that require modification of the approved closure plan.

The written notification or request will include a copy of the amended closure plan for approval by the NMED.

LANL will submit a written request for a permit modification with a copy of the amended closure plan at least 60 days prior to the proposed change in unit design or operation or no later than 60 days after an occurrence of an unexpected event that affects the closure plan. If the unexpected event occurs during closure, the permit modification will be requested within 30 days of the occurrence. If the Secretary of the NMED requests a modification of the closure plan, a plan modified in accordance with the request will be submitted within 60 days of notification or within 30 days of notification if a change in facility condition occurs during the closure process.

E.1.1.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements [20 NMAC 4.1, Subpart V, 264.140(c)]

In accordance with 20 NMAC 4.1, Subpart V, 264.140(c) [6-14-00], LANL, as a federal facility, is exempt from the requirements of 20 NMAC 4.1, Subpart V, Part 264, Subpart H [6-14-00], to provide a cost estimate, financial assurance mechanism, and liability insurance for closure actions.

E.1.1.6 Closure Certification [20 NMAC 4.1, Subpart V, 264.115]

Within 60 days after completion of closure activities for the TA-16-88 CSU, LANL will submit to the

Secretary of the NMED, via certified mail, a certification that the unit has been closed in accordance with the specifications of the closure plan, when approved. The certification will be attested to by an independent, registered professional engineer and will be signed by the appropriate DOE and LANL officials, in accordance with 20 NMAC 4.1, Subpart V, 264.115 [6-14-00]. Documentation supporting the independent, registered engineer's certification will be furnished to the Secretary of the NMED with the original certification. A copy of the certification and supporting documentation shall be maintained by both DOE/LAAO and ESH-19.

E.1.1.7 Security

Because of the ongoing nature of operations at LANL, the TA-16-88 CSU will be under the permanent care of the DOE or another authorized federal agency. Site security will be maintained for as long as necessary to prohibit public access.

E.1.1.8 Closure Report

Upon completion of the closure activities for the TA-16-88 CSU, a closure report shall be prepared and submitted to the Secretary of the NMED. The report shall document the closure and contain, for example, the following:

- The certification described in Section E.1.1.6
- Any significant variance from the approved activities and the reason for the variance
- A summary of all sampling results, showing:
  - Sample identification
  - Sampling location
  - Datum reported
  - Detection limit for each datum
  - A measure of analytical precision (e.g., uncertainty, range, variance)
  - Identification of analytical procedure
  - Identification of analytical laboratory
- A quality assurance (QA)/quality control (QC) statement on analytical data validation and decontamination verification
- The location of the file of supporting documentation, including:
  - Field logbooks
  - Laboratory sample analysis reports
  - QA/QC documentation
  - Chain-of-custody forms
- Storage or disposal location of regulated hazardous waste resulting from closure activities

- A certification of accuracy of the report.

E.1.1.9 Survey Plat and Post-Closure Requirements [20 NMAC 4,1. Subpart V, 264.116 and 264.117 through 264.120]

LANL intends to remove hazardous waste and associated hazardous constituents from the TA-16-88 CSU and to decontaminate all structures and equipment contained in the unit or, if decontamination to the cleanup levels approved in the closure plan cannot be achieved, to dispose of the contaminated structures and equipment (clean closure). If decontamination to these cleanup levels is not achievable, LANL may propose an alternate demonstration of decontamination, as circumstances indicate.

If the TA-16-88 CSU cannot be clean closed, LANL will provide a written post-closure plan. In addition, a survey plat prepared in accordance with 20 NMAC 4.1, Subpart V, 264.116 [6-14-00], will be filed with the appropriate authorities at certification of closure, as described in that regulation. Post-closure care requirements pursuant to 20 NMAC 4.1, Subpart V, 264.117 through 264.120 [6-14-00], will begin after closure of the unit. These will include the preparation of a written post-closure care plan with provisions for amendments pursuant to 20 NMAC 4.1, Subpart V, 264.118 [6-14-00], and post-closure notices will be filed with appropriate authorities, as described in 20 NMAC 4.1, Subpart V, 264.119 [6-14-00]. To meet that requirement, the DOE will file a "Land Use Restriction Notice" or equivalent document with the County of Los Alamos and other authorized agencies. Within 60 days after completion of the established post-closure care period for the unit, LANL will submit to the Secretary of the NMED, via certified mail, a certification of completion of post-closure care in accordance with the requirements of 20 NMAC 4.1, Subpart V, 264.120 [6-14-00].

E.1.2 CLOSURE PROCEDURES FOR THE TA-16-88 CSU

The CSU is located at TA-16-88 and consists of an area approximately 15 feet (ft) by 10 ft that is used for storage of solid hazardous and mixed low-level wastes (Figure E.1-1). LANL will evaluate this closure plan and, if necessary, revise the plan to address conditions at the time of actual closure of the TA-16-88 CSU. If revised, the amended closure plan will be submitted to the NMED for review and approval. The location and disposition of all wastes generated during closure will be documented in the final closure report. The estimated year of closure for the TA-16-88 CSU is 2011.

E.1.2.1 Estimate of Maximum Waste in Storage

The maximum inventory of waste that may be in storage at any time in the TA-16-88 CSU is estimated at 275 gallons.

E.1.2.2 Description of Waste

Solid hazardous and mixed low-level waste may be stored at the TA-16-88 CSU. Some wastes are considered mixed wastes because Resource Conservation and Recovery Act (RCRA)-characteristic and/or -listed wastes are or may be present in the waste, along with a radioactive component. Information on the hazardous component(s) of wastes potentially stored at the TA-16-88 CSU is provided in Attachment G.1 of this permit chapter.

E.1.2.3 Removal of Waste

Prior to the initiation of closure activities, all wastes will be removed from the TA-16-88 CSU. Containers will be removed with normal material-handling equipment. Small containers may be handled manually or with dollies. Containers will be placed onto trucks or trailers for transport. Appropriate shipping papers will accompany the wastes during transport. Containers holding solid hazardous or mixed low-level wastes will be moved to an approved on-site facility or an off-site treatment, storage, or disposal facility.

E.1.2.4 Closure Procedures and Decontamination

Information from the operating record for the TA-16-88 CSU will be reviewed before proceeding with closure activities to determine focused sampling locations. To the extent possible, all contaminated structures and equipment (if present) at the TA-16-88 CSU will be decontaminated for RCRA-regulated constituents. Structures and equipment that cannot be decontaminated will be managed in compliance with appropriate regulations. Closure will be conducted in accordance with the schedule presented in Table E.1-1.

Before proceeding with closure activities, the TA-16-88 CSU will be surveyed for radiological contamination as an indicator of potential RCRA-regulated constituent contamination and for worker safety. Personal protective equipment (PPE) and monitoring requirements will be determined by LANL's radiological and industrial hygiene personnel following a field inspection. The level of PPE that will be required will depend upon the levels of radiological and/or chemical contamination that are detected, if any. If the surveys do not indicate detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed footwear, and safety glasses or face shields. If an overhead danger is present, hard hats will be worn. All workers involved in closure activities will be

required to have appropriate training. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.

Before any decontamination activity begins, a sample of clean water and detergent (washwater) solution (squeezed from mops and/or sponges prior to use) will be collected. The CSU will be inspected for any cracks or conditions that would potentially lead to the loss of decontamination-liquid containment. If any defects, deterioration, damage, or hazards affecting containment are discovered during inspection, appropriate remedial actions (including repairs, maintenance, or replacement) will be completed before decontamination activities begin.

A portable berm will be placed around the perimeter of the CSU to contain washwater resulting from decontamination activities. The floor of the CSU and any equipment and/or structures located within the unit will then be wiped down with a washwater solution. The floor and any equipment and/or structures will be wiped down with mops and/or sponges to minimize the amount of liquid waste generated as a result of decontamination activities. Washwater resulting from decontamination activities will collect within the bermed area.

Washwater collected in the bermed area will be transferred to appropriate containers and sampled. Both the clean and used washwater will be analyzed for the appropriate parameters listed in Table E.1-2. The wash cycles will continue until the floor and any equipment and/or structures in the area have been cleaned to established levels for RCRA-regulated constituents (see Section E.1.2.6) or the decision is made to manage the materials as contaminated waste. An additional sample of clean washwater solution squeezed from mops and/or sponges prior to use will be collected for each additional washdown event. The used washwater will be managed at an appropriate treatment, storage, or disposal facility, depending on the regulated components present.

Under normal circumstances, soil sampling will not be applicable for the TA-16-88 CSU because storage will occur inside a building with an impervious floor. However, if soil sampling is deemed necessary based on the site surveys and/or the operating record for the TA-16-88 CSU, soil sampling will be performed to determine the horizontal and vertical extent of contamination. An iterative sampling approach will be utilized to verify that no hazardous constituents resulting from container storage activities remain upon closure.

E.1.2.5 Decontamination Equipment

Prior to use, all reusable decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks, if necessary, will be collected and analyzed in accordance with Environmental Restoration (ER) standard operating procedures (SOP). Reusable protective clothing, tools, and equipment used during closure activities will be scraped as necessary to remove any residue and cleaned with a washwater solution. Residue, disposable equipment, and reusable equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility, depending on the regulated constituents present.

E.1.2.6 Decontamination Verification

Sufficient sampling and analysis will be required to demonstrate that hazardous waste residue is not present at the TA-16-88 CSU after closure. A sample of clean washwater solution (squeezed from mops and/or sponges prior to use) will be collected before initial washdown of the TA-16-88 CSU. The sample will be analyzed for the appropriate parameters, as discussed in Section E.1.2.4. Analytical procedures will conform to methods found in the most current version of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (U.S. Environmental Protection Agency [EPA], 1986). Used washdown solutions (and soil samples, if collected) will be analyzed for the same appropriate parameters. Washdown solutions will be considered contaminated if the used washwater solution shows a significant increase (i.e., determined using statistical methods defined in *SW-846*) in the analytical parameters over the clean washwater solution. If subsequent washdowns are deemed necessary, an additional sample of clean washwater solution (squeezed from mops and/or sponges prior to use) will be collected for each additional washdown event.

Successful decontamination meets one of the following criteria:

- No detectable RCRA-regulated constituent residues from the storage of authorized RCRA-regulated wastes are identified in samples collected during closure activities.
- Detectable concentrations of RCRA-regulated constituents in samples collected during closure activities are at or below existing regulatory action levels, as agreed upon with the NMED.
- Detectable concentrations of RCRA-regulated constituents in samples collected during closure activities identify no statistically significant concentrations of RCRA-regulated constituents above baseline data or above established background concentrations.
- Detectable concentrations of RCRA-regulated constituents in samples collected during closure activities are at or below levels agreed upon with the NMED to be protective of human health and the environment.

- Detectable concentrations of RCRA-regulated constituents that cannot be removed or decontaminated to acceptable levels as described above will be allowed to remain, provided that these RCRA-regulated constituents do not pose an unacceptable risk when combined with technical or administrative control measures agreed upon with the NMED.

An alternative demonstration of decontamination may be proposed and justified at the time of unit closure, as circumstances indicate. The NMED will evaluate the proposed alternative in accordance with the standards and guidance then in effect and, if approved, incorporate the alternative into this closure plan.

E.1.3 SAMPLING AND ANALYTICAL PROCEDURES [20 NMAC 4.1, Subpart V, 264.112(b)(4)]

The following sections describe or reference procedures and methods for sampling, analysis, and documentation applicable to closure activities. Sampling and analysis will be conducted in accordance with procedures given in *SW-846*, or other approved procedures or methods.

E.1.3.1 Soil and Sediment Sampling

If it is determined that soil and/or sediment sampling is appropriate or required as a result of container storage activities, the sampling procedures referenced below will be used to obtain samples to determine the amount (if any) of hazardous constituents in the soil in the vicinity of the TA-16-88 CSU.

Soil samples (if required) will be collected from various depths to determine the vertical extent of contamination. Sediment samples will be collected from the surface or near surface. Sampling procedures will be performed in accordance with the most recent version of ER-SOP-6.09, "Spade and Scoop Method for Collection of Soil Samples;" ER-SOP-6.10, "Hand Auger and Thin-Wall Tube Sampler;" or other appropriate ER SOPs or NMED-approved methods.

E.1.3.2 Liquid Sampling

In order to determine baseline parameters, a sample of unused washwater solution will be collected before decontamination begins. Samples of washwater used in cleaning structures and equipment will also be collected to determine the amount (if any) of hazardous constituents in the used washwater.

Liquid sampling will be performed in accordance with ER-SOP-6.15, "Coliwasa Samples for Liquids and Slurries;" ER-SOP-6.19, "Weighted Bottle Sampler for Liquids and Slurries in Tanks;" or other appropriate ER SOPs or NMED-approved methods.

E.1.3.3 Cleaning of Samplers

A sampler must be clean before use. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. To prevent cross contamination, it is important to clean nondisposable samplers after each sample is collected. Cleaning of samplers will be performed in accordance with ER-SOP-1.08, "Field Decontamination of Drilling and Sampling Equipment."

E.1.3.4 Sample Handling and Documentation

Samples will be analyzed either at LANL or at a commercial analytical laboratory. In either case, each sample will be labeled, sealed, and accompanied by chain-of-custody and sample analysis request forms. The chain-of-custody form is necessary to trace sample possession from the time of collection to the time of analysis and must accompany every sample. The original record accompanies shipment; the copy is retained by LANL. If samples are analyzed at LANL, the original will be maintained by LANL. The request for analysis form has two parts: a field portion and a laboratory portion. The field portion is intended to be completed by analytical laboratory personnel when the sample is received. The analytical laboratory retains the original record and sends a copy to LANL.

Sample containers appropriate for the requested analyses will be used for all samples. Samples will be collected, placed in bottles, sealed, and tagged. Sample container surfaces will be screened for radiological contamination and decontaminated, if necessary. Sample containers will then be immediately placed in packaging material, and, if refrigeration is required, in an insulated container with ice. Typical sample containers, preservation techniques, and holding times are presented in Tables E.1-3 and E.1-4.

The sample container must be sealed with a custody seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. A sample label is necessary to prevent misidentification of samples and should include, if applicable, the grid number referenced to positions staked on the site perimeter. The sample label should be completed to include the project name, sample number,

collection date/time, collector's name, sample location, sample media description, preservative, and analysis requested. In the case of soil sampling, field information may include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling.

A field logbook will be kept and will contain information pertinent to field surveys and sampling. Examples of entries include:

- Purpose of sample (routine sampling, special sampling)
- Location of sampling (coordinates referenced to staked field points, if soil sample)
- Name and business address of person making log entry
- Type of process producing waste
- Number and volume of sample
- Description of each sampling location, sampling methodology, equipment used
- Date and time of sample collection
- Sample destination and transporter's name (e.g., name of laboratory, United Parcel Service)
- Map or photograph of sampling site, if any
- Field observations, if applicable (e.g., ambient temperature, sky conditions, past 24-hour precipitation)
- Field measurements, if applicable (e.g., pH, conductivity)
- Collector's sample identification number(s)
- Signature of person responsible for the log entry.

Because sampling situations vary widely, no general rule can be given as to the extent of information that must be entered in the logbook. It is recommended, however, to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

E.1.3.5 Analytical Procedures

Sample analyses, including the QA/QC analyses, will be conducted using methods prescribed in *SW-846* (EPA, 1986) or other approved procedures or methods. Target detection limits, analytical methods, and instrumentation for metals are presented in Tables E.1-5.

E.1.3.6 Field and Laboratory QA/QC

Field QC activities will include collection of the following QC samples: duplicate samples, field banks, and, if necessary, equipment rinsate blanks. Field QC samples are summarized in Table E.1-6.

Duplicate samples are two or more samples collected simultaneously into separate containers from the same source under identical conditions. Acceptance limits for field duplicate analyses are 0 to 20 relative percent difference per analyte. Frequency of duplicate samples will be 1 in 20 samples, or 1 per sampling day if less than 20 samples are collected. Blank samples will include field blanks and, if necessary, equipment rinsate blanks. A field blank is a sample collected to assess the ambient conditions at the sampling site. It consists of a sample of organic-free deionized water poured into a sample container under normal sampling conditions. An equipment rinsate blank is collected to assess the cleanliness of sampling equipment. Organic-free deionized water is poured over the decontaminated equipment's sampling surface and collected in a sample container. Frequency of equipment rinsate blank samples will be 1 in 20 samples, or 1 per sampling day if less than 20 samples are collected. Blank samples and duplicate samples of liquid, soil, and sediment will be analyzed for the same parameters as the closure samples. Samples will be provided with unique identification numbers that do not indicate to the laboratory that the samples are for QA/QC purposes.

Instrument calibration and maintenance are subject to QC procedures. Field equipment will be calibrated and maintained using the manufacturer's instructions or appropriate standard procedures.

Laboratories used for analysis shall operate under a quality assurance program plan (QAPP) that meets the requirements in *SW-846*. QC procedures in the analytical laboratory are guided by the laboratory's QAPP. In the laboratory, QC samples are required to establish the accuracy and precision of the analytical data in order to determine the quality of the data. Laboratory QC procedures are summarized in Table E.1-7.

E.1.4 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.

Table E.1-1

Schedule for Closure Activities at Technical Area 16, Building 88, Container Storage Unit

Activity	Maximum Time Required[a]
Let contract request for proposals	-90 Days
Notify the New Mexico Environment Department (NMED)	-45 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Approval of closure plan	Day 0
Begin closure activities (perform washdown of structures and/or equipment)	Day 10
Perform initial sampling	Day 15
Analyze samples	Day 45
Perform additional washdown (if necessary)	Day 50
Perform additional sampling (if necessary)	Day 60
Analyze additional samples (if necessary)	Day 90
Perform final cleanup (e.g., removal of decontaminated equipment and decontamination wastes)	Day 120
Verify decontamination	Day 150
Submit final report to the NMED	Day 180

[a] The schedule above indicates calendar days from the beginning by which activities will be completed. Some activities may be conducted simultaneously, may not require the maximum time listed, or may require more time than indicated above. Extensions to the schedule may be requested, as needed.

Table E.1-2

Analytical Parameters and Test Methods[a]

Parameter	Test Method	Reference[b]
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	
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A[c]
Barium		(L, S)SW7080A[d], SW7081[e]
Lead		(L, S) SW7420[d], SW7421[e]
TC Other:	Gas chromatography (GC)/mass spectrometry (MS)	(L, S) SW8270C
2,4-Dinitrotoluene	GC/MS capillary column technique	(S) SW8275A
Total RCRA metals[f]	Acid digestion	(L) SW3010A, (S) SW3050B
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010B
Barium		(L, S) SW6010B
Lead		(L, S) SW6010B
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A

[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] "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] Method being revised per the January 1998 *SW-846* Draft Update IVA.

[d] Method being integrated into Method 7010, per the January 1998 *SW-846* Draft Update IVA.

[e] Method being integrated into Method 7000B, per the January 1998 *SW-846* Draft Update IVA.

[f] See also atomic absorption methods. Total metals may be substituted for TCLP metals, if appropriate. RCRA = Resource Conservation and Recovery Act.

Table E.1-3

Sample Containers, Preservation Techniques, and Holding Times for Sediment/Soil/Sludge Samples

Analyte Group	Container	Preservative	Holding Time[a]
Target analyte metals[b] (except mercury and hexavalent chromium)	200 gram (g) WM[c]-P[d] or G[e]	None	180 days
Mercury	200 g WM-P or G	Cool to 4°C	28 days
Hexavalent chromium	100 g WM-P or G	Cool to 4°C	One month to extraction 4 days from preparative extraction to determinative analysis

[a] Holding time information was taken from U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

[b] Target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

[c] WM = Wide-mouth

[d] P = Polyethylene

[e] G = Glass

Table E.1-4

Sample Containers, Preservation Techniques, and Holding Times for Liquid Samples

Analyte Group	Container	Preservative	Holding Time[a]
Target analyte metals[b] (except mercury and hexavalent chromium)	600 milliliter (ml) P[c] or G[d]	HNO_3[e] to pH <2	180 days
Mercury	400 ml P or G	HNO_3 to pH <2	28 days
Hexavalent chromium	400 ml P or G	Cool to 4°C	24 hours

[a] Holding time information was taken from U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

[b] Target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

[c] P = Polyethylene

[d] G = Glass

[e] HNO_3 = Nitric acid

Table E.1-5

Target Detection Limits, Analytical Methods, and Instrumentation for Metals Analysis

Analyte	Target Detection[a] Limit (µg/L)[b]	EPA *SW-846*[c] Analytical Method	Instrumentation[d]
Barium	200	6010A, 7080A[e], 7081[f]	ICP, FLAA, GFAA
Lead	5	6010A, 7420[e], 7421[f]	ICP, FLAA, GFAA
Mercury	0.2	7470A, 7471A[g]	CVAA

[a] Detection limits listed are for clean water. Actual detection limits may be higher depending on sample composition and matrix type.
[b] µg/L = micrograms per liter
[c] U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[d] ICP = Inductively coupled plasma emission spectroscopy
GFAA = Graphite furnace atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
CVAA = Cold-vapor atomic absorption spectroscopy
[e] Method being integrated into Method 7010, per the January 1998 *SW-846* Draft Update IVA.
[f] Method being integrated into Method 7000B, per the January 1998 *SW-846* Draft Update IVA.
[g] Method being revised per the January 1998 *SW-846* Draft Update IVA.

Table E.1-6

Summary of Field Quality Control Samples

Quality Control Sample Type	Sample Matrix	Applicable Analysis	Frequency	Purpose	Acceptance Criteria	Corrective[a] Action
Field blank	Water	Metals	One per 20 samples	Monitor field sample contamination/air contamination	[b]	Advisory--no action required
Field duplicate	Soil/water	Metals	One per 20 samples per matrix type	Monitor sample variability	Analytical method criteria, if applicable	Advisory--no action required
Equipment rinsate blank	Water	Metals	One per 20 samples	Monitor decontamination effectiveness and sample cross contamination	[b]	Advisory--no action required

[a] U.S. Environmental Protection Agency Functional Guidelines for Data Validation may apply.
[b] Sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

Table E.1-7

Summary of Laboratory Quality Control Procedures[a] by Analytical Method

Parameter	EPA *SW-846*[b] Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
Metals	6010A	Surrogate compounds Instrument calibration Initial/continuing calibration	Each sample and blank Daily, or each setup After instrument calibration, 10% or every 2 hours	60–150% recovery 5% of true value 10% of true value	Advisory only--no action Repeat calibration Correct problem, recalibrate and reanalyze previous ten samples
		Initial/continuing calibration blank	Every calibration, 10% or 2 hours	< contract-required detection limits	Correct problem; recalibrate and reanalyze all samples since last blank
		Preparation blank	Each batch of digested samples	< contract-required detection limits	Redigest and reanalyze all associated samples per method criteria
		Interference check sample (ICS)	Each run or twice per 8-hour shift	20% of true value	Correct problem; recalibrate and reanalyze all samples since last ICS
		Duplicate sample analysis	Once per field batch per matrix	0–20% relative percent difference when < five times detection limit; detection limit otherwise	Flag data

Refer to footnotes at end of table.

Table E.1-7 (Continued)

Summary of Laboratory Quality Control Procedures[a] by Analytical Method

Parameter	EPA *SW-846*[b] Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
Metals (continued)		Laboratory control sample (LCS)	Once per field batch or each digest group	80–120% percent recovery (except silver, antimony)	Correct problem; redigest and reanalyze all samples since last LCS
		Serial dilution analysis	Once per field batch per matrix	10% original determination	Flag data
		Instrument detection limit	Quarterly	As determined	Not applicable
		Interelement corrections	Annually	As determined	Not applicable

[a] Source: "U.S. Environmental Protection Agency Contract Laboratory Program Statement of Work for Inorganic and Organic Analysis" (EPA, 1990). Not all listed procedures may be applicable to *SW-846* protocols.

[b] U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

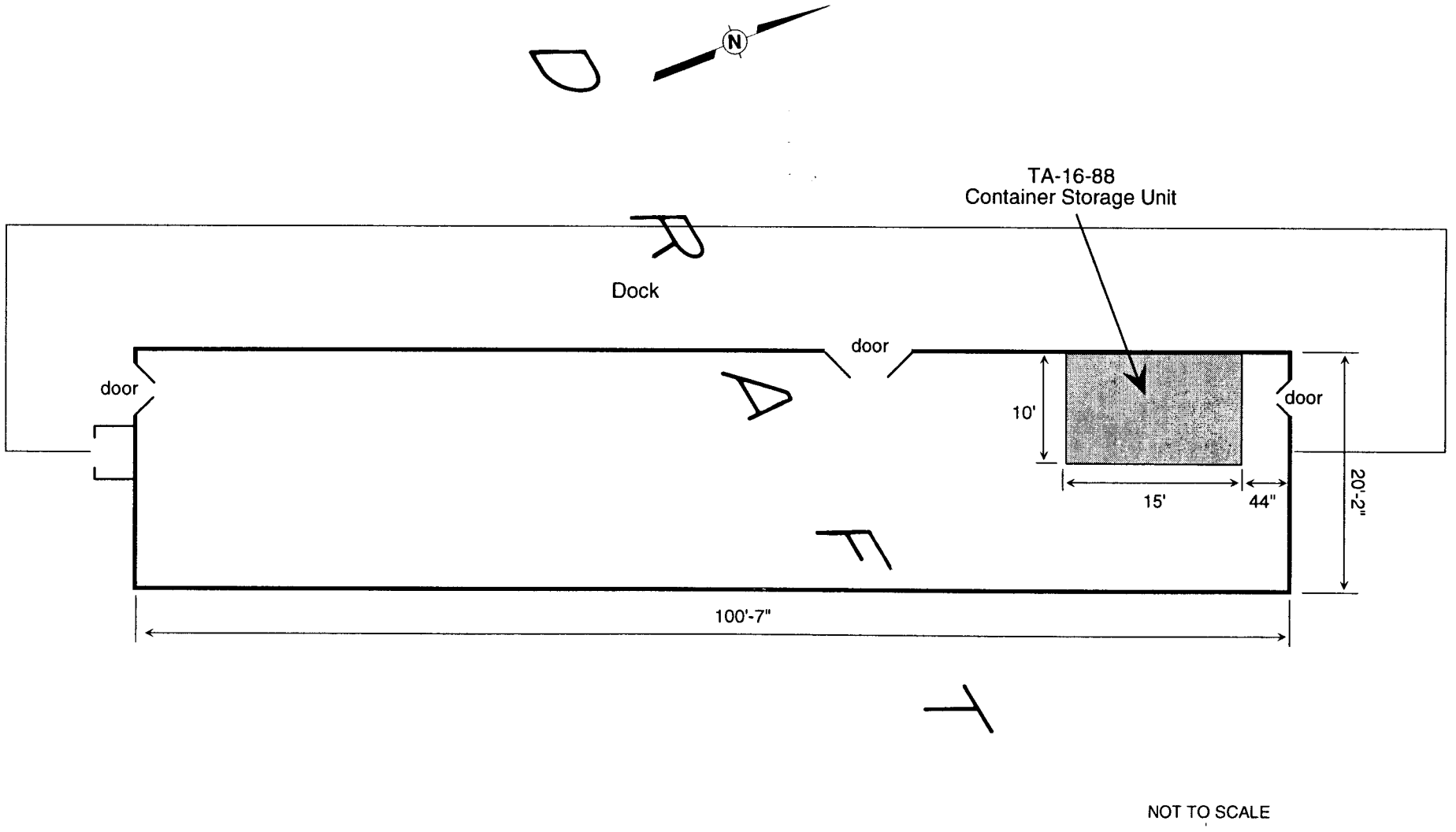

Figure E.1-1
Technical Area (TA) 16, Building 88, Container Storage Unit

ATTACHMENT E.2

CLOSURE PLAN FOR THE TECHNICAL AREA 16 BURN GROUND UNIT

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LIST OF ABBREVIATIONS/ACRONYMS

20 NMAC 4.1	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
ESH-19	Hazardous and Solid Waste Group
HE	high explosives
LAAO	Los Alamos Area Office
LANL	Los Alamos National Laboratory
lb	pounds
NMED	New Mexico Environment Department
OB	open burning
PPE	personal protection equipment
QA	quality assurance
QAPP	quality assurance program plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
SOP	standard operating procedures
SW-846	EPA's "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986)
TA	technical area

ATTACHMENT E.2

CLOSURE PLAN FOR THE TECHNICAL AREA 16 BURN GROUND UNIT

This closure plan describes the activities necessary to close the hazardous waste open burning (OB) unit at Los Alamos National Laboratory (LANL) Technical Area (TA) 16. The information provided in this closure plan is submitted to address the applicable closure requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.14(b)(13), and 20 NMAC 4.1, Subpart V, Part 264, Subparts G and X, revised June 14, 2000 [6-14-00]. This attachment is organized as follows:

- General closure information applicable to the TA-16 Burn Ground Unit (Section E.2.1)
- Specific closure information applicable to the TA-16 Burn Ground Unit (Section E.2.2)
- Sampling and analytical procedures to be used during closure activities at the TA-16 Burn Ground Unit (Section E.2.3).

Closure will include removal of waste from the TA-16 Burn Ground Unit and decontamination or other appropriate management of structures and equipment that have been contaminated by waste materials. Closure activities will minimize the need for further maintenance, preclude the release of hazardous waste or constituents to environmental media, and be protective of human health.

Until closure is complete and has been certified in accordance with 20 NMAC 4.1, Subpart V, 264.115 [6-14-00], as discussed in Section E.2.1.6, a copy of the approved closure plan and any approved revisions will be on file at LANL's Hazardous and Solid Waste Group (ESH-19) and at the U.S. Department of Energy (DOE) Los Alamos Area Office (LAAO).

E.2.1 GENERAL CLOSURE INFORMATION

This section is prepared in accordance with the requirements of 20 NMAC 4.1, Subpart IX, 270.14(b)(13), and 20 NMAC 4.1, Subpart V, Part 264, Subparts G and H [6-14-00], as applicable.

E.2.1.1 Closure Performance Standard [20 NMAC 4.1, Subpart V, 264.111]

The OB unit will be closed to meet the following performance standards:

- 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 runoff, or hazardous waste decomposition products to the ground or surface waters or atmosphere

- Comply with the applicable closure and post-closure requirements of 20 NMAC 4.1, Subpart V, Subparts G and X [6-14-00].

This will be accomplished by removal of waste from the TA-16 Burn Ground Unit and decontamination, if necessary, of the areas that may have come into contact with wastes. Decontamination activities will ensure the removal of hazardous waste residues from the TA-16 Burn Ground Unit to established cleanup levels.

E.2.1.2 Partial and Final Closure Activities [20 NMAC 4.1, Subpart V, 264.112(d)]

This closure plan has been written for partial closure rather than final closure of the entire LANL facility. Partial closure will consist of closing the TA-16 Burn Ground Unit, or portions thereof, at the LANL facility, while leaving the remainder of the unit or other regulated hazardous/mixed waste units at LANL in service. Partial closure (hereinafter referred to as closure) will be deemed complete when decontamination has been verified; the TA-16 Burn Ground Unit (or portion thereof) and related equipment and structures have been decontaminated, if necessary; the closure certification has been submitted to the New Mexico Environment Department (NMED); and the NMED has approved the closure. Final closure will occur when LANL's remaining regulated hazardous/mixed waste management units are closed either by waste removal and decontamination or by disposal of contaminated structures and equipment.

E.2.1.3 Closure Schedule [20 NMAC 4.1, Subpart V, 264.112(b)(6), 264.112(e), and 264.113]

Written notification will be provided to the NMED before the start of closure activities at the TA-16 Burn Ground Unit structure to be closed. However, pursuant to 20 NMAC 4.1, Subpart V, 264.112(e) [6-14-00], 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. Closure activities will begin according to the requirements of 20 NMAC 4.1, Subpart V, 264.112(d)(2) [6-14-00]. Treatment, removal, or disposal of hazardous wastes will begin in accordance with the approved closure plan, as required by 20 NMAC 4.1, Subpart V, 264.113(a) [6-14-00], within 90 days after final receipt of waste at the TA-16 Burn Ground Unit structure to be closed. This timeframe will be met as long as facilities are available for treatment or disposal of these wastes. In the event that closure activities cannot begin within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements in 20 NMAC 4.1, Subpart V, 264.113(a) [6-14-00]. Closure activities and reporting requirements will then be completed within 180 days of receipt of the

final volume of waste at the TA-16 Burn Ground Unit structure to be closed. Closure will be conducted in accordance with the schedule presented in Table E.2-1. In the event that closure of the TA-16 Burn Ground Unit structure is prevented from proceeding according to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20 NMAC 4.1, Subpart V, 264.113(b) [6-14-00]. In addition, the demonstrations in 20 NMAC 4.1, Subpart V, 264.113(a)(1) and (b)(1), will be made in accordance with 20 NMAC 4.1, Subpart V, 264.113(c) [6-14-00].

E.2.1.4 Amendment of the Closure Plan [20 NMAC 4.1, Subpart V, 264.112(c)]

In accordance with 20 NMAC 4.1, Subpart IX, 264.112(c) [6-14-00], LANL will submit a written notification of or request for a permit modification to authorize a change in the approved closure plan whenever:

- There are changes in operating plans or facility design that affect the closure plan
- There is a change in the expected year of closure
- Unexpected events occur during closure that require modification of the approved closure plan.

The written notification or request will include a copy of the amended closure plan for approval by the NMED.

LANL will submit a written request for a permit modification with a copy of the amended closure plan at least 60 days prior to the proposed change in unit design or operation or no later than 60 days after an occurrence of an unexpected event that affects the closure plan. If the unexpected event occurs during closure, the permit modification will be requested within 30 days of the occurrence. If the Secretary of the NMED requests a modification of the closure plan, a plan modified in accordance with the request will be submitted within 60 days of notification or within 30 days of notification if a change in facility condition occurs during the closure process.

E.2.1.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements [20 NMAC 4.1, Subpart V, 264.140(c)]

In accordance with 20 NMAC 4.1, Subpart V, 264.140(c) [6-14-00], LANL, as a federal facility, is exempt from the requirements of 20 NMAC 4.1, Subpart V, Part 264, Subpart H [6-14-00], to provide a cost estimate, financial assurance mechanisms, and liability insurance for closure actions.

E.2.1.6 Closure Certification [20 NMAC 4.1, Subpart V, 264.115]

Within 60 days after completion of closure activities at the TA-16 Burn Ground Unit (or portion thereof), LANL will submit to the Secretary of the NMED, via certified mail, a certification that the unit (or portion thereof) has been closed in accordance with the specifications of the closure plan, when approved. The certification will be attested to by an independent, registered professional engineer and will be signed by the appropriate DOE and LANL officials, in accordance with 20 NMAC 4.1, Subpart V, 264.115 [6-14-00]. Documentation supporting the independent, registered engineer's certification will be furnished to the Secretary of the NMED with the original certification. A copy of the certification and supporting documentation shall be maintained by both DOE/LAAO and ESH-19.

E.2.1.7 Security

Because of the ongoing nature of operations at LANL, the TA-16 Burn Ground Unit will be under the permanent care of the DOE or another authorized federal agency. Site security will be maintained for as long as necessary to prohibit public access.

E.2.1.8 Closure Report

Upon completion of the closure activities at the TA-16 Burn Ground Unit (or portion thereof), a closure report shall be prepared and submitted to the Secretary of the NMED. The report shall document the closure and contain, for example, the following:

- The certification described in Section E.2.1.6
- Any significant variance from the approved activities and the reason for the variance
- A summary of all sampling results, showing:
  - Sample identification
  - Sampling location
  - Datum reported
  - Detection limit for each datum
  - A measure of analytical precision (e.g., uncertainty, range, variance)
  - Identification of analytical procedure
  - Identification of analytical laboratory
- A quality assurance (QA)/quality control (QC) statement on analytical data validation and decontamination verification
- The location of the file of supporting documentation, including:
  - Field logbooks
  - Laboratory sample analysis reports
  - QA/QC documentation

- Chain-of-custody forms

- Storage or disposal location of regulated hazardous waste resulting from closure activities
- A certification of accuracy of the report.

E.2.1.9 Survey Plat and Post-Closure Requirements [20 NMAC 4.1, Subpart V, 264.116 and 264.117 through 264.120]

LANL intends to remove hazardous waste and associated hazardous constituents from the TA-16 Burn Ground Unit (or portion thereof) and to decontaminate structures and equipment contained in the unit or, if decontamination to the cleanup levels approved in the closure plan cannot be achieved, to dispose of or otherwise manage the contaminated structures and equipment (clean closure). If decontamination to these cleanup levels is not achievable, LANL may propose an alternate demonstration of decontamination, as circumstances indicate.

If the TA-16 Burn Ground Unit (or portion thereof) cannot be clean closed, LANL will provide a written post-closure plan. In addition, a survey plat prepared in accordance with 20 NMAC 4.1, Subpart V, 264.116 [6-14-00], will be filed with the appropriate authorities at certification of closure, as described in that regulation. Post-closure care requirements pursuant to 20 NMAC 4.1, Subpart V, 264.117 through 264.120 [6-14-00], will begin after partial or final closure of the unit. These will include the preparation of a written post-closure care plan with provisions for amendments pursuant to 20 NMAC 4.1, Subpart V, 264.118 [6-14-00], and post-closure notices will be filed with appropriate authorities, as described in 20 NMAC 4.1, Subpart V, 264.119 [6-14-00]. To meet that requirement, the DOE will file a "Land Use Restriction Notice" or equivalent document with the County of Los Alamos and other authorized agencies. Within 60 days after completion of the established post-closure care period for the unit, LANL will submit to the Secretary of the NMED, via certified mail, a certification of completion of post-closure care in accordance with the requirements of 20 NMAC 4.1, Subpart V, 264.120 [6-14-00].

E.2.2 CLOSURE PROCEDURES FOR THE TA-16 BURN GROUND UNIT

The OB unit is located at TA-16 at LANL. Figure E.2-1 shows the specific locations of the TA-16 Burn Ground Unit and the structures located within the unit. The closure schedule for the TA-16 Burn Ground Unit is outlined in Table E.2-1. LANL will evaluate this closure plan and, if necessary, revise the plan to address conditions at the time of actual closure. If revised, the amended closure plan will be submitted to the NMED for review and approval. The location and disposition of all

wastes generated during closure will be documented in the final closure report. The estimated year of closure for the TA-16 Burn Ground Unit is 2100.

E.2.2.1 Description of Waste/Estimate of Maximum Waste Capacity

The TA-16 Burn Ground Unit structures are used to treat a variety of high explosives (HE)-contaminated wastes, including but not limited to, scrap HE, HE-contaminated equipment and particulate matter, combustible solids, and HE-contaminated liquids. Information on the hazardous components of the wastes treated at the TA-16 Burn Ground Unit is provided in Attachment G.2 of this permit chapter. The maximum amount of waste that may be treated at the TA-16-388 Flash Pad is 40,000 pounds (lb) per burn. The maximum waste treatment capacity for the TA-16-388 and TA-16-399 Burn Trays is 100 gallons and 1,000 lb, respectively. The maximum waste treatment capacity for the TA-16-401 and TA-16-406 Sand Filters is 1,000 lb of HE per burn each.

E.2.2.2 Removal of Waste

After wastes are treated at each Burn Ground Unit structure, ash residues are removed promptly. Therefore, removal of waste prior to the initiation of closure activities is not anticipated.

E.2.2.3 Closure Procedures and Decontamination

To the extent possible, contaminated OB structures associated with the TA-16 Burn Ground Unit will be decontaminated, if necessary. Structures and equipment that cannot be decontaminated will be managed in compliance with appropriate regulations. Information from the operating record for the OB structure to be closed will be reviewed before proceeding with closure activities. Closure activities may include the removal, treatment, segregation, and/or disposition of structures and associated equipment. After removal and segregation, management of the structures and equipment will include treatment by OB at TA-16 and/or characterization by analytical samples prior to recycling or disposal. Closure will be conducted in accordance with the schedule presented in Table E.2-1. The final assessment and remediation of the OB area undergoing closure will be integrated and coordinated as Resource Conservation and Recovery Act (RCRA) corrective actions.

Before proceeding with closure activities, the OB structure to be closed will receive a thorough visual inspection for unburned materials. Personal protective equipment (PPE) and monitoring requirements will be determined by LANL's industrial hygiene and HE personnel following the initial field inspection. The level of PPE that will be required will depend upon the levels of chemical contamination that are detected, if any. If the surveys do not indicate detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed footwear, and safety glasses

or face shields. If an overhead danger is present, a hard hat will be worn. Workers involved in closure activities will be required to have appropriate training. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.

E.2.2.4 Decontamination Equipment

Prior to use, any reusable decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks, if necessary, will be collected and analyzed in accordance with Environmental Restoration (ER) standard operating procedures (SOP). Reusable protective clothing, tools, and equipment used during closure activities will be scraped as necessary to remove any residue and cleaned with a washwater solution. Residue, disposable equipment, and reusable equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility, depending on the regulated constituents present. Used washwater will be collected and analyzed for the appropriate parameters listed in Table E.2-2. Used washwater will be transported to the TA-16 HE Wastewater Treatment Facility or other appropriate LANL or off-site facility, depending on the regulated components present.

E.2.2.5 Decontamination Verification

Sufficient sampling and analysis will be required to demonstrate that closure performance standards have been met. Samples will be analyzed for the appropriate parameters, as discussed in Section E.2.2.4. Analytical procedures will conform to methods found in the most current version of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (U.S. Environmental Protection Agency [EPA], 1986) or other approved methods. Used washwater will be analyzed for the same parameters.

Decontamination activities will be performed until at least one of the following decontamination criteria has been met:

- No detectable RCRA-regulated constituent residues from treatment of authorized RCRA-regulated wastes are identified in samples collected during closure activities.
- Detectable concentrations of RCRA-regulated constituents in samples collected during closure activities are at or below existing regulatory action levels, as agreed upon with the NMED.
- Detectable concentrations of RCRA-regulated constituents in samples collected during closure activities identify no statistically significant concentrations of RCRA-regulated constituents above baseline data or above established background concentrations.

- Detectable concentrations of RCRA-regulated constituents in samples collected during closure activities are at or below levels agreed upon with the NMED to be protective of human health and the environment.

- Detectable concentrations of RCRA-regulated constituents that cannot be removed or decontaminated to acceptable levels as described above will be allowed to remain, provided that these RCRA-regulated constituents do not pose an unacceptable risk when combined with technical or administrative control measures agreed upon with the NMED.

An alternative demonstration of decontamination may be proposed and justified at the time of closure, as circumstances indicate. NMED will evaluate the proposed alternative in accordance with the standards and guidance then in effect and, if approved, incorporate the alternative into this closure plan.

E.2.3 SAMPLING AND ANALYTICAL PROCEDURES [20 NMAC 4.1, Subpart V, 264.112(b)(4)]
The following sections describe or reference procedures and methods for sampling, analysis, and documentation applicable to closure activities. Sampling and analysis will be conducted in accordance with procedures given in *SW-846,* or other approved procedures or methods.

E.2.3.1 Soil and Sediment Sampling
When soil and/or sediment sampling is appropriate or required as a result of OB activities, the sampling procedures referenced below will be used to obtain samples to determine the amount (if any) of hazardous constituents in the soil and/or sediment in the vicinity of the TA-16 Burn Ground Unit (or portion thereof).

Soil samples will be collected from various depths to determine the vertical extent of contamination. Sediment samples will be collected from the surface or near surface. Sampling procedures will be performed in accordance with the most recent version of ER-SOP-6.09, "Spade and Scoop Method for Collection of Soil Samples;" ER-SOP-6.10, "Hand Auger and Thin-Walled Tube Sampler;" or other appropriate ER SOPs or NMED-approved methods.

E.2.3.2 Liquid Sampling
In order to determine baseline parameters, a sample of unused washwater solution will be collected before decontamination begins. Samples of washwater used in cleaning structures and equipment will also be collected, as appropriate, to determine the amount (if any) of hazardous constituents in the used washwater.

Liquid sampling will be performed in accordance with ER-SOP-6.15, "Coliwasa Sampler for Liquids and Slurries;" ER-SOP-6.19, "Weighted Bottle Sampler for Liquids and Slurries in Tanks;" or other appropriate ER SOPs or NMED-approved methods.

E.2.3.3 Cleaning of Samplers

A sampler must be clean before use. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. To prevent cross contamination, it is important to clean nondisposable samplers after each sample is collected. Cleaning of samplers will be performed in accordance with ER-SOP-1.08, "Field Decontamination of Drilling and Sampling Equipment."

E.2.3.4 Sample Handling and Documentation

Samples will be analyzed either at LANL or at a commercial analytical laboratory. In either case, each sample will be labeled, sealed, and accompanied by chain-of-custody and sample analysis request forms. The chain-of-custody form is necessary to trace sample possession from the time of collection to the time of analysis and must accompany every sample. The original record accompanies shipment; the copy is retained by LANL. If samples are analyzed at LANL, the original will be maintained by LANL. The request for analysis form has two parts: a field portion and a laboratory portion. The field portion of this form must be completed by sample collection personnel. The laboratory portion is intended to be completed by analytical laboratory personnel when the sample is received. The analytical laboratory retains the original record and sends a copy to LANL.

Sample containers appropriate for the requested analyses will be used for all samples. Samples will be collected, placed in bottles, sealed, and tagged. Sample containers will then be immediately placed in packaging material, and, if refrigeration is required, in an insulated container with ice. Typical sample containers, preservation techniques, and holding times are presented in Tables E.2-3 and E.2-4.

The sample container must be sealed with a custody seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. A sample label is necessary to prevent misidentification of samples and should include, if applicable, the grid number referenced to positions staked on the site perimeter. The sample label should be completed to include the project name, sample number, collection date/time, collector's name, sample location, sample media description, preservative, and analysis requested. In the case of soil sampling, field information may include observations such

as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling.

A field logbook will be kept and will contain information pertinent to field surveys and sampling. Examples of entries include:

- Purpose of sample (routine sampling, special sampling)
- Location of sampling (coordinates referenced to staked field points, if soil sample)
- Name and business address of person making log entry
- Type of process producing waste
- Number and volume of sample
- Description of each sampling location, sampling methodology, equipment used
- Date and time of sample collection
- Sample destination and transporter's name (e.g., name of laboratory, United Parcel Service)
- Map or photograph of the sampling site, if any
- Field observations, if applicable (e.g., ambient temperature, sky conditions, past 24-hour precipitation)
- Field measurements, if applicable (e.g., pH, conductivity)
- Collector's sample identification number(s)
- Signature of person responsible for the log entry.

Because sampling situations vary widely, no general rule can be given as to the extent of information that must be entered in the logbook. It is recommended, however, to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

E.2.3.5 Analytical Procedures

Sample analyses, including those for QA/QC, will be conducted using methods prescribed in *SW-846* or other approved procedures or methods. Target detection limits, analytical methods, and instrumentation for metals and organics analyses are presented in Tables E.2-5 and E.2-6, respectively.

E.2.3.6 Field and Laboratory QA/QC

Field QC activities will include collection of the following QC samples: duplicate samples, trip blanks, field blanks, and, if necessary, equipment rinsate blanks. Field QC samples are summarized in Table E.2-7.

Duplicate samples are two or more samples collected simultaneously into separate containers from the same source under identical conditions. Acceptance limits for field duplicate analyses are 0 to 20 relative percent difference per analyte. Frequency of duplicate samples will be 1 in 20 samples, or 1 per sampling day if less than 20 samples are collected. Blank samples will include trip blanks, field blanks, and, if necessary, equipment rinsate blanks. A trip blank is a sample container filled with organic-free deionized water. The filled container is taken to the sampling site, remains unopened, and then is shipped to the analytical laboratory along with the samples. A trip blank is submitted whenever samples are collected for volatile organic compounds analysis. A field blank is a sample collected to assess the ambient conditions at the sampling site. It consists of a sample of organic-free deionized water poured into a sample container under normal sampling conditions. An equipment rinsate blank is collected to assess the cleanliness of sampling equipment. Organic-free deionized water is poured over the decontaminated equipment's sampling surface and collected in a sample container. Frequency of equipment rinsate blank samples will be 1 in 20 samples, or 1 per sampling day if less than 20 samples are collected. Blank samples and duplicate samples of liquid, soil, and sediment will be analyzed for the same parameters as the closure samples. Samples will be provided with unique identification numbers that do not indicate to the laboratory that the samples are for QA/QC purposes.

Instrument calibration and maintenance are subject to QC procedures. Field equipment will be calibrated and maintained using the manufacturer's instructions or appropriate standard procedures.

Laboratories used for analysis shall operate under a quality assurance program plan (QAPP) that meets the requirements in *SW-846* (EPA, 1986). QC procedures in the analytical laboratory are guided by the laboratory's QAPP. In the laboratory, QC samples are required to establish the accuracy and precision of the analytical data in order to determine the quality of the data. Laboratory QC procedures are summarized in Table E.2-8.

E.2.4 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.

Table E.2-1

Schedule for Closure Activities at the Technical Area 16 Burn Ground Unit

Activity	Maximum Time Required[a]
Let contract request for proposals	-90 Days
Notify the New Mexico Environment Department (NMED)	-45 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Approval of closure plan	Day 0
Final treatment of waste	Day 5
Begin closure activities (perform additional treatment of structures, if necessary)	Day 10
Perform initial sampling	Day 15
Analyze samples	Day 45
Perform additional sampling, if necessary	Day 60
Analyze additional samples, if necessary	Day 90
Perform final cleanup (e.g., removal of decontamination wastes)	Day 120
Verify decontamination	Day 150
Submit final report to NMED	Day 180

[a] The schedule above indicates calendar days from the beginning by which activities will be completed. Some activities may be conducted simultaneously, may not require the maximum time listed, or may require more time than indicated above. Extensions to the schedule may be requested, as necessary.

Table E.2-2

Analytical Parameters and Test Methods[a]

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method Setaflash closed-cup method Ignitability of solids	(L, S) SW1010, SW1020 (S) SW1030 (L, S) ASTM D93-80
~~Reactivity~~	~~Test method to determine hydrogen cyanide released from waste~~ ~~Test method to determine hydrogen sulfide released from waste~~	~~(L, S) SW, Section 7.3~~
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	
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A[c]
Barium		(L, S) SW7080A[d], SW7081[e]
Cadmium		(L, S) SW7130[d], SW7131A[e]
Chromium		(L, S) SW7190[d], SW7191[e]
Lead		(L, S) SW7420[d], SW7421[e]
Silver		(L, S) SW7760A[d], SW7761[e]
TC Other:	Gas chromatography (GC)/mass spectrometry (MS)	(L, S) SW8270C
Benzene	GC/MS capillary column technique	(S) SW8275A
Chloroform		
1,2-Dichloroethane		
2,4-Dinitrotoluene		
Methyl ethyl ketone		
Nitrobenzene		
Pyridine		
Volatile organics	GC/MS GC/MS capillary column technique	(L, S) SW8260B

Refer to footnotes at end of table.

Table E.2-2 (continued)

Analytical Parameters and Test Methods[a]

Parameter	Test Method	Reference[b]
Semivolatile organics	GC/MS	(L, S) SW8270C
	GC/MS capillary column technique	(S) SW8275A
Total RCRA metals[f]	Acid digestion	(L) SW3010A, (S) SW3050B
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010B
Barium		(L, S) SW6010B
Cadmium		(L, S) SW6010B
Chromium		(L, S) SW6010B
Lead		(L, S) SW6010B
Silver		(L, S) SW6010B
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A
Explosives Compounds	**High-Performance Liquid Chromatography**	**(L,S) SW8330**
	Thin-Layer Chromatography	**(L,S) SW8332**
	GC/Flame Ionization Detector	**(L,S) SW8015b**
	Solvent Extraction/GC	**(L,S) SW7580**
	GC/MS	
Perchlorates	**Ion Chromatography**	**(L) EPA Method 314.0**

[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. **For the Technical Area 16 Burn Ground, analyses will be conducted if the constituents were in the wastes treated at the open burning sites.**

[b] "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] Method being revised per the January 1998 *SW-846* Draft Update IVA.

[d] Method being integrated into Method 7010, per the January 1998 *SW-846* Draft Update IVA.

[e] Method being integrated into Method 7000B, per the January 1998 *SW-846* Draft Update IVA.

[f] See also atomic absorption methods. Total metals may be substituted for TCLP metals, if appropriate. RCRA = Resource Conservation and Recovery Act.

Table E.2-2

Analytical Parameters and Test Methods[a]

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L, S) SW1010, SW1020
	Setaflash closed-cup method	(S) SW1030
	Ignitability of solids	(L, S) ASTM D93-80
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	
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A[c]
Barium		(L, S) SW7080A[d], SW7081[e]
Cadmium		(L, S) SW7130[d], SW7131A[e]
Chromium		(L, S) SW7190[d], SW7191[e]
Lead		(L, S) SW7420[d], SW7421[e]
Silver		(L, S) SW7760A[d], SW7761[e]
TC Other:	Gas chromatography (GC)/mass spectrometry (MS)	(L, S) SW8270C
Benzene	GC/MS capillary column technique	(S) SW8275A
Chloroform		
1,2-Dichloroethane		
2,4-Dinitrotoluene		
Methyl ethyl ketone		
Nitrobenzene		
Pyridine		
Volatile organics	GC/MS	(L, S) SW8260B
	GC/MS capillary column technique	

Refer to footnotes at end of table.

Table E.2-2 (continued)

Analytical Parameters and Test Methods[a]

Parameter	Test Method	Reference[b]
Semivolatile organics	GC/MS	(L, S) SW8270C
	GC/MS capillary column technique	(S) SW8275A
Total RCRA metals[f]	Acid digestion	(L) SW3010A, (S) SW3050B
	Inductively coupled plasma atomic emission spectroscopy	
Barium		(L, S) SW6010B
Cadmium		(L, S) SW6010B
Chromium		(L, S) SW6010B
Lead		(L, S) SW6010B
Silver		(L, S) SW6010B
Mercury		(L, S) SW6010B
	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A

[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] "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] Method being revised per the January 1998 *SW-846* Draft Update IVA.

[d] Method being integrated into Method 7010, per the January 1998 *SW-846* Draft Update IVA.

[e] Method being integrated into Method 7000B, per the January 1998 *SW-846* Draft Update IVA.

[f] See also atomic absorption methods. Total metals may be substituted for TCLP metals, if appropriate. RCRA = Resource Conservation and Recovery Act.

Table E.2-3

Sample Containers, Preservation Techniques, and Holding Times for Sediment/Soil/Sludge Samples

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	125 milliliter (ml) WM[c]-G[d]	Cool to 4 degrees Celsius (°C)	14 days
Target compound semivolatile organics[b]	250 ml WM-G vial with Teflon-lined lid	Cool to 4°C	14 days from field collection to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury and hexavalent chromium)	200 gram (g) WM-P[e] or G	None	180 days
Mercury	200 g WM-P or G	Cool to 4°C	28 days
Hexavalent chromium	100 g WM-P or G	Cool to 4°C	One month to extraction 4 days from preparative extraction to determinative analysis

[a] Holding time information was taken from U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

[c] WM = Wide-mouth

[d] G = Glass

[e] P = Polyethylene

Table E.2-4

Sample Containers, Preservation Techniques, and Holding Times for Liquid Samples

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	2 x 40 milliliter (ml) G[c] vials with Teflon-lined septa	HCl[d], H_2SO_4[e], or solid $NaHSO_4$[f] to pH<2; cool to 4 degrees Celsius (°C)	14 days
Target compound semivolatile organics[b]	4 x 1 liter AG[g] with Teflon-lined lid	Cool to 4°C	7 days from field collection to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury and hexavalent chromium)	600 ml P[h] or G	HNO_3[i] to pH <2	180 days
Mercury	400 ml P or G	HNO_3 to pH <2	28 days
Hexavalent chromium	400 ml P or G	Cool to 4°C	24 hours

[a] Holding time information was taken from U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] G = Glass
[d] HCl = Hydrochloric acid
[e] H_2SO_4 = sulfuric acid
[f] $NaHSO_4$ = sodium sulfate
[g] AG = Amber glass
[h] P = Polyethylene
[i] HNO_3 = Nitric acid

Table E.2-5

Target Detection Limits, Analytical Methods, and Instrumentation for Metals Analysis

Analyte	Target Detection[a] Limit (µg/L)[b]	EPA *SW-846*[c] Analytical Method	Instrumentation[d]
Barium	200	6010A, 7080A[e], 7081[f]	ICP, FLAA, GFAA
Cadmium	2	6010A, 7130[e], 7131A[f]	ICP, FLAA, GFAA
Chromium	10	6010A, 7190[e], 7191[f]	ICP, FLAA, GFAA
Lead	5	6010A, 7420[e], 7421[f]	ICP, FLAA, GFAA
Mercury	0.2	7470A, 7471A[g]	CVAA
Silver	10	6010A, 7760A[e], 7761[f]	ICP, FLAA, GFAA

[a] Detection limits listed are for clean water. Actual detection limits may be higher depending on sample composition and matrix type.

[b] µg/L = micrograms per liter

[c] U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

[d] ICP = Inductively coupled plasma emission spectroscopy
GFAA = Graphite furnace atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
CVAA = Cold-vapor atomic absorption spectroscopy

[e] Method being integrated into Method 7010, per the January 1998 *SW-846* Draft Update IVA.

[f] Method being integrated into Method 7000B, per the January 1998 *SW-846* Draft Update IVA.

[g] Method being revised per the January 1998 *SW-846* Draft Update IVA.

Table E.2-6

Target Detection Limits, Analytical Methods, and Instrumentation for Organics Analysis

Analyte (Group)	Target Detection Limits[a]	EPA *SW-846*[b] Analytical Method	Instrumentation[c]
Target compound list volatiles plus ten tentatively identified compounds (TIC)	10 mg/L[d] water 10–120 mg/kg[e] sediment	8260B	GC/MS
Target compound list semivolatiles plus 20 TICs	10 mg/L water 330–50,000 mg/kg sediment	8270C[f]	GC/MS

[a] Detection limits expressed as practical quantitation limits.
[b] U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] GC/MS = Gas chromatography/mass spectrometry
[d] mg/L = milligrams per liter
[e] mg/kg = milligrams per kilogram
[f] Method being revised per the January 1998 *SW-846* Draft Update IVA.

Table E.2-7

Summary of Field Quality Control Samples

Quality Control Sample Type	Sample Matrix	Applicable Analysis	Frequency	Purpose	Acceptance Criteria	Corrective[a] Action
Trip blank	Water	Volatile organic analytes (VOA)	One set per shipping cooler containing samples to be analyzed for VOAs	Monitor contamination or cross contamination during handling and transportation	[b]	Advisory--no action required
Field blank	Water	VOAs, semivolatile organic analytes (SVOA), metals	One per 20 samples	Monitor field sample contamination/air contamination	[b]	Advisory--no action required
Field duplicate	Soil/water	VOAs, SVOAs, metals	One per 20 samples per matrix type	Monitor sample variability	Analytical method criteria, if applicable	Advisory--no action required
Equipment rinsate blank	Water	VOAs, SVOAs, metals	One per 20 samples	Monitor decontamination effectiveness and sample cross contamination	[b]	Advisory--no action required

[a] U.S. Environmental Protection Agency Functional Guidelines for Data Validation may apply.

[b] For volatile and semivolatile 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.

Table E.2-8

Summary of Laboratory Quality Control Procedures[a] by Analytical Method

Parameter	EPA *SW-846*[b] Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
Target compound volatile organics	8240B or 8260A	Instrument performance: mass calibration/ion abundance pattern	Every 12 hours of analysis time	Per method	Repeat until acceptance criteria satisfied
		Initial calibration: instrument sensitivity and linearity of response	Five concentration levels; after each instrument performance, check prior to sample analysis	Relative response factors (RRF) within method limits	Repeat calibration
		Continuing calibration	Every 12 hours of analysis time	Average RRFs <25% difference	Repeat calibration
		Internal standards	All calibration standards, samples, and blanks	Extracted ion current profile (EICP); D -50 to +100% Retention time shifts <0.50 minutes	Correct malfunction; reanalyze sample per method criteria
		Method blank	Every 12 hours of analysis time	<5 times quantitation limit for methylene chloride, acetone, 2-butanone; all other compounds < or = to quantitation limit	Determine source of contamination, and document corrective action; reextract and reanalyze samples
		System monitoring compounds	Every method blank, sample, matrix spike, matrix spike duplicate; matrix specific, per method limits	Check instrument and calculations; reanalyze per method criteria	

Refer to footnotes at end of table.

Table E.2-8 (Continued)

Summary of Laboratory Quality Control Procedures[a] by Analytical Method

Parameter	EPA *SW-846*[b] Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
Target compound semivolatile organics	8250A or 8270B[c]	Instrument performance: mass calibration/ion abundance pattern	Every 12 hours	Per method	Repeat until acceptance criteria satisfied
		Initial calibration: instrument sensitivity and linearity of response	Five concentration levels. After each performance, check prior to sample analysis	RRFs within method limits	Repeat calibration
		Continuing calibration	Every 12 hours	Average RRFs <25% difference	Repeat calibration
		Internal standards	All calibration standards, samples, and blanks	EICP; D -50 to +100% Retention time shifts <0.50 minutes	Correct malfunction; reanalyze sample per method criteria
		Method blank	Each group of samples of similar matrix and concentration level (soils)	<5 times quantitation limit for phthalate esters; all other compounds < or = to quantitation limit	Determine source of contamination; document corrective action; reextract and reanalyze samples
		Surrogate compounds	Each sample, blank	Matrix-specific per method limits	Reextract and reanalyze per method criteria

Refer to footnotes at end of table.

Table E.2-8 (Continued)

Summary of Laboratory Quality Control Procedures[a] by Analytical Method

Parameter	EPA *SW-846*[b] Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
Metals	6010A	Surrogate compounds Instrument calibration Initial/continuing calibration	Each sample and blank Daily, or each setup After instrument calibration, 10% or every 2 hours	60–150% recovery 5% of true value 10% of true value	Advisory only--no action Repeat calibration Correct problem, recalibrate and reanalyze previous ten samples
		Initial/continuing calibration blank	Every calibration, 10% or 2 hours	< contract-required detection limits	Correct problem; recalibrate and reanalyze all samples since last blank
		Preparation blank	Each batch of digested samples	< contract-required detection limits	Redigest and reanalyze all associated samples per method criteria
		Interference check sample (ICS)	Each run or twice per 8-hour shift	20% of true value	Correct problem; recalibrate and reanalyze all samples since last ICS
		Duplicate sample analysis	Once per field batch per matrix	0–20% relative percent difference when < five times detection limit; detection limit otherwise	Flag data

Refer to footnotes at end of table.

Table E.2-8 (Continued)

Summary of Laboratory Quality Control Procedures[a] by Analytical Method

Parameter	EPA *SW-846*[b] Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
Metals (continued)		Laboratory control sample (LCS)	Once per field batch or each digest group	80–120% percent recovery (except silver, antimony)	Correct problem; redigest and reanalyze all samples since last LCS
		Serial dilution analysis	Once per field batch per matrix	10% original determination	Flag data
		Instrument detection limit	Quarterly	As determined	Not applicable
		Interelement corrections	Annually	As determined	Not applicable

[a] Source: "U.S. Environmental Protection Agency Contract Laboratory Program Statement of Work for Inorganic and Organic Analysis" (EPA, 1990). Not all listed procedures may be applicable to *SW-846* protocols.
[b] U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] Method being revised per the January 1998 *SW-846* Draft Update IVA.

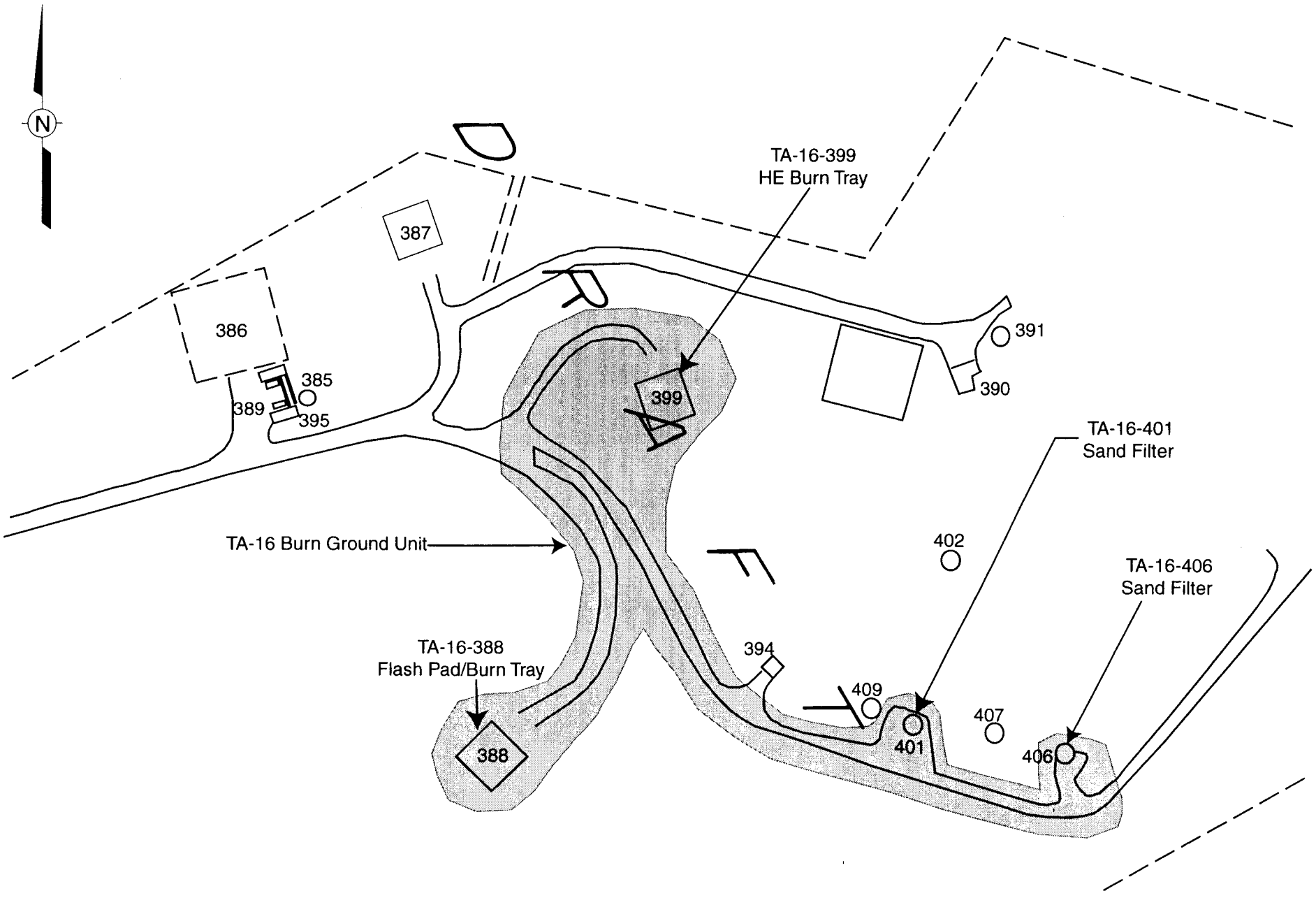

Figure E.2-1
Location Map Showing the Burn Ground Unit at Technical Area (TA) 16

ATTACHMENT F.1

CONTAINER MANAGEMENT

TABLE OF CONTENTS

LIST OF ABBREVIATIONS/ACRONYMS

CSU	container storage unit
EPA	U.S. Environmental Protection Agency
PPE	personal protective equipment
TA	technical area
WPF	Waste Profile Form

ATTACHMENT F.1
CONTAINER MANAGEMENT

F.1.1 CONTAINER PACKAGING, SAMPLING, AND LABELING

F.1.1.1 Container Packaging and Transport

Containers that may be used for storage at the Technical Area (TA) 16, Building 88 (TA-16-88) container storage unit (CSU) include, but are not limited to, 55-gallon drums, crates, boxes, and various small containers and irregularly-shaped containers.

Most waste stored in the TA-16-88 CSU is likely to be generated in the building and hand carried or moved by hand truck, dollies, or carts to the CSU. If waste were to be brought from another location with the Los Alamos National Laboratory boundary, the packaged wastes would be unloaded by hydraulic lift, forklift, or similar device onto the loading dock and moved into TA-16-88 through the north-facing or west-facing door.

The methods used to move containers into and within the TA-16-88 CSU will be selected based on the size and weight of containers to prevent hazards while moving containers. Damaged containers (e.g., severely corroded drums) must be repaired or overpacked or the wastes repackaged in new containers before being stored at the CSU.

F.1.1.2 Container Labeling, Recording, and Sampling System

The generator labels each container of waste with a "Hazardous Waste" label bearing the following information:

- Generator name and address
- U.S. Environmental Protection Agency (EPA) Identification Number
- The accumulation start date
- The applicable EPA Hazardous Waste Number(s)

A "Radioactive Material/Radioactive Waste" label is applied, if appropriate.

Each waste shipment must be accompanied by an approved Waste Profile Form (WPF) or equivalent form. Upon receipt, the CSU operator writes the WPF number on each container.

F.1.2 TA-16-88 STORAGE AREA PRACTICES

The CSU at TA-16-88 is used to store solid hazardous and mixed low-level waste. No liquid or liquid-bearing wastes are managed at the CSU. If incompatible wastes are stored, they are kept segregated during storage.

F.1.3 GENERAL CONTAINER MANAGEMENT PRACTICES

Inspections will be conducted and aisle space will be maintained in accordance with Module II of this permit chapter.

Whenever waste is being handled at the TA-16-88 CSU, all personnel involved have immediate access to telephones in the building for direct voice contact with another individual.

The CSU is located inside TA-16-88 and any material spilled during waste management activities will be remediated pursuant to the Attachment D of this permit chapter and Appendix D in Chapter 1 of this permit.

Electrical power is supplied to TA-16-88 to operate lights and the alarm systems in the building. In the event of a power failure, operations in the building will cease and personnel will exit the facility. Operations in the CSU will be discontinued temporarily if electrical power is not restored quickly or if container-handling equipment fails.

Personnel at the TA-16-88 CSU are required to use appropriate personal protective equipment (PPE) to protect themselves from the hazards found in the work place under normal conditions. Use of PPE protects workers from direct contact with and inhalation or ingestion of hazardous materials. At TA-16-88, PPE is used as needed during waste-handling operations and when responding to unusual hazardous situations.

ATTACHMENT F.2

BURN GROUND UNIT MANAGEMENT

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LIST OF ABBREVIATIONS/ACRONYMS

BTU/hr	British thermal units per hour
ft	feet/foot
HE	high explosives
LANL	Los Alamos National Laboratory
NMED	New Mexico Environment Department
OB	open burning
SOP	standard operating procedure
TA	technical area

ATTACHMENT F.2
BURN GROUND UNIT MANAGEMENT

F.2.1 GENERAL OPEN BURNING PROCEDURES

Treatment of hazardous wastes by open burning (OB) at the Technical Area (TA) 16 Burn Ground Unit will be conducted in a manner that does not threaten human health or the environment. Prior to OB operations at the Burn Ground Unit, the area is cleared of all but authorized Burn Ground personnel. A barrier is placed across the access road to prevent entry.

The closest property not owned by Los Alamos National Laboratory (LANL) is at a distance greater than one mile from the TA-16 Burn Ground Unit. Therefore, a safe distance is maintained between the Burn Ground Unit and the property of others.

The master controls for each of the Burn Ground Unit structures' firing circuits are located inside the Control Building (TA-16-389). The Control Building is no less than 300 feet (ft) from all OB operations. Operational procedures require that OB not be conducted at a time of impending electrical storms and during high wind conditions. OB may also be restricted during periods of high fire danger and adverse atmospheric conditions. The New Mexico Environment Department's (NMED) Air Quality Bureau determines the conditions under which OB can occur. All OB operations are conducted in accordance with appropriate standard operating procedures (SOP). Adherence to the SOPs ensure safe and efficient high explosives (HE) destruction and decontamination of flashed materials.

F.2.2 OPEN BURNING IN A CONTAINMENT DEVICE OR ON A PAD

F.2.2.1 TA-16-388 Flash Pad

The TA-16-388 Flash Pad is described briefly in III.A.1 of this permit chapter. The foundation of the flash pad is slanted down toward the back concrete wall, thus providing secondary containment for any spills or run-on/runoff of stormwater. These are collected in the rear of the pad where they either evaporate or can be collected by one of the Burn Ground HE wastewater tank trucks. The maximum treatment capacity of the flash pad is estimated at 40,000 pounds per burn to accommodate the weights of large machine tools and other equipment. However, large burns are conducted only when absolutely necessary because it is more difficult to assure the HE is destroyed on all materials treated. Instead, burns of several hundred pounds are usually conducted.

The heat sources for the flash pad consist of forced-air propane burners with adjustable mounts. 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 flashed. The total capacity of the propane supply system is approximately 7 million British thermal units per hour (BTU/hr). This provides adequate heat to bring the material being flashed to a temperature sufficient to destroy all HE contamination, typically to a temperature above 800 degrees Fahrenheit.

Television cameras mounted at the TA-16-388 OB structure monitor operations at the flash pad, and Burn Ground personnel observe the flash operations on the monitor in the Control Building. Lockout keys for the power that operates the flash pad are also located in the Control Building. The lockout keys are removed and carried by personnel working at the flash pad. Once the flash pad has been set up for a treatment and has been barricaded to prevent traffic from approaching the pad, personnel return to the Control Building and operate the burners using a computer monitor display.

Movable steel equipment is used on the TA-16-388 Flash Pad to stage the many types of HE-contaminated waste to be treated at the pad. This equipment is constructed to be moved with a forklift and will be stored within the TA-16 Burn Ground Unit. One type of waste treated is large, metallic equipment that has been used for HE machining, handling, transportation, and storage. Several steel pallets are positioned in the middle of the flash pad and the equipment to be treated is set on the steel pallets. The pallets protect the integrity of the concrete pad, preventing deterioration caused by the heat and by mechanical impacts. Thermocouples are placed on and within the equipment being flashed to record temperatures and to document that the materials reach and maintain the required temperature levels for the necessary time. The computer monitoring the flash pad operations records these data.

Much of the noncombustible waste consists of smaller metal items that can be moved by hand. These items are treated in a steel tray, which is lined on the bottom with sand and on the sides with firebrick. The smaller metallic items are positioned in this tray for treatment. After cooling, the items can be reoriented for additional treatment. Thermocouples can be used to verify that the required temperatures have been reached.

Steel trays are also used in treating the following:

- combustible solids
- small batches of water-solvent solutions, acids, bases, or oils
- soil contaminated with explosives

In addition to the steel pallets and steel trays already described, several other movable steel devices are being considered for use on the flash pad to optimize burning and/or prevent waste compaction. The first device is a cage of expanded steel screen to better contain combustibles during burning. The second device is an apparatus for treating noncombustible particulate material in a more efficient manner. For the second device, one method being considered is to trap the material between two narrowly separated steel plates and heat both plates until the desired temperature is reached. The treated material would then be released into a container and the apparatus would be refilled from a hopper. A second method is to continuously release the material from a hopper, through a flame, and into a container. A third device required may be steel stands on which HE-contaminated pipes are supported. As waste types change, other devices may be needed to effectively treat the wastes.

F.2.2.2 TA-16-388 Burn Tray

The TA-16-388 Burn Tray is described briefly in III.A.1 of this permit chapter. Beneath the burn tray kettle is a propane ring burner with a heat output of approximately 200,000 BTU/hr. The burner has a steel windshield wrapped around it. Mounted on stands beside the kettle are two flare burners with a heat output of approximately 50,000 BTU/hr each. These burners ignite combustible gases boiled off by the ring burner.

The wastes treated at the TA-16-388 Burn Tray range from HE-contaminated solvents, solvent/water mixtures, acids, and bases resulting from HE analysis, processing, maintenance, and cleanup activities. The liquids are either poured into the kettle from 5-gallon carboys or hand-pumped from 55-gallon or other drums. Burn Ground personnel observe the burn tray operations via television monitor. After the liquid contents are evaporated, the residue in the kettle is heated to decomposition temperatures for explosives, as determined by thermocouples attached to the kettle and registered in the Control Building. Although the maximum treatment capacity of the burn tray is listed in the Attachment G.2 of this permit chapter as 100 gallons and the kettle capacity is 75 gallons, usually only about 5 to 30 gallons of liquid waste is treated in any batch. This quantity represents the amount that can be effectively treated in a single day.

F.2.2.3 TA-16-399 Burn Tray

The TA-16-399 HE Burn Tray is described briefly in III.A.2 of this permit chapter. Explosives to be burned, usually rejected pieces from pressing and machining operations and also HE pieces that are no longer useful, are transported to the HE burn tray packed in cardboard and wooden boxes. The boxes are set before the tray one at a time, paper padding is placed on the tray, and the explosives

are removed from the boxes and set on the padding. When the surface is covered with HE pieces, usually several hundred pounds, the empty boxes are placed back on the transport vehicle. The padding is then dampened with kerosene, electric matches (squibs) are connected to the firing cables, and a train of excelsior saturated with kerosene is run from the squibs to the padding. All personnel then go to the Control Building and the squibs are fired remotely. The burn is observed by Burn Ground personnel located in the Control Building, using a television camera located near the TA-16-388 OB structure and a monitor and a periscope located in the Control Building.

F.2.2.4 TA-16-401 and TA-16-406 Sand Filters

The TA-16-401 and TA-16-406 Sand Filters are described briefly in III.A.3 of this permit chapter. The base of each sand filter has a shallow funnel-shape that is connected to underground pipes leading to the HE Wastewater Treatment Facility's sump tank. The sand filters consist of a gradation of large, smooth river rocks at the bottom to coarse and fine sand on the top. The sand filters perform two vital functions in water treatment. The first is to remove inert and explosive solids that are settled from or are suspended in wastewater. The second is to partially "digest" organic materials in the wastewater using microbes that live among the sand and rock particles. The flow rate through the sand filters is usually only several gallons per minute and it generally takes a day to unload a full truck tank.

Two types of wastes are treated at the sand filters. The first is wastewater in which HE, and possibly trace chemicals associated with HE synthesis and degradation, are in solution. The second is particulate HE saturated with water. Either sand filter can be used for wastewater and/or bulk and particulate HE.

The wastewater to be treated comes from HE-processing facilities and from environmental restoration and decontamination operations of HE-contaminated solid waste management units. Usually, the wastewater is pumped into tank trucks operated by Burn Ground personnel, and poured into the TA-16-406 Sand Filter at a rate of several gallons per minute. However, there may be some instances where wastewater is placed in a holding tank near the sand filter and then pumped or gravity fed directly into the filter. Filter socks are tied to the outlet hoses, if necessary, to capture coarse particulate HE. If the water is oily, several pounds of activated charcoal may be added to the filter socks to adsorb oils. Once the filter sock is filled with inert and explosive particles, it is drained and placed on the TA-16-401 Sand Filter. Eventually, the top of the TA-16-406 Sand Filter becomes clogged with fine particles. This fine top layer of sediment is removed and placed in the TA-16-401

Sand Filter or on the TA-16-388 Flash Pad. Clean sand is then placed on the surface of the TA-16-406 Sand Filter.

Water-saturated explosives are placed in the TA-16-401 Sand Filter. These water-saturated HE wastes come from several sources. The first source is the HE-production facilities or environmental restoration activities where HE-containing wastewater is pre-filtered. When the pre-filters are full, the contents or the entire filter are placed into plastic buckets. After a sufficient number of buckets have been accumulated at less-than-90-day storage areas or satellite accumulation areas, or the accumulation limit for the buckets is about to expire, the buckets are moved from the storage or accumulation sites to the TA-16-401 Sand Filter, where their contents are spread out on the sand filter surface. Similarly handled is the HE that is collected during environmental restoration or building decontamination/decommissioning activities. It is placed into buckets with water and stored in accumulation areas until treated by OB. Another source of wet HE is the HE sludge at the bottom of the various holding tanks, or sumps. After the wastewater is removed for treatment, the sludge remaining in the sumps is periodically vacuumed into tank trucks and poured into the TA-16-401 Sand Filter. Because the operations and capacities of the sand filters are similar to those of the TA-16-399 HE Burn Tray, the sand filters can be used to treat bulk HE if the TA-16-399 HE Burn Tray is not operational. There may be other sources of HE generated in the future that will be treated at the sand filters.

After bulk HE has been placed in a sand filter, a heavy steel lid is then placed over the filter to restrict access to the wastes and shield them from initiating sources. When a sufficient amount of bulk HE wastes have been accumulated in the TA-16-401 Sand Filter, the steel lid is tightly sealed to the sand filter structure using screw clamps. The contents of the sand filter are then dried with heated forced air for 4 or 5 days. The dried contents are then dampened with kerosene and ignited remotely using the same procedure as used at the TA-16-399 HE Burn Tray. The burn is observed remotely by Burn Ground personnel using television cameras located near the sand filters, and a monitor and a periscope located in the Control Building. The TA-16-401 Sand Filter is used principally for burning because it is not as close to trees as the TA-16-406 Sand Filter and the area around the TA-16-401 Sand Filter is easily kept mowed. During seasonal dry periods, a wide area around the TA-16-401 Sand Filter is wetted down prior to treatment.

F.2.3 STAGING OF HE WASTES

F.2.3.1 TA-16-388 Flash Pad

The wastes are accumulated in less-than-90-day storage areas and satellite accumulation areas until several days before flashing. Depending on the size and amount of waste to be flashed, it may take several days to stage the waste on the structure. The waste material to be treated may include relatively large quantities that involve extensive scheduling of collection and transport resources, may require equipment such as cranes or additional procedures for lifting of large pieces, and require complicated stacking arrangements on removable steel supports. Because the staging of this material is complex, it may not always be possible to ensure that the conditions required by the NMED Air Quality Bureau are going to be present at the scheduled burn time. If burning is delayed due to adverse conditions, the retractable cover is rolled over the waste to be treated.

F.2.3.2 TA-16-388 Burn Tray

The amount of liquid waste treated at the TA-16-388 Burn Tray is small and staging of this waste does not involve complicated collection and transport procedures. The waste to be treated is transported from less-than-90-day storage areas and satellite accumulation areas just before a planned treatment. It is usually possible to ensure that the conditions (e.g., wind speed, fire conditions) required by the NMED Air Quality Bureau can be met before the waste is staged. In the event of an unforeseen delay, the waste is covered until it can be burned.

F.2.3.3 TA-16-399 Burn Tray

Bulk HE treated at the TA-16-399 HE Burn Tray is initially accumulated in less-than-90-day storage areas and satellite accumulation areas until the day of treatment. Safety concerns dictate that HE be burned promptly after arriving at the Burn Ground. If it cannot be burned promptly, the HE is staged temporarily in a rest house or magazine.

F.2.3.4 TA-16-401 and TA-16-406 Sand Filters

The TA-16-401 and TA-16-406 Sand Filters are used to treat HE-contaminated wastewater; the HE-contaminated solids accumulate over a number of days. Wet bulk and particulate HE is transported to the sand filters from less-than-90-day storage areas and satellite accumulation areas just before the filters are covered for drying. Several days prior to burning, the filters are sealed and the forced-air heater is activated to dry the HE. The HE is burned as soon as conditions allow.

F.2.4 WASTE HANDLING, STORAGE, AND TRANSPORT

Waste containers for small pieces of explosives-contaminated waste and explosive material

generally consist of plastic bags, 55-gallon drums, 30-gallon carboys, or paper-lined cardboard boxes. The waste will be placed within a container, sealed, and labeled appropriately. These waste containers will then be stored in a less-than-90-day storage area or a satellite accumulation area. Pieces of waste that cannot fit into boxes or drums (e.g., large equipment and debris) are usually stored in movable storage bins, such as covered roll-off bins. These bins are designated as less-than-90-day accumulation areas. They can be transported directly to the TA-16 Burn Ground Unit for staging and subsequent treatment of the waste.

Waste to be treated is collected from various less-than-90-day storage areas and satellite accumulation areas at the facility. When loading waste, the cargo compartment of the transport vehicle(s) 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(s). Wastes are transported by appropriately trained personnel in a designated vehicle(s) to the TA-16 Burn Ground. The waste is unloaded from the vehicle(s) and placed at the appropriate Burn Ground Unit structure by qualified technicians/specialists. A visual examination is conducted after unloading to ensure that no explosive material remains in the transport vehicle(s).

F.2.5 PRECIPITATION COVERS AND ACCUMULATED PRECIPITATION MANAGEMENT

The TA-16-388 Flash Pad and Burn Tray are equipped with retractable covers and secondary containment to prevent run-on and runoff of precipitation. The TA-16-399 HE Burn Tray is equipped with a movable cover to prevent run-on into this structure. The TA-16-401 and TA-16-406 Sand Filters are both equipped with heavy steel lids and are connected to the HE Wastewater Treatment Facility, which eliminates the potential for run-on into and runoff from these structures.

In the event that precipitation accumulates at any of the Burn Ground Unit structures, an HE wastewater tank truck will collect and manage it in the same manner as HE-contaminated wastewater.

F.2.6 ASH/RESIDUE MANAGEMENT

HE wastes treated are both homogeneous (e.g., solid explosives, scrap explosives) and heterogeneous (e.g., excess equipment, remediation debris). The wastes are treated to remove the characteristic of reactivity, although other characteristic and listed hazardous waste may be present in the wastes being treated. Whereas burning will treat a number of waste constituents (e.g., HE, solvents), metals will not be destroyed. They will remain in the residues, which are sampled and

analyzed. If hazardous, the residues are sent to an appropriate permitted facility for treatment/disposal. HE-contaminated wastes may be treated at the TA-16 Burn Ground Unit to desensitize or declassify the waste.

The day after an OB treatment, any ash present is inspected for unburned HE or other residues that do not appear to be fully treated. The metal cover is placed over the residue until it can be treated again at the current structure or until it can be transported to a different Burn Ground Unit structure for treatment.

When sampling is required for characterization, the ash may be sampled either before or after being placed in drums. The drums are stored in a less-than-90-day storage area, pending sample analysis in accordance with I.C of this permit chapter. The ash is then sent off site for disposal or for further treatment, based on the analytical results and on the original U.S. Environmental Protection Agency Hazardous Waste Numbers assigned to the waste before treatment. Scrap metal that is free of HE is sent off site for recycling. Other residues are disposed as New Mexico Special Waste in accordance with the New Mexico Administrative Code, Title 20, Chapter 9, Part 1, in a landfill licensed to accept these wastes.

F.2.7 PROTECTION OF THE ATMOSPHERE

The NMED's Air Quality Bureau regulates the air emissions from the TA-16 Burn Ground Unit under a permit issued under the New Mexico Administrative Code, Title 20, Chapter 2, Part 6, "Open Burning." NMED's open burning program recognizes that the systems and structures to prevent emissions of hazardous constituents are not the same as other types of sources because engineering controls are not appropriate. Instead, the program evaluates the methods of burning and relies on burning under good atmospheric dispersion conditions to minimize hazardous emissions impact. Thus, this program also meets the requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V, 264.601(c)(2), revised June 14, 2000. Burning must take place under atmospheric conditions (e.g., stability and wind speed/direction) that favor dispersion. However, winds cannot be so high that significant amounts of ash would become windborne.

ATTACHMENT G.1

AUTHORIZED WASTES FOR THE TECHNICAL AREA 16, BUILDING 88, CONTAINER STORAGE UNIT

EPA I.D. Number *(Enter from Page 1)*

NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES(Enter code)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 16, Building 88, Container Storage Unit							
1	D001	10,000	P	S01			Hazardous Waste
2	D005						Included With Above.
3	D008						Included With Above.
4	D009						Included With Above.
5	D030						Included With Above.
6	THIS LINE INTENTIONALLY LEFT BLANK						
7	D001	10,000	P	S01			Mixed Low-Level Waste
8	D005						Included With Above.
9	D008						Included With Above.
10	D009						Included With Above.
11	D030						Included With Above.

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ATTACHMENT G.2

AUTHORIZED WASTES FOR THE TECHNICAL AREA 16 BURN GROUND UNIT

EPA I.D. Number *(Enter from Page 1)* NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 16 Burn Ground Unit							
1	D003	600,000	P	X01			High explosive (HE)-contaminated water, potentially contaminated with trace solvents and/or metals
2	D005						Included With Above.
3	D006						Included With Above.
4	D007						Included With Above.
5	D008						Included With Above.
6	D009						Included With Above.
7	D011						Included With Above.
8	D018						Included With Above.
9	D022						Included With Above.
10	D030						Included With Above.
11	D035						Included With Above.
12	D036						Included With Above.
13	D038						Included With Above.
14	F002						Included With Above.
15	F003						Included With Above.
16	F004						Included With Above.
17	F005						Included With Above.
18	THIS LINE INTENTIONALLY LEFT BLANK						
19	D001	5,000	P	X01			HE-contaminated spent solvent waste
20	D002						Include With Above.
21	D003						Include With Above.
22	D018						Include With Above.
23	D022						Include With Above.
24	D028						Include With Above.
25	D030						Include With Above.
26	D035						Include With Above.
27	D036						Include With Above.
28	D038						Include With Above.
29	F002						Include With Above.
30	F003						Include With Above.
31	F004						Include With Above.
32	F005						Include With Above.
33	THIS LINE INTENTIONALLY LEFT BLANK						
34	D003	400,000	P	X01			HE-contaminated water
35	D030						Included With Above.
36	THIS LINE INTENTIONALLY LEFT BLANK						
37	D003	5,000	P	X01			HE-contaminated used oil
38	D005						Included With Above.
39	D006						Included With Above.
40	D007						Included With Above.
41	D008						Included With Above.
42	D030						Included With Above.
43	THIS LINE INTENTIONALLY LEFT BLANK						

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 16 Burn Ground Unit (Continued)							
44	D001	12,000	P	X01			Solid and scrap HE
45	D003						Included With Above.
46	D005						Included With Above.
47	D030						Included With Above.
48	THIS LINE INTENTIONALLY LEFT BLANK						
49	D003	30,000[a]	Cubic Yards	X01			HE-contaminated environmental restoration (ER) soil and/or debris
50	D005						Included With Above.
51	D006						Included With Above.
52	D007						Included With Above.
53	D008						Included With Above.
54	D009						Included With Above.
55	D011						Included With Above.
56	D018						Included With Above.
57	D022						Included With Above.
58	D030						Included With Above.
59	D035						Included With Above.
60	D036						Included With Above.
61	D038						Included With Above.
62	F002						Included With Above.
63	F003						Included With Above.
64	F004						Included With Above.
65	F005						Included With Above.
66	THIS LINE INTENTIONALLY LEFT BLANK						
67	D003	1,000	P	X01			HE-contaminated commercial chemical products
68	U019						Included With Above.
69	U022						Included With Above.
70	U044						Included With Above.
71	U112						Included With Above.
72	U154						Included With Above.
73	U159						Included With Above.
74	U169						Included With Above.
75	U196						Included With Above.
76	U220						Included With Above.
77	U239						Included With Above.
78	THIS LINE INTENTIONALLY LEFT BLANK						
79	D003	20,000	P	X01			HE wastewater treatment residues; may include spent carbon and filter solids
80	D005						Included With Above.
81	D006						Included With Above.
82	D007						Included With Above.
83	D008						Included With Above.
84	D009						Included With Above.
85	D011						Included With Above.
86	D018						Included With Above.

EPA I.D. Number *(Enter from Page 1)*

NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 16 Burn Ground Unit (Continued)							
87	D022						Included With Above.
88	D028						Included With Above.
89	D030						Included With Above.
90	D035						Included With Above.
91	D036						Included With Above.
92	D038						Included With Above.
93	F002						Included With Above.
94	F003						Included With Above.
95	F004						Included With Above.
96	F005						Included With Above.
97	K044						Included With Above.
98	K045						Included With Above.
99	THIS LINE INTENTIONALLY LEFT BLANK						
100	D003	5,000	P	X01			HE-contaminated waste; may include paper, glassware, tools, and other waste; may be contaminated with solvents
101	D005						Included With Above.
102	D006						Included With Above.
103	D007						Included With Above.
104	D008						Included With Above.
105	D009						Included With Above.
106	D011						Included With Above.
107	D018						Included With Above.
108	D022						Included With Above.
109	D030						Included With Above.
110	D035						Included With Above.
111	D036						Included With Above.
112	D038						Included With Above.
113	F002						Included With Above.
114	F003						Included With Above.
115	F004						Included With Above.
116	F005						Included With Above.
117	THIS LINE INTENTIONALLY LEFT BLANK						
118	D003	150,000	P	X01			HE-contaminated equipment
119	D005						Included With Above.
120	D006						Included With Above.
121	D007						Included With Above.
122	D008						Included With Above.
123	D009						Included With Above.
124	D011						Included With Above.
125	D030						Included With Above.
126	THIS LINE INTENTIONALLY LEFT BLANK						
127	D001	1,000	P	X01			HE-contaminated waste rags, wipes, and other combustibles
128	D002						Included With Above.
129	D003						Included With Above.
130	F003						Included With Above.