TA50

WF

December 22, 1995

Proposed Hazardous Waste Facility Permit Modification

Technical Area 50

Building 1; Rooms 35, 36, and 38/38A Container Storage Areas
Building 69; Indoor and Outdoor Container Storage Areas

Technical Area 54 West

Building 38; High Bay, Low Bay, Loading Dock, and Outdoor Container Storage Areas

Prepared by:

Los Alamos National Laboratory
Hazardous and Solid Waste Group (ESH-19)
Los Alamos, New Mexico 87545

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PROPOSED HAZARDOUS WASTE FACILITY MODIFIED PERMIT SUMMARY FOR CONTAINER STORAGE AREAS AT TA-50-1, TA-50-69, AND TA-54-38

Module/Attachment	Page	Section	Modification to Permit
III	2 of 6	III.A.3	Added information on hazardous and mixed waste container storage areas at TA-50.
III	2 of 6	III.A.4	Added information on mixed waste container storage areas at TA-54 West.
III	3 of 6	III.B.1	Added language to address mixed wastes.
III	3 of 6	III.B.3	Updated regulatory citations.
III	3 of 6	III.C.1	Added language to address mixed wastes.
III	4 of 6	III.C.2	Added language to address mixed wastes.
III	4/5 of 6	III.C.3	Added information on quantities of wastes in container storage areas at TA-50 and TA-54 West.
III	5 of 6	III.C.4	Added language to address mixed wastes.
III	5 of 6	III.C.5	Updated regulatory citation and added language to address mixed wastes.
III	5 of 6	III.C.6	Updated regulatory citation.
III	6 of 6	III.D	Simplified language and updated regulatory citation.
III	6 of 6	III.F	Updated regulatory citation.
III	6 of 6	III.H.3	Added language to address mixed wastes.
Figures 11, 12, 13	--	--	New figures added to show container storage area locations at TA-50 and TA-54 West.
A	--	Cover Page	Changed from Permit Attachment A to Permit Attachment A.1.
A.2	All	All	Added new Permit Attachment A.2 to address waste analysis for transuranic mixed waste.
A.3	All	All	Added new Permit Attachment A.3 to address waste analysis for low-level solid mixed waste.

B	5 of 31	B.5.1	Clarified/updated language and added language to address mixed wastes.
B	6 of 31	B.5.1	Added information on communication and alarm equipment for the container storage areas at TA-50 and TA-54 West.
B	7 of 31	B.5.2	Clarified/updated language regarding external communication/alarm equipment.
B	7 of 31	B.5.4	Updated reference regarding fire protection group.
B	7/8 of 31	B.6	Clarified language and added aisle space information for the container storage areas at TA-50 and TA-54 West.
B	8-11 of 31	B.7-B.9	Added inspection information for the container storage areas at TA-50 and TA-54 West.
B	13 of 31	Table B-1	Added inspection schedule information for the container storage areas at TA-50 and TA-54 West.
B	24-26 of 31	IRF	Added "Hazardous and Mixed Waste Facility Inspection Record Form." This form is currently used at LANL.
B	27-31 of 31	IRF	Added "Instructions for Use of the Hazardous and Mixed Waste Facility Inspection Record Form."
C (Existing)	1-68 of 68	All	Deleted previous version of Attachment C because training information has been updated and/or revised extensively.
C (Proposed)	1-10 of 10	All	Provided new Attachment C to reflect updated/revised training information.
D (Existing)	1-46 of 46	All	Deleted previous version of Attachment D because contingency measures have been updated and/or revised extensively and the plan addressed only hazardous waste.
D (Proposed)	1-57 of 57	All	Provided new Attachment D to reflect updated/revised contingency measures information and to address both hazardous and mixed waste.
D (Proposed)	9 of 57	D.3.1	Language regarding explosions and fires was retained from the previous version of Attachment D.

D (Proposed)	17-18 of 57	D.9.1.1	Language regarding emergency process shutdown for the TA-50 Waste Incinerator was retained from the previous version of Attachment D.
D (Proposed)	18 of 57	D.9.1.2	Language regarding emergency process shutdown for the TA-16 Industrial Incinerator was retained from the previous version of Attachment D.
D (Proposed)	27 of 57	Table D-3	Table D-6 from the previous version of Attachment D was retained and renumbered as Table D-3.
D (Proposed)	37-43 of 57	Appendix D-1	Information regarding emergency equipment for the specific units included in the previous version of Attachment D was retained and is in now included in Appendix D-1.
E.10	1-17 of 17	All	Provided new Attachment E.10, which is the Closure Plan for the container storage areas at TA-50-1.
E.11	1-18 of 18	All	Provided new Attachment E.11, which is the Closure Plan for the container storage areas at TA-50-69.
E.12	1-18 of 18	All	Provided new Attachment E.12, which is the Closure Plan for the container storage areas at TA-54 West.
F	1-2 of 4	F.1.1	Updated language regarding container packaging and transport to reflect most current and accurate information and to address mixed waste.
F	2 of 4	F.1.2	Updated language regarding labeling, recording, and sampling to reflect most current and accurate information.
F	2-4 of 4	F.2.1	Added language to address storage areas at TA-50-1, TA-50-69, and TA-54-38.
F	4 of 4	F.2.2	Added language for clarification of general container management practices.
G	19-28	--	Added authorized wastes for container storage areas at TA-50-1, Rooms 35, 36, and 38/38A. Because the EPA form already has shading, the new information is not redlined.

G	29-38	--	Added authorized wastes for container storage areas at TA-50-69 Indoor and Outdoor container storage areas. Because the EPA form already has shading, the new information is not redlined.
G	39-43	--	Added authorized wastes for container storage areas at TA-54 West, Building 38, container storage areas. Because the EPA form already has shading, the new information is not redlined.

MODULE III STORAGE IN CONTAINERS

III.A. DESIGNATED STORAGE UNITS

1. Technical Area 54, Area L The Permittee may store for more than ninety days hazardous wastes in containers only in the following designated storage areas:

   a. Containers containing free liquids may be stored on the concrete containment structure, Facility Number 54-32.

   b. Containers containing free liquids may be stored in the packaging building, Facility Number 54-31.

   c. Containers not containing free liquids may be stored, on pallets or otherwise elevated four inches, in a single layer in cleared areas within the fenced portion of Area L, subject to the limitations of HWMR-5, as amended 1989, Part V, 40 CFR Sections 264.175(c) and 264.175(d). Such containers shall not be stored within five feet of the perimeter fence, nor five feet of any structure, nor five feet of the paved or unpaved roadway. Disposal unit covers designed to serve as storage areas are not subject to this exclusion. See Figure 6.

   d. Gas cylinders will be stored in cylinder racks, or on specially constructed pallets that provide support and restraint under a self-supporting canopy located in cleared areas within the fenced portion of Area L, within the restrictions of permit paragraph II.G. above.

   e. The fence line around Area L as shown in permit Figure 6 shall not be altered without prior notice to the Secretary and permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.41 or 270.42 as appropriate.

   f. Containers containing free liquids may be stored in the modular storage buildings, Model 22 or equivalent, Facility Numbers 54-68 and 54-69, 54-70 for container storage located as shown in Figure 6.

2. Technical Area 50 The Permittee may store for more than ninety days hazardous wastes in containers only in the following designated storage areas:

   a. Containers may be stored within the curbed bay of the Batch Waste Treatment Unit in Building 50-1.

   b. Containers containing free liquids may be stored on the concrete containment structures, Facility Numbers 50-139 and 50-140, located as shown in Figure 4.

c. Building 50-37. Containers may be stored within storage room 117 of the Controlled Air incinerator as shown in Figure 4.

d. Containers containing free liquids may be stored in the modular storage buildings, Model 22 or equivalent, Facility Numbers 50-114, 50-137 and 50-138, located as shown in Figure III-2.

3. Technical Area 50 The Permittee may store for more than ninety days hazardous and/or mixed wastes in containers only in the following designated storage areas:

a. Containers not containing free liquids may be stored on pallets, dollies, or otherwise elevated in Building 50-1, Rooms 35, 36, and 38/38A. Containers containing suspect or known free liquids may be stored on self-containment pallets in Building 50-1, Rooms 35 and 38/38A. Containers will not be stacked at these storage areas. See Figure 11.

b. Containers not containing free liquids may be stored on pallets, dollies, or otherwise elevated in Building 50-69, Rooms 102 and 103, and at the Building 50-69 Outdoor Container Storage Area (CSA). Containers containing suspect or known free liquids may be stored on self-containment pallets in Building 50-69, Rooms 102 and 103, and at the Building 50-69 Outdoor CSA. Containers will not be stacked at the Building 50-69, Rooms 102 and 103, storage areas. Containers may be stacked two high at the Building 50-69 Outdoor CSA. See Figure 12.

4. Technical Area 54 West The Permittee may store for more than ninety days mixed wastes in containers only in the following designated storage areas.

a. Building 54-38 Low Bay CSA. Containers not containing free liquids may be stored on pallets or dollies in the Low Bay CSA. Containers containing suspect or known liquids may be stored on self-containment pallets in the Low Bay CSA. Containers will not be stacked at this storage area. See Figure 13.

b. Building 54-38 High Bay CSA. Containers not containing free liquids may be stored on pallets or dollies or otherwise elevated in the High Bay CSA. Containers containing suspect or known liquids may be stored on self-containment pallets in the High Bay CSA. Containers will not be stacked at this storage area. See Figure 13.

c. Building 54-38 Loading Dock CSA. Containers may be stored on self-containment pallets in the Loading Dock CSA. Containers will not be stacked at this storage area. See Figure 13.

d. Building 54-38 Outdoor CSA. Drums of waste may be stored on self-containment pallets in the Outdoor CSA. Other types of waste containers that are elevated by design may be stored in the Outdoor CSA. Containers will not be stacked at this storage area. See Figure 13.

III.B. AUTHORIZED WASTES

1. Identification Only hazardous and/or mixed wastes identified in Permit Attachment G. with the process code "S01" in column D.1. "Processes" shall be stored.

2. Quantities The cumulative quantity of individual hazardous and/or mixed wastes in storage at any one time at the facility shall not exceed the quantity indicated in Permit Attachment G. Column B. "Estimated Annual Quantity of Waste".

3. Land Ban The Permittee must also comply with the following regarding storage of its wastes in containers which are prohibited from land disposal. These restrictions are imposed on any waste as it becomes prohibited from land disposal. ~~(HWMR-5, as amended 1989, Part VIII, 40 CFR Section 268.50)~~ (New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart VIII, 268.50, revised November 1, 1995)

   a. A storage period of one year is permitted. A storage period beyond one year is permitted provided there is proof that such storage is solely for the purpose of accumulation of such quantities as are necessary to facilitate proper recovery, treatment or disposal.

   b. Each container must be clearly marked as to its contents and the date each period of accumulation begins.

   c. Hazardous wastes meeting the treatment standards in ~~HWMR-5, Part VIII, 40 CFR Sections 268.41, 268.42, 268.43~~ 20 NMAC 4.1, Subpart VIII, 268.41, 268.42, 268.43, revised November 1, 1995, are not subject to the storage prohibition. Hazardous wastes meeting the treatment standards specified under the variance in ~~HWMR-5, Part VIII, 40 CFR Section 268.44~~ 20 NMAC 4.1, Subpart VIII, 268.44, revised November 1, 1995, are not subject to the storage prohibition.

III.C. CONTAINERS

1. Capacity

   a. Labpacked wastes shall be stored in containers not to exceed 55-gallon nominal capacity.

   b. Bulk liquids may be stored in drums of a nominal capacity of 55-gallons or less.

   c. Solidified hazardous and/or mixed wastes not containing free liquids may be stored in containers meeting U.S. Department of Transportation (DOT) requirements for transportation.

   d. Compressed gases may be stored in any sized cylinder. Small cylinders may be packed in drums or crates complying with DOT shipping regulations.

e. Polyethylene containers of 220-gallon or 330-gallon capacity may be used in place of 55-gallon drums as long as secondary containment capacity criteria of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.175(b)(3) are not exceeded.

2. Type Containers must be of a type specified in the DOT hazardous materials regulations, 49 CFR 171 to 179, if those regulations specify a particular container for the waste. As applicable, the containers shall be either: (1) previously unused or certified reconditioned DOT shipping containers; (2) the original shipping containers in which the material was first marketed; or (3) any other suitable container which satisfies the requirements of permit paragraph III.C. If the hazardous and/or mixed wastes are to be received and stored in their original shipping containers, the Permittee must insure that the requirements of permit paragraph III.C. are satisfied. Polyethylene bulk containers shall meet or exceed DOT specification number E9052. Compressed gas cylinders not meeting DOT requirements shall be segregated in a safe area.

3. Quantity The following quantities include all stored liquid materials, whether regulated or not. Solid materials which do not displace containment capacity may be collocated without affecting these volumes. Solid materials which displace containment volume shall be included in calculating the stored volume as if they were liquids. The Permittee shall keep current accurate records of the quantity of waste in storage at each location below to ensure that these capacities are not exceeded.

   a. No more than 220 gallons of liquid shall be stored at Technical Area 50, Building 50-1, BWTU curbed bay.

   b. No more than 440 gallons of liquid shall be stored at Technical Area 54, Area L, Building Number 54-31.

   c. No more than 17,220 gallons of liquid shall be stored at each concrete containment structure: facility Numbers 54-32, 50-139 or 50-140.

   d. No more than 3600 containers of 55-gallon capacity or less, or the equivalent volume of 26,470 cubic feet, 980 cubic yards or 749 cubic meters, shall be used to store solidified wastes at Technical Area 54, Area L.

   e. No more than 3,630 gallons of liquid shall be stored in Building 50-37, Room 117.

   f. No more than 1,650 gallons of waste shall be stored in each modular storage unit.

   g. No more than 250 gallons of waste shall be stored in Building 50-1, Room 35. No more than 15 cubic yards of waste shall be stored in Building 50-1, Room 36. No more than 750 gallons of waste shall be stored in Building 50-1, Room 38/38A.

   h. No more than 1,500 gallons of waste shall be stored at the Building 50-69 Indoor CSA (Rooms 102 and 103). No more than 30,000 gallons of waste shall be stored at the Building 50-69 Outdoor CSA.

i. No more than 2,200 gallons of waste shall be stored at the Building 54-38 High Bay CSA. No more than 880 gallons of waste shall be stored at the Building 54-38 Low Bay CSA. No more than 660 gallons of waste shall be stored at the Building 54-38 Loading Dock CSA. No more than 7,920 gallons of waste shall be stored at the Building 54-38 Outdoor CSA.

4. Condition

a. If a container holding hazardous or mixed 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 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.

b. 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 record.

5. Compatibility of Waste with Containers

a. The Permittee shall assure, as required by ~~HWMR-5, as amended 1989, Part V, 40 CFR Section 264.172,~~ 20 NMAC 4.1, Subpart V, 264.172, revised November 1, 1995, that the ability of the container to contain the waste is not impaired. When necessary, this shall include procedures for determining whether the hazardous or mixed waste is no longer compatible with the shipping container if it is to be stored in its original container (e.g. determination of container adequacy for chemicals that have a finite shelf life or may change in composition upon aging).

b. The Permittee shall not place into the polyethylene containers described in permit paragraph III.C.1.e. above, any material for which the manufacturer does not rate the container suitability as "Good" or "Excellent" in the current compatibility technical bulletin issued by the manufacturer. A copy of the current bulletin shall be available at any location where the polyethylene container(s) is (are) filled or stored with contained wastes for more than thirty days.

6. Management The Permittee shall manage containers as required by ~~HWMR-5, as amended 1989, Part V, 40 CFR Section 264.173~~ 20 NMAC 4.1, Subpart V, 264.173, revised November 1, 1995, and Permit Attachment F.

III.D. CONTAINMENT

The Permittee shall construct and maintain the containment systems for each storage unit in permit paragraphs III.A.~~1. and III.A.2.~~ above in accordance with the requirements of ~~HWMR-5, as amended 1989, Part V, 40 CFR Section 264.175.~~ 20 NMAC 4.1, Subpart V, 264.175, revised November 1, 1995.

III.E. IGNITABLE OR REACTIVE WASTES

The Permittee shall not locate containers holding ignitable or reactive waste within 15 meters (50 feet) of the facility property line.

III.F. INCOMPATIBLE WASTES

The Permittee shall manage incompatible wastes or incompatible wastes and materials in accordance with the requirements of ~~HWMR-5, as amended 1989, Part V, 40 CFR Section 264.177.~~ 20 NMAC 4.1, Subpart V, 264.177, revised November 1, 1995.

III.G. CLOSURE

The Permittee shall comply with the Closure Plan, Permit Attachment E. and permit paragraph II.L. above, for closure of any permitted storage area.

III.H. INSPECTION

1. Inspection Plan The Permittee shall inspect the storage areas in accordance with Permit Attachment B.

2. Spill Kits The type, presence, location and quantity of spill kits shall be verified and annotated monthly. If spill kits are locked up, the location of access keys shall be verified.

3. Warning Signs The legibility and condition of warning signs shall be included in the weekly inspection. Missing or illegible signs shall be promptly replaced within 24 hours of discovery.

    a. Signs shall be at the entrances to the hazardous and mixed waste units. Collocated units may be included within one signed area.

    b. Signs shall say "Danger, Unauthorized Personnel Keep Out" and "Hazardous Waste Storage Area".

    c. Signs shall be in both English and Spanish.

    d. Signs on approachable perimeter fences shall be spaced no more than 50 feet apart.

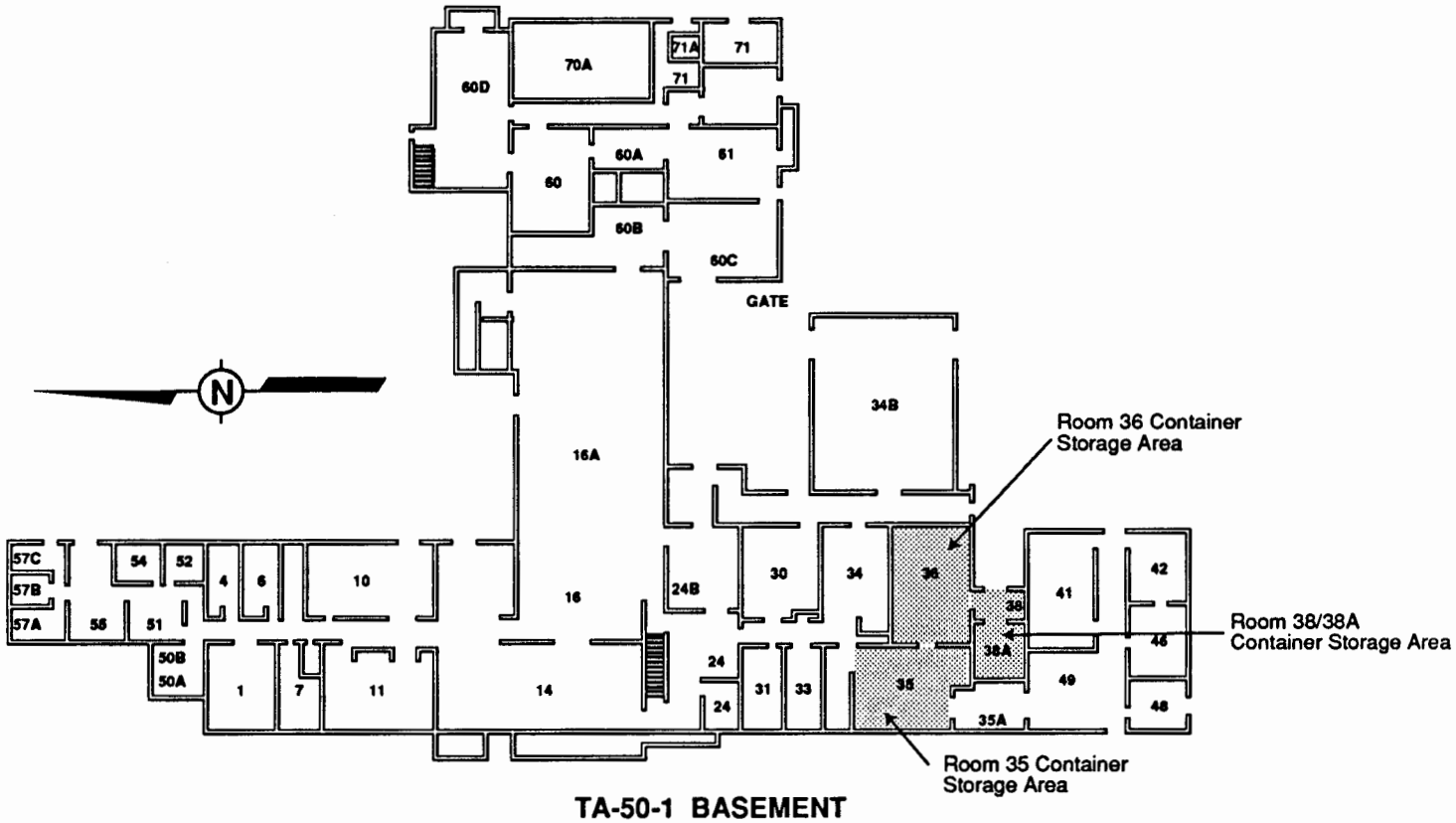
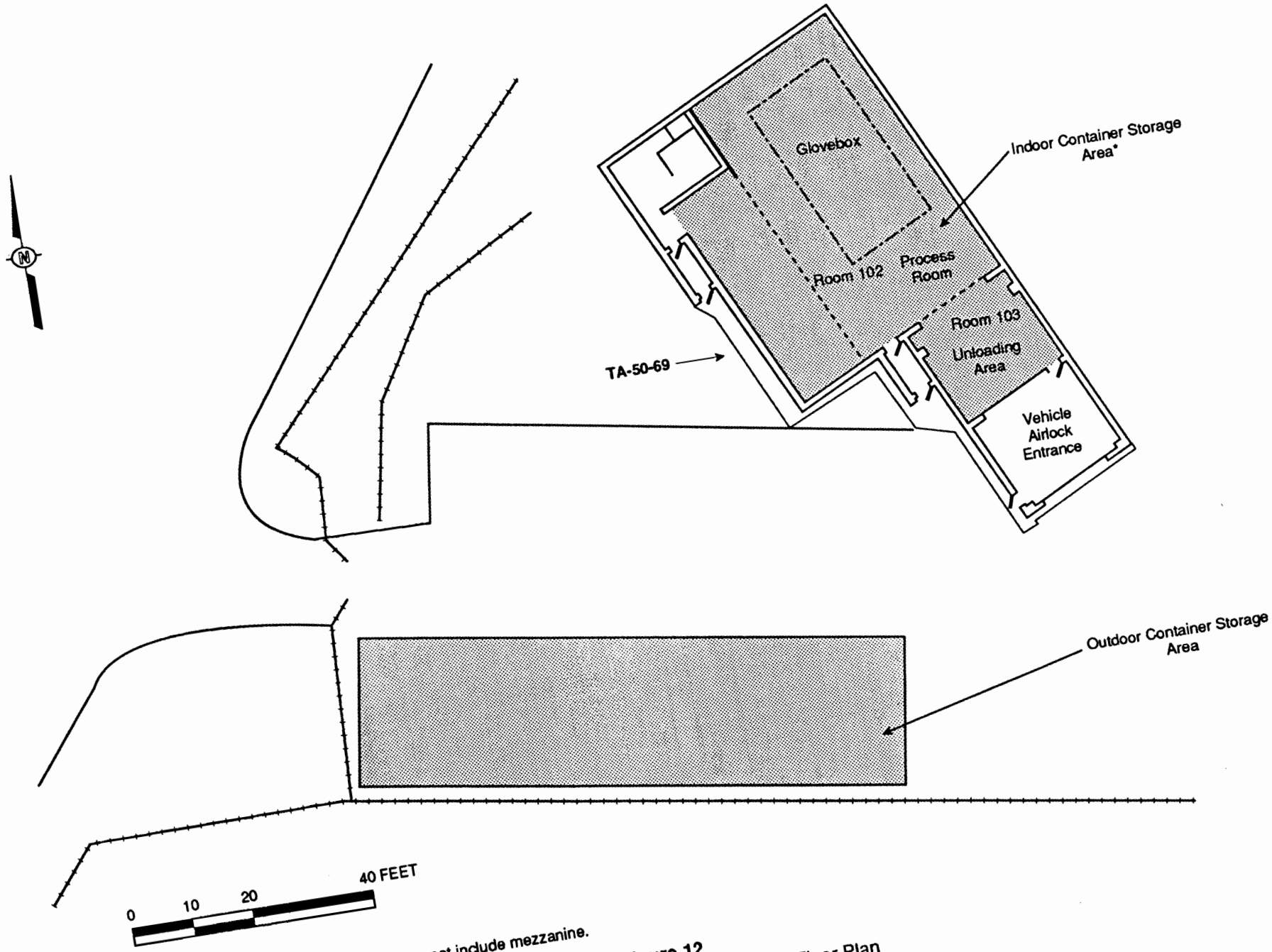


Figure 11
Technical Area (TA) 50, Building 1, Basement Floor Plan



*Note: Container Storage Area in Building 69 does not include mezzanine.

Figure 12
Technical Area (TA) 50, Building 69, First Floor Plan

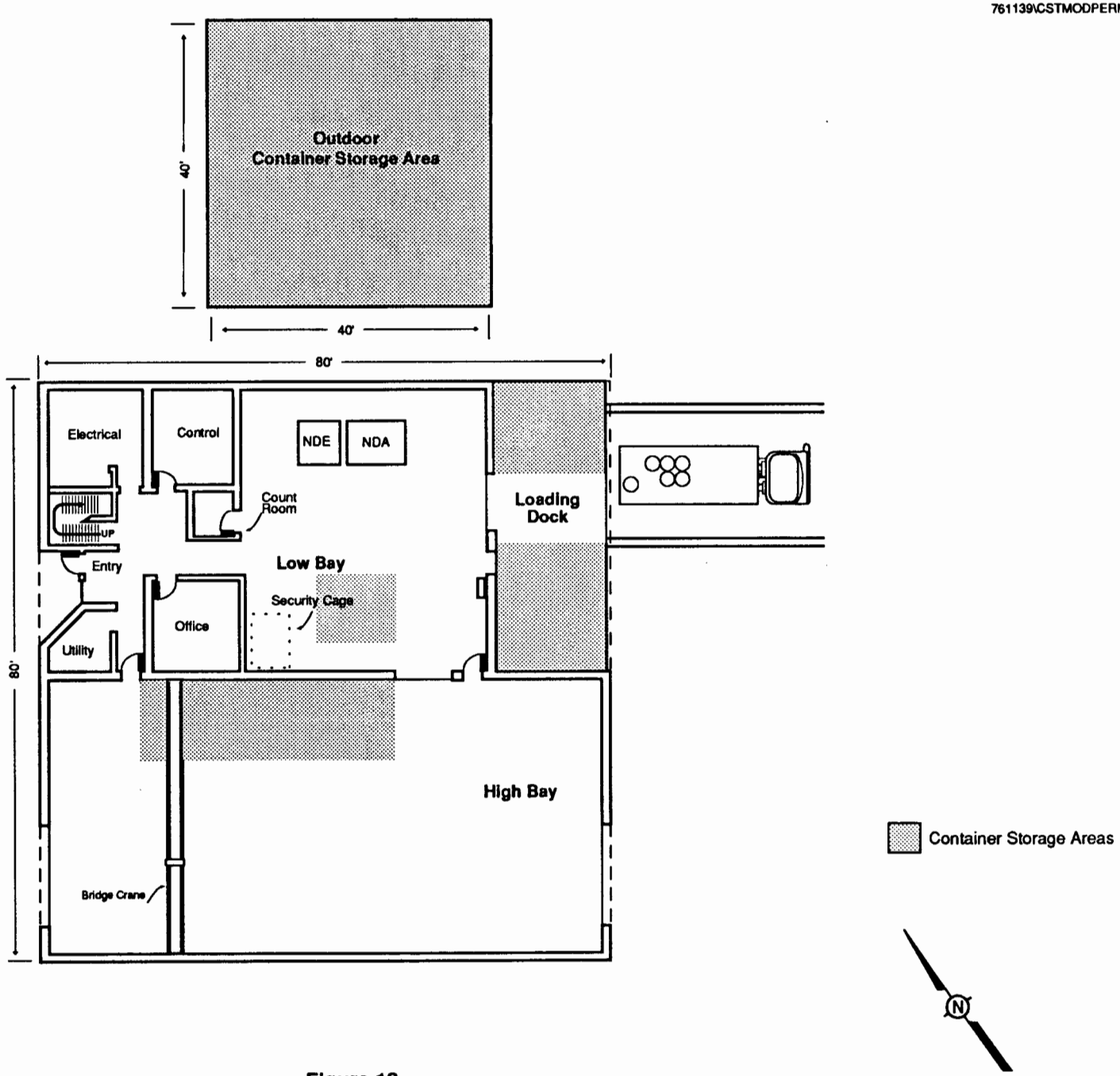


Figure 13
Technical Area (TA) 54 West, Building 38, First Floor Plan

WASTE ANALYSIS PLAN
AND
WASTE SEGREGATION PROCEDURES

PERMIT ATTACHMENT A.1
NM0890010515-1

WASTE ANALYSIS PLAN

PERMIT ATTACHMENT A.2
NM0890010515-1

WASTE ANALYSIS PLAN FOR TRANSURANIC MIXED WASTE

LIST OF DEFINITIONS

Acceptable knowledge - Broadly defined to include process knowledge, waste analysis data, and/or facility records of analysis.

Existing (or currently generated) transuranic (TRU) mixed waste - TRU mixed waste streams that have been characterized using Los Alamos National Laboratory (LANL)'s Waste Profile Form (WPF) (the WPF has been used since May 1991).

Future TRU mixed waste - TRU mixed waste streams that will be characterized through the use of both LANL's WPF and a certification program.

Heterogeneous waste - Waste that is of dissimilar or diverse composition.

Homogeneous waste - Waste that is of uniform composition.

Legacy TRU mixed waste - TRU mixed waste streams generated before the LANL WPF was implemented (i.e., prior to May 1991).

Process knowledge - Described in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.13(a)(2), revised November 1, 1995, as data developed under Subpart II and existing published or documented data on a specific hazardous waste or hazardous waste generated from similar processes.

Resource Conservation and Recovery Act (RCRA) hazardous waste - The criteria for establishing a waste as a RCRA hazardous waste are provided in 20 NMAC 4.1, Subpart II, revised November 1, 1995. A waste is considered hazardous if it meets the definition of a RCRA solid waste; is not exempted from regulation; and exhibits one or more of the characteristics described in 20 NMAC 4.1, Subpart II, Part 261, Subpart C, revised November 1, 1995, or is listed in 20 NMAC 4.1, Subpart II, Part 261, Subpart D, revised November 1, 1995.

RCRA solid waste - Any waste stream that meets the definition of a "solid waste" as specified in 20 NMAC 4.1, Subpart II, 261.2, revised November 1, 1995.

Retrievably stored waste - Waste that was generated and placed in storage in covered pads and shafts before the implementation of LANL's TRU waste certification program. Waste stored after implementation of LANL's TRU waste certification program is stored in areas that can be more easily accessed.

Solid waste - Any waste stream in a solid physical form. In this document, use of the generic term "solid waste" refers only to the solid physical form and has no additional regulatory meaning.

TRU mixed waste - Waste that has both a RCRA-hazardous waste component (see definition) and a TRU waste component (see definition).

LIST OF DEFINITIONS
(Continued)

TRU waste - Waste defined in the U.S. Department of Energy (DOE) Order 5820.2A, "Radioactive Waste Management" (DOE, 1988), as follows: "Without regard to source or form, waste that is contaminated with alpha-emitting transuranic radionuclides with half-lives greater than 20 years and concentrations greater than 100 nanocuries per gram at the time of assay and has atomic numbers greater than 92. Heads of Field Elements can determine that other alpha contaminated waste, peculiar to a specific site, must be managed as TRU waste."

LIST OF REGULATORY REFERENCES AND CORRESPONDING WASTE ANALYSIS PLAN LOCATION

RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
264.13(a)(1)	Analysis information adequate to meet 20 NMAC 4.1, Subparts V and VIII, Parts 264 and 268, revised November 1, 1995, storage requirements	A.2.2 and A.2.3
264.13(a)(2)	Waste analysis data	A.2.3.2
264.13(a)(3)	Repeat analysis	A.2.3.1, A.2.5, and A.2.5.2
264.13(a)(4)	Inspection and analysis after each movement of hazardous waste received from off-site	Not applicable (NA)
264.13(b)	Written waste analysis plan	Entire plan
264.13(b)(1)	Parameters and rationale for selection	A.2.2.1 and A.2.2.2 and Table A.2-3
264.13(b)(2)	Test methods	A.2.3, A.2.3.3, A.2.3.3.1, A.2.3.3.2, A.2.3.3.3, A.2.4, and Tables A.2-3 and A.2-4
264.13(b)(3)	Representative sample collection method	A.2.3.3, A.2.3.3.3, A.2.3.3.4, and A.2.3.3.5
264.13(b)(4)	Frequency for review or repeat of initial analysis	A.2.3.1, A.2.5.1, and A.2.5.2
264.13(b)(5)	Waste analysis information to be provided to off-site facilities	A.2.3.1, A.2.3.2, and Figure A.2-1
264.13(b)(6)	Additional waste analysis requirements	A.2.6

Refer to footnotes at end of table.

LIST OF REGULATORY REFERENCES AND CORRESPONDING WASTE ANALYSIS PLAN LOCATION (Continued)

RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
264.13(b)(7)	Surface impoundments exempted under 20 NMAC 4.1, Subpart VIII, 268.4(a), revised November 1, 1995	NA
264.13(c)	Inspection and analysis procedures for off-site facilities	NA
264.13(c)(1)	Procedures for identification of each movement of waste at off-site facilities	NA
264.13(c)(2)	Sampling method for the waste to be identified at off-site facilities	NA
264.13(c)(3)	For off-site landfills: procedures to determine whether a biodegradable sorbent has been added to containers	NA
268.7(a)	Determination of whether waste is restricted from land disposal	A.2.6.3
268.7(b)	Testing requirements for treatment facilities	NA
268.7(b)(1)	Testing of treatment residues or extract of waste with concentration-based treatment standards specified in 20 NMAC 4.1, Subpart VIII, 268.41, revised November 1, 1995	A.2.6.3
268.7(b)(2)	Testing of treatment residues pursuant to 20 NMAC 4.1, Subpart VIII, 268.32, revised November 1, 1995	NA
268.7(b)(3)	Testing of treatment residues of waste with concentration-based treatment standards specified in 20 NMAC 4.1, Subpart VIII, 268.43, revised November 1, 1995	A.2.6.3
268.7(b)(4)	Notice requirements	A.2.6.3 and Figure A.2-2

Refer to footnotes at end of table.

LIST OF REGULATORY REFERENCES AND CORRESPONDING WASTE ANALYSIS PLAN LOCATION (Continued)

RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
268.7(b)(5)	Certification of compliance with 20 NMAC 4.1, Subpart VIII, Part 268, revised November 1, 1995	A.2.6.3
268.7(b)(6)	Notice and certification requirements for treatment facilities that ship treatment residues to a different treatment, storage, or disposal (TSD) facility	NA
268.7(b)(7)	Notice requirement for recycling facilities using materials in a manner constituting disposal	NA
268.7(c)(1)	Recordkeeping requirements for land disposal facilities	NA
268.7(c)(2)	Testing requirements for land disposal facilities	NA
268.7(d)(1)	Notification requirements for excluded debris (i.e., pursuant to 20 NMAC 4.1, Subpart II, 261.3, revised November 1, 1995)	NA
268.7(d)(2)	Updated notification requirements for debris	NA
268.7(d)(3)	Documentation and certification requirements for debris excluded under 20 NMAC 4.1, Subpart II, 261.3(e)(1), revised November 1, 1995	NA
270.14(b)(2)	Chemical and physical analyses	A.2.2.1, A.2.3, A.2.3.1, A.2.3.2, A.2.3.3, A.2.3.3.1, A.2.3.3.2, A.2.3.3.3, Figure A.2-1, and Tables A.2-3 and A.2-4

Refer to footnotes at end of table.

LIST OF REGULATORY REFERENCES AND CORRESPONDING WASTE ANALYSIS PLAN LOCATION (Continued)

[a] Resource Conservation and Recovery Act

[b] New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), revised November 1, 1995, which adopts, with a few limited exceptions, Title 40 of the Code of Federal Regulations (40 CFR), Parts 260–266, Part 268, and Part 270 (1994). 20 NMAC 4.1, Subparts V, VIII, and IX, revised November 1, 1995, contain equivalent regulations to 40 CFR Parts 264, 268, and 270, respectively.

ATTACHMENT A.2
WASTE ANALYSIS PLAN FOR TRANSURANIC MIXED WASTE

This waste analysis plan (WAP) presents information on the chemical and physical nature of transuranic (TRU) mixed waste generated and general TRU mixed waste characterization methods used at Los Alamos National Laboratory (LANL). The waste analysis information contained within this WAP is specific to storage requirements only. Waste analysis plans specific to treatment requirements will be developed and submitted as needed. Waste analysis requirements are specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.14(b)(2), revised November 1, 1995; in 20 NMAC 4.1, Subpart V, 264.13, "General Waste Analysis," revised November 1, 1995; and in 20 NMAC 4.1, Subpart VIII, 268.7, "Waste Analysis and Recordkeeping," revised November 1, 1995. The content of this WAP generally follows the guidance provided in "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes - A Guidance Manual" (U.S. Environmental Protection Agency [EPA], 1994).

Mixed waste contains both a hazardous waste component, as defined and regulated by the Resource Conservation and Recovery Act (RCRA), and a radioactive waste component. This WAP addresses only *TRU mixed waste*, which is defined in the List of Definitions of this WAP.

For waste characterization purposes, TRU mixed waste at LANL has been subdivided into three groups based on the timeframe for generation of the waste: *legacy, existing (or currently generated)*, and *future*. These three groups are defined in the List of Definitions.

This TRU mixed waste WAP is organized as follows. Section A.2.1 includes a facility description, information on TRU mixed waste-generating processes and activities, identification of TRU mixed waste managed, and a description of TRU mixed waste management units. Section A.2.2 presents waste parameters, including the criteria and rationale for selection. Section A.2.3 provides TRU mixed waste characterization procedures. Section A.2.4 presents laboratory selection and analytical methods. Section A.2.5 provides waste verification requirements. Section A.2.6 addresses special procedural requirements (e.g., for ignitable, reactive, and incompatible waste and for compliance with land disposal restriction [LDR] requirements). Differences in requirements for the characterization of legacy, existing, and future TRU mixed waste are described in the applicable sections of this WAP.

A.2.1 FACILITY DESCRIPTION

LANL is located in Los Alamos County in north-central New Mexico. It is approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. LANL, which is divided into 49 technical areas (TA), and the associated residential and commercial areas of Los Alamos County are situated on the Pajarito Plateau. The principal missions of LANL include the research, design, development, and analysis of weapons components for the nation's nuclear arsenal; supporting research programs; energy research and environmental missions; and environmental management programs. LANL is owned by the U.S. Department of Energy (DOE) and is operated jointly by DOE and the University of California.

A.2.1.1 Facility Waste-Generating Processes, Activities, and Identification of TRU Mixed Wastes Managed

TRU mixed waste is generated at LANL primarily from research and development activities, processing and recovery operations, and decontamination and decommissioning projects. Additional information on waste-generating processes is provided in Sections A.2.1.1.1 through A.2.1.1.3.

In addition to grouping TRU mixed waste based on the time of generation (i.e., legacy, existing, and future), TRU mixed waste streams at LANL will be divided into three broad categories referred to as *matrix parameter codes*, which are used to define waste characterization groupings for the Federal Facilities Compliance Act requirements. The matrix parameter codes are based upon the physical and chemical forms of the waste. The matrix parameter codes that are applicable to LANL's TRU mixed waste are:

- Matrix Parameter Code 3000 - solid process residues
- Matrix Parameter Code 4000 - soils
- Matrix Parameter Code 5000 - debris wastes.

Matrix parameter code descriptions are provided in "DOE Waste Treatability Groups Guidance" (DOE, 1994). Sampling and analytical procedures, discussed in Sections A.2.3 and A.2.4, are based on the physical characteristics of these broad categories.

Matrix parameter codes have been applied to TRU mixed waste streams at LANL as the most general categorization scheme to distinguish waste types at this time. Additional waste identification systems have been used for supplementary purposes as part of waste management operations for TRU mixed waste generated at LANL. Table A.2-1 cross references the matrix parameter codes with these waste identification systems. The waste identification system used for a particular waste container depends largely upon the date of placement into storage. The additional waste identification systems, listed in order of the most general system to the most specific, are as follows:

- Item Description Codes (IDC) - IDCs, first used at LANL in July 1984, generally consist of a three-digit number. These codes represent the most general descriptions of TRU and TRU mixed waste and are used at most of DOE's facilities that generate TRU and TRU mixed waste. They were developed as a waste identification system, based on the chemical and physical form of the waste, to promote consistency throughout DOE for wastes intended for transportation to the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico. IDCs for TRU mixed waste at LANL are provided in Section A.2.1.1.1.

- TRUPACT-II Content (TRUCON) Codes - TRUCON codes, first used at LANL in October 1992, were developed by DOE to provide a consistent waste description for all TRU and TRU mixed waste generated throughout all of DOE's facilities. The TRUCON codes are intended to assist DOE in establishing the characteristics of TRU and TRU mixed waste to be certified for transportation to the WIPP. LANL TRUCON codes consist of a three-digit number preceded by the letters "LA" and followed by a letter that further defines the waste type and source. TRUCON codes for TRU mixed waste at LANL are provided in Section A.2.1.1.2.

- Radioactive Solid Waste Disposal (RSWD) Codes - RSWD codes, first used at LANL in January 1971, are two-digit codes preceded by the letter "A". These codes are used exclusively at LANL and categorize TRU and TRU mixed waste forms generated by the various on-site facilities. RSWD codes for TRU mixed waste are provided in Section A.2.1.1.3.

Tables A.2-1 and A.2-2 are organized in this hierarchical fashion, from the most general waste stream categorization scheme to the most specific waste stream identification system. As shown in Table A.2-1, the matrix parameter codes are the most general categorization scheme for TRU mixed waste. Each matrix parameter code includes specific IDCs, and each IDC in turn may include a number of TRUCON and RSWD codes. Each IDC, TRUCON code, and RSWD code in LANL's TRU mixed waste inventory is described in Sections A.2.1.1.1, A.2.1.1.2, and A.2.1.1.3, respectively. The basis for RCRA waste classification for each IDC, TRUCON code, and RSWD code is provided in Table A.2-2. Because the IDCs, TRUCON codes, and RSWD codes were not developed to provide RCRA-required information, potential EPA Hazardous Waste Numbers and potential hazardous constituents shown in Table A.2-2 have been identified through records reviews and interviews with generators for much of LANL's legacy TRU mixed waste. A conservative approach has been used to identify potential hazardous constituents for legacy and existing TRU mixed waste streams. Waste characterization, as discussed in Section A.2.3, will be used to confirm hazardous constituents present in individual waste streams. The development of detailed, RCRA-required information for legacy TRU mixed waste is an ongoing process at LANL. The potential EPA Hazardous Waste Numbers and hazardous constituents shown in Table A.2-2 are the result of the most recent iteration of this process and may be updated upon further evaluation.

A.2.1.1.1 LANL IDCs

This section provides brief descriptions of the TRU mixed waste streams at LANL that have been assigned IDCs. The descriptions of the IDC wastes were developed from Attachments 1 through 4 and Attachment 6 to the "Los Alamos TRU Waste Certification Plan" (LANL, 1991). The EPA Hazardous Waste Numbers that potentially apply to these IDC wastes are listed in Table A.2-2.

IDC 001

IDC 001 waste is comprised of several types of metal scrap and incidental combustibles. This waste is generated at various TAs throughout LANL and is size reduced at the Waste Characterization, Reduction, and Repackaging Facility (WCRRF) at TA-50-69. The waste consists mostly of metals or metal equipment, either whole or sectioned, and lesser amounts of combustible components. In addition, it contains small volumes of combustibles generated during decommissioning, sectioning, and packaging. The waste forms primarily include gloveboxes, process equipment, and ductwork from decommissioning operations. Gloveboxes may include gloves, wiring, plastic, glass windows, plastic wrapping, and lead shielding.

IDC 002

IDC 002 waste is concreted (cemented) aqueous waste, which consists of caustic sludge stabilized with Portland cement to form a noncorrosive solid monolith. The sludge is a residue from the treatment of blended acidic and caustic aqueous liquid radioactive waste with calcium hydroxide, ferric sulfate, and a flocculation aid. This treatment produces a thin sludge (approximately 25 percent solids) that is always

alkaline and is compatible with Portland cement. Final cemented waste monoliths are produced by tumbling 55-gallon steel drums containing empirically determined quantities of sludge, Portland cement, vermiculite, and sodium silicate.

IDC 003

IDC 003 waste is stabilized aqueous waste. It consists of dewatered sludge generated by the vacuum filtration of solids from a pretreated aqueous waste slurry. These solids are first trapped on the surfaces of the filter media (diatomaceous earth). The filter medium with the entrapped filtrate is then placed in drums with dry concrete absorbent.

IDC 004

Combustible waste (e.g., paper, rags, plastic, rubber) comprises IDC 004, including plastic-based and cellulose-based waste generated at TA-55-4. Plastic-based waste includes, but may not be limited to, tape, polyethylene, and vinyl; gloves; plastic vials; polystyrene; Tygon™ tubing; polyvinyl chloride plastic; Teflon™ products; plexiglass; and dry box gloves (unleaded Neoprene base). Cellulose-based waste includes, but may not be limited to, rags, wood, paper, cardboard, laboratory coats and coveralls, booties and cotton gloves, and similar miscellaneous materials. IDC 004 waste may also contain a small fraction of noncombustible solids (e.g., scrap metals, metal lids).

IDC 005 and Subgroups

IDC 005 waste consists of the following subgroups:

IDC 005

Discarded high-efficiency particulate air (HEPA) filters are identified as IDC 005 waste. This waste is generated at TA-55-4.

IDC 005(LG)

IDC 005(LG) waste consists of glass waste and includes, but may not be limited to, discarded labware, windows, and bottles. A small fraction of combustible waste, such as plastics (mainly packaging), may also be present in this waste stream.

IDC 005(LM)

Metal waste (e.g., motors, pumps, tools, and process equipment) comprises IDC 005(LM) waste. A small fraction of combustible waste, such as plastics (mainly packaging), may also be present in this waste stream.

IDC 005(P1)

IDC 005(P1) waste is leaded rubber waste and metal waste. This waste stream also includes lead-lined glovebox gloves discarded along with metal waste, such as motors and tools.

IDC 005(P2G)

IDC 005(P2G) waste is graphite solid waste that consists of discarded graphite mold and furnace equipment generated during plutonium casting and other operations conducted in Room 327 at TA-55-4.

IDC 005(P2S)

IDC 005(P2S) waste consists of used salts from pyrochemical processes such as electrorefining, molten salt extraction, salt stripping, fluoride reduction, and direct oxide reduction. These processes occur at TA-55-4. A small fraction of combustible waste, such as plastics (mainly packaging), may also be present in this waste stream.

IDC 006

Solidified inorganic and organic process solids comprise IDC 006 waste. This waste consists of process leached solids, ash, filter cakes, salts, metal oxides, fines, or evaporator bottoms stabilized in Portland or gypsum cement. These waste streams are generated at TA-55-4.

A.2.1.1.2 LANL TRUCON Codes

This section provides a brief description of the TRUCON-coded TRU mixed waste streams at LANL. All existing (i.e., currently generated) TRU mixed waste at LANL is assigned a TRUCON code, except for waste that requires further processing at the WCRRF. The descriptions of the TRUCON-coded wastes were extracted from "TRUPACT-II Content Codes (TRUCON)," DOE/WIPP 89-004, Rev. 3 (DOE, 1989); and "Detailed Operating Procedure for the Review and Disposition of the TRU Waste Storage Record," Attachment B (LANL, 1994). The EPA Hazardous Waste Numbers that potentially apply to these TRUCON-coded wastes are listed in Table A.2-2.

TRUCON Code LA 111A

TRUCON code LA 111A waste consists of concreted (cemented) aqueous waste. This waste is similar to the waste previously identified as IDC 002. The waste originates as aqueous effluent from plutonium processing at TA-55-4 that is then treated in Room 60 of the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50-1. As described for IDC 002, the resultant sludge is mixed with Portland cement, vermiculite, and sodium silicate and then packaged as TRUCON code LA 111A.

TRUCON Code LA 211A

TRUCON code LA 211A waste consists of retrievably stored (see List of Definitions), concreted (cemented) aqueous waste. This waste originates as aqueous effluent from plutonium processing at TA-55-4 that is then treated in Room 60 of the RLWTF at TA-50-1. As described for IDC 002, the resultant sludge is mixed with Portland cement, vermiculite, and sodium silicate.

TRUCON Code LA 111B

TRUCON code LA 111B waste consists of stabilized aqueous waste (dewatered sludge) that is similar to the waste identified as IDC 003. The waste consists of solids from vacuum filtration of a pretreated aqueous waste slurry at TA-50-1. These solids, which originated in the plutonium-processing facility at TA-55-4, are trapped on the surfaces of filter media (diatomaceous earth). The filter medium with the entrapped filtrate is placed in drums with dry Portland cement as an absorbent.

TRUCON Code LA 211B

TRUCON code LA 211B waste consists of retrievably stored, stabilized aqueous waste (dewatered sludge) that is similar to the waste identified as IDC 003. The waste consists of solids from vacuum filtration of a pretreated aqueous waste slurry at TA-50-1. These solids, which originated in the plutonium-processing facility at TA-55-4, are trapped on the surfaces of filter media (diatomaceous earth). The filter medium with the entrapped filtrate is placed in drums with dry Portland cement as an absorbent.

TRUCON Code LA 114A

TRUCON code LA 114A waste consists of solidified inorganic process solids. This waste is similar to the waste previously identified as IDC 006. The waste is generated at TA-55-4 as a result of plutonium-processing operations. Solidified process solids include process residue from evaporator bottoms and other discardable solutions, process-leached solids, ash, filter cakes, salts, metal oxides, and fines. These process solids are immobilized in gypsum cement to form a noncorrosive solid matrix. The resultant waste is packaged as TRUCON code LA 114A.

TRUCON Code LA 115A

Graphite waste generated from plutonium-processing activities at TA-55-4 is packaged as TRUCON code LA 115A waste. TRUCON code LA 115A is similar to the waste identified as IDC 005(P2G). The waste consists of discarded graphite mold and furnace equipment from plutonium-casting operations. A small fraction of combustible waste, such as plastic (mainly packaging), also comprises this waste type. The graphite waste is first placed in tin or stainless steel cans and then placed in 55-gallon drums or standard waste boxes (SWB).

TRUCON Code LA 116A

TRUCON code LA 116A waste is comprised of combustible waste generated at TA-55-4. TRUCON code LA 116A is similar to the waste identified as IDC 004. The combustible solids consist primarily of paper, rags, plastic, and rubber. A small fraction of noncombustible solids, such as scrap metals, may also be contained in this waste form. The wastes are containerized in 55-gallon drums or SWBs.

TRUCON Code LA 116B

TRUCON code LA 116B waste is comprised of combustible debris waste generated at TA-55. TRUCON code LA 116B is similar to the waste identified as IDC 004. This combustible debris waste consists primarily of room trash generated during plutonium-processing activities.

TRUCON Code LA 116C

TRUCON code LA 116C waste is comprised of combustible debris waste generated at TA-55. TRUCON code LA 116C is similar to the waste identified as IDC 004. This combustible debris waste consists primarily of glovebox trash generated during plutonium-processing activities.

TRUCON Code LA 116D

TRUCON code LA 116D waste is comprised of all other combustible waste generated at TA-3 and not included in LA 116E. TRUCON code LA 116D is similar to the waste previously identified as IDC 004.

TRUCON Code LA 116E

TRUCON code LA 116E waste is comprised of combustible waste generated at TA-3. TRUCON code LA 116E is similar to the waste previously identified as IDC 004. This combustible solid waste may consist of paper, rags, plastic, and rubber.

TRUCON Code LA 117A

TRUCON code LA 117A waste is comprised of noncombustible waste generated at TA-55. TRUCON code LA 117A is similar to the waste previously identified as IDC 005(LM). This metal waste may consist of motors, pumps, tools, and process equipment and may contain some small fraction of combustible waste, such as plastics (mainly packaging). This waste is packaged in SWBs.

TRUCON Code LA 117B

TRUCON code LA 117B waste is comprised of noncombustible waste generated at TA-55. TRUCON code LA 117B consists of the metal waste described in TRUCON code LA 117A. The difference between this waste and LA 117A is that LA 117B is packaged in a maximum of four layers of plastic bagging contained within 55-gallon drums.

TRUCON Code LA 117C

TRUCON code LA 117C waste is comprised of metal waste as described in TRUCON code LA 117A. This waste stream is generated at TA-3.

TRUCON Code LA 117D

TRUCON code LA 117D waste is comprised of metal waste as described in TRUCON code LA 117A. This waste stream is generated at TA-55. The waste may also contain glass in the form of discarded laboratory glassware, windows, and bottles, with a small fraction of combustibles (e.g., plastics mainly from packaging). The waste is packaged in a maximum of four layers of plastic bagging contained within 55-gallon drums.

TRUCON Code LA 117E

TRUCON code LA 117E waste is comprised of metal waste from plutonium-processing activities at TA-55. TRUCON code LA 117E is similar to IDC 005(LM). This waste may consist of motors, pumps, tools, and process equipment and may contain some small fraction of combustible waste, such as plastic (mainly from packaging). The waste is packaged in a maximum of four layers of plastic bagging contained within 55-gallon drums.

TRUCON Code LA 117F

TRUCON code LA 117F waste is comprised of noncombustible waste and is similar to IDC 005(LM). This waste is generated from plutonium-processing activities at TA-3.

TRUCON Code LA 117G

TRUCON code LA 117G waste is comprised of all other noncombustible waste generated at TA-3. TRUCON code LA 117G is similar to IDC 005(LM).

TRUCON Code LA 118A

TRUCON code LA 118A waste consists of TRU glass waste generated from plutonium-processing activities at TA-55-4. TRUCON code LA 118A is similar to the waste identified as IDC 005(LG). This glass waste consists of discarded laboratory glassware, windows, and bottles. A small fraction of combustible waste, such as plastic (mainly packaging), may also comprise this waste type. The waste is packaged in tin or stainless steel cans and contained in 55-gallon drums or SWBs.

TRUCON Code LA 119A

TRUCON code LA 119A waste consists of discarded HEPA filters from TA-55-4. TRUCON code LA 119A is similar to the waste identified as IDC 005.

TRUCON Code LA 123A

Leaded rubber and metal waste generated at TA-55-4 is packaged as TRUCON code LA 123A waste, which is similar to the waste identified as IDC 005(P1). This waste type consists of lead-lined glovebox gloves discarded along with metal waste, such as discarded metals, motors, and tools. The waste is placed in 55-gallon drums or SWBs.

TRUCON Code LA 123B

TRUCON code LA 123B waste consists only of leaded gloves from TA-55-4. The waste is similar to the waste identified previously as IDC 005(P1).

TRUCON Code LA 124A

TRUCON code LA 124A waste consists of TRU waste salts generated from plutonium-processing activities at TA-55-4. TRUCON code LA 124A is similar to the waste identified as IDC 005(P2S). The salt waste consists of used salts from pyrochemical processes, such as electrorefining, molten salt extraction, salt stripping, fluoride reduction, and direct oxide reduction. A small fraction of combustible waste, such as plastics (mainly packaging), may also be contained in this waste.

TRUCON Code LA 125A

TRUCON code LA 125A waste contains metal equipment, either whole or sectioned, along with its combustible components. This waste also consists of a small volume of combustibles generated during decommissioning, sectioning, and packaging. TRUCON code LA 125A is similar to IDC 001 and is generated at TA-50.

TRUCON Code LA 126A

TRUCON code LA 126A waste consists of solidified organic process solids. This waste is similar to the waste previously identified as IDC 006. The waste is generated at TA-55-4 as a result of plutonium-processing operations. Solidified process solids include process residue from evaporator bottoms and other discardable solutions, process leached solids, ash, filter cakes, salts, metal oxides, and fines. These process solids are immobilized in gypsum cement to form a noncorrosive solid matrix. The resultant waste is packaged as TRUCON code LA 126A.

A.2.1.1.3 LANL RSWD Codes

This section provides a brief description of the RSWD-coded waste at LANL and the processes that generated the waste. The descriptions of the RSWD-coded waste were extracted primarily from the DOE/LANL "Response to the Notice of Deficiency Issued by the New Mexico Environment Department for the Part B Permit Application for Technical Area 54, Area G Storage Pads and Domes" (DOE, 1994). Additional information was obtained through queries of LANL's Chemical Science and Technology (CST) Division waste management database. The EPA Hazardous Waste Numbers that potentially apply to these RSWD codes are listed in Table A.2-2.

LANL RSWD Code A10

RSWD code A10 waste consists of graphite solids generated from plutonium-processing operations, specifically, casting conducted in Room 327 at TA-55-4.

LANL RSWD Code A14

RSWD code A14 waste consists of combustible material generated during decontamination activities at TA-3, TA-21, TA-50, and TA-55. Decontamination waste may include cellulosics, plastic, or cloth generated during plutonium processing.

LANL RSWD Code A15

RSWD code A15 waste consists mainly of combustible solids collected from plutonium-processing operations and related activities at TA-3, TA-21, TA-50, and TA-55-4. Waste at TA-55-4 is collected in the waste management room (Room 432) for packaging, documentation, and radionuclide assay. The waste includes cellulosics, such as wood scraps, paper, and rags.

LANL RSWD Code A16

RSWD code A16 waste consists of plastic (mainly packaging) generated at TA-3, TA-21, TA-50, and TA-55. This waste is generated from plutonium-processing and related activities.

LANL RSWD Code A17

RSWD code A17 waste consists of rubber materials generated during plutonium-processing and related activities. This waste is generated at TA-3, TA-21, TA-50, and TA-55.

LANL RSWD Code A18

Nonsegregated paper, plastic, and rubber comprises RSWD code A18 waste. This waste is generated at TA-3, TA-21, TA-50, and TA-55 during plutonium-processing and related activities.

LANL RSWD Code A19

RSWD code A19 waste consists of a combination of noncombustible material, such as scrap metal, and trash generated at TA-3, TA-21, TA-50, and TA-55. Plutonium-processing and related activities generate this waste.

LANL RSWD Code A24

RSWD code A24 waste is comprised of cemented/immobilized residues and/or powders. This waste stream is generated at TA-55-4 and may consist of process leached solids, ash, filter cake, metal oxides, and fines from plutonium-processing operations. The waste has been immobilized in gypsum cement.

LANL RSWD Code A25

Plutonium operations generate numerous waste items that may require plutonium recovery, such as filter media, plastics, used equipment, personal protective equipment, and paper products that are removed from process gloveboxes or radiation control areas. These items are processed by various methods, such as acid leaching, to recover the residual plutonium. In this plutonium-recovery process, waste streams consisting of leached materials, such as solution residues, solids, ash, filter cake residues, salts, and metal oxides, were generated at TA-21 and TA-50 and are currently generated at TA-55. This waste constitutes the A25 waste stream. The residual material is mixed with gypsum cement in steel drums. Some batches of gypsum-cemented waste have been found to release a minimal amount of free liquid as a result of dewatering after the cement has set. There is some likelihood of hydrogen gas generation from the radiolysis of water contained within the cement matrix.

LANL RSWD Code A26

After the items containing recoverable levels of plutonium have been processed (as described for LANL RSWD Code A25) and the waste materials that no longer contain recoverable amounts of plutonium have been segregated (RSWD code A25 waste), the remaining leachate that still contains recoverable levels of plutonium is processed in ion-exchange units. The ion-exchange units segregate the plutonium and generate a stripped leachate. This stripped leachate is then collected, along with plutonium-oxalate solutions and process waters, and distilled in an evaporator. The evaporator distillate is then sent to TA-50 for further treatment. The A26 waste stream consists of the evaporator bottom solutions that result from the evaporation process. This waste stream is generated at TA-55 and is stabilized in a cement matrix at TA-55-4, Room 401.

LANL RSWD Code A27

This waste stream consists of any solid crystallized residues from the evaporator process solution described above for RSWD code A26. The residues may include iron-, aluminum-, calcium-, magnesium-, ammonium-, potassium-, and sodium-nitrate salts. Some particles have been immobilized by cementation to meet minimum particulate size criteria for storage. Most salts were placed in containers without immobilization.

LANL RSWD Code A28

RSWD code A28 waste consists of discarded chloride salts used in pyrochemical operations, such as electrorefining, molten salt extraction, salt stripping, and oxide reduction associated with plutonium-recovery operations at TA-55. In molten form, the chlorides are used as a solvent in the preparation and purification of plutonium metal. Prior to 1987, the discarded salts contained calcium metal. No liquids or hydrocarbons are present in this waste stream.

LANL RSWD Code A29

RSWD code A29 waste is a hydroxide cake generated from waste salt. This waste is generated at TA-55 during plutonium-processing operations.

LANL RSWD Code A30

RSWD Code A30 waste consists of large, discarded, property-numbered (PN) equipment, such as gloveboxes and ancillary equipment (e.g., support structures, feed lines, ventilation equipment) from TA-3, TA-21, TA-39, TA-49, TA-50, and TA-55. These large metallic items from decontamination and decommissioning operations are size reduced at the WCRRF at TA-50-69 by cutting with a plasma arc torch. Many of the gloveboxes included in this waste stream are lined with sheets of lead. This waste may contain very small quantities of contained liquids in piping and possibly precipitation that entered containment crates prior to placement in their present storage configuration.

LANL RSWD Code A31

RSWD Code A31 waste consists of smaller discarded parts and non-PN equipment associated with the generation of RSWD code A30, such as faucets, piping, wiring, plastic wrapping, and plastic or glass windows. No liquids or hydrocarbons are associated with this waste stream.

LANL RSWD Code A36

The RSWD code A36 waste consists of noncombustible building debris. The building debris was generated during decommissioning activities at TA-3, TA-21, TA-39, TA-49, TA-50-69, and TA-55.

LANL RSWD Code A40

RSWD code A40 waste consists of combustible hot cell waste generated during plutonium-processing and related activities. This waste is generated at TA-3, TA-21, TA-50, and TA-55.

LANL RSWD Code A46

RSWD code A46 waste consists of reaction process crucibles and oxide residues immobilized in gypsum cement. This waste is generated at TA-55.

LANL RSWD Code A47

Slag and porcelain waste generated at TA-3 and TA-55 comprise RSWD code A47 waste. This waste is generated as a result of plutonium-processing activities.

LANL RSWD Code A50

RSWD code A50 waste consists of metal crucibles, scrap, and dies. This waste is generated during plutonium-processing activities at TA-3 and TA-55.

LANL RSWD Code A52

RSWD code A52 waste consists of metal waste from TA-55-4. The metal waste is comprised of motors, pumps, tools, and process equipment.

LANL RSWD Code A55

Discarded HEPA filters comprise RSWD code A55 waste. This waste is generated at TA-55-4.

LANL RSWD Code A60

RSWD code A60 waste consists of other combustibles generated at TA-3, TA-21, TA-50, and TA-55. This waste is generated as a result of plutonium-processing and related activities.

LANL RSWD Code A61

RSWD code A61 waste consists of miscellaneous noncombustible trash associated with plutonium-processing operations, such as ceramics, scrap metal, and glass. The scrap metal includes discarded motors, pumps, tools, and process equipment and materials from fabricated items disassembled for evaluation. Rubber gloves containing lead oxide may be included in this waste stream.

LANL RSWD Code A75

Most of the waste included in RSWD code A75 was generated before 1982 at TA-50-1 and TA-55-4. This waste stream consists of the distillate from the evaporator process discussed for RSWD code A26 and depleted plutonium solutions from caustic-recovery processes at TA-55-4. This wastewater was collected and chemically treated at TA-50-1 with lime and ferric sulfate to encapsulate the nuclear material in an iron hydroxide matrix. It was then dewatered by vacuum filtration. Cement was added to the top of the resulting sludge to capture any liquid that separated from the sludge. This waste stream was significantly reduced in 1982 by redirecting TA-50-1 influent with high TRU content into a pretreatment unit in Room 60 (see description below for RSWD code A76). However, even though this influent is now redirected into the pretreatment unit, the supernatant resulting from the current pretreatment operations enters the main plant treatment operations in Room 116; thus, A75 waste continues to be generated.

LANL RSWD Code A76

RSWD Code A76 waste consists of cement paste created by stabilizing pretreatment sludge generated at TA-50-1, Room 60. This sludge results from pretreatment of TA-55 influent before it enters the main treatment plant operations in TA-50-1, Room 116. The pretreatment sludge was generated after 1982 and stabilized with Portland cement. Halogenated organic solvents used in the influent-generating process may have been introduced to the influent generating this sludge. There is currently no evidence that this waste stream contains free liquids and no materials exist in this waste stream that would cause generation of hydrogen gas.

LANL RSWD Code A80

RSWD code A80 waste consists of irradiation sources plated on planchets. This waste is generated at TA-3 and TA-55.

LANL RSWD Code A90

RSWD code A90 waste consists of radioactively-contaminated soil generated during decontamination activities and/or accidental spills at TA-1, TA-3, TA-21, and TA-50.

LANL RSWD Code A95

RSWD code A95 waste consists of glass waste generated from plutonium-processing and related activities at TA-3, TA-21, TA-42, and TA-55. This waste stream may contain discarded labware, windows, and/or bottles and contains a small fraction of combustibles such as plastic.

A.2.1.2 Description of TRU Mixed Waste Management Units

The permitted TRU mixed waste storage units at LANL that are addressed in this WAP include:

- Storage Pad 1 and Pad 1's New Storage Dome (TA-54-227), Storage Pad 2, and Storage Pad 4 and Pad 4's New Storage Dome (TA-54-228) at TA-54, Area G.
- Storage Domes A (TA-54-229), B (TA-54-230), C (TA-54-231), and D (TA-54-232) at TA-54, Area G.
- Rooms 35, 36, and 38/38A Container Storage Areas (CSA) at the TA-50-1 Decontamination Facility.
- The WCRRF Indoor and Outdoor CSAs at TA-50-69.
- The Radioassay and Nondestructive Testing Facility High Bay, Low Bay, Loading Dock, and Outdoor CSAs at TA-54 West, Building 38 (TA-54-38).

Information on the units at TA-54, Area G, is available in LANL's "RCRA Part B Permit Application: Technical Area 54, Area G, Pads 1, 2, and 4; Storage Domes A-D; Chemical Plating Waste Treatment Skid and Treated Liquid Storage Tanks, Technical Area 63, Hazardous Waste Treatment Facility" (LANL, 1993), submitted to the New Mexico Environment Department in September 1993.

Information on the units at TA-50 and TA-54 West is available in LANL's "RCRA Permit Modification Request, Technical Area 50, Building 1, Rooms 35, 36, and 38/38A Container Storage Areas; Building 69, Waste Characterization, Reduction, and Repackaging Facility Indoor and Outdoor Container Storage Areas; Technical Area 54 West, Building 38, Radioassay and Nondestructive Testing Facility High Bay, Low Bay, Loading Dock, and Outdoor Container Storage Areas," Final Draft, September 1995.

TRU mixed waste storage units operating under interim status facility standards and addressed in this WAP include:

- Storage Domes 48, 153, 224, and 283 at TA-54, Area G
- The Drum Prep Facility and Storage Shed 8 at TA-54, Area G
- CSAs in Rooms 9010, 9020, and 9030 of Wing 9 at TA-3-29
- Storage units at TA-50-1 (Room 59) and TA-50-37 (Rooms 115, 117, and 118)
- A CSA at TA-50-114
- Storage units at TA-55, Buildings 4 and 185.

Information on these units is available in LANL's "RCRA Part A Permit Application for Mixed Waste, Revision 2.0" (LANL, 1994).

A.2.2 WASTE ANALYSIS PARAMETERS

A detailed chemical and physical characterization will be performed for TRU mixed waste management purposes, as required by RCRA. Waste analysis parameters will be selected to ensure that this

characterization will contain all the information necessary to properly treat, store, or dispose of waste in accordance with RCRA general facility standards and LDR requirements.

A.2.2.1 Proposed Analytical Parameters and Characterization Methods

Proposed analytical parameters and characterization methods for TRU mixed waste at LANL are summarized in Table A.2-3. Some or all of these parameters will be used to determine the RCRA regulatory status of LANL TRU mixed waste and are as follows:

- Physical waste form characterization through real-time radiography (RTR) and visual examination to verify the absence of free liquids
- Headspace gas sampling to determine the presence of volatile organic compounds (VOC) in container headspace
- Hazardous constituent sampling to determine the presence and concentrations of:
  - RCRA-regulated metals
  - RCRA-regulated VOCs
  - RCRA-regulated semivolatile organic compounds (SVOC)

A.2.2.2 Criteria and Rationale for Parameter Selection

Waste analysis parameters selected to characterize TRU mixed waste are in conformance with RCRA and incorporate characterization procedures from the WIPP "TRU Waste Characterization Quality Assurance Program Plan" (QAPP) (DOE, 1994) requirements, which are based on knowledge of raw materials and physical/chemical processes of waste-generating activities and may be supported by analytical results. The analytical parameters selected to confirm knowledge-based waste characterization, as well as the rationale for the selected parameters, are identified in Table A.2-3.

A.2.3 CHARACTERIZATION OF TRU MIXED WASTE

The characterization of TRU mixed waste managed at LANL can be divided into general approaches based on when the waste was generated and the differences involved in sampling the waste. Generally, the distinction is made between legacy, existing, and future TRU mixed waste to define the quality of information available on the waste and the subsequent need for additional sampling and analysis. A secondary distinction between heterogeneous and homogeneous waste, as reflected in the matrix parameter codes, is made to determine the availability or appropriateness of sampling procedures.

As provided in the List of Definitions, *legacy* TRU mixed waste is waste generated before the LANL Waste Profile Form (WPF) was implemented in May 1991 (see Section A.2.3.1). Legacy TRU mixed waste has been characterized with qualitative assessments to evaluate the presence or absence of hazardous constituents. These assessments include examining past records and databases, conducting interviews with waste generators, and observing and evaluating similar waste-generating processes. *Existing (or currently generated)* TRU mixed waste (i.e., waste generated since May 1991) is characterized using LANL's WPF.

Future TRU mixed waste will be characterized using both LANL's WPF and a certification program (see Section A.2.3.2).

The TRU mixed waste types described include solid process residues, soils, and debris wastes. As discussed in Section A.2.1.1, these types are categorized by *matrix parameter codes* based on the physical and chemical form of the waste. Waste streams in the solid process residues (Matrix Parameter Code 3000) or soils (Matrix Parameter Code 4000) categories may contain RCRA-regulated VOCs, SVOCs, and metals (see Table A.2-4). These homogeneous waste streams will be sampled and analyzed for the toxicity characteristic (TC) contaminants listed in 20 NMAC 4.1, Subpart II, 261.24, revised November 1, 1995. Analysis for total concentration of TC contaminants may be performed on samples in a screening step. If total concentrations are used in the waste characterization process, analytical data will be compared to the TC regulatory levels expressed as total values. These total values will be considered the regulatory threshold limit (RTL) values for the determination of whether a particular waste exhibits a TC. RTL values are obtained by calculating the weight/weight concentration (in the solid) of a TC contaminant that would give the regulatory weight/volume concentration in the toxicity characteristic leaching procedure extract.

Debris waste streams (Matrix Parameter Code 5000) consist of heterogeneous materials. As such, it is difficult to obtain representative samples, and the waste type is best characterized through examination of the original materials from which the waste was generated. Therefore, debris waste may be characterized for the presence of hazardous constituents (i.e., VOCs, SVOCs, and metals) using acceptable knowledge. Additionally, headspace gas sampling, RTR, or visual examination will be conducted on a statistically selected population of waste streams to substantiate this characterization.

The matrix parameter codes (see Table A.2-1) will be used as preliminary guidance for establishing sampling and analytical procedures. Specific sampling and analytical requirements will then be determined for each waste stream. Initial predictions of hazardous constituents present in each waste stream will be based on process knowledge, with waste sampling and analysis performed as necessary to obtain qualitative and quantitative data for hazardous constituents (i.e., VOCs, SVOCs, and metals). Table A.2-3 summarizes characterization methods by matrix parameter code. Sampling and analytical methods for specific hazardous constituents are presented in Table A.2-4. The following discussion presents the approach to characterization that will be used for each of these waste groups, integrating the time of generation and the physical form of the waste.

Characterization of legacy TRU mixed waste is primarily based on process knowledge, which is suitable for safe storage of these waste streams. Further characterization of homogeneous legacy waste may be accomplished through statistically based sampling and analysis, headspace gas sampling, RTR, and visual examination. Heterogeneous legacy waste will be characterized using process knowledge, headspace gas sampling, RTR, and visual examination. These approaches for homogeneous and heterogeneous legacy waste are discussed in Section A.2.3.3.

Existing TRU mixed waste is currently characterized using process knowledge, which is provided by individual waste generators on LANL's WPF. (For a detailed description of the WPF, refer to Section A.2.3.1 and to LANL's Administrative Requirement 10-9, "Waste Profile Form.") Additional characterization of existing TRU mixed waste will occur after the construction of planned facilities and implementation of sampling and analytical capabilities at LANL. For this additional characterization of

homogeneous existing waste, LANL will use statistically based sampling and analysis, headspace gas analysis, RTR, and visual examination. Heterogeneous existing waste will be characterized using process knowledge, headspace gas sampling, RTR, and visual examination.

Future homogeneous TRU mixed waste will be characterized through the use of LANL's WPF and a certification program to be implemented. Sampling and analysis will be conducted for characterization only when required to fully document and/or verify the waste stream. Documented and auditable acceptable knowledge will be used to determine whether or not the waste stream is RCRA-regulated. If available information regarding acceptable knowledge is insufficient for waste characterization, additional information will be obtained using the sampling procedures identified in Section A.2.3.3. Heterogeneous waste will be characterized for RCRA-regulated constituents using acceptable knowledge, which may be supported by some waste analysis data.

For future TRU mixed waste, knowledge of the waste-generating process will be strictly controlled by a quality assurance (QA)/quality control (QC) program that addresses management of specific waste streams. This approach will provide a rigid definition for the acceptable knowledge applicable to specific waste streams. For example, the QA/QC program may include procedures for controlling chemical inputs to the waste-generating process as well as procedures for confirming the types of waste placed in different waste containers. These measures will provide knowledge of the types and concentrations of chemical constituents in individual waste streams.

A.2.3.1 Waste Profiling System

In an effort to maintain detailed and accurate waste characterization information, LANL's CST Division utilizes a generator waste-profiling program for existing (i.e., currently generated) waste at LANL. The waste-profiling effort requires each waste generator to provide a detailed written description of the waste on a standardized WPF, Form 1346 (Figure A.2-1). The waste description can be based on generator process knowledge, the use of appropriate Material Safety Data Sheets (MSDS), and/or results of a chemical/physical analysis of the specific waste. By completing the WPF, waste generators supply information that allows for the proper management of TRU mixed waste. Specific information that is requested on the WPF includes:

- Point of generation
- Method of characterization
- Waste categories
- Waste description
- Waste origination
- Classification of radioactivity
- Presence of toxic metals and an estimate of concentration
- Presence of organic compounds and an estimate of concentration
- Identification of hazardous constituents
- Identification of hazardous characteristics
- Identification of the radiological characteristics of the waste.

A correctly completed WPF contains sufficient information to allow CST to classify the waste as either non-RCRA-regulated waste, RCRA-regulated solid waste (i.e., regulated under RCRA Subtitle D), RCRA-

regulated hazardous (includes mixed) waste (i.e., regulated under RCRA Subtitle C), or radioactive waste. These four waste classifications are each divided into categories that further distinguish specific wastes. These categories are identified on the WPF. By associating a waste with an individual category, CST can properly classify the waste and assign it the appropriate EPA Hazardous Waste Number(s). Ultimately, the waste profile is used by CST Division to determine the proper procedures for managing the waste.

All waste generators must certify, based on their knowledge of the waste, that the information on the WPF is complete and accurate. Knowingly providing false information can result in administrative action by LANL and/or significant civil or criminal penalties, as stipulated by the waste generator's certification statement.

The WPF must be completed prior to any waste treatment, storage, or disposal. Waste generators must provide new profiles when a process change results in a change in waste composition or when a new waste is generated; otherwise, waste stream profiles are reevaluated annually. This annual reevaluation complies with the characterization frequency requirement of 20 NMAC 4.1, Subpart V, 264.13(b)(4), revised November 1, 1995.

A.2.3.2 Acceptable Knowledge

The physical nature of some TRU mixed waste forms (e.g., debris) makes the collection of representative samples difficult. This difficulty arises from several factors, some of which include: waste streams that contain disparate elements; disparate elements may need to be segregated into similar forms; large objects cannot be made to fill standard size sample containers; and laboratories may not have the capability to sample large objects (EPA, 1992). Health and safety risks to personnel from exposure to radioactive material also preclude extensive sampling and analysis of certain TRU mixed waste forms. Therefore, acceptable knowledge is a method used to characterize TRU mixed waste forms at LANL. For generation of future TRU mixed waste, LANL will implement a certification program to support acceptable knowledge used for waste characterization.

According to EPA guidance, *acceptable knowledge* is broadly defined to include process knowledge, waste analysis data, and/or facility records of analysis (EPA, 1994). *Process knowledge* is described in 20 NMAC 4.1, Subpart V, 264.13(a)(2), revised November 1, 1995, as data developed under 20 NMAC 4.1, Subpart II, revised November 1, 1995, and existing published or documented data on a specific hazardous waste or hazardous waste generated from similar processes. *Waste analysis data* include concentration(s) of RCRA-regulated constituents and/or results of tests for hazardous characteristics. These data are used to determine if wastes are RCRA regulated and to determine their LDR status. *Facility records of analysis* performed before the effective date of RCRA regulations will be used with caution. These analytical results must be accurate and applicable to the specified waste and should be supplemented with other existing information (e.g., published data). EPA guidance suggests that acceptable knowledge may be appropriate for wastes meeting the following descriptions:

- Wastes containing hazardous constituents from specific processes that are well documented, such as RCRA F-listed and/or K-listed waste code descriptions.

- Wastes consisting of discarded unused commercial chemical products, reagents, or chemicals containing known physical and chemical constituents. Several of these fall into the RCRA P-listed and U-listed waste code descriptions.

- Waste (e.g., radioactive mixed waste) containing levels of radioactivity such that health and safety risks to personnel do not justify sampling and analysis due to quantified and documented radiological concerns.

- Wastes containing heterogeneous materials, where the physical nature of the waste does not lend itself to taking a representative sample (e.g., laboratory trash and construction debris with surface contamination) (EPA, 1994).

At LANL, waste generators will obtain, assemble, and prepare the acceptable knowledge documentation available for each waste stream in a separate auditable file or maintain a waste stream reference file that identifies the acceptable knowledge documents and their locations. The acceptable knowledge documentation must be explicitly relevant and traceable to a waste type and must not be merely a list of information sources for a particular operation and/or waste. There are many sources of applicable documentation at LANL that may be used to substantiate acceptable knowledge for a specific waste stream. This documentation includes the following:

- Process design documents (e.g., Title II Design).

- Preliminary and final safety analysis reports, unreviewed safety question determinations, and technical safety requirements.

- Standard operating procedures and detailed operating procedures, which can list the raw materials or reagents, describe the process/experiment that uses the materials, and describe the wastes generated and how the wastes are handled.

- Waste packaging logs.

- Test plans or research project reports that describe the reagents and other raw materials used in an experiment.

- Site databases (e.g., chemical inventory database for Superfund Amendments and Reauthorization Act Title III requirements).

- Information from site personnel (e.g., documented interviews).

- Standard industry practice documents (e.g., vendor information).

- Industry reports on a similar process when there is a clear connection between the LANL process/experiment and the industry's similar process/experiment.

- Previous analytical data relevant to the waste stream, including results from fingerprint analyses, spot checks, or routine waste verification sampling.

- Analytical data from studies of common industry processes that are similar to LANL processes. These data can be used to identify the constituents in a specific "similar" process waste stream and to determine the regulatory status of the waste.

- MSDSs, product labels, and other product package information.

- Sampling and analysis data from comparable waste streams.

- Documented visual inspections to confirm or identify the physical characteristics and packaging of a waste.

- Laboratory notebooks that detail the research processes and raw materials used in an experiment.

Sampling surrogate wastes (e.g., equivalent nonradioactive or low-level radioactive materials) may also be a means of obtaining acceptable knowledge for characterizing TRU mixed wastes. For example, data from the analysis of nonradioactive leaded-rubber glove waste may be used to evaluate the characteristics of similar radioactive leaded-rubber glove waste. In some cases, a low-level mixed waste stream may be chemically equivalent to a TRU mixed waste stream. Because data for a low-level mixed waste stream may be more readily attainable, it may be useful for characterizing the TRU mixed waste stream. Sampling nonradioactive inputs or outputs from processes may also provide data that are useful for characterizing a similar TRU mixed waste stream.

Acceptable knowledge confirmed with RTR and visual examination is a reasonable approach to characterizing debris waste. Obtaining a representative sample of debris waste (Matrix Parameter Code 5000), as required by 20 NMAC 4.1, Subpart V, 264.13(b)(3), revised November 1, 1995, is difficult, because many types of waste may be present in a single waste stream or even in a single waste container. For legacy and existing heterogeneous waste, the type of waste segregation that would enable the development of a sampling strategy to obtain representative samples has not always occurred. Problems also arise in collecting representative samples from irregularly shaped and indurated waste items. Debris wastes are expected to exhibit highly variable concentrations of hazardous constituents, even for segregated materials. This may potentially diminish the reliability of sampling and analytical data.

The acceptable knowledge approach to characterizing TRU mixed debris waste is supported by EPA guidance for the situations described in the previous paragraph (EPA, 1994). A conservative approach is used to determine if a waste is RCRA-regulated waste. Process inputs (e.g., chemicals) are identified, and if the waste stream generated may contain RCRA-hazardous constituents derived from process inputs, the waste is managed as a RCRA-regulated hazardous/mixed waste. This type of process knowledge will be used to characterize TRU mixed debris waste. For example, metals present in debris waste are often associated with specific materials (e.g., lead in leaded rubber, leaded glass, or lead shielding). Knowledge of the materials and operations that generated specific waste streams in the debris category is used to determine if these types of items are present in the waste and if the waste stream contains RCRA-regulated metals.

A.2.3.3 Sampling and Analysis for TRU Mixed Waste

This section discusses proposed sampling procedures and frequency of sampling applicable to TRU mixed wastes. The approach described for characterizing TRU mixed waste streams is based on radiological, physical/chemical, and hazardous properties of the waste. The sampling and analysis strategies presented here will be used to evaluate whether TRU mixed waste exhibits the characteristic of toxicity, as described in 20 NMAC 4.1, Subpart II, 261.24, revised November 1, 1995. The proposed methods do not apply directly to determinations of whether a waste exhibits other characteristics (i.e., ignitability, corrosivity, or reactivity) or is listed in 20 NMAC 4.1, Subpart II, Part 261, Subpart D, revised November 1, 1995. Determinations of whether a TRU mixed waste exhibits these characteristics or is listed will be made by applying acceptable knowledge, as described in Section A.2.3.2. Techniques typically used to obtain the physical and chemical data necessary for TRU mixed waste characterization include the following: RTR, visual examination, headspace gas sampling and analysis, and homogeneous solid waste sampling and analysis (e.g., for VOCs, SVOCs, and metals). For the purpose of TRU mixed waste characterization, LANL utilizes RTR, visual examination, and headspace gas sampling as confirmational sampling and analysis procedures for process knowledge. These procedures, coupled with documented, auditable process knowledge, will result in accurate, defensible waste characterization of TRU mixed waste. Specific waste sampling methods, equipment, and sample-handling procedures are described below.

To confirm whether existing TRU mixed waste is RCRA hazardous, available process knowledge will first be used to segregate the waste containers into waste streams and to assign each waste stream to a matrix parameter code. Once the waste streams have been defined and assigned to the matrix parameter codes, this information will be verified by a multistep process (Section A.2.5). RTR will be used for TRU mixed waste to confirm the matrix parameter code and to verify compliance with the waste form requirements of the "Waste Acceptance Criteria for the Waste Isolation Pilot Plant" (DOE, 1991). A statistically selected number of containers (as described in Section A.2.3.3.2) will be visually examined to confirm RTR results. Drums retrieved from Storage Pads 1, 2, and 4 will be selected on a statistical basis (as described in Section A.2.3.3.5) for headspace gas sampling during drum-venting operations.

A.2.3.3.1 Real-Time Radiography

RTR is a nondestructive, qualitative, and semiquantitative assay technique that involves x-ray scanning of waste containers to identify and verify, using appropriate equipment and qualified operators, the physical form(s) of waste container contents. RTR will be used to verify the absence of free liquids and that the physical form requirements of the WIPP waste acceptance criteria (DOE, 1991) are met. At the same time, RTR will verify the waste classification (i.e., matrix parameter code) and waste form determined using acceptable knowledge. All TRU mixed waste containers will be analyzed by RTR, and the results for each waste container will be documented. The audio/video tapes produced during the waste container scan will be maintained for a minimum of three years. In addition, an RTR data form will be used to document the waste matrix parameter code.

A.2.3.3.2 Visual Examination

Waste contents of select TRU mixed waste containers will be visually examined to confirm the RTR results. This visual examination will also verify aspects of acceptable knowledge amenable to visual confirmation. For example, the visual examination will verify the physical characteristics of the waste and

the associated matrix parameter code (i.e., Matrix Parameter Code 3000, 4000, or 5000). In addition, the visual examination will verify the presence of certain hazardous constituents, such as lead in lead bricks or lead-lined gloves. These types of visual confirmations will further verify or refute the overall acceptable knowledge used to characterize the waste stream.

The number of containers to be visually examined will be determined based on the drum population and on the historical miscertification percentage. The method for selecting containers to be examined visually is based upon a statistical approach for quantifying the proportion of waste containers miscertified by the RTR process. Because the sampling effort will be to estimate a proportion in a finite population, the hypergeometric distribution is used to determine the number of containers to be visually examined. For the first year of container examination, LANL will use the 2 percent miscertification rate observed at the Idaho National Engineering Laboratory (INEL). In subsequent years, LANL will use the miscertification rate observed at LANL in the previous year(s) to determine the appropriate number of containers for visual examination. Visual examinations will be documented and the staff making the examination will be trained regarding what to look for and how to record observations.

A.2.3.3.3 Headspace Gas Sampling and Analysis

Headspace gas sampling and analysis is a qualitative screening technique used to confirm the presence of RCRA-regulated hazardous constituents. TRU mixed waste characterization includes sampling and analysis of headspace gas from up to three areas within drums of waste as follows:

(1) The drum headspace (i.e., directly under the drum lid)
(2) The 55-gallon polyethylene bag headspace
(3) The innermost layers of confinement headspace.

The drum headspace (i.e., the space directly under the drum lid) will be sampled when filters are inserted into unvented drums. All previously unvented drums will be sampled for flammable gases, and a statistically selected subset of these drums will be sampled for selected VOCs in order to assure that health and safety criteria for safe storage of these drums are met. The statistical basis for selection of drums to be sampled is described in Section A.2.3.3.5. Headspace gas sampling and analysis also serves to confirm the presence of RCRA-regulated hazardous constituents. Headspace gas sampling will not be relied upon to prove the absence of a hazardous constituent in a waste.

The precision, accuracy, and representativeness of these headspace gas samples will be evaluated for adherence to the program's QA objectives through analysis of field QC samples and adherence to QC practices.

In order to meet the proposed characterization requirements in the WIPP QAPP (DOE, 1994), the headspace of previously vented drums in retrievable storage will be sampled and analyzed as the drums are characterized for shipment to WIPP. The sampling of vented drums may include samples from inner layers of confinement (55-gallon polyethylene bag headspace and innermost layers of confinement headspace) for a statistically selected subset of drums undergoing visual examination.

Analytical methods for the determination of VOCs in the headspace of TRU mixed waste containers must meet technical performance criteria, be consistent with regulatory guidance, and be compatible with the

operational constraints associated with the analysis of actinide-contaminated materials. Methods for the collection of headspace gases are based on "Test Methods for Evaluating Solid Waste" (SW-846) (EPA, 1992) and on the "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air" (EPA, 1988). DOE has modified the EPA methods to accommodate the characteristics of TRU mixed waste headspace gas samples. These methods include SA 010 and SA 011 (DOE, 1994).

A.2.3.3.4 Solid Waste Sampling and Analysis

The following describes the proposed methods for collecting samples of homogeneous TRU mixed waste classified as solid process residues or soils. Sampling protocol is based on sampling methods similar to those approved by EPA for solid waste and soil sampling in SW-846 (EPA, 1992); in "Standard Practice for Thin-Walled Tube Sampling of Soils" (American Society for Testing and Materials [ASTM], 1983); and in "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds" (ASTM, 1991). These methods are designed to ensure that representative waste samples are consistently collected and transferred to the responsible laboratory in a manner that maintains sample integrity. The statistical basis for sampling is described in Section A.2.3.3.5.

The TRU mixed waste classified as solid process residues or soils is packaged in either 55-gallon drums or in smaller containers within 55-gallon drums. Drums may contain TRU mixed waste within a 55-gallon polyethylene bag or may consist of up to 20 or more small containers within a 55-gallon polyethylene bag. For drums selected for sampling that contain multiple small containers, one of the small containers will be randomly selected for sampling. Waste parameters for which solid process residues and soils may be analyzed are listed in Table A.2-3.

To accomplish sampling of these wastes, the techniques described below have been developed for sample and subsample collection. The sampling techniques are designed to obtain a representative sample from the container (e.g., 55-gallon drum, 1-gallon polyethylene bottle) and the subsampling techniques are designed to obtain a representative subsample from the sample. Subsampling is conducted to provide laboratories the minimum amount of required sample, thus minimizing the quantity of investigation-derived waste.

The methods used to collect samples of TRU mixed waste classified as solid process residues and soils from 55-gallon drums and smaller containers must be such that the samples are representative of the waste from which they were taken. For 55-gallon drums containing solid process residues and soils, a sample must be collected as a core that is representative of the waste along the entire depth of the waste in the drum.

Sample Core Collection

Coring tools must be used to collect cores of solid process residues and soils from 55-gallon drums and smaller containers in a manner that minimizes disturbance to the core. A rotational coring tool (i.e., a tool that is rotated longitudinally), similar to a drill bit, must be used to cut, lift the waste cuttings, and collect a core sample from containers of waste. For solid process residues and soils that are relatively soft, nonrotational coring tools may be used in lieu of a rotational coring tool.

Rotational coring tools (i.e., lightweight augers) and nonrotational coring tools (i.e., thin-walled samplers) have each been tested for their ability to collect a vertical core of simulated solidified waste contained in 55-gallon drums and 1-gallon polyethylene bottles, as described in "Idaho National Engineering Laboratory Simulated Solidified Transuranic Waste Sampling Program" (EG&G, 1994). The rotational coring tool used at the INEL has demonstrated core recoveries greater than 75 percent for soft simulated wastes and greater than 94 percent for hard simulated waste. The sampling tool has been designed to minimize the transfer of frictional heat to the core, thereby minimizing potential loss of VOCs (DOE, 1994). The nonrotational coring tool has demonstrated core recoveries greater than 88 percent for soft simulated wastes. LANL will use coring tools similar to those developed at the INEL.

Subsample Collection

To obtain representative subsamples, subsampling of the sample core is required. Subsampling must be conducted as soon as possible after sample core collection to minimize the loss of VOCs. If a substantial delay (e.g., several minutes) is expected between sample core collection and subsampling, the sample core must remain in the sleeve and the sleeve must be capped at each end. Subsamples for VOCs must be collected prior to extruding the sample core from the sleeve. The sampling location must be randomly selected along the long axis of the sleeve and access to the waste must be gained by making a perpendicular cut through the sleeve and the waste it contains.

A.2.3.3.5 Statistical Approach for Headspace Gas and Solid Waste Sampling

A statistical approach will be used to select containers for headspace gas sampling. The same approach will be used for solid waste sampling and analysis of legacy and existing solid process residue and soil waste streams. This approach relies on the premise that the waste containers have been separated into waste streams on the basis of process knowledge and, thus, represent populations that contain similar waste. Drums are first segregated into waste streams based on existing characterization information. An initial number of drums is selected from each waste stream for sampling and analysis. For waste streams consisting of ten drums or more, ten drums are selected at random for sampling. For waste streams consisting of ten drums or less, each drum is sampled. For waste streams with less than three drums, a total of three samples is taken. The analytical results from the initial round of sampling are used to calculate upper and lower confidence limits for the mean concentrations of RCRA-regulated constituents. Those limits are compared to the RTLs for the constituents. If a hazardous waste determination cannot be made based on the results from the initial round of sampling, an additional number of drums is selected. The number of additional drums for the second round of sampling depends on the variance of the analytical results from the first round. Drums are sampled to a maximum of all of the drums in the waste stream or 40 drums, whichever is smaller.

The objective is to classify specific waste streams as hazardous or nonhazardous by determining the average, or mean, and associated variance of the concentration of RCRA-hazardous constituents in the waste stream. Confidence limits for the mean concentration will be used in comparisons to RCRA regulatory limits so that a predetermined level of confidence can be associated with the decision on whether a waste stream is hazardous for a RCRA characteristic. Waste containers within each waste stream and sample locations within each container will be randomly selected to ensure that the analytical results provide an unbiased estimate of the true mean contaminant concentration for each waste stream.

A.2.3.4 Sample Handling, Preservation, and Storage

Table A.2-5 presents SW-846 requirements regarding sample containers, preservation techniques, and holding times associated with sample collection. Adherence to these requirements will occur to ensure that sampling and analysis meet quality objectives for data.

A.2.4 ANALYTICAL LABORATORY SELECTION AND ANALYTICAL METHODS

Analytical laboratories at LANL and/or approved subcontractor laboratories will perform all of the detailed qualitative and quantitative chemical analyses specified in Table A.2-4 of this WAP. These laboratories must have:

- The capability of handling radioactive material/waste
- A documented comprehensive QA/QC program
- Technical analytical expertise
- A document control/records management plan
- The capability to perform data reduction, validation, and reporting.

The selection and development of analytical testing methods for LANL TRU mixed waste streams were based on the following considerations:

- The physical form of the waste
- Analytes of interest
- Required detection limits (e.g., regulatory thresholds)
- Information requirements (e.g., verify compliance with LDR treatment standards, waste classification).

Collectively, these factors contributed to the selection of the analytical methods specified in Table A.2-4. Qualified analytical laboratories at LANL and/or approved subcontractor laboratories that meet the above criteria will analyze TRU mixed waste samples for RCRA-regulated hazardous constituents (VOCs, SVOCs, and metals) and characteristics according to SW-846 or documented and approved equivalent methods.

A.2.5 VERIFICATION ANALYSIS FOR TRU MIXED WASTE

Analysis may be performed to verify the accuracy of the initial waste characterization, to verify that applicable treatment standards have been met, when there is a change in a waste-generating process, when the generator requests a review, or when analytical results indicate a change in a waste stream. Verification analysis for TRU mixed waste will be conducted at LANL's or an approved subcontractor's laboratory facilities. All verification analyses will be conducted in conformance with appropriate EPA-approved methods. The type of verification analysis that will be performed to obtain waste characterization information depends upon the matrix parameter code of the waste stream and whether the

waste is existing or future TRU mixed waste. Verification analysis methodologies for these different types of waste are presented below.

A.2.5.1 Verification of Existing TRU Mixed Waste

Characterization for existing homogeneous TRU mixed waste streams (Matrix Parameter Codes 3000 and 4000) will not require verification, because the statistical basis for initial characterization provides statistical confidence in determining whether a waste is hazardous as defined by RCRA. Process knowledge documentation applicable to existing heterogeneous TRU mixed waste streams (Matrix Parameter Code 5000) will be qualitatively verified by RTR of waste containers (see Section A.2.3.3.1), visual examination of the contents of select waste containers (see Section A.2.3.3.2), and headspace gas sampling while venting (see Section A.2.3.3.3).

A.2.5.2 Verification of Future TRU Mixed Waste

Future homogeneous TRU mixed waste streams that have been characterized using LANL's WPF and a certification program will undergo verification sampling and analysis at a frequency of at least 1 in 100 waste streams per year. This verification will be used to support waste characterization information provided on the WPF, as well as the certification program, for the waste stream. Analytical results that show regulated constituents present at concentrations outside the ranges documented on the WPF are cause for rejection of the WPF and will require investigation and recharacterization of the waste stream. The recharacterization will include sampling and analysis sufficient to establish the range of regulated constituents potentially present in the waste stream.

Future heterogeneous TRU mixed waste streams will undergo qualitative verification of acceptable knowledge through RTR, visual examination, and headspace gas sampling, as described in Section A.2.5.1. Both homogeneous and heterogeneous waste streams will undergo qualitative verification through review of documentation supporting waste characterization as part of a certification program.

A.2.6 SPECIAL PROCEDURAL REQUIREMENTS

Additional waste management requirements specific to ignitable, reactive, and incompatible wastes, as well as compliance with LDR, are described below.

A.2.6.1 Procedures for Ignitable and Reactive Wastes

When ignitable or reactive waste streams are stored at LANL, specific waste management procedures for ignitable and reactive waste will be followed pursuant to 20 NMAC 4.1, Subpart V, 264.17, revised November 1, 1995. At a minimum, ignitable and reactive wastes will be separated during storage.

A.2.6.2 Procedures for Incompatible Wastes

Pursuant to 20 NMAC 4.1 Subpart V, 264.17, revised November 1, 1995, specific waste management procedures for incompatible wastes are described as follows. Incompatible wastes are kept separated during storage. Waste containers holding potentially incompatible free liquids will be stored on self-containment pallets to maintain separation. Because incompatible wastes are and will be separated and

potentially incompatible free liquids will be stored on self-containment pallets, any potential for release and reaction with other wastes or materials is and will be minimized.

A.2.6.3 Procedures to Ensure Compliance with LDR Requirements

In accordance with LDR requirements, waste to be shipped off site may need to be analyzed to determine whether it meets the applicable LDR treatment standards in 20 NMAC 4.1, Subpart VIII, Part 268, Subpart D, revised November 1, 1995. If (1) it is known whether the wastes meet applicable LDR treatment standards based on acceptable knowledge or (2) waste will be transported to a RCRA-permitted waste management facility operating in conformance with a no-migration determination, then sampling and analysis to certify LDR compliance is not necessary for affected waste. Sampling and analysis will be conducted in accordance with 20 NMAC 4.1, Subpart VIII, Part 268, revised November 1, 1995, only to certify that the waste meets LDR treatment standards. Each waste for which a treatment standard has been established will be evaluated for the applicable parameters in 20 NMAC 4.1, Subpart VIII, Part 268, Subpart D, revised November 1, 1995. All analytical results completed in support of LDR requirements will be retained within the facility operating record. LDR determinations will be documented on LANL's Land Disposal Restrictions Notification Form (Figure A.2-2).

TABLE A.2-1
CROSS REFERENCE OF MATRIX PARAMETER CODES AND WASTE IDENTIFICATION CODES

Matrix Parameter[a] Code/ Description	Item Description Codes (IDCs)	Matrix Category (Waste Description)	TRUPACT-II Content and Radioactive Solid Waste Disposal Codes	Waste Descriptions
3000-Solid Process Residues	002	Stabilized aqueous waste	LA 111A/211A	Concreted/cemented aqueous waste
			A76	Cement paste
	003	Stabilized aqueous waste	LA 111B/211B	Dewatered sludge
			A75	Chemical treatment sludge
	005(P2S)	Waste salts	LA 124A	Transuranic (TRU) waste salts
			A27	Nitrated solid crystallized residues
			A28	Chloride salts
			A29	Hydroxide cake
	006	Solidified inorganic process solids	LA 114A	Solidified inorganic process solids
			A24	Cemented/immobilized residues/powders
			A26	Evaporator bottoms/salts
	006	Solidified organic process solids	LA 126A	Solidified organic process solids
			A24	Cemented/immobilized residues/powders
			A25	Leached process residues
			A26	Evaporator bottoms/salts
			A29	Hydroxide cake
			A46	Reaction process crucibles and oxide residues
4000-Soils	None	Contaminated soil	A90	Contaminated soil

Refer to footnotes at end of table.

TABLE A.2-1
CROSS REFERENCE OF MATRIX PARAMETER CODES AND WASTE IDENTIFICATION CODES
(continued)

Matrix Parameter[a] Code/ Description	Item Description Codes (IDCs)	Matrix Category (Waste Description)	TRUPACT-II Content and Radioactive Solid Waste Disposal Codes	Waste Descriptions
5000-Debris Wastes	001	Mixed metal scrap and incidental combustibles	LA 125A	Incidental combustibles and mixed metal scrap
			A30	Property-numbered (PN) equipment
			A31	Non-PN equipment
			A36	Noncombustible building debris
			A55	Filter media
	004	Combustible waste	LA 116A-E	Combustible waste
			A14	Combustible decontamination waste
			A15	Cellulosics (e.g., paper, wood)
			A16	Plastics
			A17	Rubber materials
			A18	Combined paper/plastics/rubber
			A19	Combined noncombustible trash
			A40	Combustible hot cell waste
			A60	Other combustibles
	005	High-efficiency particulate air (HEPA) filters	LA 119A	HEPA filters
			A55	Filter media
	005(LG)	Glass waste	LA 118A	TRU glass waste
			A47	Slag and porcelain
			A95	Glass waste

Refer to footnotes at end of table.

TABLE A.2-1
CROSS REFERENCE OF MATRIX PARAMETER CODES AND WASTE IDENTIFICATION CODES
(continued)

Matrix Parameter[a] Code/ Description	Item Description Codes (IDCs)	Matrix Category (Waste Description)	TRUPACT-II Content and Radioactive Solid Waste Disposal Codes	Waste Descriptions
5000-Debris Wastes (Continued)	005(LM)	Metal waste	LA 117A-G	TRU noncombustible/ metal waste
			A50	Metal crucibles, scrap, dies
			A52	Scrap metal
			A61	Other noncombustibles
			A80	Irradiation sources
	005(P1)	Leaded-rubber and metal waste	LA 123A-B	TRU leaded-rubber and TRU metal waste
			A61	Other noncombustibles
	005(P2G)	Graphite waste	LA 115A	TRU graphite waste
			A10	Graphite solids

[a] Information in this column was extracted from the U.S. Department of Energy (DOE), 1994, "TRU Waste Characterization Quality Assurance Program Plan," *CAO-94-1010*, Rev. B, Draft, Carlsbad Area Office, Carlsbad, New Mexico.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
001	Mixed metal scrap and incidental combustibles	LA 125A	Metal equipment from decommissioning (e.g., gloveboxes, process equipment, ductwork); small volumes of combustibles from decommissioning in TA-3, TA-21, TA-39, TA-49, and TA-55, and sectioning, and packaging in TA-50-69.	A30 - Property-numbered (PN) equipment A31 - Non-PN Equipment A36 - Non-combustible building debris A55 - Filter media	Knowledge[d]	D006 D008	Cadmium Lead	1.0 5.0
002	Stabilized aqueous waste	LA 111A LA 211A	Effluent from plutonium (Pu) processing operations in TA-21 and TA-55, treated in TA-50-1 to produce the resulting concreted monolith	A76 - Cement paste	Knowledge[d]	D004 D006 D007 D008 D009 None None	Arsenic Cadmium Chromium Lead Mercury Barium hydroxide Beryllium hydroxide	5.0 1.0 5.0 5.0 0.2 None None

Refer to footnotes at end of table.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]
(continued)

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
003	Stabilized aqueous waste	LA 111B LA 211B	Sludge from Pu processing in TA-55 is chemically treated and mixed with dry concrete in TA-50-1	A75 - Chemical treatment sludge	Knowledge[d]	D004	Arsenic	5.0
						D006	Cadmium	1.0
						D007	Chromium	5.0
						D008	Lead	5.0
						D009	Mercury	0.2
						D010	Selenium	1.0
						D011	Silver	5.0
						D019	Carbon tetrachloride	0.5
						D021	Chlorobenzene	100.0
						D022	Chloroform	6.0
						F002	Spent halogenated solvents	Not Applicable (NA)
						F004 F005	Spent nonhalogenated solvents	NA
						None	Acetone	None
						None	Barium chloride	None
						None	Barium hydroxide	None
						None	Beryllium	None
						None	Beryllium hydroxide	None
						None	Di-n-octyl-phthalate	None
						None	Ethanol	None
						None	Methanol	None
						None	Methylene chloride	None
						None	n-Butyl alcohol	None
						None	Nickel	None
						None	Thallium	None
						None	Toluene	None
						None	Xylene	None

Refer to footnotes at end of table.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]
(continued)

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
004	Combustible waste	LA 116A LA 116B LA 116C LA 116D LA 116E	Combustible solids (e.g., paper, rags, plastic, rubber) and a small fraction of non-combustibles (e.g., metal scrap) generated from Pu processing and operations in TA-3, TA-21, TA-50, and TA-55	A14 - Combustible decontamination waste A15 - Cellulosics A16 - Plastics A17 - Rubber materials A18 - Combined paper/plastics/rubber A19 - Combined noncombustible trash A40 - Combustible hot cell waste A60 - Other combustibles	Knowledge[d]/ Testing[e]	D002 D004 D006 D008 D009 D019 D022 D028 D040 F002 F003 F005 None None None None None None	Hydrofluoric acid Arsenic Cadmium Lead Mercury Carbon tetrachloride Chloroform Dichloroethane Trichloroethylene 1,1,1-Trichloroethane Acetone Toluene Barium chloride Beryllium Beryllium hydroxide Bromobenzene Nickel Tributyl phosphate	NA 5.0 1.0 5.0 0.2 0.5 6.0 0.5 0.5 NA NA NA None None None None None None
005	High-efficiency particulate air (HEPA) filters	LA 119A	HEPA filters from exhaust air systems in Pu processing in TA-55	A55 - Filter media	Knowledge[d]	None	None	None
005(LG)	Glass waste	LA 118A	Glass waste (e.g., discarded labware, windows, bottles) with a small fraction of combustibles (e.g., plastics) generated from Pu processing in TA-3, TA-21, TA-42, and TA-55	A47 - Slag and porcelain A95 - Glass waste	Knowledge[d]/ Testing[e]	D002 D008 D009 D019 None None	Hydrofluoric acid Lead Mercury Carbon tetrachloride Barium chloride Barium hydroxide	NA 5.0 0.2 0.5 None None

Refer to footnotes at end of table.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]
(continued)

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
005(LM)	Metal waste	LA 117A LA 117B LA 117C LA 117D LA 117E LA 117F LA 117G	Metal waste (e.g., motors, pumps, tools, process equipment) with a small fraction of combustible waste (e.g., plastics) generated from Pu processing in TA-3 and TA-55	A50 - Metal crucibles, scrap, dies A52 - Scrap metal A61 - Other noncombustibles A80 - Irradiation sources	Knowledge[d]/ Testing[e]	D002 D008 D019 None None	Hydrofluoric acid Lead Carbon tetrachloride Barium chloride Beryllium	NA 5.0 0.5 None None
005(P1)	Leaded-rubber and metal waste	LA 123A LA 123B	Lead-lined glovebox gloves and metal waste (e.g., motors, tools, discarded metals) generated from Pu processing in TA-55	A61 - Other noncombustibles	Knowledge[d]/ Testing[e]	D002 D004 D006 D008 D009 D019 None None None	Hydrofluoric acid Arsenic Cadmium Lead Mercury Carbon tetrachloride Beryllium hydroxide Bromobenzene Nickel	NA 5.0 1.0 5.0 0.2 0.5 None None None
005(P2G)	Graphite waste	LA 115A	Discarded graphite molds, furnace equipment, and a small fraction of combustible waste generated from Pu processing in TA-55	A10 - Graphite solids	Knowledge[d]	D004 D006 D008 None None	Arsenic Cadmium Lead Beryllium Nickel	5.0 1.0 5.0 None None

Refer to footnotes at end of table.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]
(continued)

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
005(P2S)	Waste salts	LA 124A	Used chloride salts from pyrochemical processes (e.g., electrorefining, molten salt extraction, salt stripping, fluoride reduction, direct oxide reduction) and a small fraction of combustible waste (e.g., plastic) generated from Pu processing in TA-55	A27 - Nitrated solid crystallized residues A28 - Chloride salts A29 - Hydroxide cake	Knowledge[d]/ Testing[e]	D004 D006 D008 D009 None None	Arsenic Cadmium Lead Mercury Beryllium hydroxide Nickel	5.0 1.0 5.0 0.2 None None
006	Solidified inorganic process solids	LA 114A	Process residue from evaporator bottoms and other discardable solutions, process-leached solids, ash, filter cakes, salts, metal oxides, and fines generated as a result of Pu processing at TA-55-4	A24 - Cemented/immobilized residues/powders A26 - Evaporator bottoms/salts	Knowledge[d]	D002 D004 D006 D007 D008 D009	Hydrofluoric acid Arsenic Cadmium Chromium Lead Mercury	NA 5.0 1.0 5.0 5.0 0.2

Refer to footnotes at end of table.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]
(continued)

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
006	Solidified organic process solids	LA 126A	Solidified process residue from evaporator bottoms and other discardable solutions, processed leached solids, ash, filter cake, salts, metal oxide, fines, etc., that are immobilized in gypsum cement, generated from processing operations in TA-55.	A24 - Cemented/immobilized residues/powders A25 - Leached process residues A26 - Evaporator bottoms/salts A29 - Hydroxide cake A46 - Reaction process crucibles and oxide residues	Knowledge[d]	D002 D004 D006 D007 D008 D009 D019 D021 D022 D028 D040 F002 None None None None None None None None None	Hydrofluoric acid Arsenic Cadmium Chromium Lead Mercury Carbon tetrachloride Chlorobenzene Chloroform Dichloroethane Trichloroethylene 1,1,1-Trichloroethane Acetone Beryllium Bromobenzene Ethanol Methanol Methylene Chloride n-Butyl Alcohol Toluene Xylene	NA 5.0 1.0 5.0 5.0 0.2 0.5 100.0 6.0 0.5 0.5 NA None None None None None None None None None
None	Contaminated soil	None	Possibly generated by decontamination activities and/or accidental spills in TA-1, TA-3, TA-21, and TA-50	A90 - Contaminated soil	Knowledge[d]	Unknown	Unknown	Unknown

Refer to footnotes at end of table.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]
(continued)

[a] This table is based on preliminary information from Los Alamos National Laboratory, 1994, "Draft Transuranic Waste Stream Hazardous Material Characterization Study," Rev. 0, and is subject to change upon further review. Potential EPA Hazardous Waste Numbers shown in this table may vary from those reported in LANL's Part A Permit Application for Mixed Waste (Rev. 2.0), September 1994, which reports the EPA Hazardous Waste Numbers in LANL's waste management database.
[b] U.S. Environmental Protection Agency.
[c] A solid waste exhibits the characteristic of toxicity if the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Subpart D, revised November 1, 1995.
[d] Knowledge indicates process knowledge used as the basis for hazardous waste designation.
[e] Testing: In reference to the basis for hazardous waste classification, indicates that sampling and analysis has been performed, but either (1) the documentation is not available or (2) the data exist but are not verifiable.

TABLE A.2-3
PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR TRANSURANIC MIXED WASTE

Matrix Parameter[a] Code/Description	Waste Description	Analytical Parameters[b]	Characterization Methods	Rationale
3000—Solid Process Residues	– Solidified aqueous waste (e.g., concreted/cemented aqueous waste) – Solidified aqueous waste (e.g., dewatered sludge and chemical treatment sludge) – Solidified inorganic/organic process solids – Waste salts	– Free liquids in waste matrix – Physical form of the waste	– Visual examination – Real-time radiography (RTR) – Acceptable knowledge[c]	– Verify physical waste form – No free liquids allowed
		– Resource Conservation and Recovery Act (RCRA)–regulated metals (see Table A.2-4)	– Sample and analyze statistically selected number of drums in waste stream. (see Table A.2-4)	– Determine toxicity characteristic – Determine concentration of metals
		– Volatile organic compounds (VOC) in container headspace gas	– Gas chromatography/ mass spectrometry – Fourier transform infrared spectrometry – Gas chromatography/ Flame ionization detector	– Qualitative screening to confirm the presence of VOCs
		– VOCs and semivolatile organic compounds (SVOC) (see Table A.2-4)	– Sample and analyze statistically selected number of drums in waste stream. (see Table A.2-4)	– Determine toxicity characteristic – Determine concentration of organics
4000—Soils	– Contaminated soil			
5000—Debris Waste	– Mixed metal scrap and incidental combustibles – Combustible waste – Graphite waste – Metal waste – Glass waste – Leaded-rubber and metal waste – High-efficiency particulate air filters	– Free liquids – Physical form of the waste	– Visual examination – RTR – Acceptable knowledge	– Verify physical waste form – No free liquids allowed
		– RCRA-regulated metals (see Table A.2-4)	– Acceptable knowledge	– Determine compliance with land disposal restriction (LDR) treatment standards, if applicable

`efer to footnotes at end of table.

TABLE A.2-3
PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR TRANSURANIC MIXED WASTE
(continued)

Matrix Parameter[a] Code/Description	Waste Description	Analytical Parameters[b]	Characterization Methods	Rationale
		– VOCs in container headspace gas	– Gas chromatography/ mass spectrometry – Fourier transform infrared spectrometry – Gas chromatography/ Flame ionization detector	– Qualitative screening to confirm the presence of VOCs
		– VOCs and SVOCs (see Table A.2-4)	– Acceptable knowledge	– Determine compliance with LDR treatment standards, if applicable

[a] Information in this column was extracted from the U.S. Department of Energy (DOE), 1994, "TRU Waste Characterization Quality Assurance Program Plan," *CAO-94-1010*, Rev. B, Draft, Carlsbad Area Office, Carlsbad, New Mexico.

[b] U.S. Department of Energy (DOE), 1992, "RCRA Part B Permit Application for the Waste Isolation Pilot Plant," *DOE/WIPP 91-005*, Rev. 2, U.S. Department of Energy, Carlsbad, New Mexico.

[c] According to U.S. Environmental Protection Agency (EPA), 1994, "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes - A Guidance Manual," *OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C., acceptable knowledge is broadly defined as process knowledge, waste analysis data (e.g., sampling and analysis), and/or facility records of analysis performed.

TABLE A.2-4
SUMMARY OF WASTE CHARACTERIZATION TECHNIQUES FOR TRANSURANIC MIXED WASTE

Parameter[a]	Method Numbers	Test Methods	Rationale
Physical Waste Form		Waste inspection procedures Real-time radiography Visual examination Process knowledge	Identify and verify waste container contents
Volatile Organic Compounds (VOC) in waste matrix and container headspace gas: Acetone n-Butyl alcohol Carbon tetrachloride Chlorobenzene Chloroform Dichloroethane Formaldehyde Methanol Methylene chloride Spent halogenated solvents Spent nonhalogenated solvents Tetrachloroethylene Toluene 1,1,1-Trichloroethane Trichloroethylene Xylenes	ASTM Method D4547-91[b] U.S. EPA/540/4-91/001[c] SW-846 (1311, 8240, 8240A, 8240B, 8260, 8260A)[d], or equivalent methods[e]	Total and/or toxicity characteristic leaching procedure (TCLP) VOC analysis by gas chromatography/ mass spectrometry (GC/MS) Fourier transform infrared spectrometry Flame ionization detector Process knowledge for debris wastes	Determine total and/or TCLP VOC concentrations in samples of solid process residues and soils
Semivolatile Organic Compounds (SVOC) in waste: Cresols Ortho-dichlorobenzene 1,4-Dichlorobenzene 2,4-Dinitrotoluene Hexachloroethane Nitrobenzene Pyridine	SW-846 (1311, 8250, 8250A, 8270A, 8270B)[d], or equivalent methods[e]	Total and/or TCLP SVOC analysis by GC/MS Process knowledge for debris waste	Determine total and/or TCLP SVOC concentrations in samples of solid process residues and soils

Refer to footnotes at end of table.

TABLE A.2-4
SUMMARY OF WASTE CHARACTERIZATION TECHNIQUES FOR TRANSURANIC MIXED WASTE
(continued)

Parameter[a]	Method Numbers	Test Methods	Rationale
Metals in waste:	SW-846	Total and/or TCLP metals analysis	Determine total and/or TCLP metals concentrations in samples of solid process residues and soils
Arsenic	(3051, 1311, 6010A, 6020, 7060A, 7061A)[d]		
Barium	(3051, 1311, 6010A, 6020, 7080, 7080A, 7081)[d]	Inductively coupled plasma	
Cadmium	(3051, 1311, 6010A, 6020, 7130, 7131A)[d]		
Chromium	(3051, 1311, 6010A, 6020, 7190, 7191)[d]		
Lead	(3051, 1311, 6010A, 6020, 7420, 7421)[d]	Atomic absorption spectroscopy	
Mercury	(1311, 7471A)[d]		
Nickel	(3051, 1311, 6010A, 6020, 7520)[d]		
Selenium	(3051, 1311, 6010A, 6020, 7740, 7741A, 7742)[d]	Cold vapor atomic absorption spectroscopy	
Silver	(3051, 1311, 6010A, 6020, 7760A, 7761)[d]		
Thallium	(3051, 1311, 6010A, 6020, 7840, 7841)[d], or equivalent methods[e]	Process knowledge for debris wastes	

[a] Information in this column was extracted from the U.S. Department of Energy (DOE), 1992, "RCRA Part B Permit Application for the Waste Isolation Pilot Plant," *DOE/WIPP 91-005*, Rev. 2, U.S. Department of Energy, Carlsbad, New Mexico.
[b] American Society for Testing and Materials (ASTM), 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," *ASTM D4547-91*, Annual Book of ASTM Standards, Philadelphia, Pennsylvania, American Society for Testing and Materials.
[c] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," *EPA/540/4-91/001*, Office of Research and Development, U.S. Environmental Protection Agency.
[d] U.S. Environmental Protection Agency (EPA), 1994, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, Third Edition, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.
[e] Equivalent methods, subject to EPA approval, may be substituted.

Los Alamos
National Laboratory

WASTE PROFILE FORM

Account information

For rapid processing, complete all sections in black or blue ink and mail this form to Waste Services Group at MS J579

Reference Number

Waste Generator's Name (Print)	Znumber	Waste Management Coordinator's Name (Print)	Znumber

Generator's Group	Generator's Telephone	Generator's Mail Stop	Waste Stream Technical Area	Building	Room

Waste Accumulation
Check as many as apply.

- ☐ Satellite accumulation area --> site no.: _____
- ☐ Less than 90 day accumulation area --> site no.: _____
- ☐ Radioactive Materials Management Area (RMMA) --> site no.: _____
- ☐ None of the above

Method of Characterization
Check as many as apply.

- ☐ Acceptable Knowledge (AK)
- ☐ Analysis attached --> sample/request no. _____
- ☐ MSDS attached
- ☐ Request for analysis

Section 1- Chemical and Physical Characteristics

For help in completing this section of the form, call 5-WAST or 5-4000.

Waste Type
Check only one.

- ☐ Unused/unspent chemical
  Check Waste Classes and Associated Documentation Only
- ☐ Process waste/spent chemical
  Complete all of Section 1.

Waste Classes
Check as many as apply.

- ☐ On-going generation
- ☐ One-time generation
- ☐ Radioactive (complete Sec. 2)
- ☐ Non-radioactive
- ☐ Wastewater (complete Sec. 3)
- ☐ Classified/Sensitive

Associated Documentation
Check as many as apply.

- ☐ Process SOP --> no.: ____
- ☐ RMMA OP --> no.: ____
- ☐ WM SOP --> no.: ____
- ☐ Other --> _____
- ☐ None --> describe below

Waste Category
Check as many as apply.

- ☐ Solvent
- ☐ Degreaser
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated hazardous waste residue
- ☐ Explosive process waste
- ☐ Infectious/biological waste
- ☐ Beryllium
- ☐ Asbestos-friable
- ☐ Asbestos-nonfriable
- ☐ Empty containers
- ☐ PCB (<50 ppm)
  - ☐ PCB (50 - 500 ppm)
  - ☐ PCB (> 500 ppm)
  - → id. no. : _____
- ☐ Not applicable --> describe below

Waste Sources
Check as many as apply.

- ☐ Research and development
- ☐ Maintenance
- ☐ Construction
- ☐ Material processing
- ☐ Decon/decom
- ☐ Investigation derived
- ☐ Remediation
- ☐ UST - petroleum
- ☐ UST - non-petroleum
- ☐ Generator treatment
- ☐ Interim/permitted treatment
- ☐ Industrial sludge
- ☐ Sanitary sludge
- ☐ Abatement

Waste Matrix
Check only one.

Gas
- ☐ ≤ 1.5 Atmospheres
- ☐ > 1.5 Atmospheres

Liquid
- ☐ Aqueous
- ☐ Organic
- ☐ Inorganic

Solid
- ☐ Powder/ash
- ☐ Solid
- ☐ Absorbed liquid

Matrix Type
Check only one.

- ☐ Homogeneous
- ☐ Heterogeneous --> describe below

Waste/Process Description

_____
_____
_____
_____
_____
_____
_____

Form 1346 (1/95)

Page 1 of 4

FIGURE A.2-1

WASTE PROFILE FORM

Section 1- Chemical and Physical Characteristics (continued)

Ignitability (degrees F.)
Check only one.

- ☐ < 73
- ☐ 73-99
- ☐ 100-139
- ☐ 140-200
- ☐ > 200
- ☐ Ignitable solid
- ☐ DOT oxidizer
- ☐ Not ignitable

Corrosivity (pH)
Check only one.

- ☐ ≤ 2.0
- ☐ 2.1-4.0
- ☐ 4.1-6.0
- ☐ 6.1-9.0
- ☐ 9.1-12.4
- ☐ ≥ 12.5
- ☐ Liquid corrosive to steel
- ☐ Not aqueous

Reactivity
Check as many as apply.

- ☐ Unstable
- ☐ Water reactive
- ☐ Pyrophoric
- ☐ Cyanide bearing
- ☐ Sulfide bearing
- ☐ Shock sensitive
- ☐ Explosive - class _____
- ☐ Non-reactive

Boiling Point (degrees F.)
Check only one.

- ☐ ≤ 95
- ☐ > 95
- ☐ Not applicable

Identify presence of contaminants.			Minimum	Maximum	Unit (ppm or % only)	Analytical method
Toxicity Characteristic Metals						
Arsenic	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Barium	☐ None	☐ < 100.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Cadmium	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Chromium	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Lead	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Mercury	☐ None	☐ < 0.2 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Selenium	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Silver	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Toxicity Characteristic Organic Compounds						
Benzene	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Carbon tetrachloride	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Chlorobenzene	☐ None	☐ < 100.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Chloroform	☐ None	☐ < 6.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Cresol	☐ None	☐ < 200.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
1,4-dichlorobenzene	☐ None	☐ < 7.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
1,2-Dichloroethane	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
1,1-Dichloroethylene	☐ None	☐ < 0.7 ppm	_____	to _____	_____	☐ TCLP ☐ Total
2,4-Dinitrotoluene	☐ None	☐ < 0.13 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Hexachlorobenzene	☐ None	☐ < 0.13 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Hexachlorobutadiene	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Hexachloroethane	☐ None	☐ < 3.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Methyl ethyl ketone	☐ None	☐ < 200.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Nitrobenzene	☐ None	☐ < 2.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Pentachlorophenol	☐ None	☐ < 100.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Pyridine	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Perchloroethylene or tetrachloroethylene	☐ None	☐ < 0.7 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Trichloroethylene	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
2,4,5-Trichlorophenol	☐ None	☐ < 400.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
2,4,6-Trichlorophenol	☐ None	☐ < 2.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Vinyl chloride	☐ None	☐ < 0.2 ppm	_____	to _____	_____	☐ TCLP ☐ Total

Additional Chemical Constituents and Contaminants (for hazardous constituents, see AR 10-3, Appendix A)
List all other constituents (including inerts) not identified above and attach any applicable analyses.

Name of constituent	Cas no.(optional)	Minimum	Maximum	Unit (ppm or % only)
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____

Form 1346 (1/95) Page 2 of 4

FIGURE A.2-1

WASTE PROFILE FORM
(continued)

Section 2- Radiological Characteristics

For help in completing this section of the form, call 5-WAST or 5-4000.

	Range minimum		Range maximum	Unit (Ci/g or Ci/l)
General				
☐ Alpha	_____	to	_____	_____
☐ Beta	_____	to	_____	_____
☐ Gamma	_____	to	_____	_____
TRU radionuclides				
☐ None present				
☐ Am-241	_____	to	_____	_____
☐ Am-243	_____	to	_____	_____
☐ Cf-249	_____	to	_____	_____
☐ Cf-251	_____	to	_____	_____
☐ Cm-243	_____	to	_____	_____
☐ Cm-245	_____	to	_____	_____
☐ Cm-247	_____	to	_____	_____
☐ Pu-238	_____	to	_____	_____
☐ Pu-239	_____	to	_____	_____
☐ Pu-240	_____	to	_____	_____
☐ Pu-242	_____	to	_____	_____
Fission products				
☐ None present				
☐ Ba-140	_____	to	_____	_____
☐ Ce-144	_____	to	_____	_____
☐ Cs-134	_____	to	_____	_____
☐ Cs-137	_____	to	_____	_____
☐ I-129	_____	to	_____	_____
☐ I-133	_____	to	_____	_____
☐ Kr-85	_____	to	_____	_____
☐ Nb-95	_____	to	_____	_____
☐ Ru-106	_____	to	_____	_____
☐ Sb-125	_____	to	_____	_____
☐ Sr-90	_____	to	_____	_____
☐ Tc-99	_____	to	_____	_____
☐ Zr-93	_____	to	_____	_____
☐ Zr-95	_____	to	_____	_____
Activation products				
☐ None present				
☐ As -74	_____	to	_____	_____
☐ Be-7	_____	to	_____	_____
☐ C-14	_____	to	_____	_____
☐ Co-56	_____	to	_____	_____
☐ Co-57	_____	to	_____	_____
☐ Co-58	_____	to	_____	_____
☐ Co-60	_____	to	_____	_____
☐ Cr-51	_____	to	_____	_____
☐ Eu-152	_____	to	_____	_____
☐ Mn-52	_____	to	_____	_____
☐ Mn-54	_____	to	_____	_____
☐ Nb-94	_____	to	_____	_____
☐ Ni-59	_____	to	_____	_____
☐ Ni-63	_____	to	_____	_____
☐ Rb-83	_____	to	_____	_____
☐ Rb-84	_____	to	_____	_____
☐ Se-75	_____	to	_____	_____
☐ Sr-82	_____	to	_____	_____
☐ Sr-85	_____	to	_____	_____
☐ V-48	_____	to	_____	_____
☐ Y-88	_____	to	_____	_____
☐ Zn-65	_____	to	_____	_____
☐ Zr-88	_____	to	_____	_____

	Range minimum		Range maximum	Unit (Ci/g or Ci/l)
Other				
☐ None present				
☐ Am-242	_____	to	_____	_____
☐ Bi-207	_____	to	_____	_____
☐ Bi-210	_____	to	_____	_____
☐ Cf-250	_____	to	_____	_____
☐ Cf-252	_____	to	_____	_____
☐ Cm-244	_____	to	_____	_____
☐ H-3	_____	to	_____	_____
☐ Pa-231	_____	to	_____	_____
☐ Pb-210	_____	to	_____	_____
☐ Po-210	_____	to	_____	_____
☐ Pu-236	_____	to	_____	_____
☐ Pu-241	_____	to	_____	_____
☐ Ra-226	_____	to	_____	_____
☐ Ra-228	_____	to	_____	_____
☐ Th-230	_____	to	_____	_____
☐ Th-232	_____	to	_____	_____
☐ U-232	_____	to	_____	_____
☐ U-233	_____	to	_____	_____
☐ U-234	_____	to	_____	_____
☐ U-235	_____	to	_____	_____
☐ U-236	_____	to	_____	_____
☐ U-238	_____	to	_____	_____
Add'l radionuclides				
☐ No additional radionuclides present				
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____

Contamination Type: *Check as many as apply.*

☐ Volume Contamination
☐ Surface Contamination

Form 1346 (1/95)

Page 3 of 4

FIGURE A.2-1

WASTE PROFILE FORM
(continued)

Section 3 - Wastewater Characteristics

For help in completing this section of the form, call 7-4301.

Identify presence of contaminants			Minimum	Maximum	Unit (ppm or % only)	Analytical method	
Aluminum	☐ None	☐ < 5.0 ppm	_____ to	_____	_____	☐ TCLP	☐ Total
Boron	☐ None	☐ < 5.0 ppm	_____ to	_____	_____	☐ TCLP	☐ Total
Cobalt	☐ None	☐ < 1.0 ppm	_____ to	_____	_____	☐ TCLP	☐ Total
Copper	☐ None	☐ < 1.0 ppm	_____ to	_____	_____	☐ TCLP	☐ Total
Vanadium	☐ None	☐ < 0.10 ppm	_____ to	_____	_____	☐ TCLP	☐ Total
Zinc	☐ None	☐ < 65.4 ppm	_____ to	_____	_____	☐ TCLP	☐ Total

Maximum daily flow when discharge occurs: _____ ☐ Gallons ☐ Liters

Average daily flow when discharge occurs: _____ ☐ Gallons ☐ Liters

Estimated number of days per year that discharge will occur: _____

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50-1: _____ ☐ Gallons ☐ Liters

For TA-55 use only. Wastewater will be discharged through one of the following:

☐ Acid line ☐ Caustic line ☐ Industrial waste line

Section 4 - Additional Information

If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:

WASTE GENERATOR CERTIFICATION: *Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.*

Signature	Date

Form 1346 (1/95) Page 4 of 4

FIGURE A.2-1

WASTE PROFILE FORM
(continued)

Los Alamos
National Laboratory

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

A copy of this form must be attached to each Waste Profile Form and to each Uniform Hazardous Waste Manifest required to transport waste within LANL, pursuant to 40 CFR 268.7(a)(1).

Waste Profile Form No.	Chemical Waste/ Waste Disposal Record No.	Uniform Hazardous Waste Manifest No.	Date of Waste Pickup

Check only one.

- ☐ Non-wastewater
- ☐ Wastewater [as defined in 40 CFR 268.2(f)]

NOTIFICATION OF CALIFORNIA LIST APPLICABILITY

Check all that apply.

- ☐ Liquid hazardous waste containing PCBs at a concentration of ≥50 ppm.
- ☐ A D001 – D017 liquid waste containing ≥134 mg/L of nickel and/or ≥130 mg/L of thallium.
- ☐ A D001 – D011 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at ≥1000 ppm.

NOTIFICATION OF "D" CHARACTERISTIC EPA WASTE CODES

Check all that apply.

EPA Waste Code	Waste Description and/or Subcategory (as needed)
☐ D001*	Ignitable characteristic wastes [except for the Section 261.21(a)(1) High TOC Subcategory] that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.
☐ D001	High TOC Ignitable Characteristic Liquids Subcategory based on 40 CFR 261.21(a)(1) - Greater than 10% total organic carbon.
☐ D002*	Corrosive Characteristic Wastes that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.
☐ D003	Reactive Sulfides Subcategory
☐ D003	Reactive Cyanides Subcategory
☐ D003	Water Reactive Subcategory
☐ D003	Other Reactives Subcategory [based on 261.23(a)(1)]
☐ D004	
☐ D005	
☐ D006	Wastes that exhibit the TC for cadmium
☐ D006	Cadmium Containing Batteries Subcategory
☐ D007	
☐ D008	Wastes that exhibit TC for lead
☐ D008	Lead Acid Batteries Subcategory
☐ D008	Radioactive Lead Solids Subcategory
☐ D009	High Mercury-Organic Subcategory (≥260 mg/kg Hg with organics and not incinerator residues)
☐ D009	High Mercury-Inorganic Subcategory (≥260 mg/kg Hg [with inorganics])
☐ D009	Low Mercury Subcategory (<260 mg/kg Hg)
☐ D009	All D009 wastewaters
☐ D009	Elemental mercury contaminated with radioactive materials.
☐ D009	Hydraulic oil contaminated with Mercury Radioactive Materials Subcategory
☐ D010	
☐ D011	

☐ D012*	☐ D020*	☐ D028*	☐ D036*
☐ D013*	☐ D021*	☐ D029*	☐ D037*
☐ D014*	☐ D022*	☐ D030*	☐ D038*
☐ D015*	☐ D023*	☐ D031*	☐ D039*
☐ D016*	☐ D024*	☐ D032*	☐ D040*
☐ D017*	☐ D025*	☐ D033*	☐ D041*
☐ D018*	☐ D026*	☐ D034*	☐ D042*
☐ D019*	☐ D027*	☐ D035*	☐ D043*

*All applicable Underlying Hazardous Constituents in these characteristic wastes must be checked in Table UTS.

Form 1346A (11/94) Page 1 of 6

FIGURE A.2-2

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

Los Alamos
National Laboratory

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

NOTIFICATION FOR F001 – F005 SPENT SOLVENT WASTES

Check all that apply.

Spent solvent wastes with the following constituents only.

EPA Waste Code	Constituents in the waste	
☐ F001	☐ Acetone	☐ Isobutyl alcohol
☐ F002	☐ Benzene	☐ Methanol
☐ F003	☐ n-Butyl alcohol	☐ Methylene chloride
☐ F004	☐ Carbon disulfide (wastewater only)	☐ Methyl ethyl ketone
☐ F005	☐ Carbon tetrachloride	☐ Methyl isobutyl ketone
	☐ Chlorobenzene	☐ Nitrobenzene
	☐ o-cresol	☐ Pyridine
	☐ m-cresol	☐ Tetrachloroethylene
	☐ p-cresol	☐ Toluene
	☐ Cresol-mixed isomers (Cresylic acid)	☐ 1,1,1-Trichloroethane
	☐ Cyclohexanone (wastewater only)	☐ 1,1,2-Trichloroethane
	☐ o-Dichlorobenzene	☐ 1,1,2-Trichloro – 1,2,2-trifluoroethane
	☐ Ethyl acetate	☐ Trichloroethylene
	☐ Ethyl benzene	☐ Trichloromonofluoromethane
	☐ Ethyl ether	☐ Xylenes – mixed isomers (o-, m-, p-xylene)

Check all that apply.

EPA Waste Codes	Constituents in the waste
☐ F003	☐ Carbon disulfide
☐ F005	☐ Cyclohexanone
	☐ Methanol

Note: Treatment standards for these constituents apply to F001 – F005 wastes which contain only one, two, or all three of these constituents.

Check only one, if applicable.

EPA Waste Code	Constituents in the waste
☐ F005	☐ Containing 2-nitropropane as the only listed F001 – F005 solvent.
	☐ Containing 2-ethoxyethanol as the only listed F001 – F005 solvent.

NOTIFICATION FOR OTHER "F" WASTES

Check only one, if applicable.

☐ F006
☐ F007
☐ F008
☐ F009
☐ F027

Form 1346A (11/94)

Page 2 of 6

FIGURE A.2-2

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM
(continued)

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National Laboratory

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

NOTIFICATION FOR "P" AND "U" LISTED WASTE CODES

☐ P001	☐ P057	☐ P115	☐ U041	☐ U092	☐ U144	☐ U194
☐ P002	☐ P058	☐ P116	☐ U042	☐ U093	☐ U145	☐ U196
☐ P003	☐ P059	☐ P118	☐ U043	☐ U094	☐ U146	☐ U197
☐ P004	☐ P060	☐ P119	☐ U044	☐ U095	☐ U147	☐ U200
☐ P005	☐ P062	☐ P120	☐ U045	☐ U096	☐ U148	☐ U201
☐ P006	☐ P063	☐ P121	☐ U046	☐ U097	☐ U149	☐ U202
☐ P007	☐ P064	☐ P122	☐ U047	☐ U098	☐ U150	☐ U203
☐ P008	☐ P065	☐ P123	☐ U048	☐ U099	☐ U151	☐ U204
☐ P009	☐ P066		☐ U049	☐ U101	☐ U152	☐ U205
☐ P010	☐ P067		☐ U050	☐ U102	☐ U153	☐ U206
☐ P011	☐ P068		☐ U051	☐ U103	☐ U154	☐ U207
☐ P012	☐ P069	☐ U001	☐ U052	☐ U105	☐ U155	☐ U208
☐ P013	☐ P070	☐ U002	☐ U053	☐ U106	☐ U156	☐ U209
☐ P014	☐ P071	☐ U003	☐ U055	☐ U107	☐ U157	☐ U210
☐ P015	☐ P072	☐ U004	☐ U056	☐ U108	☐ U158	☐ U211
☐ P016	☐ P073	☐ U005	☐ U057	☐ U109	☐ U159	☐ U213
☐ P017	☐ P074	☐ U006	☐ U058	☐ U110	☐ U160	☐ U214
☐ P018	☐ P075	☐ U007	☐ U059	☐ U111	☐ U161	☐ U215
☐ P020	☐ P076	☐ U008	☐ U060	☐ U112	☐ U162	☐ U216
☐ P021	☐ P077	☐ U009	☐ U061	☐ U113	☐ U163	☐ U217
☐ P022	☐ P078	☐ U010	☐ U062	☐ U114	☐ U164	☐ U218
☐ P023	☐ P081	☐ U011	☐ U063	☐ U115	☐ U165	☐ U219
☐ P024	☐ P082	☐ U012	☐ U064	☐ U116	☐ U166	☐ U220
☐ P026	☐ P084	☐ U014	☐ U066	☐ U117	☐ U167	☐ U221
☐ P027	☐ P085	☐ U015	☐ U067	☐ U118	☐ U168	☐ U222
☐ P028	☐ P087	☐ U016	☐ U068	☐ U119	☐ U169	☐ U223
☐ P029	☐ P088	☐ U017	☐ U069	☐ U120	☐ U170	☐ U225
☐ P030	☐ P089	☐ U018	☐ U070	☐ U121	☐ U171	☐ U226
☐ P031	☐ P092	☐ U019	☐ U071	☐ U122	☐ U172	☐ U227
☐ P033	☐ P093	☐ U020	☐ U072	☐ U123	☐ U173	☐ U228
☐ P034	☐ P094	☐ U021	☐ U073	☐ U124	☐ U174	☐ U234
☐ P036	☐ P095	☐ U022	☐ U074	☐ U125	☐ U176	☐ U235
☐ P037	☐ P096	☐ U023	☐ U075	☐ U126	☐ U177	☐ U236
☐ P038	☐ P097	☐ U024	☐ U076	☐ U127	☐ U178	☐ U237
☐ P039	☐ P098	☐ U025	☐ U077	☐ U128	☐ U179	☐ U238
☐ P040	☐ P099	☐ U026	☐ U078	☐ U129	☐ U180	☐ U239
☐ P041	☐ P101	☐ U027	☐ U079	☐ U130	☐ U181	☐ U240
☐ P042	☐ P102	☐ U028	☐ U080	☐ U131	☐ U182	☐ U243
☐ P043	☐ P103	☐ U029	☐ U081	☐ U132	☐ U183	☐ U244
☐ P044	☐ P104	☐ U030	☐ U082	☐ U133	☐ U184	☐ U246
☐ P045	☐ P105	☐ U031	☐ U083	☐ U134	☐ U185	☐ U247
☐ P046	☐ P106	☐ U032	☐ U084	☐ U135	☐ U186	☐ U248
☐ P047	☐ P108	☐ U033	☐ U085	☐ U136	☐ U187	☐ U249
☐ P048	☐ P109	☐ U034	☐ U086	☐ U137	☐ U188	☐ U328
☐ P049	☐ P110	☐ U035	☐ U087	☐ U138	☐ U189	☐ U353
☐ P050	☐ P111	☐ U036	☐ U088	☐ U140	☐ U190	☐ U359

FIGURE A.2-2

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM
(continued)

Los Alamos
National Laboratory

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

TABLE UTS—Universal Treatment Standards
(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

- ☐ Acenaphthylene
- ☐ Acenaphthene
- ☐ Acetone
- ☐ Acetonitrile
- ☐ Acetophenone
- ☐ 2-Acetylaminofluorene
- ☐ Acrolein
- ☐ Acrylamide
- ☐ Acrylonitrile
- ☐ Aldrin
- ☐ 4-Aminobiphenyl
- ☐ Aniline
- ☐ Anthracene
- ☐ Aramite
- ☐ alpha-BHC
- ☐ beta-BHC
- ☐ delta-BHC
- ☐ gamma-BHC
- ☐ Benzene
- ☐ Benz(a)anthracene
- ☐ Benzal chloride
- ☐ Benzo(b)fluoranthene (difficult to distinguish from benzo(k)fluoranthene)
- ☐ Benzo(k)fluoranthene (difficult to distinguish from benzo(b)fluoranthene)
- ☐ Benzo(g,h,i)perylene
- ☐ Benzo(a)pyrene
- ☐ Bromodichloromethane
- ☐ Methyl bromide (Bromomethane)
- ☐ 4-Bromophenyl phenyl ether
- ☐ n-Butyl alcohol
- ☐ Butyl benzyl phthalate
- ☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)
- ☐ Carbon disulfide
- ☐ Carbon tetrachloride
- ☐ Chlordane (alpha and gamma isomers)
- ☐ p-Chloroaniline
- ☐ Chlorobenzene
- ☐ Chlorobenzilate
- ☐ 2-Chloro-1,3-butadiene
- ☐ Chlorodibromomethane
- ☐ Chloroethane
- ☐ bis(2-Chloroethoxy)methane
- ☐ bis(2-Chloroethyl)ether
- ☐ Chloroform
- ☐ bis(2-Chloroisopropyl)ether
- ☐ p-Chloro-m-cresol
- ☐ 2-Chloroethyl vinyl ether
- ☐ Chloromethane (Methyl chloride)
- ☐ 2-Chloronaphthalene
- ☐ 2-Chlorophenol
- ☐ 3-Chloropropylene
- ☐ Chrysene
- ☐ o-Cresol
- ☐ m-Cresol (difficult to distinguish from p-cresol)
- ☐ p-Cresol (difficult to distinguish from m-cresol)
- ☐ Cyclohexanone
- ☐ 1,2-Dibromo-3-chloropropane
- ☐ Ethylene dibromide (1,2-Dibromoethane)
- ☐ Dibromomethane
- ☐ 2,4-D (2,4-Dichlorophenoxyacetic acid)
- ☐ o,p'-DDD
- ☐ p,p'-DDD
- ☐ o,p'-DDE
- ☐ p,p'-DDE
- ☐ o,p'-DDT
- ☐ p,p'-DDT
- ☐ Dibenz(a,h)anthracene
- ☐ Dibenz(a,e)pyrene
- ☐ m-Dichlorobenzene
- ☐ o-Dichlorobenzene
- ☐ p-Dichlorobenzene
- ☐ Dichlorodifluoromethane
- ☐ 1,1-Dichloroethane
- ☐ 1,2-Dichloroethane
- ☐ 1,1-Dichloroethylene
- ☐ trans-1,2-Dichloroethylene
- ☐ 2,4-Dichlorophenol
- ☐ 2,6-Dichlorophenol
- ☐ 1,2-Dichloropropane
- ☐ cis-1,3-Dichloropropylene
- ☐ trans-1,3-Dichloropropylene
- ☐ Dieldrin
- ☐ Diethyl phthalate
- ☐ 2-4,Dimethyl phenol
- ☐ Dimethyl phthalate
- ☐ Di-n-butyl phthalate
- ☐ 1,4-Dinitrobenzene

FIGURE A.2-2

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM
(continued)

Los Alamos
National Laboratory

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

TABLE UTS—Universal Treatment Standards
(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

- ☐ 4,6-Dinitro-o-cresol
- ☐ 2,4-Dinitrophenol
- ☐ 2,4-Dinitrotoluene
- ☐ 2,6-Dinitrotoluene
- ☐ Di-n-octyl phthalate
- ☐ p-Dimethylaminoazobenzene
- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine (difficult to distinguish from diphenylnitrosamine)
- ☐ Diphenylnitrosamine (difficult to distinguish from diphenylamine)
- ☐ 1,2-Diphenylhydrazine
- ☐ Disulfoton
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ Ethyl acetate
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl benzene
- ☐ Ethyl ether
- ☐ bis(2-Ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ HxCDDs (All Hexachlorodibenzo-p-dioxins)
- ☐ HxCDFs (All Hexachlorodibenzofurans)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methoxychlor
- ☐ 3-Methylcholanthrene
- ☐ 4,4-Methylene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N-Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Parathion
- ☐ Total PCBs (sum of all PCB isomers, or all Aroclors)
- ☐ Pentachlorobenzene
- ☐ PeCDDs (All Pentachlorodibenzo-p-dioxins)
- ☐ PeCDFs (All Pentachlorodibenzofurans)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Pronamide
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)

Form 1346A (11/94) Page 5 of 6

FIGURE A.2-2

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM
(continued)

Los Alamos
National Laboratory

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

TABLE UTS—Universal Treatment Standards
(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

- ☐ 2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ TCDDs (All Tetrachlorodibenzo-p-dioxins)
- ☐ TCDFs (All Tetrachlorodibenzofurans)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tetrachlorophenol
- ☐ Toluene
- ☐ Toxaphene
- ☐ Bromoform (Tribromomethane)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vinyl chloride
- ☐ Xylenes-mixed isomers (sum of o-, m-, and p-xylene concentrations)
- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Beryllium
- ☐ Cadmium
- ☐ Chromium (Total)
- ☐ Cyanides (Total)[1]
- ☐ Cyanides (Amenable)[1]
- ☐ Fluoride
- ☐ Lead
- ☐ Mercury—Nonwastewater from Retort
- ☐ Mercury—All Others
- ☐ Nickel
- ☐ Selenium
- ☐ Silver
- ☐ Sulfide
- ☐ Thallium
- ☐ Vanadium

[1] Both Cyanides (Total) and Cyanides (Amenable) for nonwastewaters are to be analyzed using Method 9010 or 9012, found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW-846, as incorporated by reference in 40 CFR 260.11, with a sample size of 10 grams and a distillation time of one hour and 15 minutes.

NOTIFICATION OF ADDITIONAL TREATMENT STANDARDS

EPA Waste Code	Waste Description and/or Subcategory (if applicable)

Form 1346A (11/94)

Page 6 of 6

FIGURE A.2-2

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM
(continued)

WASTE ANALYSIS PLAN

PERMIT ATTACHMENT A.3
NM0890010515-1

WASTE ANALYSIS PLAN FOR LOW-LEVEL SOLID MIXED WASTE

LIST OF DEFINITIONS

Acceptable knowledge - Broadly defined to include process knowledge, waste analysis data, and/or facility records of analysis.

Existing (or currently generated) low-level mixed waste - Low-level mixed waste streams that have been characterized using Los Alamos National Laboratory (LANL)'s Waste Profile Form (WPF) (the WPF has been used since May 1991).

Future low-level mixed waste - Low-level mixed waste streams that will be characterized through the use of both LANL's WPF and a certification program.

Heterogeneous waste - Waste that is of dissimilar or diverse composition.

Homogeneous waste - Waste that is of uniform composition.

Legacy low-level mixed waste - Low-level mixed waste streams generated before the LANL WPF was implemented (i.e., prior to May 1991).

Low-level waste - Waste defined in U.S. Department of Energy (DOE) Order 5820.2A, "Radioactive Waste Management" (DOE, 1988), as "waste that contains radioactivity and is not classified as high-level waste, transuranic waste, spent nuclear fuel, or 11(e)(2) by-product material as defined by this Order. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level, provided that the concentration of transuranics is less than 100 nanocuries per gram of waste." By-product material, as defined in Section 11(e)(2) of the Atomic Energy Act of 1954, as amended, consists of uranium and thorium mill tailings. Section 11(e)(2) by-product material is not generated at LANL.

Low-level solid mixed waste - Waste that has both a Resource Conservation and Recovery Act (RCRA) hazardous waste component (see definition) and a low-level waste component (see definition).

Process knowledge - Described in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.13(a)(2), revised November 1, 1995, as data developed under Subpart II and existing published or documented data on a specific hazardous waste or on hazardous waste generated from similar processes.

RCRA hazardous waste - The criteria for establishing a waste as a RCRA hazardous waste are provided in 20 NMAC 4.1, Subpart II, revised November 1, 1995. A waste is considered hazardous if it meets the definition of a RCRA solid waste; is not exempted from regulation; and exhibits one or more of the characteristics described in 20 NMAC 4.1, Subpart II, Part 261, Subpart C, revised November 1, 1995, or is listed in 20 NMAC 4.1, Subpart II, Part 261, Subpart D, revised November 1, 1995.

RCRA solid waste - Any waste stream that meets the definition of a "solid waste" as specified in 20 NMAC 4.1, Subpart II, 261.2, revised November 1, 1995.

LIST OF DEFINITIONS
(Continued)

Solid waste - Any waste stream in a solid physical form. In this document, use of the generic term "solid waste" refers only to the solid physical form and has no additional regulatory meaning.

LIST OF REGULATORY REFERENCES AND CORRESPONDING WASTE ANALYSIS PLAN LOCATION

RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
264.13(a)(1)	Analysis information adequate to meet 20 NMAC 4.1, Subparts V and VIII, Parts 264 and 268, revised November 1, 1995, storage requirements	A.3.2 and A.3.3
264.13(a)(2)	Waste analysis data	A.3.3.2
264.13(a)(3)	Repeat analysis	A.3.3.1, A.3.3.3, A.3.5, and A.3.5.2
264.13(a)(4)	Inspection and analysis after each movement of hazardous waste received from off site	Not applicable (NA)
264.13(b)	Written waste analysis plan	Entire plan
264.13(b)(1)	Parameters and rationale for selection	A.3.2.1 and A.3.2.2
264.13(b)(2)	Test methods	A.3.3, A.3.3.3, A.3.4, and Tables A.3-2 and A.3-3
264.13(b)(3)	Representative sample collection method	A.3.3.3
264.13(b)(4)	Frequency for review or repeat of initial analysis	A.3.3.1, A.3.3.3, A.3.5.1, and A.3.5.2
264.13(b)(5)	Waste analysis information to be provided to off-site facilities	A.3.3.1, A.3.3.2, and Figure A.3-1
264.13(b)(6)	Additional waste analysis requirements	NA
264.13(b)(7)	Surface impoundments exempted under 20 NMAC 4.1, Subpart VIII, 268.4(a), revised November 1, 1995	NA

Refer to footnotes at end of table.

LIST OF REGULATORY REFERENCES AND CORRESPONDING WASTE ANALYSIS PLAN LOCATION (Continued)

RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
264.13(c)	Inspection and analysis procedures for off-site facilities	NA
264.13(c)(1)	Procedures for identification of each movement of waste for off-site shipments	NA
264.13(c)(2)	Sampling method for the waste to be identified for off-site shipments	NA
264.13(c)(3)	For off-site landfills: procedures to determine whether a biodegradable sorbent has been added to containers	NA
268.7(a)	Determination of whether waste is restricted from land disposal	A.3.6.3
268.7(b)	Testing requirements for treatment facilities	NA
268.7(b)(1)	Testing of treatment residues or extract of waste with concentration-based treatment standards specified in 20 NMAC 4.1, Subpart VIII, 268.41, revised November 1, 1995	NA
268.7(b)(2)	Testing of treatment residues pursuant to 20 NMAC 4.1, Subpart VIII, 268.32, revised November 1, 1995	NA
268.7(b)(3)	Testing of treatment residues of waste with concentration-based treatment standards specified in 20 NMAC 4.1, Subpart VIII, 268.43, revised November 1, 1995	A.3.6.3
268.7(b)(4)	Notice requirements	A.3.6.3 and Figure A.3-2
268.7(b)(5)	Certification of compliance with 20 NMAC 4.1, Subpart VIII, Part 268, revised November 1, 1995	A.3.6.3
268.7(b)(6)	Notice and certification requirements for treatment facilities that ship treatment residues to a different treatment, storage, or disposal (TSD) facility	NA

Refer to footnotes at end of table.

LIST OF REGULATORY REFERENCES AND CORRESPONDING WASTE ANALYSIS PLAN LOCATION (Continued)

RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
268.7(b)(7)	Notice requirement for recycling facilities using materials in a manner constituting disposal	NA
268.7(c)(1)	Recordkeeping requirements for land disposal facilities	NA
268.7(c)(2)	Testing requirements for land disposal facilities	NA
268.7(d)(1)	Notification requirements for excluded debris (i.e., pursuant to 20 NMAC 4.1, Subpart II, 261.3, revised November 1, 1995)	NA
268.7(d)(2)	Updated notification requirements for debris	NA
268.7(d)(3)	Documentation and certification requirements for debris excluded under 20 NMAC 4.1, Subpart II, 261.3(e)(1), revised November 1, 1995	NA
270.14(b)(2)	Chemical and physical analyses	A.3.2.1, A.3.3, A.3.3.1, A.3.3.2, A.3.3.3, Figure A.3-1, and Tables A.3-2 and A.3-3

[a] Resource Conservation and Recovery Act
[b] New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), revised November 1, 1995, which adopts, with a few limited exceptions, Title 40 of the Code of Federal Regulations (40 CFR), Parts 260–266, Part 268, and Part 270 (1994). 20 NMAC 4.1, Subpart V, VIII, and IX, revised November 1, 1995, contain equivalent regulations to 40 CFR Parts 264, 268, and 270, respectively.

ATTACHMENT A.3
WASTE ANALYSIS PLAN FOR LOW-LEVEL SOLID MIXED WASTE

This waste analysis plan (WAP) presents information on the chemical and physical nature of low-level mixed waste generated and general low-level mixed waste characterization methods used at Los Alamos National Laboratory (LANL). The waste analysis information contained within this WAP is specific to storage requirements only. Waste analysis plans specific to treatment will be developed and submitted as needed. Waste analysis requirements are specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.14(b)(2), revised November 1, 1995; 20 NMAC 4.1, Subpart V, 264.13, "General Waste Analysis," revised November 1, 1995; and in 20 NMAC 4.1, Subpart VIII, 268.7, "Waste Analysis and Recordkeeping," revised November 1, 1995. The content of this WAP generally follows the guidance provided in "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes - A Guidance Manual" (U.S. Environmental Protection Agency [EPA], 1994).

Mixed waste contains both a hazardous waste component, as defined and regulated by the Resource Conservation and Recovery Act (RCRA), and a radioactive waste component. This WAP addresses only *low-level solid mixed waste* (as provided in the List of Definitions of this WAP) considered to be nonwastewaters, pursuant to land disposal restriction (LDR) regulations.

For waste characterization purposes, low-level solid mixed waste at LANL has been subdivided into three groups based on the timeframe for generation of the waste: *legacy, existing (or currently generated)*, and *future*. These three groups are defined in the List of Definitions.

This low-level solid mixed waste WAP is organized as follows. Section A.3.1 includes a facility description, information on low-level solid mixed waste-generating processes and activities, identification of low-level solid mixed waste managed, and a description of low-level solid mixed waste management units. Section A.3.2 presents waste parameters, including the criteria and rationale for selection. Section A.3.3 provides low-level mixed waste characterization procedures. Section A.3.4 presents laboratory selection and analytical methods. Section A.3.5 provides waste verification requirements. Section A.3.6 addresses special procedural requirements (e.g., for ignitable, reactive, and incompatible waste and for compliance with LDR requirements). Differences in requirements for the characterization of legacy, existing, and future low-level solid mixed waste are described in Section A.3.3 of this WAP.

A.3.1 FACILITY DESCRIPTION

LANL is located in Los Alamos County in north-central New Mexico. It is approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. LANL, which is divided into 49 technical areas (TA), and the associated residential and commercial areas of Los Alamos County are situated on the Pajarito Plateau. The principal missions of LANL include the research, design, development, and analysis of weapons components for the nation's nuclear arsenal; supporting research programs; energy research and environmental missions; and environmental management programs. LANL is owned by the U.S. Department of Energy (DOE) and is operated jointly by DOE and the University of California.

A.3.1.1 Facility Waste-Generating Processes, Activities, and Identification of Low-Level Solid Mixed Wastes Managed

Low-level solid mixed waste is generated at LANL primarily from research and development activities, processing and recovery operations, decontamination and decommissioning projects, and environmental remediation/restoration activities. Table A.3-1 provides information on potential low-level solid mixed waste at LANL, including brief waste descriptions, waste-generating processes, and waste-generating locations. The characterization basis for hazardous waste designation (i.e., process knowledge and/or analysis), potential EPA Hazardous Waste Number(s), potential hazardous constituents in and/or characteristics of the waste, and regulatory limits are also listed in Table A.3-1. Descriptions of the low-level solid mixed wastes and their waste-generating processes are provided below. These descriptions are extracted primarily from the Federal Facility Compliance Order, Los Alamos National Laboratory, "Site Treatment Plan Background Volume" (October 4, 1995).

A.3.1.1.1 Homogeneous Low-Level Solid Mixed Wastes

Homogeneous (i.e., uniform composition) low-level solid mixed waste streams at LANL are described generally in the following paragraphs.

Dewatered Treatment Sludges
Dewatered treatment sludges are generated during the treatment of radioactive liquid wastes at the TA-50 Radioactive Liquid Waste Treatment Facility. Liquid waste is typically treated with calcium hydroxide and ferric sulfate, then dewatered through a rotary vacuum filter. Perlite is added to the filtrate to aid in settling. The resulting sludge is bulked into 55-gallon drums. Portland cement is added to the drums to absorb most of the residual moisture within the sludge.

Soils with Heavy Metals
Soil waste contaminated with heavy metals is generated during decommissioning and decontamination activities at various locations throughout LANL. Typically, this waste consists of soils contaminated with varying concentrations of lead or other heavy metals resulting from contact with small shapes, typically in the form of small pieces, shot, or pellets.

Environmental Restoration (ER) Soils
ER soils are contaminated with heavy metals and organic compounds and are generated typically from the remediation of spill sites. Some of this waste stream has resulted from decommissioning of reactors.

Inorganic Solid Oxidizers
Many different types of discarded reagent powders and crystalline materials comprise this waste stream. This waste was generated during a LANL-wide effort to eliminate unnecessary and expired chemical inventory. Most of these items are in the original manufacturer's containers, some of which may be hydrated. Many of these containers are unopened but are suspected to have radioactive surface contamination.

A.3.1.1.2 Heterogeneous Low-Level Solid Mixed Wastes

Heterogeneous (i.e., dissimilar or diverse composition) low-level solid mixed waste streams at LANL are described generally in the following paragraphs.

Lead from Surface Decontamination
Lead from surface decontamination consists of contaminated lead shielding used as radiation shielding in radioisotope experiments and other reactor, accelerator, laser, and x-ray applications. The lead may be in the form of sheets, pigs, bricks, and special shapes. The radioactive material on the surface of the lead may be removable by decontamination and the lead can then be recycled or reused.

Other Lead Waste
Other lead waste consists of activated or inseparable lead, lead wastes - to be determined, lead blankets, and lead requiring sorting. This lead was also used as shielding for radiation, but is not amenable to surface decontamination because the waste is either activated or has a physical form that prevents decontamination. The waste may be in the form of sheets, pigs, bricks, special shapes, shot, shavings, slag, and dross.

Noncombustible Debris
Noncombustible debris typically consists of discarded hazardous and contaminated scrap metals that are generated by the demolition and decommissioning of research laboratories or equipment, including piping and hydraulic fittings from test reactors and test explosives assemblies. Additionally, discarded bricks and glass are generated through dismantling of LANL buildings, including plating shops and machine sheds. The waste may be considered hazardous due to the metal content or by virtue of contamination during use. The waste may be contaminated with residues of cadmium, nickel, cyanide, and uranium.

Combustible Debris
LANL's various machine shops routinely generate rags and combustible debris with heavy metals and organics, some of which may contain residual liquids. Examples include solvents and lubricants, such as WD-40™, that are used in metal-cutting operations. Much of this waste is generated during the processing (e.g., metal-cutting operations) of lead and barium, resulting in heavy metal contamination. Additionally, firing site debris is generated from the detonation of high explosives (HE) and cleanup of firing site debris. The waste consists of mixed fragments of lead and depleted uranium commingled with wood, paper, tape, gloves, and protective clothing.

Organic-Contaminated Noncombustible Solids
This waste stream typically includes absorbed oils, laboratory trash, and discarded equipment. Absorbed oil waste is comprised of bulk drums containing rags or Kimwipes™ and vermiculite or corncob fractions used to absorb many different types of oil from spills and routine maintenance operations. The oil generally originates from vacuum pumps and may be contaminated by mercury, lead, or cadmium. Mercury is a common constituent in the waste stream because of its use at various LANL locations as a vacuum pumping fluid for early vacuum systems. Cadmium contamination may be the result of soldering and brazing-fume-hood operations. Lead contamination is the result of lead turnings contained in cooling oil. Absorbent is routinely added to these waste oils as required by standard operating procedures. Laboratory trash consists of noncombustible solid materials with residual solvent contamination. The laboratory debris includes reagent bottles, broken glassware, and discarded disposable materials (e.g.,

syringes and drying dishes). Large quantities of chemicals were not placed in this trash; however, residual liquids or powders may have remained on some of the disposed material. Discarded equipment with heavy metals and solvents primarily includes equipment and broken glassware that may have contained residual solvents.

Organic-Contaminated Combustible Solids
This waste stream typically consists of waste similar to the combustible debris, without the debris (e.g., rags, cardboard, protective clothing), and paint-stripper trash. Paint-stripper trash waste is generated mainly at TA-55 in large gloveboxes. Paint is removed periodically from the surfaces in the gloveboxes to control radiological contamination. Methylene chloride is used to soften the paint prior to removal.

Water-Reactive Wastes
Water-reactive wastes consist of reactive metal debris generated through the cleanup of HE firing site debris and from machining and disassembly of test components. This waste stream includes calcium, lithium hydride, lithium hydride contaminated with uranium, lithium metal, and magnesium.

Mercury Wastes - To Be Determined
The mercury-contaminated instruments and equipment waste stream consists of discarded or broken equipment containing liquid mercury. The instruments and equipment include broken thermometers, vacuum tubes from electronics applications, vacuum pumps with residual mercury, and mercury absorbed into a paper or solid matrix. Most of this waste is from cleanup operations and could not effectively be recycled or separated from its containing vessel.

Nonradioactive or Suspect Waste Items to be Surveyed
This waste stream consists of various wastes that are managed as radioactive wastes because they were generated in locations that had a possibility of resulting in radioactive contamination of the waste. The waste will be sampled or surveyed to determine if it is radioactive.

A.3.1.2 Description of Low-Level Solid Mixed Waste Management Units

The permitted low-level solid mixed waste storage units at LANL that are addressed in this WAP include:

- Rooms 35, 36, and 38/38A Container Storage Areas (CSA) at the TA-50-1 Decontamination Facility
- The Waste Characterization, Reduction, and Repackaging Facility Indoor and Outdoor CSAs at TA-50-69
- The Radioassay and Nondestructive Testing Facility High Bay, Low Bay, Loading Dock, and Outdoor CSAs at TA-54 West, Building 38 (TA-54-38).

Information on these units is available in LANL's "RCRA Permit Modification Request, Technical Area 50, Building 1, Rooms 35, 36, and 38/38A Container Storage Areas; Building 69, Waste Characterization, Reduction, and Repackaging Facility Indoor and Outdoor Container Storage Areas;

Technical Area 54 West, Building 38, Radioassay and Nondestructive Testing Facility High Bay, Low Bay, Loading Dock, and Outdoor Container Storage Areas," Final Draft, September 1995.

Low-level solid mixed waste storage units and subunits operating under interim status facility standards and addressed in this WAP include:

- A CSA at TA-16-88
- CSAs at TA-21-61
- CSAs at TA-50-37
- The Drum Prep Facility; Storage Sheds 8, 1027, 1028, 1029, and 1041; and Storage Domes 49 and 224 at TA-54, Area G
- CSAs at TA-54, Area L
- CSAs at TA-55
- Storage units at TA-63.

Information on these units is available in LANL's "RCRA Part A Permit Application for Mixed Waste, Revision 2.0" (LANL, 1994).

A.3.2 WASTE ANALYSIS PARAMETERS

A detailed chemical and physical characterization will be performed for low-level solid mixed waste management purposes, as required by RCRA. Waste analysis parameters will be selected to ensure that this characterization will contain all the information necessary to properly treat, store, or dispose of waste in accordance with RCRA general facility standards and LDR requirements. Characterization will be performed by utilizing the procedures described in Section A.3.3.

A.3.2.1 Proposed Analytical Parameters and Characterization Methods

Proposed analytical parameters, characterization methods, and test methods for low-level solid mixed waste at LANL are summarized in Tables A.3-2 and A.3-3. The parameters listed in Table A.3-2 were selected based on acceptable knowledge, as described in Section A.3.3.2, for the various homogeneous and heterogeneous waste forms described in Section A.3.1.1. Table A.3-3 indicates the proposed test methods for generating the data, pursuant to 20 NMAC 4.1, Subpart V, 264.13(b)(2), revised November 1, 1995.

A.3.2.2 Criteria and Rationale for Parameter Selection

Waste analysis parameters selected to characterize low-level solid mixed waste are in conformance with RCRA. These parameters are based on knowledge of raw materials and physical/chemical processes of waste-generating activities, and may be supported by analytical results. The rationale for the selected parameters are identified in Tables A.3-2 and A.3-3.

A.3.3 CHARACTERIZATION OF LOW-LEVEL SOLID MIXED WASTE

Low-level solid mixed waste generated at LANL is divided into general groups based on when the waste was generated and the degree of difficulty involved in sampling the waste. Generally, the distinction is made between legacy, existing, and future low-level solid mixed waste to define the quality of information available on the waste and the subsequent need for additional sampling and analysis. A secondary distinction between heterogeneous and homogeneous waste is made to determine the availability and appropriateness of sampling procedures.

As provided in the List of Definitions, *legacy low-level solid mixed waste* is waste generated prior to implementation of the LANL Waste Profile Form (WPF) in May 1991 (see Section A.3.3.1). *Existing (or currently generated) low-level solid mixed waste* (i.e., waste generated after May 1991) is characterized using LANL's WPF. *Future low-level solid mixed waste* will be characterized using both LANL's WPF and a certification program (see Section A.3.3.2).

Legacy low-level solid mixed waste was reviewed in partial fulfillment of the requirements of the "Federal Facility Compliance Agreement Regarding Land Disposal Restrictions at the Los Alamos National Laboratory" (EPA, 1994). The waste characterization process outlined in the Federal Facility Compliance Agreement (FFCA) submittal consisted of the following activities: 1) reviewing existing waste data, 2) conducting process knowledge interviews with waste generators, 3) determining if process knowledge information was adequate to characterize the wastes, 4) identifying low-level solid mixed waste containers requiring sampling and analysis, and 5) characterizing the waste in order to assign EPA Hazardous Waste Numbers.

Existing low-level solid mixed waste is characterized using process knowledge, which is provided by individual waste generators on LANL's WPF. If a homogeneous low-level solid mixed waste is found to have insufficient process information available to adequately characterize the waste, sampling and analysis will be performed. (For a detailed description of the WPF, refer to Section A.3.3.1 and to LANL's Administrative Requirement 10-9, "Waste Profile Form.")

Future low-level solid mixed waste will be characterized by utilizing the WPF and a certification program to be implemented. In addition, for waste streams characterized by process knowledge, LANL will implement a documented quality assurance (QA)/quality control (QC) program that will address management of these specific waste streams. For example, the QA/QC program may include procedures for controlling chemical inputs to the waste-generating process as well as procedures for confirming the types of waste placed in different waste containers. These measures will provide knowledge of the types and concentrations of chemical constituents in individual waste streams.

In addition to the distinction among legacy, existing, and future low-level solid mixed waste streams, characterization procedures are constrained by the physical nature of the waste stream (i.e., homogeneous or heterogeneous). Homogeneous low-level solid mixed waste may be characterized for the presence of hazardous constituents (i.e., volatile organic compounds [VOC], semivolatile organic compounds [SVOC], and metals) on the basis of process knowledge and/or sampling and analysis. Homogeneous waste streams may be sampled and analyzed for the toxicity characteristic (TC) contaminants listed in 20 NMAC 4.1, Subpart II, 261.24, revised November 1, 1995. Analytical data will be compared to the TC regulatory levels expressed as total values. These total values will be considered the regulatory threshold limit (RTL)

values for the determination of whether a particular waste exhibits a TC. RTL values are obtained by calculating the weight/weight concentration (in the solid) of a TC contaminant that would give the regulatory weight/volume concentration in the toxicity characteristic leaching procedure (TCLP) extract. Because of the difficulty in obtaining representative samples and the lack of appropriate sampling methodology, heterogeneous low-level solid mixed waste will be characterized largely on the basis of process knowledge.

A.3.3.1 Waste Profiling System

In an effort to maintain detailed and accurate waste characterization information, LANL's Chemical Science and Technology (CST) Division utilizes a generator waste-profiling program for existing (i.e., currently generated) waste at LANL. The waste-profiling effort requires each waste generator to provide a detailed written description of the waste on a standardized WPF, Form 1346 (Figure A.3-1). The waste description can be based on generator process knowledge, the use of appropriate Material Safety Data Sheets (MSDS), and/or results of a chemical/physical analysis of the specific waste. By completing the WPF, waste generators supply information that allows for the proper management of low-level solid mixed waste. Specific information that is requested on the WPF includes:

- Point of generation
- Method of characterization
- Waste categories
- Waste description
- Waste origination
- Classification of radioactivity
- Presence of toxic metals and an estimate of concentration
- Presence of organic compounds and an estimate of concentration
- Identification of hazardous constituents
- Identification of hazardous characteristics
- Identification of the radiological characteristics of the waste.

A correctly completed WPF contains sufficient information to allow CST to classify the waste as either non-RCRA-regulated waste, RCRA-regulated solid waste (i.e., regulated under RCRA Subtitle D), RCRA-regulated hazardous (includes mixed) waste (i.e., regulated under RCRA Subtitle C), or radioactive waste. These four waste classifications are each divided into categories that further distinguish specific wastes. These categories are identified on the WPF. By associating a waste with an individual category, CST can properly classify the waste and assign it the appropriate EPA Hazardous Waste Number(s). Ultimately, the waste profile is used by CST Division to determine the proper procedures for managing the waste.

All waste generators must certify, based on their knowledge of the waste, that the information on the WPF is complete and accurate. Knowingly providing false information can result in administrative action by LANL and/or significant civil or criminal penalties, as stipulated by the waste generator's certification statement.

The WPF must be completed prior to any waste treatment, storage, or disposal. Waste generators must provide new profiles when a process change results in a change in waste composition or when a new waste is generated; otherwise, waste stream profiles are reevaluated annually. This annual reevaluation

complies with the characterization frequency requirement of 20 NMAC 4.1, Subpart V, 264.13(b)(4), revised November 1, 1995.

A.3.3.2 Acceptable Knowledge

The physical nature of some low-level solid mixed waste forms (e.g., debris, equipment, and instruments) makes the collection of representative samples difficult. This difficulty arises from several factors, some of which include: waste streams that contain disparate elements; disparate elements may need to be segregated into similar forms; large objects cannot be made to fill standard size sample containers; and laboratories may not have the capability to sample large objects (EPA, 1992). Health and safety risks to personnel from exposure to radioactive material also constrain or restrict extensive sampling and analysis of certain low-level solid mixed waste forms. Therefore, acceptable knowledge is a method used to characterize most low-level solid mixed waste forms at LANL. For generation of future low-level solid mixed waste, LANL will implement a certification program to support acceptable knowledge used for waste characterization.

According to EPA guidance, *acceptable knowledge* is broadly defined to include process knowledge, waste analysis data, and/or facility records of analysis (EPA, 1994). *Process knowledge* is described in 20 NMAC 4.1, Subpart V, 264.13(a)(2), revised November 1, 1995, as data developed under 20 NMAC 4.1, Subpart II, revised November 1, 1995, and existing published or documented data on a specific hazardous waste or hazardous waste generated from similar processes. *Waste analysis data* include concentration(s) of RCRA-regulated constituents and/or results of tests for hazardous characteristics. These data are used to determine if wastes are RCRA regulated and to determine their LDR status. *Facility records of analysis* performed before the effective date of RCRA regulations will be used with caution. These analytical results must be accurate and applicable to the specified waste and should be supplemented with other existing information (e.g., published data). EPA guidance suggests that acceptable knowledge may be appropriate for wastes meeting the following descriptions:

- Wastes containing hazardous constituents from specific processes that are well documented, such as RCRA F-listed and/or K-listed waste code descriptions.

- Wastes consisting of discarded unused commercial chemical products, reagents, or chemicals of known physical and chemical constituents. Several of these fall into the RCRA P-listed and U-listed waste code descriptions.

- Waste (e.g., radioactive mixed waste) containing levels of radioactivity such that health and safety risks to personnel do not justify sampling and analysis due to quantified and documented radiological concerns.

- Wastes containing heterogeneous materials, where the physical nature of the waste does not lend itself to taking a representative sample (e.g., laboratory trash and construction debris with surface contamination) (EPA, 1994).

At LANL, waste generators will obtain, assemble, and prepare the acceptable knowledge documentation available for each waste stream in a separate auditable file or maintain a waste stream reference file that identifies the acceptable knowledge documents and their locations. The acceptable knowledge

documentation must be explicitly relevant and traceable to a waste type and must not be merely a list of information sources for a particular operation and/or waste. There are many sources of applicable documentation at LANL that may be used to substantiate acceptable knowledge for a specific waste stream. This documentation includes the following:

- Process design documents (e.g., Title II Design).
- Preliminary and final safety analysis reports, unreviewed safety question determinations, and technical safety requirements.
- Standard operating procedures and detailed operating procedures, which can list the raw materials or reagents, describe the process/experiment that uses the materials, and describe the wastes generated and how the wastes are handled.
- Waste packaging logs.
- Test plans or research project reports that describe the reagents and other raw materials used in an experiment.
- Site databases (e.g., chemical inventory database for Superfund Amendments and Reauthorization Act Title III requirements).
- Information from site personnel (e.g., documented interviews).
- Standard industry practice documents (e.g., vendor information).
- Industry reports on a similar process when there is a clear connection between the LANL process/experiment and the industry's similar process/experiment.
- Previous analytical data relevant to the waste stream, including results from fingerprint analyses, spot checks, or routine waste verification sampling.
- Analytical data from studies of common industry processes that are similar to LANL processes. These data can be used to identify the constituents in a specific "similar" process waste stream and to determine the regulatory status of the waste.
- MSDSs, product labels, and other product package information.
- Sampling and analysis data from comparable waste streams.
- Documented visual inspections to confirm or identify the physical characteristics and packaging of a waste.
- Laboratory notebooks that detail the research processes and raw materials used in an experiment.

Sampling surrogate wastes (e.g., equivalent nonradioactive materials) may also be a means of obtaining acceptable knowledge for characterizing low-level solid mixed wastes. For example, data from the analysis of nonradioactive laboratory wastes may be used to evaluate the characteristics of similar radioactive laboratory waste. Sampling nonradioactive inputs or outputs from processes may also provide data that are useful for characterizing a similar low-level solid mixed waste stream.

A.3.3.3 Sampling and Analysis for Low-Level Solid Mixed Waste

If a homogeneous low-level solid mixed waste is found to have insufficient process information available to adequately characterize the waste, sampling and analysis will be performed. Sampling and analysis can be initiated by the generator or waste management groups through the WPF. To ensure that proper procedures and considerations for sample collection, preservation, and shipping; quality assurance and quality control; and occupational safety and health are followed, personnel involved in sampling and analysis of hazardous waste will comply with LANL-specific protocol consistent with EPA's "Test Methods for Evaluating Solid Waste" (SW-846) (EPA, 1992). Sampling will be conducted utilizing LANL sampling procedures to ensure that a representative sample is collected. Specific information relative to analytical methods is outlined in Table A.3-3.

For purposes of collecting a representative sample of homogeneous waste, the sample must be collected and handled by means that will preserve its original physical form and composition and will prevent contamination or changes in concentration of the parameters to be analyzed (EPA, 1994). The two major approaches used to collect a representative sample are authoritative and random sampling. The following sampling equipment may be used for collection of homogeneous low-level solid mixed waste:

- Surface soil or drummed soil with a spade, scoop, or trowel
- Subsurface soil or drummed soil with a hand auger and thin-walled tube sampler
- Sludge or sediment samples with a scoop
- Bulk material with a grain thief, trier, or scoop.

Real-time radiography (RTR) and/or visual examination may be utilized to confirm the process knowledge used to characterize a low-level solid mixed waste. A brief description of these procedures follows.

RTR is a nondestructive, qualitative, and semiquantitative assay technique that involves x-ray scanning of waste containers to identify and verify, using appropriate equipment and qualified operators, the physical form(s) of waste container contents. If RTR is used, the results of each waste container analyzed will be documented. Any audio/video tapes produced during a container scan will be maintained for a minimum of three years.

Visual examination may be used to verify process knowledge amenable to visual confirmation. For example, visual examination may be used to verify the presence of certain hazardous constituents, such as lead in lead bricks or lead-lined gloves. All visual examinations conducted will be documented and the staff performing the examination will be trained regarding what to look for and how to record observations.

Because legacy and existing low-level solid mixed waste streams have been characterized in partial fulfillment of the FFCA (EPA, 1994), future low-level solid mixed waste that is of similar composition

to the characterized low-level solid mixed waste will not be analyzed further unless the waste-generating process changes. Changes in waste-generating processes will be verified through an annual recharacterization evaluation. In addition, if the newly generated waste is of different composition than the stored waste or if waste verification inspections indicate a discrepancy between the waste and its WPF, additional characterization will be performed to recharacterize the waste. For future homogeneous waste, the recharacterization will include sampling and analysis sufficient to establish the range of regulated constituents potentially present in the waste. Both homogeneous and heterogeneous wastes will undergo reevaluation through review of documentation supporting waste characterization activities.

A.3.3.4 Sample Handling, Preservation, and Storage

Table A.3-4 presents requirements specified in SW-846 (EPA, 1992) regarding sample containers, preservation techniques, and holding times associated with sample collection. Adherence to these requirements will occur to ensure that sampling and analysis meet quality objectives for data.

A.3.4 ANALYTICAL LABORATORY SELECTION AND ANALYTICAL METHODS

Analytical laboratories at LANL and/or approved subcontractor laboratories will perform all of the detailed qualitative and quantitative chemical analyses specified in Table A.3-3 of this WAP. These laboratories must have:

- The capability of handling radioactive material/waste
- A documented, comprehensive QA/QC program
- Technical analytical expertise
- A document control/records management plan
- The capability to perform data reduction, validation, and reporting.

The selection and development of analytical testing methods for LANL low-level solid mixed waste streams were based on the following considerations:

- The physical form of the waste
- Analytes of interest
- Required detection limits (e.g., regulatory thresholds)
- Information requirements (e.g., verify compliance with LDR treatment standards, waste classification).

Collectively, these factors contributed to the selection of the analytical methods specified in Table A.3-3. Qualified analytical laboratories at LANL and/or approved subcontractor laboratories that meet the above criteria will analyze low-level solid mixed waste samples for RCRA-regulated hazardous constituents (VOCs, SVOCs, and metals) and characteristics according to SW-846 or documented and approved equivalent methods.

A.3.5 VERIFICATION ANALYSIS FOR LOW-LEVEL SOLID MIXED WASTE

Analysis may be performed to verify the accuracy of the initial waste characterization, to verify that applicable treatment standards have been met, when there is a change in a waste-generating process, when the generator requests a review, or when analytical results indicate a change in a waste stream. Verification analysis for low-level solid mixed waste will be conducted at LANL's or an approved subcontractor's laboratory facilities. All verification analyses will be conducted in conformance with appropriate EPA-approved methods. The type of verification analysis that will be performed to obtain waste characterization information depends upon the physical form of the waste (i.e., homogeneous or heterogeneous) and whether the waste is existing or future low-level solid mixed waste. Verification analysis methodologies for these different types of waste are presented below.

A.3.5.1 Verification of Existing Low-Level Solid Mixed Waste

Characterization for existing homogeneous low-level solid mixed waste streams will not require verification, because the initial characterization provides sufficient information to determine whether a waste is hazardous as defined by RCRA. Process knowledge documentation applicable to existing heterogeneous low-level solid mixed waste streams will be qualitatively verified through visual examination of the contents of select waste containers.

A.3.5.2 Verification of Future Low-Level Solid Mixed Waste

Future homogeneous low-level solid mixed waste streams that have been characterized using LANL's WPF and a certification program will undergo verification sampling and analysis at a frequency of at least 1 in 100 waste streams per year. The selection of waste streams to be analyzed will be random. Factory-sealed product containers and original containers redistributed for use at LANL will not be included in this analysis. Lab-packed chemicals in original containers that have been accepted by an off-site disposal or treatment facility need not be verified unless rejected by the off-site facility. Verification will be used to support waste characterization information provided on the WPF, as well as the certification program, for the waste stream.

Analytical results that show regulated constituents present at concentrations outside of the ranges documented on the WPF are cause for rejection of the WPF and will require investigation. Recharacterization of the waste stream will include sampling and analysis sufficient to establish the range of regulated constituents potentially present in the waste stream. In addition, any time a process change that affects a waste stream occurs, verification analysis must be repeated to determine the regulatory status of the waste stream.

Future heterogeneous low-level solid mixed waste streams will undergo qualitative verification of acceptable knowledge through visual examination. Both homogeneous and heterogeneous waste streams will undergo qualitative verification through review of documentation supporting waste characterization as part of a certification program.

A.3.6 SPECIAL PROCEDURAL REQUIREMENTS

Additional waste management requirements specific to ignitable, reactive, and incompatible wastes, as well as compliance with LDR, are described below.

A.3.6.1 Procedures for Ignitable and Reactive Wastes

Pursuant to 20 NMAC 4.1, Subpart V, 264.17, revised November 1, 1995, specific waste management methods for ignitable and reactive low-level solid mixed waste are as follows. All low-level solid mixed wastes are in a solid physical form and are segregated from any potential liquid-bearing wastes within each waste management unit. Thus, ignitable and reactive wastes will not likely be released in a form capable of commingling and, therefore, would not react with other wastes or materials.

A.3.6.2 Procedures for Incompatible Wastes

Pursuant to 20 NMAC 4.1, Subpart V, 264.17, revised November 1, 1995, specific waste management methods for incompatible low-level solid mixed wastes are described below. Incompatible wastes are kept segregated during waste management activities. The segregation scheme separates wastes by EPA Hazardous Waste Numbers or by compatibility group schemes. All low-level solid mixed wastes are in a solid physical form; thus, it is not anticipated that incompatible wastes will be capable of commingling and reacting with other wastes or materials.

A.3.6.3 Procedures to Ensure Compliance with LDR Requirements

In accordance with the LDR requirements, waste to be shipped off site may need to be analyzed to determine whether it meets the applicable LDR treatment standards in 20 NMAC 4.1, Subpart VIII, Part 268, Subpart D, revised November 1, 1995. Treatment standards are expressed in two ways: (1) as constituent concentrations in the waste (from either an extract of the waste, as determined by the TCLP, or from the total volume of the waste, referred to as total waste analysis) or (2) as specified treatment technologies. Waste that must meet concentration-based treatment standards prior to shipment off site for disposal will be evaluated to determine if applicable constituent concentration levels have been attained. This will be accomplished by testing the waste or by using acceptable knowledge (EPA, 1994). Testing will be conducted only to certify that a waste meets LDR treatment standards. If a waste meets applicable LDR treatment standards based on acceptable knowledge, then testing to certify LDR compliance is not necessary. All analytical results completed in support of LDR requirements will be retained within the facility operating record.

Wastes resulting from facility operations that exceed applicable LDR treatment standards will be sent to a permitted treatment facility if treatment options are available for low-level solid mixed waste. For off-site shipment of these wastes, LDR notifications, with information required under 20 NMAC 4.1, Subpart VIII, 268.7, revised November 1, 1995, will be supplied. In addition to the LDR notification, additional data for the waste stream (e.g., WPF, analytical data) may be provided to the designated treatment facility.

Any wastes that are determined through analysis to meet treatment standards as specified in 20 NMAC 4.1, Subpart VIII, Part 268, Subpart D, revised November 1, 1995, will be land disposed in a permitted

facility without further treatment. An LDR notification form (Figure A.3-2), including all analytical records to support the notification, will be prepared and will accompany the shipment of waste to the receiving facility.

TABLE A.3-1
DESCRIPTIONS OF LOW-LEVEL SOLID MIXED WASTE AT LOS ALAMOS NATIONAL LABORATORY

Waste Description[a]	Waste Generating Process Description[a]	Technical Areas (TA)[a] Where Waste is Generated	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Homogeneous Wastes						
Dewatered treatment sludges	Cemented filtered precipitate of hydroxides and sulfates from liquid waste treatment plants	TA-50-1	Knowledge[d] and limited analysis[e]	F001	1,1,1-Trichloroethane Methylene chloride	Not applicable (NA)[f]
Soils with heavy metals	Decomissioning and decontamination activities	TA-2, TA-35, TA-50, TA-53, TA-64	Knowledge[d] and preliminary analysis[e]	D004 D005 D006 D007 D008 D009 D010 D011	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0
Environmental Restoration (ER) soils	Remediation of ground spill sites	TA-3	Knowledge[d] and analysis	D028 D029 F001 F002	1,2-Dichloroethane 1,1-Dichloroethylene 1,1,1-Trichloroethane 1,1,1-Trichloroethane	0.5 0.7 NA[f] NA[f]
Inorganic solid oxidizers	Various expired or off-specification unused solid reagents (with potential residual liquids) from stockroom cleanouts and decommissioning of research laboratories	TA-2, TA-3, TA-5, TA-16 TA-21, TA-35, TA-43, TA-46, TA-50, TA-59	Knowledge[d]	D001 D003 D005	Ignitability Reactivity Barium	NA[f] NA[f] 100.0
Heterogeneous Wastes						
Lead from surface decontamination	Radiation shielding in radioisotope applications and other reactor, accelerator, laser, and x-ray applications	TA-2, TA-3, TA-21, TA-35, TA-43, TA-46, TA-48 TA-50, TA-52, TA-53, TA-54, TA-55	Knowledge[d]	D008	Lead	5.0

Refer to footnotes at end of table.

TABLE A.3-1
DESCRIPTIONS OF LOW-LEVEL SOLID MIXED WASTE AT LOS ALAMOS NATIONAL LABORATORY
(continued)

Waste Description[a]	Waste Generating Process Description[a]	Technical Areas (TA)[a] Where Waste is Generated	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Heterogeneous Wastes (continued)						
Other lead waste	Activated or inseparable lead and other lead from radiation shielding where the lead is not amenable to decontamination	TA-2, TA-3, TA-8, TA-21, TA-35, TA-36, TA-41, TA-46, TA-48, TA-50, TA-52, TA-53, TA-54, TA-55	Knowledge[d]	D003 D007 D008 D009	Reactivity Chromium Lead Mercury	NA[f] 5.0 5.0 0.2
Noncombustible debris	Materials from demolition and decommissioning of research laboratories or reactor assemblies containing metal fittings and pipes, plus bricks and glass from dismantling buildings	TA-3, TA-16, TA-21, TA-46, TA-48, TA-50, TA-52, TA-53, TA-55	Knowledge[d]	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	NA[f] NA[f] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0
Combustible debris	Machine shop and maintenance cleanup materials and rags (with potential residual liquids) and spent solvents, plus firing site debris	TA-3, TA-16, TA-21, TA-46, TA-48, TA-50, TA-54	Knowledge[d]	D001 D003 D005 D006 D007 D008 D009 D011 F001 F002 F003 F005	Ignitability Reactivity Barium Cadmium Chromium Lead Mercury Silver 1,1,1-Trichloroethane 1,1,1-Trichloroethane Spent non-halogenated solvents Spent non-halogenated solvents	NA[f] NA[f] 100.0 1.0 5.0 5.0 0.2 5.0 NA[f] NA[f] NA[f] NA[f]

Refer to footnotes at end of table.

TABLE A.3-1
DESCRIPTIONS OF LOW-LEVEL SOLID MIXED WASTE AT LOS ALAMOS NATIONAL LABORATORY
(continued)

Waste Description[a]	Waste Generating Process Description[a]	Technical Areas (TA)[a] Where Waste Is Generated	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Heterogeneous Wastes (continued)						
Organic-contaminated noncombustible solids	Absorbed oils, laboratory trash, and discarded equipment	TA-3, TA-35, TA-50, TA-54, TA-55, TA-59	Knowledge[d]	D004	Arsenic	5.0
				D005	Barium	100.0
				D006	Cadmium	1.0
				D007	Chromium	5.0
				D008	Lead	5.0
				D009	Mercury	0.2
				D010	Selenium	1.0
				D011	Silver	5.0
				D027	1,4-Dichlorobenzene	7.5
				D030	2,4-Dinitrotoluene	0.13[g]
				D032	Hexachlorobenzene	0.13[g]
				D033	Hexachlorobutadiene	0.5
				D034	Hexachloroethane	3.0
				D042	2,4,6-Trichlorophenol	2.0
				F001	1,1,1-Trichloroethane Trichloroethylene	NA[f]
				F002	Chlorobenzene[h] Methylene chloride Tetrachloroethylene[h] Trichloroethylene	NA[f]
				F004	Cresol[h] Nitrobenzene[h]	NA[f]
				F005	Toluene Methyl ethyl ketone[h] Benzene[h]	NA[f]

Refer to footnotes at end of table.

TABLE A.3-1
DESCRIPTIONS OF LOW-LEVEL SOLID MIXED WASTE AT LOS ALAMOS NATIONAL LABORATORY
(continued)

Waste Description[a]	Waste Generating Process Description[a]	Technical Areas (TA)[a] Where Waste Is Generated	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Heterogeneous Wastes (continued)						
Organic-contaminated combustible solids	Similar to combustible debris plus paint-stripper trash	TA-3, TA-21, TA-35, TA-48, TA-50, TA-51, TA-52, TA-53, TA-54, TA-55,	Knowledge[d]	D001	Ignitability	NA[f]
				D003	Reactivity	NA[f]
				D007	Chromium	5.0
				D008	Lead	5.0
				D009	Mercury	0.2
				D030	2,4-Dinitrotoluene	0.13[g]
				D035	Methyl ethyl ketone[h]	
				F001	1,1,1-Trichloroethane	NA[f]
					Carbon tetrachloride	
				F002	1,1,1-Trichloroethane	NA[f]
					Tetrachloroethylene[h]	
					Trichloroethylene	
				F003	Acetone	NA[f]
					Ethyl Acetate	
					Methanol	
					Methyl Isobutyl Ketone	
					Xylene	
				F005	Toluene	NA[f]
					Methyl ethyl ketone[h]	
					Carbon Disulfide	
					Isobutanol	
Water-reactive wastes	Preparative machining and debris cleanup from high-explosives (HE) testing	TA-2, TA-3, TA-15, TA-16, TA-21, TA-36, TA-48, TA-53, TA-54, TA-55	Knowledge[d]	D001	Ignitability	NA[f]
				D003	Reactivity	NA[f]
				D005	Barium	100.0
				F002	1,1,1-Trichloroethane	NA[f]
Mercury wastes - to be determined	Old thermometers, hygrometers, vacuum tubes, and instruments containing unrecovered mercury	TA-3, TA-21, TA-43, TA-46, TA-48, TA-50, TA-53, TA-54, TA-55	Knowledge[d]	D007	Chromium	5.0
				D008	Lead	5.0
				D009	Mercury	0.2
				F001	1,1,1-Trichloroethane	NA[f]

Refer to footnotes at end of table.

TABLE A.3-1
DESCRIPTIONS OF LOW-LEVEL SOLID MIXED WASTE AT LOS ALAMOS NATIONAL LABORATORY
(continued)

Waste Description[a]	Waste Generating Process Description[a]	Technical Areas (TA)[a] Where Waste is Generated	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Heterogeneous Wastes (continued)						
Nonradioactive or suspect waste items to be surveyed	Various waste managed as radioactive because they were generated in a location that had a possibility of resulting in radioactive contamination	TA-2, TA-3, TA-8, TA-15, TA-21, TA-33, TA-35, TA-36, TA-41, TA-43, TA-48, TA-50, TA-53, TA-54, TA-55, TA-59	Knowledge	D001	Ignitability	NA[f]
				D002	Corrosivity	NA[f]
				D003	Reactivity	NA[f]
				D004	Arsenic	5.0
				D005	Barium	100.0
				D006	Cadmium	1.0
				D007	Chromium	5.0
				D008	Lead	5.0
				D009	Mercury	0.2
				D010	Selenium	1.0
				D011	Silver	5.0
				D018	Benzene	0.5
				D022	Chloroform	6.0
				D038	Pyridine	5.0[g]
				F001	1,1,1-Trichloroethane	NA[f]
				F002	1,1,1-Trichloroethane Methyl chloride	NA[f]
				F003	Acetone Ethyl acetate Methanol Methyl isobutyl ketone Xylene	NA[f]
				F005	Methyl ethyl ketone Pyridine Toluene	NA[f]

Refer to footnotes at end of table.

TABLE A.3-1
DESCRIPTIONS OF LOW-LEVEL SOLID MIXED WASTE AT LOS ALAMOS NATIONAL LABORATORY
(continued)

Waste Description[a]	Waste Generating Process Description[a]	Technical Areas (TA)[a] Where Waste is Generated	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Heterogeneous Wastes (continued)						
Nonradioactive or suspect waste items to be surveyed (continued)	Various waste managed as radioactive because they were generated in a location that had a possibility of resulting in radioactive contamination	TA-2, TA-3, TA-8, TA-15, TA-21, TA-33, TA-35, TA-36, TA-41, TA-43, TA-48, TA-50, TA-53, TA-54, TA-55, TA-59	Knowledge	P012	Arsenic oxide	NA[f]
				P029	Copper cyanide	NA[f]
				P030	Cyanides, NOS	NA[f]
				P098	Potasium cyanide	NA[f]
				P106	Sodium cyanide	NA[f]
				P113	Thallium oxide	NA[f]
				P120	Vanadium oxide	NA[f]
				U075	Dichlorofluoromethane	NA[f]
				U077	Ethylene dichloride	NA[f]
				U121	Trichlorfluoromethane	NA[f]
				U131	Hexachloroethane	NA[f]
				U144	Acetic acid, lead salt	NA[f]
				U145	Lead phosphate	NA[f]
				U188	Phenol	NA[f]
				U190	Phthalic anhydride	NA[f]
				U204	Selenious acid	NA[f]
				U216	Thallium chloride	NA[f]
				U219	Thiourea	NA[f]
				U226	Methyl chloroform	NA[f]

[a] Denotes information from the Federal Facility Compliance Order, Los Alamos National Laboratory, "Site Treatment Plan Background Document," October 4, 1995. The TAs shown in this table were identified by LANL as waste generation points. Future waste may be generated at additional TAs.
[b] U.S. Environmental Protection Agency.
[c] A solid waste exhibits the characteristic of toxicity if the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart II, Part 261, Subpart D, revised November 1, 1995.
[d] Knowledge: indicates process knowledge utilized as the basis for hazardous waste designation.
[e] Limited and/or preliminary analysis: In reference to the basis for hazardous waste classification, indicates that sampling and analysis has been performed but that the data may not be completely documented or that data may exist but may not be verifiable.
[f] Not applicable: Refers to the absence of regulatory limits for ignitable, corrosive, and reactive characteristic wastes and F-, P-, and U-listed wastes.
[g] Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level (20 NMAC 4.1, Subpart II, 261.24, Table 1, revised November 1, 1995).
[h] Process knowledge provided information that these constituents may have been used as solvents. Toxicity characteristic regulatory levels may also apply and will be evaluated.

TABLE A.3-2
PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR LOW-LEVEL SOLID MIXED WASTE

Waste Description[a]	Analytical Parameter[b]	Characterization Method	Rationale
Homogeneous Wastes			
Dewatered treatment sludges	– Potential volatile organic compounds (VOC) (see Table A.3-3)	– Acceptable knowledge[c] – Sample and analyze randomly selected number of drums in waste stream (see Table A.3-3)	– Determine concentration of organics, if any
Soils with heavy metals	– RCRA-regulated metals (see Table A.3-3)	– Acceptable knowledge[c] – Sample and analyze randomly selected number of drums in waste stream (see Table A.3-3)	– Determine toxicity characteristic
Environmental Restoration (ER) soils	– VOCs	– Acceptable knowledge[c] – Sample and analyze randomly selected number of drums in waste stream (see Table A.3-3)	– Determine presence of F-listed solvents – Determine toxicity characteristic
Inorganic solid oxidizers	– RCRA-regulated metals	– Acceptable knowledge[c] – Sample and analyze randomly selected number of drums in waste stream (see Table A.3-3)	– Determine toxicity characteristic – Determine characteristic for ignitability and reactivity
Heterogeneous Wastes			
Lead from surface decontamination	– RCRA-regulated metals	– Acceptable knowledge[c]	– Determine toxicity characteristic
Other lead waste	– RCRA-regulated metals	– Acceptable knowledge[c]	– Determine characteristic for reactivity – Determine toxicity characteristic
Noncombustible debris	– RCRA-regulated metals	– Acceptable knowledge[c]	– Determine toxicity characteristic – Determine characteristic for ignitability and reactivity
Combustible debris	– RCRA-regulated metals – VOCs	– Acceptable knowledge[c]	– Determine toxicity characteristic – Determine presence of F-listed solvents – Determine characteristic for ignitability and reactivity

Refer to footnotes at end of table.

TABLE A.3-2
PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR LOW-LEVEL SOLID MIXED WASTE
(continued)

Waste Description[a]	Analytical Parameter[b]	Characterization Method	Rationale
Heterogeneous Wastes (Continued)			
Organic-contaminated noncombustible solids	– RCRA-regulated metals – VOCs	– Acceptable knowledge[c]	– Determine toxicity characteristic – Determine presence of F-listed solvents
Organic-contaminated combustible solids	– RCRA-regulated metals – VOCs	– Acceptable knowledge[c]	– Determine characteristic for ignitability and reactivity – Determine toxicity characteristic – Determine presence of F-listed solvents
Water-reactive wastes	– RCRA-regulated metals – VOCs	– Acceptable knowledge[c]	– Determine toxicity characteristic – Determine characteristic for ignitability and reactivity – Determine presence of F-listed solvents
Mercury wastes - to be determined	– RCRA-regulated metals – VOCs	– Acceptable knowledge[c]	– Determine toxicity characteristic – Determine presence of F-listed solvents
Nonradioactive or suspect waste items to be surveyed	– RCRA-regulated metals – VOCs	– Acceptable knowledge[c]	– Determine toxicity characteristic – Determine presence of F-listed solvents and/or P- or U-listed unused commercial chemical products – Determine characteristic for ignitability, corrosivity, and reactivity

[a] Information contained in this column is from the Federal Facility Compliance Order, Los Alamos National Laboratory, "Site Treatment Plan Background Volume," October 4, 1995.

[b] Parameter selection is based on process knowledge for each waste stream. Additional parameters may be selected for each waste stream as necessary.

[c] According to U.S. Environmental Protection Agency (EPA), 1994, "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste - A Guidance Manual," *OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C., acceptable knowledge is broadly defined as process knowledge, waste analysis data (e.g., sampling and analysis), and/or facility records of analysis performed before the effective date of Resource Conservation and Recovery Act regulations.

TABLE A.3-3
SUMMARY OF WASTE CHARACTERIZATION TECHNIQUES FOR LOW-LEVEL SOLID MIXED WASTE

Parameter[a]	Method Numbers	Test Method	Rationale
Volatile organic compounds (VOC) in waste matrix: Benzene Chloroform 1,2-Dichloroethane 1,1-Dichloroethylene Methyl ethyl ketone Methylene chloride Spent halogenated solvents Spent nonhalogenated solvents 1,1,1-Trichloroethane	ASTM Method D4547-91[b] U.S. EPA/540/4-91/001[c] SW-846 (1311, 8240, 8240A, 8240B, 8260, 8260A)[d] or equivalent methods[e]	Total and/or toxicity characteristic leaching procedure (TCLP) VOC analysis by gas chromatography/ mass spectrometry (GC/MS) Process knowledge for heterogeneous wastes	Determine total and/or TCLP VOC concentrations in samples of solid process residues and soils
Semivolatile organic compounds (SVOC) in waste: 1,4-Dichlorobenzene 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane 2,4,6 Trichlorophenol	SW-846 (1311, 8250, 8250A, 8270A, 8270B)[d] or equivalent methods[e]	Total and/or TCLP SVOC analysis by GC/MS Process knowledge for heterogeneous waste	Determine total and/or TCLP SVOC concentration in samples of solid process residues and soils
'etals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	SW-846 (3051, 1311, 6010, 6010A, 6020, 7060, 7060A, 7061A)[d] (3051, 1311, 6010, 6010A, 6020, 7080, 7080A, 7081)[d] (3051, 1311, 6010, 6010A, 6020, 7130, 7131, 7131A)[d] (3051, 1311, 6010, 6010A, 6020, 7190, 7191)[d] (3051, 1311, 6010, 6010A, 6020, 7420, 7421)[d] (1311, 7470, 7470A, 7471, 7471A)[d] (3051, 1311, 6010, 6010A, 6020, 7740, 7741, 7741A, 7742)[d] (3051, 1311, 6010, 6010A, 6020, 7760A, 7761)[d] or equivalent methods[e]	Total and/or TCLP metals analysis Inductively-coupled plasma spectroscopy Atomic absorption spectroscopy Cold vapor atomic absorption spectroscopy Process knowledge for heterogeneous wastes	Determine total and/or TCLP metals concentrations in samples of solid process residues and soils
Reactive Cyanide	SW-846, Test Method to Determine Hydrogen Cyanide Released from Wastes[e]	Colorimetric or titrametric measurement of hydrogen cyanide released from waste following reflux distillation under acidic conditions	Determine concentration of reactive cyanides in waste

[a] Information in this column is from "Report for the Characterization Review of Low-Level Mixed Waste, Final Draft," 1995, Los Alamos National Laboratory, Los Alamos, New Mexico, and its related database.
[b] American Society for Testing and Materials (ASTM), 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," *ASTM D4547-91*, Annual Book of ASTM Standards, Philadelphia, Pennsylvania, American Society for Testing and Materials.
[c] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," *EPA/540/4-91/001*, Office of Research and Development, U.S. Environmental Protection Agency.
[d] U.S. Environmental Protection Agency (EPA), 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, Third Edition, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.
[e] Equivalent methods, subject to EPA approval, may be substituted.

TABLE A.3-4
RECOMMENDED SAMPLE CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES[a]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Volatile Organics			
Concentrated Waste Samples	8-ounce (oz) (240-milliliter [mL]) wide-mouth glass with Teflon™ liner	None.	14 days
Liquid Samples			
No residual chlorine present	2 x 40-mL vials with Teflon™-lined septum caps	Cool to 4 degrees Celsius (°C)[b].	14 days
Residual chlorine present	2 x 40-mL vials with Teflon™-lined septum caps	Collect sample in a 4 oz soil volatile organic analyte (VOA) container that has been pre-preserved with 4 drops of 10 percent sodium thiosulfate. Gently mix sample and transfer to a 40-mL VOA vial. Cool to 4°C.	14 days
Acrolein and acrylonitrile	2 x 40-mL vials with Teflon™-lined septum caps	Adjust to pH[c] of 4–5. Cool to 4°C.	14 days
Soil/Sediments and Sludges	4-oz (120-mL) wide-mouth glass with Teflon™ liner, or wide-mouth glass container sealed with a septum	Cool to 4°C.	14 days

Refer to footnotes at end of table.

TABLE A.3-4
RECOMMENDED SAMPLE CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES[a]
(continued)

Analyte Class and Sample Type	Container	Preservative	Holding Time
Semivolatile Organics/Organochlorine Pesticides and Herbicides			
Concentrated Waste Samples	8-oz (240-mL) wide-mouth glass with Teflon™ liner	None.	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Soil/Sediments and Sludges	8-oz (240-mL) wide-mouth glass with Teflon™ liner	Cool to 4°C.	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Metals (except hexavalent chromium and mercury)			
Liquid Samples			
Total	1-liter polyethylene	Add nitric acid to pH of less than 2.	180 days
Chromium VI	500-mL polyethylene	Cool to 4°C.	24 hours
Mercury	500-mL polyethylene	Add nitric acid to pH of less than 2.	28 days
Soil/Sediments and Sludges	500-mL polyethylene	Cool to 4°C.	180 days

[a] U.S. Environmental Protection Agency (EPA), 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, Third Edition, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.
[b] Adjust to pH (see footnote c) of less than 2 with sulfuric acid, hydrochloric acid, or solid sodium bisulfate.
[c] A term used to describe the hydrogen-ion activity of a system.

Los Alamos
National Laboratory

WASTE PROFILE FORM

Account Information

For rapid processing, complete **all sections** in black or blue ink and mail this form to Waste Services Group at MS J579

Reference Number

Waste Generator's Name (Print)	Znumber	Waste Management Coordinator's Name (Print)	Znumber

Generator's Group	Generator's Telephone	Generator's Mail Stop	Waste Stream Technical Area	Building	Room

Waste Accumulation
Check as many as apply.

- ☐ Satellite accumulation area --> site no.: _____
- ☐ Less than 90 day accumulation area --> site no.: _____
- ☐ Radioactive Materials Management Area (RMMA) --> site no.: _____
- ☐ None of the above

Method of Characterization
Check as many as apply.

- ☐ Acceptable Knowledge (AK)
- ☐ Analysis attached --> sample/request no. _____
- ☐ MSDS attached
- ☐ Request for analysis

Section 1- Chemical and Physical Characteristics

For help in completing this section of the form, call 5-WAST or 5-4000.

Waste Type
Check only one.

- ☐ Unused/unspent chemical
  Check Waste Classes and Associated Documentation Only
- ☐ Process waste/spent chemical
  Complete all of Section 1.

Waste Classes
Check as many as apply.

- ☐ On-going generation
- ☐ One-time generation
- ☐ Radioactive (complete Sec. 2)
- ☐ Non-radioactive
- ☐ Wastewater (complete Sec. 3)
- ☐ Classified/Sensitive

Associated Documentation
Check as many as apply.

- ☐ Process SOP --> no.: ____
- ☐ RMMA OP --> no.: ____
- ☐ WM SOP --> no.: ____
- ☐ Other --> _____
- ☐ None --> describe below

Waste Category
Check as many as apply.

- ☐ Solvent
- ☐ Degreaser
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated hazardous waste residue
- ☐ Explosive process waste
- ☐ Infectious/biological waste
- ☐ Beryllium
- ☐ Asbestos-friable
- ☐ Asbestos-nonfriable
- ☐ Empty containers
- ☐ PCB (<50 ppm)
  - ☐ PCB (50 - 500 ppm)
  - ☐ PCB (> 500 ppm)
  - → id. no. : _____
- ☐ Not applicable --> describe below

Waste Sources
Check as many as apply.

- ☐ Research and development
- ☐ Maintenance
- ☐ Construction
- ☐ Material processing
- ☐ Decon/decom
- ☐ Investigation derived
- ☐ Remediation
- ☐ UST - petroleum
- ☐ UST - non-petroleum
- ☐ Generator treatment
- ☐ Interim/permitted treatment
- ☐ Industrial sludge
- ☐ Sanitary sludge
- ☐ Abatement

Waste Matrix
Check only one.

Gas

- ☐ ≤ 1.5 Atmospheres
- ☐ > 1.5 Atmospheres

Liquid

- ☐ Aqueous
- ☐ Organic
- ☐ Inorganic

Solid

- ☐ Powder/ash
- ☐ Solid
- ☐ Absorbed liquid

Matrix Type
Check only one.

- ☐ Homogeneous
- ☐ Heterogeneous --> describe below

Waste/Process Description

_____
_____
_____
_____
_____
_____
_____

Form 1346 (1/95)

Page 1 of 4

FIGURE A.3-1

WASTE PROFILE FORM

Section 1- Chemical and Physical Characteristics (continued)

Ignitability (degrees F.)
Check only one.

- ☐ < 73
- ☐ 73-99
- ☐ 100-139
- ☐ 140-200
- ☐ > 200
- ☐ Ignitable solid
- ☐ DOT oxidizer
- ☐ Not ignitable

Corrosivity (pH)
Check only one.

- ☐ ≤ 2.0
- ☐ 2.1-4.0
- ☐ 4.1-6.0
- ☐ 6.1-9.0
- ☐ 9.1-12.4
- ☐ ≥ 12.5
- ☐ Liquid corrosive to steel
- ☐ Not aqueous

Reactivity
Check as many as apply.

- ☐ Unstable
- ☐ Water reactive
- ☐ Pyrophoric
- ☐ Cyanide bearing
- ☐ Sulfide bearing
- ☐ Shock sensitive
- ☐ Explosive - class _____
- ☐ Non-reactive

Boiling Point (degrees F.)
Check only one.

- ☐ ≤ 95
- ☐ > 95
- ☐ Not applicable

Identify presence of contaminants.			Minimum	Maximum	Unit (ppm or % only)	Analytical method
Toxicity Characteristic Metals						
Arsenic	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Barium	☐ None	☐ < 100.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Cadmium	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Chromium	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Lead	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Mercury	☐ None	☐ < 0.2 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Selenium	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Silver	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Toxicity Characteristic Organic Compounds						
Benzene	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Carbon tetrachloride	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Chlorobenzene	☐ None	☐ < 100.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Chloroform	☐ None	☐ < 6.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Cresol	☐ None	☐ < 200.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
1,4-dichlorobenzene	☐ None	☐ < 7.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
1,2-Dichloroethane	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
1,1-Dichloroethylene	☐ None	☐ < 0.7 ppm	_____	to _____	_____	☐ TCLP ☐ Total
2,4-Dinitrotoluene	☐ None	☐ < 0.13 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Hexachlorobenzene	☐ None	☐ < 0.13 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Hexachlorobutadiene	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Hexachloroethane	☐ None	☐ < 3.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Methyl ethyl ketone	☐ None	☐ < 200.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Nitrobenzene	☐ None	☐ < 2.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Pentachlorophenol	☐ None	☐ < 100.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Pyridine	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Perchloroethylene or tetrachloroethylene	☐ None	☐ < 0.7 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Trichloroethylene	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
2,4,5-Trichlorophenol	☐ None	☐ < 400.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
2,4,6-Trichlorophenol	☐ None	☐ < 2.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Vinyl chloride	☐ None	☐ < 0.2 ppm	_____	to _____	_____	☐ TCLP ☐ Total

Additional Chemical Constituents and Contaminants (for hazardous constituents, see AR 10-3, Appendix A)
List all other constituents (including inerts) not identified above and attach any applicable analyses.

Name of constituent	Cas no.(optional)	Minimum	Maximum	Unit (ppm or % only)
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____

Form 1346 (1/95) Page 2 of 4

FIGURE A.3-1

WASTE PROFILE FORM
(continued)

Section 2- Radiological Characteristics

For help in completing this section of the form, call 5-WAST or 5-4000.

	Range minimum		maximum	Unit (Ci/g or Ci/l)
General				
☐ Alpha	_____	to	_____	_____
☐ Beta	_____	to	_____	_____
☐ Gamma	_____	to	_____	_____
TRU radionuclides				
☐ None present				
☐ Am-241	_____	to	_____	_____
☐ Am-243	_____	to	_____	_____
☐ Cf-249	_____	to	_____	_____
☐ Cf-251	_____	to	_____	_____
☐ Cm-243	_____	to	_____	_____
☐ Cm-245	_____	to	_____	_____
☐ Cm-247	_____	to	_____	_____
☐ Pu-238	_____	to	_____	_____
☐ Pu-239	_____	to	_____	_____
☐ Pu-240	_____	to	_____	_____
☐ Pu-242	_____	to	_____	_____
Fission products				
☐ None present				
☐ Ba-140	_____	to	_____	_____
☐ Ca-144	_____	to	_____	_____
☐ Cs-134	_____	to	_____	_____
☐ Cs-137	_____	to	_____	_____
☐ I-129	_____	to	_____	_____
☐ I-133	_____	to	_____	_____
☐ Kr-85	_____	to	_____	_____
☐ Nb-95	_____	to	_____	_____
☐ Ru-106	_____	to	_____	_____
☐ Sb-125	_____	to	_____	_____
☐ Sr-90	_____	to	_____	_____
☐ Tc-99	_____	to	_____	_____
☐ Zr-93	_____	to	_____	_____
☐ Zr-95	_____	to	_____	_____
Activation products				
☐ None present				
☐ As -74	_____	to	_____	_____
☐ Be-7	_____	to	_____	_____
☐ C-14	_____	to	_____	_____
☐ Co-56	_____	to	_____	_____
☐ Co-57	_____	to	_____	_____
☐ Co-58	_____	to	_____	_____
☐ Co-60	_____	to	_____	_____
☐ Cr-51	_____	to	_____	_____
☐ Eu-152	_____	to	_____	_____
☐ Mn-52	_____	to	_____	_____
☐ Mn-54	_____	to	_____	_____
☐ Nb-94	_____	to	_____	_____
☐ Ni-59	_____	to	_____	_____
☐ Ni-63	_____	to	_____	_____
☐ Rb-83	_____	to	_____	_____
☐ Rb-84	_____	to	_____	_____
☐ Se-75	_____	to	_____	_____
☐ Sr-82	_____	to	_____	_____
☐ Sr-85	_____	to	_____	_____
☐ Y-48	_____	to	_____	_____
☐ Y-88	_____	to	_____	_____
☐ Zn-65	_____	to	_____	_____
☐ Zr-88	_____	to	_____	_____

	Range minimum		maximum	Unit (Ci/g or Ci/l)
Other				
☐ None present				
☐ Am-242	_____	to	_____	_____
☐ Bi-207	_____	to	_____	_____
☐ Bi-210	_____	to	_____	_____
☐ Cf-250	_____	to	_____	_____
☐ Cf-252	_____	to	_____	_____
☐ Cm-244	_____	to	_____	_____
☐ H-3	_____	to	_____	_____
☐ Pa-231	_____	to	_____	_____
☐ Pb-210	_____	to	_____	_____
☐ Po-210	_____	to	_____	_____
☐ Pu-236	_____	to	_____	_____
☐ Pu-241	_____	to	_____	_____
☐ Ra-226	_____	to	_____	_____
☐ Ra-228	_____	to	_____	_____
☐ Th-230	_____	to	_____	_____
☐ Th-232	_____	to	_____	_____
☐ U-232	_____	to	_____	_____
☐ U-233	_____	to	_____	_____
☐ U-234	_____	to	_____	_____
☐ U-235	_____	to	_____	_____
☐ U-236	_____	to	_____	_____
☐ U-238	_____	to	_____	_____
Add'l radionuclides				
☐ No additional radionuclides present				
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____

Contamination Type: *Check as many as apply.*

☐ Volume Contamination
☐ Surface Contamination

Form 1346 (1/95)

Page 3 of 4

FIGURE A.3-1

WASTE PROFILE FORM
(continued)

Section 3 - Wastewater Characteristics

For help in completing this section of the form, call 7-4301.

Identify presence of contaminants			Minimum	Maximum	Unit (ppm or % only)	Analytical method
Aluminum	☐ None	☐ < 5.0 ppm	_____ to	_____	_____	☐ TCLP ☐ Total
Boron	☐ None	☐ < 5.0 ppm	_____ to	_____	_____	☐ TCLP ☐ Total
Cobalt	☐ None	☐ < 1.0 ppm	_____ to	_____	_____	☐ TCLP ☐ Total
Copper	☐ None	☐ < 1.0 ppm	_____ to	_____	_____	☐ TCLP ☐ Total
Vanadium	☐ None	☐ < 0.10 ppm	_____ to	_____	_____	☐ TCLP ☐ Total
Zinc	☐ None	☐ < 95.4 ppm	_____ to	_____	_____	☐ TCLP ☐ Total

Maximum daily flow when discharge occurs: _____ ☐ Gallons ☐ Liters

Average daily flow when discharge occurs: _____ ☐ Gallons ☐ Liters

Estimated number of days per year that discharge will occur: _____

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50-1: _____ ☐ Gallons ☐ Liters

For TA-55 use only. Wastewater will be discharged through one of the following:

☐ Acid line ☐ Caustic line ☐ Industrial waste line

Section 4 - Additional Information

If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:

WASTE GENERATOR CERTIFICATION: *Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.*

Signature	Date

Form 1346 (1/95) Page 4 of 4

FIGURE A.3-1

WASTE PROFILE FORM
(continued)

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

A copy of this form must be attached to each Waste Profile Form and to each Uniform Hazardous Waste Manifest required to transport waste within LANL, pursuant to 40 CFR 268.7(a)(1).

Waste Profile Form No.	Chemical Waste/ Waste Disposal Record No.	Uniform Hazardous Waste Manifest No.	Date of Waste Pickup

Check only one.

☐ Non-wastewater
☐ Wastewater [as defined in 40 CFR 268.2(f)]

NOTIFICATION OF CALIFORNIA LIST APPLICABILITY

Check all that apply.

☐ Liquid hazardous waste containing PCBs at a concentration of ≥50 ppm.
☐ A D001 – D017 liquid waste containing ≥134 mg/L of nickel and/or ≥130 mg/L of thallium.
☐ A D001 – D011 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at ≥1000 ppm.

NOTIFICATION OF "D" CHARACTERISTIC EPA WASTE CODES

Check all that apply.

EPA Waste Code	Waste Description and/or Subcategory (as needed)
☐ D001*	Ignitable characteristic wastes [except for the Section 261.21(a)(1) High TOC Subcategory] that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.
☐ D001	High TOC Ignitable Characteristic Liquids Subcategory based on 40 CFR 261.21(a)(1) - Greater than 10% total organic carbon.
☐ D002*	Corrosive Characteristic Wastes that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.
☐ D003	Reactive Sulfides Subcategory
☐ D003	Reactive Cyanides Subcategory
☐ D003	Water Reactive Subcategory
☐ D003	Other Reactives Subcategory [based on 261.23(a)(1)]
☐ D004	
☐ D005	
☐ D006	Wastes that exhibit the TC for cadmium
☐ D006	Cadmium Containing Batteries Subcategory
☐ D007	
☐ D008	Wastes that exhibit TC for lead
☐ D008	Lead Acid Batteries Subcategory
☐ D008	Radioactive Lead Solids Subcategory
☐ D009	High Mercury-Organic Subcategory (≥260 mg/kg Hg with organics and not incinerator residues)
☐ D009	High Mercury-Inorganic Subcategory (≥260 mg/kg Hg [with inorganics])
☐ D009	Low Mercury Subcategory (<260 mg/kg Hg)
☐ D009	All D009 wastewaters
☐ D009	Elemental mercury contaminated with radioactive materials.
☐ D009	Hydraulic oil contaminated with Mercury Radioactive Materials Subcategory
☐ D010	
☐ D011	

☐ D012*	☐ D020*	☐ D028*	☐ D036*
☐ D013*	☐ D021*	☐ D029*	☐ D037*
☐ D014*	☐ D022*	☐ D030*	☐ D038*
☐ D015*	☐ D023*	☐ D031*	☐ D039*
☐ D016*	☐ D024*	☐ D032*	☐ D040*
☐ D017*	☐ D025*	☐ D033*	☐ D041*
☐ D018*	☐ D026*	☐ D034*	☐ D042*
☐ D019*	☐ D027*	☐ D035*	☐ D043*

*All applicable Underlying Hazardous Constituents in these characteristic wastes must be checked in Table UTS.

Form 1346A (11/94) Page 1 of 6

FIGURE A.3-2

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

NOTIFICATION FOR F001 – F005 SPENT SOLVENT WASTES

Check all that apply.

Spent solvent wastes with the following constituents only.

EPA Waste Code	Constituents in the waste	
☐ F001	☐ Acetone	☐ Isobutyl alcohol
☐ F002	☐ Benzene	☐ Methanol
☐ F003	☐ n-Butyl alcohol	☐ Methylene chloride
☐ F004	☐ Carbon disulfide (wastewater only)	☐ Methyl ethyl ketone
☐ F005	☐ Carbon tetrachloride	☐ Methyl isobutyl ketone
	☐ Chlorobenzene	☐ Nitrobenzene
	☐ o-cresol	☐ Pyridine
	☐ m-cresol	☐ Tetrachloroethylene
	☐ p-cresol	☐ Toluene
	☐ Cresol-mixed isomers (Cresylic acid)	☐ 1,1,1-Trichloroethane
	☐ Cyclohexanone (wastewater only)	☐ 1,1,2-Trichloroethane
	☐ o-Dichlorobenzene	☐ 1,1,2-Trichloro – 1,2,2-trifluoroethane
	☐ Ethyl acetate	☐ Trichloroethylene
	☐ Ethyl benzene	☐ Trichloromonofluoromethane
	☐ Ethyl ether	☐ Xylenes – mixed isomers (o-, m-, p-xylene)

Check all that apply.

EPA Waste Codes	Constituents in the waste
☐ F003	☐ Carbon disulfide
☐ F005	☐ Cyclohexanone
	☐ Methanol

Note: Treatment standards for these constituents apply to F001 – F005 wastes which contain only one, two, or all three of these constituents.

Check only one, if applicable.

EPA Waste Code	Constituents in the waste
☐ F005	☐ Containing 2-nitropropane as the only listed F001 – F005 solvent.
	☐ Containing 2-ethoxyethanol as the only listed F001 – F005 solvent.

NOTIFICATION FOR OTHER "F" WASTES

Check only one, if applicable.

☐ F006
☐ F007
☐ F008
☐ F009
☐ F027

Form 1346A (11/94)

Page 2 of 6

FIGURE A.3-2

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM
(continued)

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National Laboratory

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

NOTIFICATION FOR "P" AND "U" LISTED WASTE CODES

☐ P001	☐ P057	☐ P115	☐ U041	☐ U092	☐ U144	☐ U194
☐ P002	☐ P058	☐ P116	☐ U042	☐ U093	☐ U145	☐ U196
☐ P003	☐ P059	☐ P118	☐ U043	☐ U094	☐ U146	☐ U197
☐ P004	☐ P060	☐ P119	☐ U044	☐ U095	☐ U147	☐ U200
☐ P005	☐ P062	☐ P120	☐ U045	☐ U096	☐ U148	☐ U201
☐ P006	☐ P063	☐ P121	☐ U046	☐ U097	☐ U149	☐ U202
☐ P007	☐ P064	☐ P122	☐ U047	☐ U098	☐ U150	☐ U203
☐ P008	☐ P065	☐ P123	☐ U048	☐ U099	☐ U151	☐ U204
☐ P009	☐ P066		☐ U049	☐ U101	☐ U152	☐ U205
☐ P010	☐ P067		☐ U050	☐ U102	☐ U153	☐ U206
☐ P011	☐ P068		☐ U051	☐ U103	☐ U154	☐ U207
☐ P012	☐ P069	☐ U001	☐ U052	☐ U105	☐ U155	☐ U208
☐ P013	☐ P070	☐ U002	☐ U053	☐ U106	☐ U156	☐ U209
☐ P014	☐ P071	☐ U003	☐ U055	☐ U107	☐ U157	☐ U210
☐ P015	☐ P072	☐ U004	☐ U056	☐ U108	☐ U158	☐ U211
☐ P016	☐ P073	☐ U005	☐ U057	☐ U109	☐ U159	☐ U213
☐ P017	☐ P074	☐ U006	☐ U058	☐ U110	☐ U160	☐ U214
☐ P018	☐ P075	☐ U007	☐ U059	☐ U111	☐ U161	☐ U215
☐ P020	☐ P076	☐ U008	☐ U060	☐ U112	☐ U162	☐ U216
☐ P021	☐ P077	☐ U009	☐ U061	☐ U113	☐ U163	☐ U217
☐ P022	☐ P078	☐ U010	☐ U062	☐ U114	☐ U164	☐ U218
☐ P023	☐ P081	☐ U011	☐ U063	☐ U115	☐ U165	☐ U219
☐ P024	☐ P082	☐ U012	☐ U064	☐ U116	☐ U166	☐ U220
☐ P026	☐ P084	☐ U014	☐ U066	☐ U117	☐ U167	☐ U221
☐ P027	☐ P085	☐ U015	☐ U067	☐ U118	☐ U168	☐ U222
☐ P028	☐ P087	☐ U016	☐ U068	☐ U119	☐ U169	☐ U223
☐ P029	☐ P088	☐ U017	☐ U069	☐ U120	☐ U170	☐ U225
☐ P030	☐ P089	☐ U018	☐ U070	☐ U121	☐ U171	☐ U226
☐ P031	☐ P092	☐ U019	☐ U071	☐ U122	☐ U172	☐ U227
☐ P033	☐ P093	☐ U020	☐ U072	☐ U123	☐ U173	☐ U228
☐ P034	☐ P094	☐ U021	☐ U073	☐ U124	☐ U174	☐ U234
☐ P036	☐ P095	☐ U022	☐ U074	☐ U125	☐ U176	☐ U235
☐ P037	☐ P096	☐ U023	☐ U075	☐ U126	☐ U177	☐ U236
☐ P038	☐ P097	☐ U024	☐ U076	☐ U127	☐ U178	☐ U237
☐ P039	☐ P098	☐ U025	☐ U077	☐ U128	☐ U179	☐ U238
☐ P040	☐ P099	☐ U026	☐ U078	☐ U129	☐ U180	☐ U239
☐ P041	☐ P101	☐ U027	☐ U079	☐ U130	☐ U181	☐ U240
☐ P042	☐ P102	☐ U028	☐ U080	☐ U131	☐ U182	☐ U243
☐ P043	☐ P103	☐ U029	☐ U081	☐ U132	☐ U183	☐ U244
☐ P044	☐ P104	☐ U030	☐ U082	☐ U133	☐ U184	☐ U246
☐ P045	☐ P105	☐ U031	☐ U083	☐ U134	☐ U185	☐ U247
☐ P046	☐ P106	☐ U032	☐ U084	☐ U135	☐ U186	☐ U248
☐ P047	☐ P108	☐ U033	☐ U085	☐ U136	☐ U187	☐ U249
☐ P048	☐ P109	☐ U034	☐ U086	☐ U137	☐ U188	☐ U328
☐ P049	☐ P110	☐ U035	☐ U087	☐ U138	☐ U189	☐ U353
☐ P050	☐ P111	☐ U036	☐ U088	☐ U140	☐ U190	☐ U359

Form 1348A (11/94)

Page 3 of 6

FIGURE A.3-2

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM
(continued)

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

TABLE UTS—Universal Treatment Standards
(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

- ☐ Acenaphthylene
- ☐ Acenaphthene
- ☐ Acetone
- ☐ Acetonitrile
- ☐ Acetophenone
- ☐ 2-Acetylaminofluorene
- ☐ Acrolein
- ☐ Acrylamide
- ☐ Acrylonitrile
- ☐ Aldrin
- ☐ 4-Aminobiphenyl
- ☐ Aniline
- ☐ Anthracene
- ☐ Aramite
- ☐ alpha-BHC
- ☐ beta-BHC
- ☐ delta-BHC
- ☐ gamma-BHC
- ☐ Benzene
- ☐ Benz(a)anthracene
- ☐ Benzal chloride
- ☐ Benzo(b)fluoranthene (difficult to distinguish from benzo(k)fluoranthene)
- ☐ Benzo(k)fluoranthene (difficult to distinguish from benzo(b)fluoranthene)
- ☐ Benzo(g,h,i)perylene
- ☐ Benzo(a)pyrene
- ☐ Bromodichloromethane
- ☐ Methyl bromide (Bromomethane)
- ☐ 4-Bromophenyl phenyl ether
- ☐ n-Butyl alcohol
- ☐ Butyl benzyl phthalate
- ☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)
- ☐ Carbon disulfide
- ☐ Carbon tetrachloride
- ☐ Chlordane (alpha and gamma isomers)
- ☐ p-Chloroaniline
- ☐ Chlorobenzene
- ☐ Chlorobenzilate
- ☐ 2-Chloro-1,3-butadiene
- ☐ Chlorodibromomethane
- ☐ Chloroethane
- ☐ bis(2-Chloroethoxy)methane
- ☐ bis(2-Chloroethyl)ether
- ☐ Chloroform
- ☐ bis(2-Chloroisopropyl)ether
- ☐ p-Chloro-m-cresol
- ☐ 2-Chloroethyl vinyl ether
- ☐ Chloromethane (Methyl chloride)
- ☐ 2-Chloronaphthalene
- ☐ 2-Chlorophenol
- ☐ 3-Chloropropylene
- ☐ Chrysene
- ☐ o-Cresol
- ☐ m-Cresol (difficult to distinguish from p-cresol)
- ☐ p-Cresol (difficult to distinguish from m-cresol)
- ☐ Cyclohexanone
- ☐ 1,2-Dibromo-3-chloropropane
- ☐ Ethylene dibromide (1,2-Dibromoethane)
- ☐ Dibromomethane
- ☐ 2,4-D (2,4-Dichlorophenoxyacetic acid)
- ☐ o,p′-DDD
- ☐ p,p′-DDD
- ☐ o,p′-DDE
- ☐ p,p′-DDE
- ☐ o,p′-DDT
- ☐ p,p′-DDT
- ☐ Dibenz(a,h)anthracene
- ☐ Dibenz(a,e)pyrene
- ☐ m-Dichlorobenzene
- ☐ o-Dichlorobenzene
- ☐ p-Dichlorobenzene
- ☐ Dichlorodifluoromethane
- ☐ 1,1-Dichloroethane
- ☐ 1,2-Dichloroethane
- ☐ 1,1-Dichloroethylene
- ☐ trans-1,2-Dichloroethylene
- ☐ 2,4-Dichlorophenol
- ☐ 2,6-Dichlorophenol
- ☐ 1,2-Dichloropropane
- ☐ cis-1,3-Dichloropropylene
- ☐ trans-1,3-Dichloropropylene
- ☐ Dieldrin
- ☐ Diethyl phthalate
- ☐ 2-4,Dimethyl phenol
- ☐ Dimethyl phthalate
- ☐ Di-n-butyl phthalate
- ☐ 1,4-Dinitrobenzene

Form 1346A (11/94)

Page 4 of 6

FIGURE A.3-2

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM
(continued)

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

TABLE UTS—Universal Treatment Standards
(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

- ☐ 4,6-Dinitro-o-cresol
- ☐ 2,4-Dinitrophenol
- ☐ 2,4-Dinitrotoluene
- ☐ 2,6-Dinitrotoluene
- ☐ Di-n-octyl phthalate
- ☐ p-Dimethylaminoazobenzene
- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine (difficult to distinguish from diphenylnitrosamine)
- ☐ Diphenylnitrosamine (difficult to distinguish from diphenylamine)
- ☐ 1,2-Diphenylhydrazine
- ☐ Disulfoton
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ Ethyl acetate
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl benzene
- ☐ Ethyl ether
- ☐ bis(2-Ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ HxCDDs (All Hexachlorodibenzo-p-dioxins)
- ☐ HxCDFs (All Hexachlorodibenzofurans)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methoxychlor
- ☐ 3-Methylcholanthrene
- ☐ 4,4-Methylene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N-Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Parathion
- ☐ Total PCBs (sum of all PCB isomers, or all Aroclors)
- ☐ Pentachlorobenzene
- ☐ PeCDDs (All Pentachlorodibenzo-p-dioxins)
- ☐ PeCDFs (All Pentachlorodibenzofurans)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Pronamide
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)

Form 1348A (11/94)

Page 5 of 6

FIGURE A.3-2

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM
(continued)

Los Alamos
National Laboratory

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

TABLE UTS—Universal Treatment Standards
(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

- ☐ 2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ TCDDs (All Tetrachlorodibenzo-p-dioxins)
- ☐ TCDFs (All Tetrachlorodibenzofurans)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tetrachlorophenol
- ☐ Toluene
- ☐ Toxaphene
- ☐ Bromoform (Tribromomethane)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vinyl chloride
- ☐ Xylenes-mixed isomers (sum of o-, m-, and p-xylene concentrations)
- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Beryllium
- ☐ Cadmium
- ☐ Chromium (Total)
- ☐ Cyanides (Total)[1]
- ☐ Cyanides (Amenable)[1]
- ☐ Fluoride
- ☐ Lead
- ☐ Mercury—Nonwastewater from Retort
- ☐ Mercury—All Others
- ☐ Nickel
- ☐ Selenium
- ☐ Silver
- ☐ Sulfide
- ☐ Thallium
- ☐ Vanadium

[1] Both Cyanides (Total) and Cyanides (Amenable) for nonwastewaters are to be analyzed using Method 9010 or 9012, found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW-846, as incorporated by reference in 40 CFR 260.11, with a sample size of 10 grams and a distillation time of one hour and 15 minutes.

NOTIFICATION OF ADDITIONAL TREATMENT STANDARDS

EPA Waste Code	Waste Description and/or Subcategory (if applicable)

Form 1346A (11/94)

Page 6 of 6

FIGURE A.3-2

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM
(continued)

INSPECTION PLAN

PERMIT ATTACHMENT B
NM0890010515-1

INSPECTION PLAN
PERMIT ATTACHMENT B
NM 0890010515-1

B.1 TA-50 MODULAR CONTAINER STORAGE BUILDINGS POTENTIAL PROBLEMS

The modular container storage area is routinely inspected for potential problems with safety and emergency equipment, security devices, containers, and container storage facilities. Potential problems are listed on an inspection checklist. Potential problems include containment failure, fire, explosion, exposure, deterioration of the batch waste treatment unit or construction materials, and system leakage.

B.1.1 Frequency and Content of Inspection

The modular container storage units are inspected weekly by visually inspecting containers for waste leakage and for corrosion.

B.1.2 Remedial Action

Leaks from containers in the modular storage buildings will collect in the 500-gallon sump within the unit. In the case of small spills, vermiculite or other compatible absorbent is poured over the spill area and once the liquid is absorbed, it is swept or shoveled into drums or other appropriate containers. For spills involving larger liquid volumes, free liquids are pumped into drums and absorbent is used as above to remove the remaining liquid. Once liquids are removed, the sump is cleaned using appropriate cleaning agents. All expended cleaning material will be considered hazardous waste and handled accordingly.

In the case of exposure, remedial actions include treating the exposed personnel at the HSE-2 Medical Facility and determining the cause of exposure by observation, Laboratory records, and/or sampling.

Similar to hazardous waste releases, the extent of damage from fire and explosion is assessed by visual observations, Laboratory records, and if necessary, sampling. Equipment damaged or contaminated by fire, explosion, or spills is identified by visual inspections and sampling, if necessary.

B.2 TA-50 WASTE INCINERATOR AND ROOM 117 STORAGE AREA POTENTIAL PROBLEMS

The waste incinerator system building and Room 117 storage area are routinely inspected for potential problems with safety and emergency equipment, security devices, containers, container storage facilities, and loading and unloading facilities. Inspections of specific equipment and systems are conducted with a frequency appropriate to current operations, as well as appropriate to the equipment and systems. Potential problems include containment failure, fire, explosion, exposure, equipment deterioration or malfunction, and leaks from the incinerator.

B.2.1 Frequency and Content of Inspection

The waste incinerator, storage area, building and emergency equipment are inspected according to the schedule in Table B-1. Standard operating procedures require that process operators "walk through," their operating areas each hour to visually observe, monitor, and record and leaks, spills, malfunctions or other unusual conditions. The walkthrough and remedial actions will be annotated in the operating log.

B.2.2 Remedial Action

If any defects, deterioration, damage or hazards are discovered during inspection, appropriate remedial actions including repairs, maintenance and replacement will be completed as soon as practical to preclude further damage and reduce the need for emergency repairs. If a hazard is found imminent or if a hazardous situation already exists, remedial action will be initiated immediately and the unit not reused until corrective action is complete. Any remedial action taken due to an inspection will be noted on the operating log.

Remedial actions in the case of containment failure, fire, explosion, or exposure are identical to the measures at the TA-50 batch waste treatment unit and modular container storage area. See Section B.1.2 above. Should any of these problems occur, the waste incinerator can be shut down at the discretion of the operator. Failure of the HEPA filtration system or wet scrubbers, equipment deterioration or malfunction, or leaks from the waste incinerator will be remedied during and following process shutdown. The process operator will assess the situation and decide upon which shutdown method will be most expeditious and efficient. He will supervise the operating area during the shutdown process.

B.2.3 Inspection Logs

General inspections are conducted by the operating group according to checklists associated with the operating log. Results of the inspection (Figures B-5 and B-6), the inspector's name and title, and date and time of inspection are recorded on the inspection log sheet. A copy is sent for records to HSE-8 and kept for at least three years after all remedial action is complete. In addition, process operators will fill out process data sheets associated with the operations and every four hours when not feeding wastes. These sheets are record of operating conditions and provide evidence that the operator has checked and is aware of the operating status of the system. The time at which entries are made and the actual instrument reading for each variable will be entered into each checklist. When shutdown occurs, the log will state the nature of the shutdown, the time it occurred, and the suspected cause. Once each shift, the shift supervisor will inspect the facility for malfunctions, deterioration, operator error, and discharges. The time, individual, and results of this inspection will be entered in the log. Prestarting inspection procedures, general inspection checklists and the operating log will be kept with the incinerator system during operations. The waste storage room will be inspected using Figures B-5 and B-6.

B.3 TA-54, AREA L WASTE TRANSFER, PACKAGING AND CONTAINER STORAGE FACILITIES AND TREATMENT TANKS

B.3.1 Potential Problems

Area L is routinely inspected for potential problems with safety and emergency equipment, security devices, containers, container storage facilities, treatment tanks, and loading and unloading facilities. Potential problems are listed on the weekly inspection checklist. The container storage areas will be inspected weekly. The treatment tanks will be inspected weekly and after storms to detect any leakage, free board, damage, overflow, or cracks. In addition, the interior of each treatment tank will be inspected yearly for thin spots or excessive corrosion. Prior to the interior inspection, the treatment tank will be emptied by pumping into drums following standard procedures. After it is empty, any liner is removed and the tank must be thoroughly cleaned and checked to be sure it is free of flammable, toxic and corrosive vapors and materials before entry. If this requires steaming, the tank must be cooled after cleaning and the rinse water checked to be sure it is essentially neutral. Any nearby operations considered hazardous to tank entry are shut down. The atmosphere in the tank must be tested for the presence of combustible or toxic vapors and for oxygen content. A sufficient number of standby personnel must be present to give aid in case of trouble. Protective clothing or equipment may be required in some instances. Potential problems at Area L include containment failure, fire, explosion, and exposure.

B.3.2 Frequency and Content of Inspection

Area L is inspected according to the schedule in Table B-1. In addition, the treatment tank's shell and liner will be inspected annually to ensure that the tanks walls and liner have not experienced damage due to corrosion or erosion. The annual inspection precedure is the same as the triennial inspection outlined for the TA-50 Batch Waste Treatment Unit Tanks in Section B.1.1. above.

B.3.3 Remedial Action

If any defects, deterioration, damage or hazards are discovered during inspection, appropriate remedial actions including repairs, maintenance and replacement will be completed as soon as practical to preclude further damage and reduce the need for emergency repairs. If a hazard is found imminent or if a hazardous situation already exists, remedial action will be initiated immediately and the unit will be taken out of service until corrective action is complete. Any remedial action taken due to an inspection will be noted on the operating log.

In the case of failure of run-on or run-off control measures, the HSE-7 Group Leader or his qualified designee will assess the damage by visual observations and sampling and monitoring to determine the type and extent of contamination. Mitigation procedures and repairs, such as sandbagging and building berms, will be instituted immediately. All such action will be entered in the site log.

Remedial action in the case of drum or container failure, fire, explosion, or exposure is handled as described for the TA-50 batch waste treatment unit. In addition, soil and water samples will be taken down gradient from the release. At the transfer, packaging and storage facilities in Area L. releases from drum or container failure collect In sumps as well as berms.

If leakage, corrosion, overflow or any other damage is detected in the treatment tanks, the contents will be pumped into a drum or another treatment tank. At least 33 empty drums are always available to hold the maximum amount of liquid in a treatment tank in the unlikely event that the tank is completely full and the contents cannot be pumped into another treatment tank. The portable pumps used for emptying the tank are the same pumps used to draw down the tanks and have adequate capacity to fill 55-gallon drums. The pumps and hose used are compatible with the hazardous wastes they handle and are decontaminated after use by flushing with water. The wash water is handled as hazardous waste. The pumps are located at TA-54, Area L.

B.3.4 Inspection Logs

Each inspection is conducted by the operating groups according to the checklist in the inspection log (Figures B-7 and B-8). Results of the inspection, the inspector's name and title, and date and time of inspection are recorded on the inspection log sheet. A copy is sent to HSE-8 for records and kept for at least three years after the completion of all remedial action.

B.4 TA-50 CONCRETE CONTAINMENT STRUCTURE

B.4.1 Potential Problems

The TA-50 concrete containment structures are routinely inspected for potential problems with safety and emergency equipment, security devices, containers, container storage facilities, and loading/unloading facilities. Potential problems are listed on a weekly checklist and include containment failure, fire, explosion, exposure, equipment deterioration or malfunction and leaks.

B.4.2 Frequency and Content of Inspection

The TA-50 Storage and associated equipment are inspected in accordance with the schedule in Table B-1. The weekly inspection looks for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors.

Inspectors will use the checklists in Figures B-3 and B-4. Loading/unloading areas will be inspected daily, when used.

B.4.3 Remedial action

If any defects, deterioration, damage, spills or hazards are discovered during inspections, appropriate remedial actions including cleanup, repairs, maintenance and replacement will be completed as soon as practical to preclude further damage and reduce the need for emergency repairs. If an imminent hazard is found or if a hazardous situation already exists, remedial action will be initiated immediately. Any remedial action taken due to an inspection will be noted in the operating log.

In the case of failure of run-on and run-off control measures, the HSE-7 Group Leader or his qualified designee will assess the damage by visual observations and sampling and monitoring to determine the type and extent of contamination. Mitigation procedures and repairs, such as sandbagging and building berms, will be instituted immediately. All such action will be entered in the site log.

Leaks from containers will collect in the individual sump within the unit. In the case of small spills, vermiculite or other compatible absorbent is poured over the spill area and once the liquid is absorbed, it is swept or shoveled into drums or other appropriate containers. For spills involving larger liquid volumes, free liquids are pumped into drums and absorbent is used as above to remove the remaining liquid. Once liquids are removed, the sump is cleaned using appropriate cleaning agents.

In the case of exposure, remedial actions include treating the exposed personnel at the HSE-2 Medical Facility and determining the cause of exposure by observation, Laboratory records, and/or sampling.

Similar to hazardous waste releases, the extent of damage from fire and explosion is assessed by visual observations, Laboratory records, and if necessary, sampling.

Equipment damaged or contaminated by fire, explosion, or spills is identified by visual inspections and sampling, if necessary.

B.4.4 Inspection Logs

Each inspection is conducted by the operating group according to the checklist in Figures B-3 and B-4. Results of the inspection, the inspector's name and title, and date and time of inspection are recorded on the inspection log sheet A copy is sent for records to HSE-8 and kept for at least three years.

B.5 PREPAREDNESS AND PREVENTION REQUIREMENTS

B.5.1 Equipment Requirements Internal Communication/Alarm Equipment

The following internal communication/alarm equipment is available at LANL to provide emergency instruction for rapid evacuation and to initiate emergency response:

- Centrex telephone system
- Medium range radio nets (30-60 miles)
- Limited range radio nets (3-10-miles)
- Telephone/radio paging
- Two-way hand held radios
- Emergency central alarm system
- Mechanical central alarm system

Because ~~Since~~ this equipment is Laboratory-wide, it allows all personnel to ~~get in~~ contact Emergency Managers ~~with emergency coordinators~~ in all areas of the Laboratory. All hazardous and/or mixed waste handling personnel have immediate access to internal alarms or emergency communication devices.

The TA-50 batch waste treatment unit is equipped with telephones, one pull alarm, one automatic thermal alarm, and one automatic smoke alarm. There is an intercom system at each telephone. In the case of an emergency, the nearest source of communication for personnel handling wastes is the intercom/paging systems on each telephone.

The TA-50 waste incinerator and storage area is equipped with telephones throughout the facility. A radio with microphones at remote locations is available. Other communication/alarm equipment available at this facility includes:

- One portable radio
- One radio-equipped vehicle telephone paging system
- Internal telephone communication line
- Two-channel work station intercoms for direct communication from process area to offices and labs.
- Eleven pull alarms
- Two automatic thermal alarms

The trailer at Area L is equipped with a telephone. A radio-equipped vehicle is available for use at Area L. In addition, Area L is equipped with an alarm system and intercom to area G for evacuation. These are the nearest communication sources for use in the case of an emergency. Because of the proximity of the TA-50 Storage Pads and modular storage units to other TA-50 facilities and because only contained waste is handled at these facilities, individual emergency equipment is not required.

Personnel working at the container storage areas (CSA) in Rooms 35, 36, and 38/38A at TA-50-1 have access to telephones and a fire alarm pull station. The telephones have public address (PA) capabilities. Different alarms sound in case of a fire or evacuation emergency. In addition, fires and evacuations are announced on the building paging system.

Personnel working at the Indoor and Outdoor CSAs at TA-50-69 have access to three telephones and two fire alarm pull stations inside the building. The telephones have PA capabilities. Different alarms sound in case of a fire or an evacuation.

Personnel working at the TA-54-38 CSAs have access to three telephones, one emergency telephone, and four fire alarm pull boxes. The three telephones, located on the first floor of the building, have PA capabilities. The emergency telephone is located outside the main entrance. Different alarms sound in case of a fire or an evacuation.

B.5.2 External Communication/Alarm Equipment

The Laboratory has established external communication capabilities with the Los Alamos County Police Department and the Los Alamos Medical Center ~~County Hospital~~. The following external communication/alarm equipment is available at LANL:

- Centrex telephone system
- Private telephone lines (if Centrex fails)
- Medium range radio nets (30-60 miles)
- Limited range radio nets (3-10 miles)
- Two National Warning System (NAWAS) stations ~~(NAWAS)~~
- Direct lines from Emergency Operations Centers to KRSN (local radio station)
- Local cable television
- A Community Alert Network

B.5.3 Emergency Equipment

A list of emergency equipment available at LANL, including types of equipment, locations, and contact phone numbers is shown in Permit Attachment D.

Emergency vehicles are inspected quarterly, according to the schedule in Table B-1. Medical supplies include self-contained breathing apparatuses, wheel chairs, manual resuscitation, portable oxygen units. blankets, blood supplies, and medical kits.

B.5.4 Water for Fire Control

The Department of Energy (DOE) is responsible for overall water production, transmission, and storage for the Laboratory and Los Alamos County. Storage capacity is adequate to provide water for fire fighting purposes.

Hydrant flow tests and block valve inspections are performed annually. Pressure regulating valves are inspected and adjusted every 60 days. Flow rates for hydrants are specified by FSS-21 ~~ENG-8~~, an experienced fire protection engineering staff, and are dependent upon site needs, including size of building and presence of sprinkler systems.

B.6 AISLE SPACE REQUIREMENTS

Aisle space between waste containers at all container storage areas is inspected weekly to insure it is adequate to provide access for inspection purposes and for movement of personnel, containers, and equipment.

There are no ramps provided for fork lifts or drum handling equipment at the TA-50 batch treatment and modular container storage areas. Drums are placed in the container storage using drum slings or hydraulically powered drum tongs on a forklift.

Aisles between rows of drums at the Area L transfer, packaging and storage facilities and at the TA-50 storage pads are maintained at a minimum width of two feet to permit access for inspection and handling. Much of the bermed or curbed areas are ramped to facilitate access of forklifts and drum handling equipment.

When waste volumes necessitate aisle spacing at the TA-50-1, Room 38/38A CSA; the TA-50-69 Outdoor CSA; and the CSAs at TA-54-38, a minimum aisle space of 26 inches is maintained to permit access for inspection and handling. The limited number of containers in the TA-50-1, Rooms 35 and 36 CSAs and the TA-50-69 Indoor CSA do not require aisle spaces. Containers are placed in the storage areas either manually or with hoists, cranes, forklifts, or dollies.

B.7 TA-50-1, ROOMS 35, 36, AND 38/38A STORAGE AREAS

B.7.1 Potential Problems

The TA-50-1, Rooms 35, 36, and 38/38A CSAs are routinely inspected for various items, including integrity of containers and self-containment systems as well as conditions of safety and emergency equipment, security devices, and loading/unloading areas. Potential problems include leaks, containment failure, and equipment deterioration or malfunction. Identified problems are recorded in Part II of the Inspection Record Form (IRF).

B.7.2 Frequency and Content of Inspection

The TA-50-1, Rooms 35, 36, and 38/38A CSAs and associated equipment are inspected in accordance with the schedule in Table B-1. Items inspected daily include structural integrity of containers, condition of self-containment systems, appropriate aisle space and stacking, and conditions of loading/unloading areas. Items inspected weekly include conditions of safety equipment, security devices, emergency equipment, and pallets. Inspectors will use the IRF when conducting daily and weekly inspections.

B.7.3 Preventive and Remedial Action

If any defects, deterioration, damage, or potential hazards are discovered during inspections, appropriate corrective measures (e.g., transfer of waste from a defective container to an appropriate container in good condition) will be completed promptly to minimize further damage and prevent the need for emergency response. If a hazardous condition is imminent or has already occurred, remedial actions (including cleanup, repairs, maintenance, and/or replacement) will be completed immediately. Any remedial action taken as a result of an inspection will be recorded in Part II of the IRF.

In the case of small spills, compatible sorbent is poured over the spill area and once the liquid is sorbed, it is swept or shoveled into appropriate containers. For spills involving larger liquid volumes, free liquids are pumped or HEPA vacuumed into appropriate containers and sorbent is used as above to remove the

remaining liquid. Once liquids are removed, the spill area is cleaned using appropriate cleaning agents. All expended cleaning material will be sampled to determine appropriate waste management procedures.

In the case of exposure, remedial actions include treating exposed personnel at the ESH-2 central medical facility and determining the cause of exposure by observation, Laboratory records, and/or sampling.

The extent of damage from fire and/or explosion is assessed by visual observations, Laboratory records, and, if necessary, sampling.

Equipment damaged or contaminated by fire, explosion, or spills is identified by visual inspections and, if necessary, sampling.

B.7.4 Inspection Logs

Each inspection is conducted by the operating group responsible for the waste management unit and is recorded on the IRF. The original records are maintained by the operating group in inspection logbooks for a minimum of three years. A copy of the IRF is sent weekly to ESH-19 and maintained at ESH-19 for a minimum of three years.

B.8 TA-50-69 INDOOR AND OUTDOOR STORAGE AREAS

B.8.1 Potential Problems

The TA-50-69 Indoor and Outdoor CSAs are routinely inspected for various items, including integrity of containers and self-containment systems as well as conditions of safety and emergency equipment, security devices, and loading/unloading areas. Potential problems include leaks, containment failure, and equipment deterioration or malfunction. Identified problems are recorded in Part II of the IRF.

B.8.2 Frequency and Content of Inspection

The TA-50-69 Indoor and Outdoor CSAs and associated equipment are inspected in accordance with the schedule in Table B-1. Items inspected daily include structural integrity of containers, condition of self-containment systems, appropriate aisle space and stacking, and conditions of loading/unloading areas. Items inspected weekly include conditions of safety equipment, security devices, emergency equipment, and pallets. Inspectors will use the IRF when conducting daily and weekly inspections.

B.8.3 Preventive and Remedial Action

If any defects, deterioration, damage, or potential hazards are discovered during inspections, appropriate corrective measures (e.g., transfer of waste from a defective container to an appropriate container in good condition) will be completed promptly to minimize further damage and prevent the need for emergency response. If a hazardous condition is imminent or has already occurred, remedial actions (including cleanup, repairs, maintenance, and/or replacement) will be completed immediately. Any remedial action taken as a result of an inspection will be recorded in Part II of the IRF.

In the case of small spills, compatible sorbent is poured over the spill area and once the liquid is sorbed, it is swept or shoveled into appropriate containers. For spills involving larger liquid volumes, free liquids are pumped or HEPA vacuumed into appropriate containers and sorbent is used as above to remove the remaining liquid. Once liquids are removed, the spill area is cleaned using appropriate cleaning agents. All expended cleaning material will be sampled to determine appropriate waste management procedures.

In the case of failure of runoff control measures (e.g., self-containment system failure) at the TA-50-69 Outdoor CSA, damage will be assessed by visual observations and sampling to determine the type and extent of contamination. Mitigation procedures (e.g., sandbagging, placing portable berms) will be instituted immediately.

In the case of exposure, remedial actions include treating exposed personnel at the ESH-2 central medical facility and determining the cause of exposure by observation, Laboratory records, and/or sampling.

The extent of damage from fire and/or explosion is assessed by visual observations, Laboratory records, and, if necessary, sampling.

Equipment damaged or contaminated by fire, explosion, or spills is identified by visual inspections and, if necessary, sampling.

B.8.4 Inspection Logs

Each inspection is conducted by the operating group responsible for the waste management unit and is recorded on the IRF. The original records are maintained by the operating group in inspection logbooks for a minimum of three years. A copy of the IRF is sent weekly to ESH-19 and maintained at ESH-19 for a minimum of three years.

B.9 TA-54-38 STORAGE AREAS

B.9.1 Potential Problems

The TA-54-38 CSAs are routinely inspected for various items, including integrity of containers and self-containment systems as well as conditions of safety and emergency equipment, security devices, and loading/unloading areas. Potential problems include leaks, containment failure, and equipment deterioration or malfunction. Identified problems are recorded in Part II of the IRF.

B.9.2 Frequency and Content of Inspection

The TA-54-38 CSAs and associated equipment are inspected in accordance with the schedule in Table B-1. Items inspected daily include structural integrity of containers, condition of self-containment systems, appropriate aisle space and stacking, and conditions of loading/unloading areas. Items inspected weekly include conditions of safety equipment, security devices, emergency equipment, and pallets. Inspectors will use the IRF when conducting daily and weekly inspections.

B.9.3 Preventive and Remedial Action

If any defects, deterioration, damage, or potential hazards are discovered during inspections, appropriate corrective measures (e.g., transfer of waste from a defective container to an appropriate container in good condition) will be completed promptly to minimize further damage and prevent the need for emergency response. If a hazardous condition is imminent or has already occurred, remedial actions (including cleanup, repairs, maintenance, and/or replacement) will be completed immediately. Any remedial action taken as a result of an inspection will be recorded in Part II of the IRF.

In the case of small spills, compatible sorbent is poured over the spill area and once the liquid is sorbed, it is swept or shoveled into appropriate containers. For spills involving larger liquid volumes, free liquids are pumped or HEPA vacuumed into appropriate containers and sorbent is used as above to remove the remaining liquid. Once liquids are removed, the spill area is cleaned using appropriate cleaning agents. All expended cleaning material will be sampled to determine appropriate waste management procedures.

In the case of failure of runoff control measures (e.g., self-containment system failure) at the TA-54-38 Outdoor CSA, damage will be assessed by visual observations and sampling to determine the type and extent of contamination. Mitigation procedures (e.g., sandbagging, placing portable berms) will be instituted immediately.

In the case of exposure, remedial actions include treating exposed personnel at the ESH-2 central medical facility and determining the cause of exposure by observation, Laboratory records, and/or sampling.

The extent of damage from fire and/or explosion is assessed by visual observations, Laboratory records, and, if necessary, sampling.

Equipment damaged or contaminated by fire, explosion, or spills is identified by visual inspections and, if necessary, sampling.

B.9.4 Inspection Logs

Each inspection is conducted by the operating group responsible for the waste management unit and is recorded on the IRF. The original records are maintained by the operating group in inspection logbooks for a minimum of three years. A copy of the IRF is sent weekly to ESH-19 and maintained at ESH-19 for a minimum of three years.

TABLE B-1
INSPECTION SCHEDULE

MODULAR STORAGE UNITS	
Daily when loading or unloading	Figures B-1, B-7
Weekly	Figures B-2, B-8
CONCRETE CONTAINMENT STRUCTURES	
Daily when loading or unloading	Figures B-3, B-7
Weekly	Figures B-4, B-8
CONTROLLED AIR INCINERATOR	
Hourly when burning hazardous waste	Log entry
Daily when burning hazardous waste	Figure B-5
Weekly	Figure B-6
C.A.I. STORAGE AREA	
Daily when loading or unloading	Figure B-5
Weekly	Figure B-6
WASTE TRANSFER/STORAGE UNIT	
Daily when loading or unloading	Figure B-7
Weekly	Figure B-8
SOLID WASTE STORAGE AREA	
Daily when loading or unloading	Figure B-7
Weekly	Figure B-8
TA-54 AREA L WASTE TREATMENT/STORAGE TANKS	
Daily when in use with hazardous waste	Figure B-7
Weekly	Figure B-8
Annually	Special Report
After Storms	Special Report
EMERGENCY VEHICLES	
Quarterly	Special Report
FIRE CONTROL SYSTEM	
Annually	Special Report

TABLE B-1 (Continued)
INSPECTION SCHEDULE

TA-50-1, ROOMS 35, 36, AND 38/38A STORAGE AREAS	
Daily for areas subject to spills and when new containers of waste are placed in the storage area	Inspection Record Form (IRF)
Weekly	IRF
TA-50-69 INDOOR AND OUTDOOR STORAGE AREAS	
Daily for areas subject to spills and when new containers of waste are placed in the storage area	IRF
Weekly	IRF
TA-54-38 STORAGE AREAS	
Daily for areas subject to spills and when new containers of waste are placed in the storage area	IRF
Weekly	IRF

FACILITY: **50-Batch Plant (Includes structures 114, 137, 138, and portaberm)**

FACILITY TYPE: **T.S.** **19____** **MONTH/DAY** **MONTH/DAY**
WEEK OF_____ THRU_____

DAILY PARTS I, II, III-To be completed every day of operation

PART I. Enter the data in column for day inspected.

DAY	S	M	T	W	TH	F	S
DATE							
TIME							
INSPECTOR							

PART II. Enter condition of item inspected (OK or AR*) in column for day inspected.

ITEM	INSPECTED FOR	S	M	T	W	TH	F	S
**(UN) LOADING AREA TANKS/CONTAINERS	SPILLS AND DETERIORATION							
**CONTAINERS STORAGE	SEGREGATED ACCORDING TO COMPATIBILITY							
**CONTAINERS AND TANKS	CLOSED, LABELED AND DATED							
COMMUNICATION EQUIPMENT	PROPERLY FUNCTIONING							
TANK MONITORING EQUIPMENT	DISCHARGE CONTROLS, TEMP/PRESSURE GAUGES LEVELS (%FULL) (OK?)							
**AREA AROUND TANKS/ CONTAINERS SECONDARY CONTAINMENT	SPILLS, DAMAGE STANDING WATER							
ABOVE GROUND PARTS OF TANK SYSTEM	INTEGRITY, LEAKS CORROSION							

PART III. For any action noted in PART II, describe below: action required, action taken, date.

Los Alamos National Laboratory
Hazardous Waste Permit
NMED Control Copy
Page Modified 12-22-95

WEEKLY **To be completed on the first working day of the week.**

INSPECTOR:_____ **DATE:**_____ **TIME:**_____

PART IV. Enter condition of item inspected (OK or AR*) in "condition" column. describe action and date taken in "Action\Date" column.

ITEM	INSPECTED FOR	CONDITION (OK OR AR*)	ACTION AND DATE ACTION TAKEN
STRUCTURAL INTEGRITY OF CONTAINERS/TANKS	DETERIORATION AND LEAKS, TANKS INCLUDES ALL VALVES, PIPE, FLANGES		
COVER/LID OF CONTAINERS	CLOSED AND SECURED		
WARNING SIGNS	POSTED & READABLE (BILINGUAL)		
LABELS	"HAZARDOUS WASTE" PRESENT ON ALL CONTAINERS/TANKS		
ACCUMULATION DATE (<90 DAY STORAGE)	PRESENT ON ALL CONTAINERS/TANKS NONE EXCEED 90 DAYS FROM START		
SECURITY	CONDITION OF GATES/LOCKS		
EMERGENCY EQUIPMENT	FIRE EXTINGUISHERS, EYE WASH, SHOWERS, RESPIRATORS		
SPILL CONTROL EQUIPMENT	PRESENT, GOOD WORKING ORDER		
SITE LIGHTING	FUNCTIONS PROPERLY		
HOOD	FUNCTIONING		

REMARKS:

* Action required ** Includes all associated storage facilities.

For waste removal call HSE-7 at 667-6095 at least 10 working day prior to reaching 90 day storage limit of any container or tank. Request all hazardous waste stored on site be removed at this time. For questions concerning inspections or regulations contact Tony Grieggs, 5-0451 or Jim White, 5-0677.

cc: Tony Grieggs, HSE-8, MS K490 (Copies only, maintain orginial for a minimum of three (3) years. Last Revision: April 18, 1989

FACILITY: 50-139, 140

FACILITY TYPE: T.S. 19___ MONTH/DAY MONTH/DAY

DAILY PARTS I,II,III-To be completed every day of operation

PART I. Enter the data in column for day inspected.

DAY	S	M	T	W	TH	F	S
DATE							
TIME							
INSPECTOR							

PART II. Enter condition of item inspected (OK or AR*) in column for day inspected.

ITEM	INSPECTED FOR	S	M	T	W	TH	F	S
**(UN) LOADING AREA TANKS/CONTAINERS	SPILLS AND DETERIORATION							
COMMUNICATION EQUIPMENT	PROPERLY FUNCTIONING							
EYE WASH SAFETY SHOWERS	LEAKS FUNCTIONING							

PART III. For any action noted in PART II, describe below: action required, action taken, date.

WEEKLY **To be completed on the first working day of the week.**

INSPECTOR:_____ **DATE:**_____ **TIME:**_____

PART IV. Enter condition of item inspected (OK or AR*) in "condition" column. describe action and date taken in "Action/Date" column.

ITEM	INSPECTED FOR	CONDITION (OK OR AR*)	ACTION AND DATE ACTION TAKEN
STRUCTURAL INTEGRITY OF CONTAINERS	DETERIORATION AND LEAKS		
COVER/LID OF CONTAINERS	CLOSED AND SECURED		
WARNING SIGNS	POSTED & READABLE (BILINGUAL)		
LABELS	"HAZARDOUS WASTE" PRESENT ON ALL CONTAINERS/TANKS		
SECURITY	CONDITION OF FENCE/GATES/LOCKS		
SITE LIGHTING	FUNCTIONS PROPERLY		
CONTAINMENT STRUCTURES	INTEGRITY, STANDING WASTE		
	EROSION		
CONTAINER STORAGE	SEGREGATED ACCORDING TO COMPATIBILITY, AISLE SPACE		
FIRE EXTINGUISHERS SPILL CONTROL CEAR	PRESENT, IN GOOD WORKING ORDER		
HOSE BIB	LEAKS, FUNCTIONING		
ROAD/WORK SURFACES	CRACKS		
WIND SOCK	DAMAGE, FUNCTIONING		
PALLETS	INTEGRITY, DAMAGE		

REMARKS:

*Action required **Includes all associated storage facilities.

For waste removal call HSE-7 at 667-6095 at least 10 working days prior to reaching 90 day storage limit of any container or tank. Request all hazardous waste stored on site be removed at this time. For questions concerning inspections or regulations contact Tony Grieggs, 5-0451 or Jim White, 5-0677.

cc: Tony Grieggs, HSE-8 MS K490 (Copies only, maintain original for a minimum of three (3) years. Last Revision: April 18, 1989

FACILITY: 50-37 (incinerator) includes room 117

FACILITY TYPE: T.S. 19___ **MONTH/DAY** **MONTH/DAY**

DAILY PARTS I,II,III-To be completed every day of operation

PART I. Enter the data in column for day inspected.

DAY	S	M	T	W	TH	F	S
DATE							
TIME							
INSPECTOR							

PART II. Enter condition of item inspected (OK or AR*) in column for day inspected.

ITEM	INSPECTED FOR	S	M	T	W	TH	F	S
**(UN) LOADING AREA	SPILLS AND DETERIORATION							
TANK BY-PASS	LEAKS, DETERIORATION							
COMMUNICATION EQUIPMENT	PROPERLY FUNCTIONING							
PUMPS, VALVES PIPES	CONDITION LEAKS							
INCINERATOR EQUIP.	DETERIORATION MANFUNCTION							
TANK DISCHARGE CONTROLS, WASTE FEED CUTOFF (TANK)	ALL OVERFILL & SPILL CONTROL EQUIP. IN GOOD WORKING ORDER							
TANK MONITORING EQUIPMENT	OPERATING PROPERLY							
CONTAINMENT STRUCTURES	INTEGRITY, STANDING WATER CORROSION							

PART III. For any action noted in PART II, describe below: action required, action taken, date.

WEEKLY **To be completed on the first working day of the week.**

INSPECTOR:_____ **DATE:**_____ **TIME:**_____

PART IV. Enter condition of item inspected (OK or AR*) in "condition" column. describe action and date taken in "Action/Date" column.

ITEM	INSPECTED FOR	CONDITION (OK OR AR*)	ACTION AND DATE ACTION TAKEN
STRUCTURAL INTEGRITY OF CONTAINERS/TANKS	DETERIORATION AND LEAKS, TANKS INCLUDES ALL VALVES, PIPES, FLANGES		
TANKS AND CONTAINERS	CLOSED AND SECURED		
AISLE SPACE BETWEEN CONTAINERS	AT LEAST ONE (1) FOOT BETWEEN CONTAINERS		
WARNING SIGNS	POSTED AND READABLE (BILINGUAL)		
LABELS	"HAZARDOUS WASTE" PRESENT ON ALL CONTAINERS/TANKS		
SECURITY	CONDITION OF GATES/LOCKS		
EMERGENCY EQUIPMENT	FIRE EXTINGUISHERS, EYE WASH, SHOWERS, RESPIRATORS		
SITE LIGHTING	FUNCTIONS PROPERLY		
TANK LEVEL ALARM	FUNCTIONING		
PROCESS GLOVES	TEARS, DETERIORATION		
VENTILATION SYSTEM	FUNCTIONING PROPERLY		
SCBA GEAR	DETERIORATION, FUNCTIONING		
PROCESS FLOOR	CRACKS, SPALLING, COATING		
AISLE SPACE	CLEAR		

REMARKS:

*Action required **Includes all associated storage facilities.

For waste removal call HSE-7 at 667-6095 at least 10 working days prior to reaching 90 day storage limit of any container or tank. Request all hazardous waste stored on site be removed at this time. For questions concerning inspections or regulations contact Tony Grieggs, 5-0451 or Jim White, 5-0667.

cc: Tony Grieggs, HSE-8, MS K490 (Copies only, maintain original for a minimum of three (3) years. Last Revision: April 18, 1989

FACILITY: 54-AREA-L

FACILITY TYPE: T.S. **19____** **MONTH/DAY** **MONTH/DAY**

DAILY PARTS I,II,III-To be completed every day of operation

PART I. Enter the data in column for day inspected.

DAY	S	M	T	W	TH	F	S
DATE							
TIME							
INSPECTOR							

PART II. Enter condition of item inspected (OK or AR*) in column for day inspected.

ITEM	INSPECTED FOR	S	M	T	W	TH	F	S
**(UN) LOADING AREA TANKS/CONTAINERS	SPILLS AND DETERIORATION							
COMMUNICATION EQUIPMENT	PROPERLY FUNCTIONING							
TANKS (ALL ABOVE GROUND PORTIONS)	DISCHARGE CONTROLS CONDITION, LEAKS LEVEL (6" FREEBOARD)							
SURFACE IMPOUNDMENTS AND CONTAINMENT	FREEBOARD (2FT) SUDDEN DROPS IN LEVEL							
PORTA BERM	LEAKS CONDITION							
RUN ON/OFF CONTROL	INTEGRITY, EROSION PONDING							
EYE WASH SAFETY SHOWER	LEAKS FUNCTIONING							

PART III. For any action noted in PART II, describe below: action required, action taken, date.

WEEKLY **To be completed on the first working day of the week.**

INSPECTOR:_____ **DATE:**_____ **TIME:**_____

PART IV. Enter condition of item inspected (OK or AR*) in "condition" column. describe action and date taken in "Action/Date" column.

ITEM	INSPECTED FOR	CONDITION (OK OR AR*)	ACTION AND DATE ACTION TAKEN
STRUCTURAL INTEGRITY OF CONTAINERS/TANKS	DETERIORATION AND LEAKS, TANKS INCLUDES ALL VALVES, PIPES, FLANGES		
COVER/LID OF CONTAINERS	CLOSED AND SECURED		
WARNING SIGNS	POSTED & READABLE (BILINGUAL)		
LABELS	"HAZARDOUS WASTE" PRESENT ON ALL CONTAINERS/TANKS		
ACCUMULATION DATE (<90 DAY STORAGE)	PRESENT ON ALL CONTAINERS/TANKS NONE EXCEED 90 DAYS FROM START		
RUN ON CONTROL (AREA L, H LANDFILL)	INTEGRITY, ERROSION PONDING		
COVER INTEGRITY (AREA L, H LANDFILL)	EROSION, SUBSIDENCE WATER INTRUSION		
SECURITY	CONDITION OF FENCE/GATES/LOCKS		
SITE LIGHTING	FUNCTIONS PROPERLY		
CONTAINMENT STRUCTURES	INTEGRITY, STANDING WATER VEGETATION, EROSION		
CONTAINER STORAGE	SEGREGATED ACCORDING TO COMPATIBILITY, AISLE SPACE		
HOSE BIB	LEAKS, FUNCTIONING		
STORAGE SHED	FLOOR DAMAGE, LIQUID		
ROAD/WORK SURFACES	CRACKS		
WIND SOCK	DAMAGE, FUNCTIONING		
SHAFT COVER AND RAIL	DAMAGE		
PALLETS	INTEGRITY, DAMAGE		
TREATMENT TANKS	LEAKS, DAMAGE		
REFRIGERATOR	DAMAGED CONTAINERS		
SPILL CONTROL FIRE EQUIPMENT	PRESENT, IN GOOD WORKING ORDER		

REMARKS:

*Action required **Includes all associated storage facilities.

For waste removal call HSE-7 at 667-6095 at least 10 working days prior to reaching 90 day storage limit of any container or tank. Request all hazardous waste stored on site be removed at this time. For questions concerning inspection or regulations contact Tony Grieggs, 5-0461 or Jim White, 5-0667.

cc: Tony Grieggs, HSE-8, MS K490 (Copies only, maintain orginals for a minimum for three (3) years. Last Revision: April 18,1989

PERMIT ATTACHMENT B

APPENDIX A

RESPIRATORY PROTECTION EQUIPMENT PRACTICES FOR THE CHEMICAL BATCH TREATMENT PLANT

1. INTRODUCTION

The use of respiratory equipment is necessary for the safety and well-being of Group HSE-7 employees engaged in certain waste treatment operations. Respiratory protection equipment is required where effective engineering controls are not yet feasible or where equipment failures or malfunctions could cause hazardous work environments. The Group HSE-7 Plant Operations Section Respiratory Practices Program is in accordance with ANSI Standard Z88.2-1969, Practices for Respiratory Protection and the respirator training program of Group HSE-5.

2. SCOPE

These respiratory protection procedures shall pertain to all Group HSE-7 liquid waste facilities, equipment and operations which may generate potentially hazardous atmospheres involving toxic materials or oxygen deficiencies.

3. RESPONSIBILITIES

The Section Leader for Liquid Waste Operations or the Alternate is responsible for assuring that respiratory protection practices are performed in accordance with the respiratory protection practices outlined in this SOP and any incidents involving the use of respiratory equipment must be reported immediately to Group HSE-5.

HSE-7 personnel shall inspect the self-contained breathing apparatus (SCBA's) periodically; the interval between inspections can be as individually desired, but must not exceed one month. Each inspection must be signed and dated with the breathing air cylinder PSI marked on the inspection sticker. A SCBA inspection form must be completed and sent to HSE-5-MS486. An inspection and donning procedure is available in each SCBA carrying case. SCBA's shall also be inspected after each use. Group HSE-5 shall be notified immediately of any respirator defects, and the SCBA unit shall be replaced. HSE-5 shall also be notified when the SCBA has been used so that the breathing air tank is immediately replaced.
The HSE-1 HPT shall insure that each respirator user has a current respirator authorization card for the type of respirator that is worn. The HSE-1 HPT shall examine the photo on the respirator authorization card to determine if additional facial hair is present. Additional facial hair voids the respirator authorization card. If this situation occurs, the employee shall not be allowed to wear the respirator or enter any hazardous environment and Group HSE-5 shall be notified immediately to pick up the respirator authorization card.

Each employee shall comply with all health and safety regulations (verbal or written) and shall report any incident involving the improper utilization of respiratory protective equipment immediately to the supervisor.

4. MATERIAL, OPERATION AND EQUIPMENT CONTROLS

Full facepiece air-purifying respirators with high efficiency,v filter are not approved for emergency situations or in environments containing toxic gases/vapors or in oxygen deficient environments (<19.5% oxygen by volume). The respirator and canister shall be suited to the contaminant. If there are any questions, contact Group HSE-5.

SCBA's are approved for use in oxygen deficient environments and hazardous concentrations of toxic materials. If the environment contains materials which may be readily absorbed through the skin, an impervious suit is also required.

Possible emergencies would include:

- chemical leaks or spills
- smoke
- emergency entry into a confined space

The MSA Model 401 utilizes a high pressure portable air tank which provides a high air flow rate to meet breathing demands during extreme exertion. Generally these units supply breathing air for up to 30 minutes of activity and are equipped with an audible alarm to indicate when the breathing supply is low. The air used for SCBA's must meet the strict purity requirements of the Compressed Gas Association Specification G7.1 for Type I, Class D Breathing Air. Group HSE-5 has facilities available for filling these air tanks with air that meets these purity requirements.

5. PERSONNEL CONTROLS

Each respirator user shall have completed the comprehensive respirator training program (including quantitative fitting for air-purifying respirators) conducted by Group HSE-5 and have in his/her possession a current respirator authorization card for the type of respiratory equipment that is worn. To prevent accumulation of dirt on the respirator, it should be cleaned after each use with the packets provided at the respirator fitting office. Always inspect air purifying respirators before and after use. Any deterioration shall be reported to the supervisor, and the respirator shall be replaced.

HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

1 FACILITY	2 ☐ <90 DAY, GENERATOR STORAGE ☐ TREATMENT, STORAGE, DISPOSAL	3 START DATE	4 END DATE

5 ☐ Containers ☐ Landfill ☐ Surface Impoundment ☐ Waste Pile ☐ Thermal Treatment ☐ Chem/Phys/Bio. Treat.

☐ Incinerator ☐ Misc. Unit ☐ Tank ☐ UST ☐ Land Treatment ☐ Underground Inj.

PART I - Enter condition of item inspected (OK or AR [Action Required]) in column for day inspected.

ITEM	INSPECTED FOR	SUN	MON	TUE	WED	THU	FRI	SAT
6 NO USE	CHECK IF NO WASTE IS PRESENT							
7 (UN)LOADING AREA TANKS/CONTAINERS	SPILLS AND DETERIORATION							
8 COMMUNICATION EQUIPMENT (PHONE/RADIO/ALARMS)	PROPERLY FUNCTIONING							
9 TANKS (ALL ABOVE GROUND PORTIONS) MONITORING DATA	DISCHARGE CONTROLS CONDITION, LEAKS, LEVEL (6" FREEBOARD), CORROSION							
10 SURFACE IMPOUNDMENTS AND CONTAINMENT	FREEBOARD (2 ft) SUDDEN DROPS IN LEVEL							
11 PORTA BERM	LEAKS, CONDITION							
12 EYE WASH SAFETY SHOWERS	LEAKS, FUNCTIONING							
13 STRUCTURAL INTEGRITY OF CONTAINERS/TANKS, VALVES, PIPES, AND FLANGES	DETERIORATION AND LEAKS, CORROSION, DAMAGE							
14 COVER/LID OF CONTAINERS	CLOSED AND SECURED							
15 WARNING SIGNS	POSTED & READABLE (BILINGUAL)							
16 LABELS	"HAZARDOUS WASTE" PRESENT ON ALL CONTAINERS/TANKS							
17 ACCUMULATION START DATE	PRESENT ON ALL CONTAINERS, TANKS, NONE EXCEED TIME RESTRICTIONS							
18 RUN ON/OFF CONTROL (AREA L, G, H, P) LANDFILLS, DETONATION PADS	INTEGRITY, EROSION, PONDING							
19 COVER INTEGRITY (AREA L, G, H, P), LANDFILLS	EROSION, SUBSIDENCE, WATER INTRUSION							
20 SECURITY	CONDITION, FENCE/GATES/LOCKS							
21 SITE LIGHTING	FUNCTIONS PROPERLY							

HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

ITEM	INSPECTED FOR	SUN	MON	TUE	WED	THU	FRI	SAT
22 CONTAINMENT STRUCTURES	INTEGRITY, STANDING WATER, VEGETATION, EROSION							
23 AISLE SPACE, STACKING	ADEQUACY, APPROPRIATENESS							
24 MANAGEMENT OF CONTAINERS	SEGREGATED ACCORDING TO COMPATIBILITY							
25 HOSE BIBS, WATER SUPPLY	LEAKS, FUNCTIONING							
26 STORAGE SHEDS	FLOOR DAMAGE, LIQUID							
27 ROAD/WORK SURFACES	CRACKS/POTHOLES							
28 WIND SOCK	DAMAGE, FUNCTIONING							
29 SHAFT COVER AND RAIL	PRESENT, DAMAGE							
30 PALLETS	INTEGRITY, DAMAGE							
31 TREATMENT TANKS	PROPER OPERATION, LEAKS							
32 REFRIGERATOR	DAMAGED CONTAINERS, PROPER OPERATION							
33 SPILL CONTROL, FIRE, AND EMERGENCY EQUIPMENT	PRESENT AND IN GOOD WORKING ORDER							
34 INCINERATOR EMERGENCY WASTE FEED CUTOFF/ALARMS	PROPER OPERATING CONDITION OF ALL SHUTDOWN CONTROLS							
35 INCINERATOR PUMPS, VALVES, PIPES, MONITORING CONTROLS	LEAKS/SPILLS/TAMPERING, OPERATING WITHIN SPECS.							
36 PRESSURE VESSELS (S-SITE)	DETERIORATION AND SAND CONDITION							
37 OIL BURN PANS (S-SITE)	DETERIORATION & LEAKS							
38 HE BURN PADS (S-SITE)	DETERIORATION, VEGETATION, SAND COND., EROSION							
39 RADIATION SAFETY	SIGNS, MONITORING (α β γ ^3H)							
40 DATE	DATE OF INSPECTION							
41 TIME	TIME OF INSPECTION							
42 INSPECTOR	INITIALS OF INSPECTOR							

HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

PART II - For any AR (Action Required) in PART I above, describe below: action required, action taken, date of action. Attach additional sheets if necessary.

(Note: Items 43-48 must be completed for all inspections.)

43 INSPECTOR (Printed Name)	45 Z NUMBER	46 GROUP	47 DATE	48 TIME

44 INSPECTOR (Signature)

Instructions for Use of the Hazardous and Mixed Waste Facility Inspection Record Form

Part I

1. FACILITY: Location information including TA, building, and room if applicable. Other location descriptors may be necessary. (e.g., TA-59-3-114 or TA-59-1-S. Dock)

2. <90 Day, GENERATOR STORAGE should be checked if this location is intended for operation in accordance with generator requirements for storage of hazardous waste for less than 90 days.

   TREATMENT, STORAGE, DISPOSAL should be checked if this location is listed in LANL's Hazardous Waste Facility Permit or Part A application as a permitted or interim status TSD operation.

3. START DATE: The date of the first inspection for the week on that inspection sheet. (Usually the first working day of the week)

4. END DATE: The date of the last inspection for the week on that inspection sheet. (Usually the last working day of the week; however, if handling of hazardous waste occurs during the weekend, inspections must be conducted.)

5. Check the appropriate box for the type of operation. Several boxes may be checked if necessary for those locations where inspections are combined on a single sheet. You must have prior approval from ESH-19 to combine inspections for more than one unit.

6. NO USE: May be checked if the unit did not store, treat, dispose, or otherwise handle hazardous waste for the day/week in question. The individual responsible for the inspection must then only complete boxes 40 through 48 for that day/week. If any hazardous waste is subsequently placed at the site for any reason, a full inspection must be performed immediately and every working day thereafter until all waste is properly disposed of.

7. Loading and unloading areas must be inspected daily when in use for signs of damage or deterioration that may lead to an accident or spill. This includes asphalt pads and areas where containers or tanks are handled or contents thereof are transferred.

8. Communication equipment must be inspected for proper function: Includes all telephones, two-way radios, and alarms for the area being inspected. (An initial consultation with ESH-19 prior to use of the facility/location will determine what equipment is necessary at any particular location.)

9. For tank systems used for treatment or storage of hazardous waste, all aboveground portions of the tank system, including any and all ancillary plumbing, must be inspected daily for signs of leaking, corrosion, deterioration, or improper operation. Tanks must be operated with a minimum freeboard of 6 inches. If the tank system includes discharge controls, overtopping controls, tank level alarms, or other monitoring equipment, including leak detection equipment, all controls and relevant data must be checked to ensure they are operating properly and that operation is within design specifications for the system.

Instructions for Use of the Hazardous and Mixed Waste Facility Inspection Record Form (Continued)

10. Surface impoundments must be operated with a minimum of 24 inches (60 cm) of freeboard from the top of the dike or berm to the surface of the waste therein. Inspectors must look for signs of leaks, deterioration, and erosion of dikes, berms, and any associated plumbing or valves. These could include dying vegetation, gullies, and sudden changes in level.

11. For those locations where inflatable "Porta Berms" are used as secondary containment for tanks and containers of hazardous waste, inspectors must ensure that they are adequately inflated. Inspectors must also check for the presence of liquids in the containment unit that could indicate leaks or spills of hazardous waste. All monitoring and leak detection systems must also be checked.

12. Where required, eyewash and safety showers must be inspected to ensure proper operating condition. Outside locations must be checked for freezing.

13. All containers and tanks must be checked for structural integrity, leaks, corrosion, or damage. This item includes checking condition of all construction materials, fixtures, seams, and auxiliary equipment. See Item 7 above.

14. All tanks and containers used for treating or storing hazardous waste must have the cover or lid securely in place. Containers are not considered to be closed until the lid/cover is fastened in the manner the manufacturer originally intended.

15. Required signs must be legible and prominently posted. TSD facilities and <90 day storage areas must be equipped with bilingual (English/Spanish) signs with the legend "DANGER UNAUTHORIZED PERSONNEL KEEP OUT." TSDs must be identified with signs that read "HAZARDOUS WASTE STORAGE AREA." <90 day storage areas must be identified with a sign with the legend "<90 DAY HAZARDOUS WASTE STORAGE AREA."

16. All containers and tanks must be labeled with the words "HAZARDOUS WASTE" and with other words that identify the contents. Mixed waste must also be labeled as "RADIOACTIVE."

17. All containers and tanks of hazardous waste in TSDs or <90 day storage areas must be marked with the accumulation start date. At TSDs, containers without dates must be dated when they arrive at the facility. For wastes generated at <90 day storage areas and TSDs, containers must be marked with the accumulation start date at the time the container first receives any waste. For <90 day storage areas, no containers may exceed 90 days from accumulation start date to the time they are delivered to a permitted treatment, storage, or disposal unit. Waste management organizations will provide transportation for these wastes.

Instructions for Use of the Hazardous and Mixed Waste Facility Inspection Record Form (Continued)

18. Landfills and detonation pads must have run-on and runoff controls inspected wherever present. Leachate collection systems, where present, must also be inspected. Items to be inspected for are proper operating condition, damage, erosion, contaminant migration, ponding, etc. Detonation pads must be inspected for unburned or undetonated explosives, ordnance, and debris.

19. Landfill covers must be inspected at least weekly and after storms for evidence of erosion, subsidence, and water intrusion.

20. Site security must be verified. Items such as fences, gates, locks, etc., should be checked for proper condition and adequacy.

21. Site lighting must be adequate to prevent accidents related to hazardous waste operations and for any other night operations that may take place within the boundaries of the hazardous waste unit.

22. Secondary containment structures for hazardous waste operations must be inspected to verify proper operating condition and to ensure adequate capacity. Structures must also be inspected for the presence of standing water or hazardous waste. For incinerators and certain operations at TA-55, secondary containment includes inspections of gloves and gloveboxes, hoods, and ventilation systems where necessary.

23. Adequate aisle space must be maintained to allow for inspection and for the unobstructed movement of personnel and emergency equipment in an emergency. All containers of hazardous waste must be stored in a manner that ensures a minimum of 2 feet of aisle space between containers. Drums containing free liquids or those holding hazardous waste (excluding mixed wastes) may not be stacked over two drums high.

24. All hazardous waste containers holding materials that may be incompatible with any other materials at that location must be separated from those materials by dikes, berms, or other physical barriers to prevent a possible reaction.

25. TSD facilities must have water at an adequate volume and pressure for fire protection available. Hose bibs should be inspected for proper operating condition and adequate pressure. Outside water supplies must be checked for freezing.

26. The storage sheds must be inspected for damage, free liquids that might indicate a leak, and chemical compatibility of materials stored therein.

27. Road and work surfaces, process floors, or other work surfaces at TSDs must be inspected for damage or erosion that could lead to a spill or accident, and for adequate secondary containment.

28. Wind socks, where required, at TSDs must be inspected to ensure that they are present and in proper operating condition.

Instructions for Use of the Hazardous and Mixed Waste Facility Inspection Record Form (Continued)

29. Disposal shafts and shafts used for retrievable storage should have their covers securely in place and guard rails must be installed and in good condition.

30. Hazardous waste containers at TSDs and <90 day storage areas must be stored on pallets if they are stored outside without a roof.

31. Hazardous waste treatment tanks must be operated within design specifications and in accordance with SOPs and work plans. Tanks must be inspected for leaks or damage prior to operation.

32. Refrigerators used for storing hazardous waste, or samples thereof, must be inspected for proper operating condition and leaking or damaged containers.

33. Hazardous waste TSDs and <90 day storage areas must have adequate fire and spill control equipment for the types and volumes of waste present. Equipment must be present, in good working order, and appropriate for the material in question.

34. Incinerator waste feed cutoffs, emergency shutdown controls, and associated alarms or warning systems must be inspected for proper operating condition.

35. Incinerators, ancillary plumbing and equipment, and all monitoring controls must be inspected to ensure that they are in proper operating condition, and are being operated within design specifications. Inspectors must also look for evidence of leaks, corrosion, spills, or tampering.

36. Pressure vessels must be inspected for signs of deterioration or damage. Condition of the sand and loading must also be checked to ensure adequacy.

37. Oil burn pans must be inspected for deterioration, damage, or leaks. Inspectors must also inspect for unburned explosives and debris.

38. HE burn pads must be inspected for deterioration, damage, leaks, or vegetation that could catch fire. Condition of the sand must also be checked. Inspectors must also inspect for unburned explosives and debris.

39. Radioactive materials must be properly placarded, labeled, and stored within controlled areas in accordance with AR 3-7. Containers should be monitored/swiped for outside contamination if suspected, and all leaks or spills must be monitored to ensure adequate cleanup.

40. Inspectors will record the date of the current inspection.

41. Inspectors will record the time of the current inspection.

42. Inspectors will initial each daily inspection.

Instructions for Use of the Hazardous and Mixed Waste Facility Inspection Record Form (Continued)

Part II

Inspectors must explain in detail any deficiency noted above. Items to be included are: type of problem, any action taken, and the date/time of the action. Additional sheets may be attached as necessary.

43. Printed name of individual performing inspection.

44. Signature of individual performing inspection.

45. Z number of individual performing inspection.

46. Organization responsible for this location.

47. Date record was signed and completed.

48. Time record was signed and completed.

(Note: Items 43-48 must be completed for all inspections.)

PERSONNEL TRAINING

PERMIT ATTACHMENT C
NM0890010515-1

~~PERSONNEL TRAINING~~
~~PERMIT ATTACHMENT C~~
~~NM0890010515-1~~

~~This attachment describes the personnel training program for Los Alamos National Laboratory in accordance with the regulatory requirements of HWMR-6, Part V., Section 264.16. The information presented outlines the personnel training programs at the Laboratory. The primary objective of the program is to prepare persons to safely operate and maintain those areas containing hazardous wastes. This training program applies to all employees of Department of Energy (DOE), University of California (UC), Pan American Worldwide Services (PAWS), and their contractors who regularly work at the facility. The degree of training varies with the duties but all personnel receive as an introduction to the RCRA requirements of this permit a minimum of Sections I and II of the training outline, Figure C-1.~~

~~C.1 OUTLINE OF TRAINING PROGRAM~~

~~C.1.1 Responsibilities~~

~~Figure C-2 presents the organization of Health, Safety, and Environment (HSE) Division. HSE Division handles all waste management activities except for high explosives treatment, which is handled by the WX and M Divisions. Individuals who are directly involved with waste management are in Health, Safety, and Environment Group 7 (HSE-7). PAWS provides trained personnel to assist HSE-7 in waste handling activities. The Environmental Surveillance Group is responsible for RCRA compliance. Personnel in the Occupational Medicine (HSE-2), Safety Group (HSE-3), Industrial Hygiene Group (HSE-5), and Environmental Surveillance Group (HSE-8) are trained in their specialties to provide emergency response support.~~

~~C.2 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES~~

~~The training program instituted at the Laboratory includes a combination of internal training courses, on-the-job training, and courses taught by outside contractors.~~

~~Records of each waste handling individual's formal training are maintained in the HSE Division office. Training records of current employees are kept until closure of the facility. Records of former employees are kept for at least three years from the date the employee last worked at the facility.~~

~~The training outline (Figure C-1) is on file in the HSE Division Office and is available for review by all hazardous waste management and handling personnel, emergency response personnel, and all regulatory agencies. Courses will be reviewed annually and updated as required to maintain currency with RCRA.~~

~~The training coordinator will work with the group leaders of HSE-2, 3, 5, 7, and 8, WX and M Divisions, and PAWS to ensure that all employees receive the proper level of training. All new LANL~~

~~and PAWS employees will receive training within six months of their date of hire or transfer. Personnel will not work in unsupervised positions until they successfully complete the training course.~~

~~C.2.1 Internal Training~~

~~The personnel training courses emphasize the safe handling of hazardous wastes. Program instructors are trained in hazardous waste management procedures and RCRA provisions. The training program is designed to provide training commensurate with the employee's responsibilities. All employees will receive section I and II training, regardless of their duty assignment.~~

~~C.2.2 On-the-Job Training~~

~~All waste handling personnel will participate in on-the-job training programs. These programs are designed to give field demonstrations of Laboratory procedures for hazardous waste handling, inspections, and hazardous waste transportation requirements. Personnel responsible for directing on-the-job training participate in the RCRA provisions course so that they are familiar with hazardous waste management procedures as they related to RCRA.~~

~~C.2.3 External Training~~

~~In addition to internal training, selected personnel will participate in contractor-taught courses. Those personnel who will participate in the external training program are listed herein. These contractor-taught courses will serve to supplement the internal training program.~~

~~C.2.4 Training Coordinator~~

~~The personnel training program is directed by Dr. Thomas C. Gunderson. As Division Leader for the EM Division, Dr. Gunderson is knowledgeable about hazardous waste management facilities and practices and emergency procedures. Dr. Gunderson is responsible for coordinating the internal and external training courses and for assuring that all personnel receive the required training. The training program provides employees with training relevant to their positions within the organization. Supervisors and staff receive training appropriate to their degree of handling hazardous waste (e.g., reporting and other procedures required for compliance). For example, management responsibilities for compliance with RCRA are assigned to the HSE-7 Group Leader, who receives training in RCRA provisions. Material handlers are trained to maintain proper and safe operating procedures and to respond effectively to spills and other emergencies. Duties for each job description are matched to a LANL training course.~~

~~C.3 EMERGENCY RESPONSE TRAINING~~

~~The outside professionals (PAWS and the Protective Force) assist the Incident Commander (IC) as soon as they arrive on the scene of the emergency. These people are trained in their specialties (i.e., heavy equipment operation, traffic control). PAWS personnel are also trained in personal safety. At all times during an emergency, these contractors are under the direct supervision of the HWEC and other trained Laboratory personnel. All actions taken by contractors do not perform activities other than those for which they are trained (heavy equipment operations, constructing dikes).~~

~~In order to ensure maximum protection of life and property and to mitigate the consequences of an emergency situation, it is imperative that all HSE personnel, WX and M Division personnel, and PAWS personnel involved in waste handling and emergency response be knowledgeable about appropriate building and operating area emergency procedures. These groups will participate in the Laboratory's formal training program.~~

~~In addition to the Laboratory's formal program, division and group leaders and immediate supervisors are responsible for providing education and training in emergency response procedures. Periodic unannounced emergency drills and exercises are used to familiarize employees with emergency procedures. Training is also provided through prominent instruction displays and through presentations and discussions in safety meetings.~~

~~Each new or transferred employee is indoctrinated by his immediate supervisor regarding the RCRA requirements which apply, the general emergency procedures and those specific procedures related to his work area. Each employee is advised of changes to any emergency procedures and is given an annual review of procedures affecting his work area. The review may be given separately in writing or included in an overall indoctrination. A record of training will be kept in the employee's personnel file.~~

~~Specialized training is given to those employees assigned special functions or specific emergency duties. Emergency response personnel (HSE-2, 5, and 8, the DOE fire Department, Laboratory Emergency Response Coordinators, and Chemical Waste Management Coordinators) participate in the formal Laboratory training program and are required to attend courses on spill response, the RCRA contingency plan and RCRA provisions. All waste handling personnel (HSE-7, WX and M Divisions, and PAWS) also participate in the formal training program in which they are instructed in emergency procedures pertinent to their work area. The emergency procedures instruction in which hazardous waste management and handling personnel and emergency response personnel are required to participate will ensure a coordinated response to hazardous waste emergencies.~~

~~C.4 IMPLEMENTATION OF TRAINING PROGRAM~~

~~The introductory training program is offered at six month intervals, when needed, to ensure that all employees receive training within six months of their date of hire or transfer. Employees will not work in unsupervised positions until they have been trained. Employees transferring within divisions of the facility will receive training as if they were new employees.~~

~~All hazardous waste management and handling personnel must attend annual refresher courses. These courses are intended to update personnel on Laboratory procedures and provide them with an overview of their introductory training.~~

~~In addition, a complete Respirator or self contained breathing apparatus (SCBA) training course is taught annually, where appropriate, and must be successfully completed by hazardous waste handling personnel.~~

~~Group leaders, along with the training coordinator, will ensure that all their personnel participate in the introductory and annual training programs.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Group Leader, Waste Management (HSE 7) — #001~~

~~A. Required Skills:~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with hazardous chemical handling and use.~~
- ~~Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~
- ~~Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~
- ~~RCRA Provisions~~
- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Hazardous Waste Handling and Operations~~

~~C. Duties:~~

- ~~Oversee all chemical waste activities~~
- ~~Maintain security of waste management facilities.~~
- ~~Evaluate performance of Section Leaders~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Deputy Group Leader, Waste Management (HSE-7) - #002~~

~~A. Required Skills:~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with hazardous chemical handling and use.~~
- ~~Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~
- ~~Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~
- ~~RCRA Provisions~~
- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Hazardous Waste Handling and Operations~~

~~C. Duties:~~

- ~~Fulfill duties of group leader as necessary.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Section Leader, Chemical Mixed Waste Operations (HSE-7) — #003~~

~~A. Required Skills:~~

- ~~Knowledge of State and Federal Regulations regarding hazardous materials and waste~~
- ~~Good technical knowledge of problems associated with hazardous materials handling and use~~
- ~~Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~
- ~~Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~
- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respiratory Protection~~
- ~~Hazardous and Mixed Waste Handling and Operations~~
- ~~Spill Response~~
- ~~Contingency Plan~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site/Off-Site Transportation~~

~~C. Duties:~~

- ~~Oversee the daily collection, packaging, and transport activities of chemical waste technicians.~~
- ~~Plan and direct treatment/disposal activities.~~

~~TITLE: Section Leader, Chemical Mixed Waste Operations (HSE-7) — #003 (continued)~~

- ~~Review incoming Chemical Waste Disposal Request forms and identify hazards associated with the requests.~~
- ~~Interact with waste generators on waste problem solutions (such as identification of unknown waste).~~
- ~~Write and update all chemical waste procedures.~~
- ~~Maintain operations records for Area L.~~
- ~~Assist in on-the-job training for chemical waste handlers.~~
- ~~Provide input and personnel to spill responses for hazardous and mixed material/waste as necessary.~~
- ~~Evaluate overall performance of technicians and staff annually.~~
- ~~Maintain awareness of changes in RCRA regulations and identify necessary improvements.~~
- ~~Review and approve hazardous and mixed waste generator SOPs and relevant parameters in facility designs.~~
- ~~Review training records and inspection records for completeness and identify any needs~~
- ~~Provide personnel for emergency response.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Section Leader, Low Level Waste Operations (HSE-7) #004~~

~~A. Required Skills:~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with hazardous chemical handling and use.~~
- ~~Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~
- ~~Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~
- ~~RCRA Provisions~~
- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Emergency Procedures~~

~~C. Duties:~~

- ~~Assist Section leader for chemical waste operations as necessary.~~
- ~~Inter act with waste generators on waste problem solutions (such as identification of unknown waste)~~
- ~~Write and update all chemical waste procedures.~~
- ~~Assist in on the job training for chemical waste handlers.~~
- ~~Provide input to spill responses for hazardous material/waste as necessary~~
- ~~Evaluate overall performance of technicians and staff annually.~~

~~TITLE: Section Leader, Low Level Waste Operations (HSE-7) — #004 (continued)~~

- ~~Maintain awareness of change in RCRA regulations and identify necessary improvements.~~
- ~~Review and approve hazardous waste generators SOPs and relevant parameters in facility designs.~~
- ~~Review training records and inspection records for completeness and identify any needs.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Section Leader, Liquid Waste Operations (HSE-7) — #005~~

~~A. Required Skills:~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with hazardous chemical handling and use.~~
- ~~Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~
- ~~Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~
- ~~RCRA Provisions~~
- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Emergency Procedures~~

~~C. Duties:~~

- ~~Coordinate Section capabilities to properly receive, store and treat RCRA hazardous waste.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Section Leader,Technical Support Section (HSE-7) --- #006~~

~~A. Required Skills:~~

- ~~Familiarity with State and Federal Regulations regarding RCRA listed hazardous materials~~
- ~~Good technical knowledge of waste incinerator design and operation.~~
- ~~Ability to supervise Section personnel in proper handling and incineration of hazardous materials.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~
- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~On Site Transportation~~

~~C. Duties:~~

- ~~Coordinate Section capabilities to properly receive, accumulate, and incinerate RCRA hazardous waste.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Lead Engineer, Technical Support Section (HSE-7) — #007~~

~~A. Required Skills:~~

- ~~Familiarity with State and Federal Regulations regarding RCRA listed hazardous materials~~
- ~~Thorough understanding of waste incinerator design and operation.~~
- ~~Ability to ensure proper collection and archiving of operating data required by incinerator operating permit.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~
- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Hazardous Waste Handling and Operations~~

  ~~a. Incineration~~
  ~~b. Acids/Bases~~
  ~~c. Organics – General~~
  ~~d. Inorganics – General~~

- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site Transportation~~

~~C. Duties:~~

- ~~Lead engineer for design, construction, and maintenance of hazardous waste incinerator.~~
- ~~Train Section staff and technicians on handling of hazardous waste, incinerator operation, and data collection.~~
- ~~Serve as shift supervisor during incinerator operations.~~

~~TITLE: Lead Engineer, Technical Support Section (HSE-7) — #007 (continued)~~

~~— Maintain records of required run data in an auditable form.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Staff Member, Technical Support Section (HSE-7) — #008~~

~~A. Required Skills:~~

- ~~Familiarity with State and Federal Regulations regarding RCRA listed hazardous materials~~
- ~~Good technical knowledge of proper handling of hazardous waste forms.~~
- ~~Good technical knowledge of waste incinerator design and operation.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~
- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respirator or SCBA~~
- ~~Hazardous Waste Handling and Operations~~

  ~~a. Incineration~~
  ~~b. Acids/Bases~~
  ~~c. Organics - General~~
  ~~d. Inorganics - General~~

- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Recordkeeping/Inspections~~

~~C. Duties:~~

- ~~Provide engineering support for design, construction, and maintenance of hazardous waste incinerator.~~
- ~~Assist in handling of hazardous waste as required by operations.~~
- ~~Assist in collection of required run data.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Staff Member, Chemical and Mixed Waste Operations (HSE-7) — #009~~

~~A. Required Skills:~~

- ~~Familiarity with State and Federal Regulations regarding hazardous and mixed materials and waste.~~
- ~~Technical knowledge of problems associated with hazardous and mixed materials handling and use.~~
- ~~Ability to communicate with a wide variety of personnel, internal and external to Laboratory.~~
- ~~Ability to supervise personnel in proper hazardous and mixed waste management.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~
- ~~RCRA Provisions~~
- ~~Personnel Safety~~
- ~~Respiratory Protection~~
- ~~Hazardous/Mixed Waste Handling and Operations~~
- ~~Spill Response~~
- ~~Contingency Plan~~
- ~~Recordkeeping/Inspections~~
- ~~On Site/Off Site Transportation~~

~~C. Duties:~~

- ~~Oversee the daily collection, packaging, and transport activities of chemical waste technicians.~~
- ~~Plan and direct treatment/storage/disposal activities.~~

~~TITLE: Staff Member, Chemical and Mixed Waste Operations (HSE-7) — #009~~

- ~~Review incoming Chemical Waste Disposal Request forms and identify hazards associated with the requests.~~
- ~~Interact with waste generators on waste problem solutions (such as the identification of unknown waste).~~
- ~~Write and update all chemical waste procedures.~~
- ~~Maintain operational records for Area L~~
- ~~Assist in on-the-job training for chemical waste handlers.~~
- ~~Provide input to spill and emergency responses for hazardous and mixed materials/waste as necessary.~~
- ~~Maintain awareness of changes in RCRA regulations and identify necessary improvements.~~
- ~~Review and approve hazardous waste generators SOPs and relevant parameters in facility designs.~~
- ~~Review training records and inspections records for completeness and identify any needs.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Staff Member, Liquid Waste Operations (HSE-7) — #010~~

~~A. Required Skills:~~

- ~~Knowledge of State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Technical knowledge of problems associated with hazardous materials handling and use.~~
- ~~Ability to communicate with a wide variety of personnel, internal and external to Laboratory.~~
- ~~Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~
- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respirator or SCBA~~
- ~~Hazardous Waste Handling and Operations~~

  ~~a. Explosives/Reactives~~
  ~~b. Acids/Bases~~
  ~~c. Organics - General~~
  ~~d. Inorganics - General~~

- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site/Off-Site Transportation~~

~~TITLE: Staff Member, Liquid Waste Operations (HSE-7) — #010 (continued)~~

~~C. Duties:~~

- ~~Oversee the daily collection, packaging, and transport activities of chemical waste technicians.~~
- ~~Plan and direct treatment/disposal activities~~
- ~~Interact with waste generators on waste problems solutions (such as the identification of unknown waste).~~
- ~~Write and update all chemical waste procedures.~~
- ~~Maintain operational records for batch waste treatment system.~~
- ~~Assist in on-the-job training for chemical waste handlers.~~
- ~~Provide input to spill responses for hazardous materials/waste as necessary.~~
- ~~Maintain awareness of changes in RCRA regulations and identify necessary improvements.~~
- ~~Review training records and inspections records for completeness and identify any needs.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Staff Member, Technical Support (HSE-7) --- #011~~

~~A. Required Skills:~~

- ~~Knowledge of State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Technical knowledge of problems associated with hazardous materials handling and use.~~
- ~~Ability to communicate with a wide variety of personnel, internal and external to Laboratory.~~
- ~~Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~
- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respirator or SCBA~~
- ~~Hazardous Waste Handling and Operations~~

  ~~a. Explosives/Reactives~~
  ~~b. Acids/Bases~~
  ~~c. Organics - General~~
  ~~d. Inorganics - General~~

- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Recordkeeping/Inspections~~
- ~~On Site/Off Site Transportation~~

~~C. Duties:~~

- ~~Plan and direct treatment/disposal activities.~~
- ~~Interact with waste generators on waste problem solutions (such as the identification of unknown waste).~~

~~TITLE: Staff Member, Technical Support (HSE-7) #011 (continued)~~

- ~~Write and update all chemical waste procedures.~~
- ~~Assist in on-the-job training for chemical waste handlers.~~
- ~~Provide input to spill responses for hazardous materials/waste as necessary.~~
- ~~Maintain awareness of changes in RCRA regulations and identify necessary improvements.~~
- ~~Review and approve hazardous waste generator's SOPs and relevant parameters in facility designs.~~
- ~~Design and construct new treatment processes as needed.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Chemical Technician II, III (EM-7) #012~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with hazardous and mixed materials handling and use.~~
- ~~Oral communication skills for interfacing with waste generators.~~

~~B. Required Education/Training:~~

- ~~Formal chemistry classes or experience in chemical handling operations.~~
- ~~RCRA Provisions~~
- ~~Personnel Safety~~
- ~~Respiratory Protection~~
- ~~Spill Response~~
- ~~Contingency Plan~~
- ~~Recordkeeping/Inspections~~
- ~~On-site Transportation~~
- ~~Hazardous Waste Handling and Operations~~

~~C. Duties:~~

- ~~Collect hazardous/mixed waste from technical areas in Laboratory.~~
- ~~Segregate and/or package waste for storage/treatment/disposal.~~
- ~~Transport waste to the storage/treatment area.~~
- ~~Chemically treat any waste requiring treatment.~~
- ~~Perform required hazardous waste facility inspections.~~
- ~~Assist in the recordkeeping of all chemical waste activities.~~

~~TITLE: Chemical Technician II, III (EM-7) #012 (continued)~~

- ~~Assist in spill or emergency response treatment, cleanup, and disposal operations as required.~~
- ~~Provide input to updating of operational procedures.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Technician Liaison Specialist IV, Technical Support Section (HSE-7) — #013~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding RCRA listed hazardous materials.~~
- ~~Technical competence in area of proper handling of hazardous materials.~~
- ~~Good technical knowledge of waste incinerator design and operation.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respirator or SCBA~~
- ~~Hazardous Waste Handling and Operations~~

  ~~a. Explosives/Reactives~~
  ~~b. Acids/Bases~~
  ~~c. Organics - General~~
  ~~d. Inorganics - General~~

- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Recordkeeping/Inspections~~

~~C. Duties:~~

- ~~Provide specialized technical support for proper handling of hazardous wastes.~~
- ~~Assist in operation of incinerator.~~
- ~~Assist in collection of required run data.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Mechanical Technician III/IV, Technical Support Section (HSE-7) — #014~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding RCRA-listed hazardous materials.~~
- ~~Technical competence in area of mechanical equipment design and fabrication.~~
- ~~Good technical knowledge of proper handling of hazardous waste forms.~~
- ~~Good technical knowledge of waste incinerator design and operation.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respirator or SCBA~~
- ~~Hazardous Waste Handling and Operations~~

  ~~a. Explosives/Reactives~~
  ~~b. Acids/Bases~~
  ~~c. Organics - General~~
  ~~d. Inorganics - General~~

- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Recordkeeping/Inspections~~

~~C. Duties:~~

- ~~Provide specialized technical support for design, construction, and maintenance of hazardous waste incinerator.~~
- ~~Assist in handling of hazardous waste.~~
- ~~Assist in operation of incinerator.~~
- ~~Assist in collection of required run data.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Electronic Technician III, Technical Support Section (HSE-7) — #015~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding RCRA listed hazardous materials.~~
- ~~Technical competence in area of mechanical equipment design and fabrication.~~
- ~~Good technical knowledge of proper handling of hazardous waste forms.~~
- ~~Good technical knowledge of waste incinerator design and operation.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respirator or SCBA~~
- ~~Hazardous Waste Handling and Operations~~

  ~~a. Explosives/Reactives~~
  ~~b. Acids/Bases~~
  ~~c. Organics – General~~
  ~~d. Inorganics – General~~

- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Recordkeeping/Inspections~~

~~C. Duties:~~

- ~~Provide specialized technical support for design, construction, and maintenance of hazardous waste incinerator.~~
- ~~Assist in handling of hazardous waste.~~
- ~~Assist in operation of incinerator.~~
- ~~Assist in collection of required run data.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Mechanical Technician II/III (HSE 7) — #016~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with hazardous materials handling and use.~~
- ~~Oral communication skills for interfacing with waste generators.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respirator or SCBA~~
- ~~RCRA Contingency Plan~~
- ~~Spill Response~~

~~C. Duties:~~

- ~~Assist with chemical waste operations as needed.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Experimental Equipment/Facilities Operator II/III (Area G, HSE-7) #017~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with hazardous materials handling and use.~~
- ~~Oral communication skills for interfacing with waste generators.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respirator or SCBA~~
- ~~RCRA Contingency Plan~~
- ~~Spill Response~~

~~C. Duties:~~

- ~~Assist with chemical waste operations as needed.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Experimental Equipment/Facilities II/III (TA-50, HSE-7) — #018 Mechanical Technician III~~

~~A. Required Skills:~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with hazardous materials handling and use.~~
- ~~Oral communication skills for interfacing with waste generators.~~

~~B. Required Education/Training:~~

- ~~Formal chemistry classes or experience in chemical handling operations.~~
- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respirator or SCBA~~
- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site Transportation~~
- ~~Hazardous Waste Handling and Operations~~

  ~~a. Explosives/Reactives~~
  ~~b. Acids/Bases~~
  ~~c. Organics – General~~
  ~~d. Inorganics – General~~

~~C. Duties:~~

- ~~Operation of chemical batch treatment plant.~~
- ~~Assist in recordkeeping of all chemical waste activities.~~
- ~~Perform required hazardous waste facility inspections.~~

~~TITLE: Experimental Equipment/Facilities II/III (TA-50~~, HSE-7) --- #018 Mechanical Technician III

~~- Assist in spill response treatment, cleanup, and disposal operations as required.~~

~~- Provide input to updating operational procedures.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Chemical Technician III/Laborer (PAWS) — #019~~

~~A. — Required Skills:~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with hazardous materials handling and use.~~
- ~~Oral communication skills for interfacing with waste generators.~~

~~B. — Required Education/Training:~~

- ~~Formal chemistry classes or experience in chemical handling operations.~~
- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respirator or SCBA~~
- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site Transportation~~
- ~~Hazardous Waste Handling and Operations~~

  ~~a. — Explosives/Reactives~~
  ~~b. — Acids/Bases~~
  ~~c. — Organics - General~~
  ~~d. — Inorganics - General~~

~~C. — Duties:~~

- ~~Collect chemical waste from technical areas in Laboratory.~~
- ~~Segregate and/or package for storage/treatment/disposal.~~
- ~~Transport waste to the storage/treatment area.~~
- ~~Chemically treat any waste requiring treatment.~~

~~TITLE: Chemical Technician III/Laborer (PAWS) — #019 (continued)~~

- ~~Perform required hazardous waste facility inspections.~~
- ~~Assist in recordkeeping of all chemical waste activities.~~
- ~~Assist in spill response treatment, cleanup, and disposal operations as required.~~
- ~~Provide input to updating operational procedures.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Section Leader, Decontamination and Decommissioning — #020~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with hazardous materials handling and use.~~
- ~~Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~
- ~~Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~
- ~~RCRA Provisions~~
- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Emergency Procedures~~

~~C. Duties:~~

- ~~Coordinate Section capabilities to properly receive, store, and treat mercury waste.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Health Protection Technician II, III, Decontamination & Decommissioning (HSE-7) #021~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with hazardous materials handling and use.~~
- ~~Oral communication skills for interfacing with waste generators.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respirator or SCBA~~
- ~~RCRA Contingency Plan~~
- ~~Spill Response~~

~~C. Duties:~~

- ~~Store mercury waste~~
- ~~Treat mercury waste~~
- ~~Maintain documentation on mercury storage and treatment.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Team Leader, Staff Members, Waste Generator Interface (HSE-7) — #022~~

~~A. Required Skills~~

- ~~Knowledge of State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Technical knowledge of problems associated with hazardous materials handling and use.~~
- ~~Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~
- ~~Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~
- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respirator or SCBA~~
- ~~Hazardous Waste Handling and Operations~~

  ~~a. Explosives/Reactives~~
  ~~b. Acids/Bases~~
  ~~c. Organics – General~~
  ~~d. Inorganics – General~~

- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site/Off-Site Transportation~~

~~TITLE: Team Leader, Staff Members, Waste Generator Interface (HSE-7) #022~~

~~C. Duties:~~

- ~~Work in the field with waste generators on waste segregation, storage, minimization and transportation issues.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Technical Coordinator for Operations (M-DO) — #023~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with high explosives and handling and use.~~
- ~~Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Hazardous Waste Handling and Operations~~
  - ~~a. Handling/detonation of HE waste~~
- ~~Emergency Procedures~~
- ~~RCRA Contingency Plan~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site Transportation~~

~~C. Duties:~~

- ~~General oversight responsibility for M Division's Safety Program and general operation matters.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Testing Technician III (M-1) — #024~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with high explosives (HE) handling and use.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Hazardous Waste Handling and Operations~~
  - ~~a. Detonation/Burning HE waste~~
- ~~M-1 Contingency Plan~~
- ~~Recordkeeping/Inspections~~
- ~~On Site Transportation~~

~~C. Duties:~~

- ~~Removes waste from storage for disposal at Q-Site firing area.~~
- ~~Responsible for small scale sensitivity evaluation of explosives.~~
- ~~Responsible for small scale performance tests.~~
- ~~Directs conventional firing at Q-Site.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Technical Administrative Specialist (M-1) — #025~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with high explosives (HE) handling and use.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Hazardous Waste Handling and Operations~~
  - ~~a. Handling/Detonation/Burning HE waste~~
- ~~M-1 Emergency Procedures~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site Transportation~~

~~C. Duties:~~

- ~~Responsible for site maintenance at TA-9 and TA-14.~~
- ~~Supervise TA-9 explosives area.~~
- ~~Develop processing on new materials.~~
- ~~Coordinate production, assembly and delivery of HE.~~
- ~~Supervise new equipment installation.~~
- ~~Supervise HE shop scheduling.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Remote Site Supervisor III (M-6) ---- #026~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with high explosives (HE) handling and use.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Hazardous Waste Handling and Operations~~
  - ~~a. Handling/Detonation HE waste~~
- ~~M-6 Emergency Procedures~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site Transportation~~

~~C. Duties:~~

- ~~Schedules shots at M-6 firing sites.~~
- ~~Performs maintenance at firing sites.~~
- ~~Insures adequate safety measures of firing point operations.~~
- ~~Supervise operations at the M-6 general purpose firing site.~~
- ~~Responsible for maintenance of operational records.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Mechanical Technician II (M-6) — #027~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with high explosives (HE) handling and use.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Hazardous Waste Handling and Operations~~
  - ~~a. Handling/Detonation HE waste~~
- ~~M-6 Emergency Procedures~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site Transportation~~

~~C. Duties:~~

- ~~Assemble and fire explosive shots.~~
- ~~Assist firing point crew during shots.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Technical Supervisor IV (M-7) — #028~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good knowledge of problems associated with high explosives handling and use.~~
- ~~Strong electronics background.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Hazardous Waste Handling and Operations of HE waste~~
- ~~M-7 Emergency Procedures~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site Transportation~~

~~C. Duties~~

- ~~Supervise HE Test Firing technicians.~~
- ~~Provide on-the-job training for explosives technicians.~~
- ~~Responsible for maintenance of operational records.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Technical Supervisor III (M-7) --- #029~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with high explosives (HE) handling and use along with M-7 HE fabrication operations.~~
- ~~Familiarity with DOE and Laboratory Safety Regulations and M-7 Sops.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Hazardous Waste Handling and Operations.~~
  - ~~a. Handling of HE waste~~
- ~~M-7 Emergency Procedures~~
- ~~Recordkeeping/Inspections~~
- ~~On Site Transportation~~

~~C. Duties:~~

- ~~Supervise HE fabrication technicians.~~
- ~~Provide on-the-job training for explosives technicians.~~
- ~~Responsible for maintenance of operational records.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Group Committee Chairman (M-7) — #030~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with high explosives (HE) handling and use.~~
- ~~Familiarity with DOE and Laboratory Safety Regulations.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Hazardous Waste Handling and Operations~~
  - ~~a. Handling of HE waste~~
- ~~M-7 Emergency Procedures~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site Transportation~~

~~C. Duties:~~

- ~~Aid the group leader in implementing Laboratory Safety Program.~~
- ~~Inform the group of changes in policy, new programs/services offered by the Laboratory.~~
- ~~Assure proper records are kept as required by Federal, State and Laboratory Regulations.~~
- ~~Aid Supervisors in training personnel in safety.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Safety Officer (M-8) — #031~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Knowledge of problems associated with high explosives (HE) handling and use.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Hazardous Waste Handling and Operations~~
  - ~~a. Handling of HE waste~~
- ~~M-8 Emergency Procedures~~
- ~~Recordkeeping/Inspections~~
- ~~Respirator or SCBA~~

~~C. Duties~~

- ~~Participate in writing SOPs for group operations.~~
- ~~Maintains files of SOPs.~~
- ~~Arranges Health and Safety Training for group personnel.~~
- ~~Conducts necessary inspections of M-8 facilities.~~
- ~~Assures group operations on compliance with Laboratory Health and Safety Manual.~~
- ~~Assures group operations in accordance with approved SOPs.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Firing Operations Supervisor (M-8) — #032~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good knowledge of problems associated with high explosives (HE) handling and use.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Hazardous Waste Handling and Operations~~
  - ~~a. Handling/Detonation of HE waste~~
- ~~M-8 Emergency Procedures~~
- ~~On-Site Transportation~~

~~C. Duties~~

- ~~Supervise firing section facilities & personnel in the following areas:~~
  - ~~a. Directs and coordinates destruction of HE waste at M-8's firing sites.~~
  - ~~b. Receiving explosives deliveries.~~
  - ~~c. Assembling shots.~~
  - ~~d. Shot set up at firing site.~~
  - ~~e. Setting up the diagnostics, e.g., rotating mirror smear camera.~~
  - ~~f. Firing the shot.~~
  - ~~g. Collecting the data.~~

~~TITLE: Firing Operations Supervisor (M-8) — #032 (continued)~~

~~h. Supervise the safety of facilities and personnel.~~

~~i. Supervise and help train new technicians.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Disposal Operations Materials Technician (WX-3) — #033~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with high explosives (HE) handling and disposal.~~
- ~~Knowledge of specific group SOPs and procedures for disposal operations.~~
- ~~Competence in disposal operations.~~

~~B. Required Education/Training:~~

~~Personnel assigned to the Disposal Crew are trained on the job. Most come to the job from other technical positions in WX-3 and are well grounded in explosives safety. They have knowledge of relevant SOPs and their competence in the disposal operations is recorded by the Supervisor. They attend monthly meetings and participate in safety training.~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Hazardous Waste Handling and Operations~~
  - ~~a. Detonation/Burning HE waste~~
- ~~WX-3 Contingency Plan~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site Transportation~~

~~C. Duties:~~

- ~~Participates in the operations of a truck-mounted vacuum tank for the removal of sump waste.~~
- ~~Prepares HE Waste for burning. Uses squibs and firing circuitry to start burning operations.~~
- ~~Responsible for preparing HE waste for burning.~~
- ~~Responsible to supervisor for problems concerning efficiency, safety, and maintenance of the operation.~~

~~TITLE: Disposal Operations Materials Technician (WX-3) — #033 (continued)~~

- ~~Charged with practicing good housekeeping for the proper level of cleanliness of the facilities and equipment.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Disposal Operations Supervisor (WX-3) — #034~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with high explosives (HE) handling and disposal.~~
- ~~Thorough knowledge and understanding of specific group SOPs, safety manuals, and procedures for disposal operations.~~
- ~~Directs activities of two technicians in the pickup, transportation, and disposal of HE contaminated flammable waste from all areas involving WX-3 operations and other Laboratory Groups.~~
- ~~Responsible for the safety of all personnel engaged in disposal activities.~~
- ~~Responsible for the training of personnel in the handling, transportation, and destroying of wastes, with emphasis on the precautions necessary for individual and crew protection.~~
- ~~Schedules the activities to have all explosive or contaminated waste removed from the facilities for disposal at the Burning Ground.~~
- ~~Oversees sump cleaning activities to assure a safe, effective operation and inspects all sumps regularly.~~
- ~~Understands and enforces security regulations concerning classified scrap.~~
- ~~Responsible for the cleanliness and maintenance of all facilities and equipment involved in disposal activities.~~

~~B. Required Education/Training:~~

~~The Disposal Supervisor must have a thorough understanding of the SOPs based on the procedures developed over decades of experience in handling, transporting, and using explosives at TA-16. He must also have a thorough understanding of the regulations stated in both the U.S. Army's Materials Development and Readiness Command Manual 385-100 and DOE Safety Manual. The Supervisor is an individual promoted to this position based on his demonstrated experience and knowledge of disposal activities, explosives in general, and safety practices in explosive operations.~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~

~~TITLE: Disposal Operations Supervisor (WX-3) --- #034 (continued)~~

- ~~Hazardous Waste Handling and Operations~~

  ~~a. Detonation/Burning HE waste~~

- ~~WX-3 Contingency Plan~~

- ~~Recordkeeping/Inspections~~

- ~~On-Site Transportation~~

~~C. Duties:~~

- ~~Responsible for the operations of a truck-mounted vacuum truck for the removal of sump waste.~~

- ~~Works with the crew in preparing HE waste for burning. Custody of the firing apparatus.~~

- ~~Responsible to supervisor for problems concerning efficiency, safety, and maintenance of the disposal operation.~~

- ~~Maintains facilities and equipment by requesting maintenance support and conducts safety checks of the Burning Ground.~~

- ~~Evaluates personnel and assures compliance with security regulations.~~

- ~~Assures personnel comply with RCRA regulations.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Plant Engineering Specialist TEC IV (WX-12) — #035~~

~~A. Required Skills~~

- ~~Demonstrated technical and administrative proficiency in plant operation in maintenance.~~
- ~~Good technical knowledge of problems associated with high explosives (HE) handling and disposal.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Spill Response/Contingency Plan~~
- ~~Personal Safety~~
- ~~Detonation/Burning HE waste~~
- ~~Emergency Procedures~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site Transportation~~

~~C. Duties:~~

- ~~Investigate all proposed actions involving the physical plant and equipment to assure that the results will be compatible with the operational requirements and plant of the operating division.~~
- ~~Track, monitor, and expedite operations involving contractor and off-site personnel that affect the area, buildings, facilities, and equipment.~~
- ~~Serve as construction coordinator and maintenance inspector.~~
- ~~Ensure the operations of contractor and off-site personnel are safe, compatible with existing facilities and operations, and minimize impact on the work of division personnel.~~

~~TITLE: Plant Engineering Specialist TEC IV (WX-12) --- #035 (continued0~~

- ~~Function as certifying agent, which involves inspection and testing for explosives contamination of items leaving the explosives area and many items to be transferred within the explosives area.~~

- ~~Provide direct supervision of all craft work related to vacuum systems, dust collectors, and other equipment that may be internally contaminated with high explosives.~~

- ~~Supervision of jobs in progress to assure that job requirements are met, including timely completion of jobs, adherence to S-Site safety rules, and procedures, and prompt resolution of problems.~~

- ~~Provide safety leadership at S-Site, including recommendation of changes to existing safety rules and procedures affecting contractor and off-site personnel work in the area.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Certifying Agent (WX-12) — #036~~

~~A. Required Skills~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with high explosives (HE) handling and disposal.~~
- ~~Knowledgeable of specific group SOPs and procedures for disposal operations.~~
- ~~Competence in verification by visual inspection or application of appropriate tests that equipment or materials leaving TA-16 are free of explosives.~~
- ~~Certifies equipment or materials for general use with no qualifications.~~

~~B. Required Education/Training:~~

~~The Certifier is trained on the job by senior personnel. Qualified Certifiers are senior technicians knowledgeable in explosives safety and explosives used in specific facilities.~~

~~Required Courses:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Hazardous Waste Handling and Operations~~
  - ~~a. Detonation/Burning HE waste~~
- ~~WX-12 Contingency Plan~~
- ~~Recordkeeping/Inspections~~
- ~~On-Site Transportation~~

~~C. Duties:~~

- ~~Completely remove high explosives from contaminated equipment and materials. Certify the equipment and materials for general use with no qualifications.~~

~~TITLE: Certifying Agent (WX-12) — #036 (continued)~~

- ~~Responsible to supervisor for problems concerning efficiency, safety, and maintenance of the operation.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Plant Engineering Specialist TEC IV (WX-12) — #037~~

~~A. Required Skills~~

- ~~Demonstrated technical and administrative proficiency in maintenance of plant operation.~~
- ~~Good technical knowledge of problems associated with high explosives handling and use.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Spill Response/Contingency Plan~~
- ~~Personal Safety~~
- ~~Detonation/Burning HE~~
- ~~Emergency Procedures~~
- ~~Recordkeeping/Inspections~~
- ~~On Site Transportation~~

~~C. Duties:~~

- ~~Investigate all proposed actions involving the physical plant and equipment to assure that the results will be compatible with the operational requirements and plant of the operating division.~~
- ~~Track, monitor, and expedite operations involving contractor and off-site personnel that affect the area, buildings, facilities, and equipment.~~
- ~~Serve as construction coordinator and maintenance inspector.~~
- ~~Ensure that operations of contractor and off-site personnel are safe, compatible with existing facilities and operations, and minimize impact on the work of division personnel.~~
- ~~Function as certifying agent, which involves inspection and testing for explosives, contamination of items leaving the explosives area and many items to be transferred within the explosives area.~~
- ~~Provide direct supervision of all craft work related to vacuum systems, dust collectors, and other equipment that may be internally contaminated with high explosives.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Emergency Manager/Hazardous Material Response Team #038~~

~~A. Required Skills:~~

- ~~Familiarity with State and Federal Regulations regarding hazardous and mixed materials and waste.~~
- ~~Good technical knowledge of problems associated with hazardous chemical handling and use.~~
- ~~Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~
- ~~Ability to supervise personnel in hazardous and mixed waste emergency situation.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~OSHA Provisions~~
- ~~Spill Response~~
- ~~Contingency Plan~~
- ~~Emergency Response~~

~~C. Duties:~~

- ~~Act as Incident Commander in the event of a RCRA emergency situation.~~
- ~~Maintain awareness of RCRA regulations with respect to local operations.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Chemical Waste Management Coordinator — #039~~

~~A. Required Skills:~~

- ~~Knowledge of State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Knowledge of Laboratory requirements for hazardous material and waste management.~~
- ~~Ability to instruct personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Spill Response~~
- ~~Contingency Plan~~

~~C. Duties:~~

- ~~Oversee local waste activities.~~
- ~~Instruct fellow personnel in Laboratory waste disposal requirements.~~
- ~~Provide input to spill responses for hazardous materials/waste as necessary.~~
- ~~Maintain awareness of RCRA regulations with respect to local operations.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Staff Member, Technical Support Section (HSE-7) — #040~~

~~A. Required Skills:~~

- ~~Familiarity with State and Federal Regulations regarding RCRA-listed hazardous materials.~~
- ~~Good understanding of waste incinerator design and operation.~~
- ~~Ability to train and supervise other Section members as required by operations.~~

~~B. Required Education/Training:~~

- ~~Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and engineering.~~
- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Respirator or SCBA~~
- ~~Hazardous Waste Handling and Operations~~

  ~~a. Incineration~~
  ~~b. Acids/Bases~~
  ~~c. Organics - General~~
  ~~d. Inorganics - General~~

- ~~Spill Response~~
- ~~RCRA Contingency Plan~~
- ~~Recordkeeping/Inspections~~

~~C. Duties:~~

- ~~Assist in training of Section staff and technicians in handling of hazardous wastes, incinerator operations, and data collection.~~
- ~~Supervise handling of hazardous wastes as required by operations.~~

~~TITLE: Staff Member, Technical Support Section (HSE-7) — #040 (continued)~~

~~— Serve as shift supervisor during incinerator operations.~~

~~— Collect records of required run data.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: High Explosives Technician (M-1) #041~~

~~A. Required Skills:~~

- ~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~
- ~~Good technical knowledge of problems associated with high explosives handling and use.~~

~~B. Required Education/Training:~~

- ~~RCRA Provisions~~
- ~~Personal Safety~~
- ~~Detonation/burning HE~~
- ~~Emergency procedures~~
- ~~Recordkeeping/inspection~~
- ~~On-Site transportation of explosives~~

~~C. Duties:~~

- ~~Remove waste from satellite storage for disposal at TA-14 detonation/burning site.~~
- ~~Small-scale sensitivity testing of explosives.~~
- ~~Small-scale evaluation of explosives performance.~~

~~RCRA JOB DESCRIPTION TABLE~~

~~Name~~	~~Number~~	~~Title~~	~~Group~~
~~A. Drypolcher~~	~~001~~	~~Group Leader, Waste Management~~	~~EM-7~~
~~R. Garde~~	~~002~~	~~Deputy Group Leader, Waste Management~~	~~EM-7~~
~~A. Gustavsson~~	~~003~~	~~Section Leader, Chemical and Mixed Waste Operations~~	~~EM-7~~
~~J. Harper~~	~~004~~	~~Section Leader, Low Level Waste Operations~~	~~EM-7~~
~~S. Hanson~~	~~005~~	~~Acting Section Leader, Liquid Waste Operations~~	~~EM-7~~
~~S. Zygmunt~~	~~006~~	~~Section Leader, Technical Support Section~~	~~EM-7~~
~~Vacant~~	~~008~~	~~Staff Member, Technical Support Section~~	~~EM-7~~
~~A. Montonya~~	~~009~~	~~Staff Member, Chemical and Mixed Waste Operations~~	~~EM-7~~
~~E. Lopez~~	~~009~~	~~Staff Member, Chemical and Mixed Waste Operations~~	~~EM-7~~
~~F. Vigil~~	~~009~~	~~Staff Member, Chemical and Mixed Waste Operations~~	~~EM-7~~
~~N. Sauer~~	~~009~~	~~Staff Member, Chemical and Mixed Waste Operations~~	~~EM-7~~
~~J. Kelly~~	~~009~~	~~Staff Member, Chemical and Mixed Waste Operations~~	~~EM-7~~
~~W.R. Velasquez~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~E. Velasquez~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~B. Romero~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~J. Armijo~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~M. Martinez~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~S. Martinez~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~T. Martinez~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~J. Gonzales~~	~~012~~	~~Environmental Technician~~	~~EM-7~~

~~RCRA JOB DESCRIPTION TABLE~~
~~(continued)~~

~~Name~~	~~Number~~	~~Title~~	~~Group~~
~~L. Esquibel~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~L. Hupke~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~D. Melton~~	~~014~~	~~Mechanical Technician, Technical Support~~	~~EM-7~~
~~R. Powers~~	~~014~~	~~Mechanical Technician, Technical Support~~	~~EM-7~~
~~J.F. Rutten~~	~~014~~	~~Mechanical Technician, Technical Support~~	~~EM-7~~
~~J. Mendez~~	~~015~~	~~Electronic Technician III, Technical Support~~	~~EM-7~~
~~Vacancy~~	~~015~~	~~Electronic Technician III, Technical Support~~	~~EM-7~~
~~C. Villareal~~	~~017~~	~~Experimental Equipment/Facilities Operator II/III (Area G)~~	~~EM-7~~
~~R. Roybal~~	~~017~~	~~Experimental Equipment/Facilities Operator II/III (Area G)~~	~~EM-7~~
~~R. Spencer~~	~~017~~	~~Experimental Equipment/Facilities Operator II/III (Area G)~~	~~EM-7~~
~~B. Smith~~	~~017~~	~~Experimental Equipment/Facilities Operator II/III (Area G)~~	~~EM-7~~
~~M. Martinez~~	~~017~~	~~Experimental Equipment/Facilities Operator II/III (Area G)~~	~~EM-7~~
~~D. Moss~~	~~018~~	~~Experimental Equipment Facilities Operator II/III (TA-50)~~	~~EM-7~~
~~D. Salazar~~	~~018~~	~~Experimental Equipment Facilities Operator II/III (TA-50)~~	~~EM-7~~
~~R. Reyonlds~~	~~018~~	~~Experimental Equipment Facilities Operator II/III (TA-50)~~	~~EM-7~~
~~G. Royer~~	~~018~~	~~Experimental Equipment Facilities Operator II/III (TA-50)~~	~~EM-7~~
~~E. Montoya~~	~~019~~	~~Chemical Technician III/Laborer~~	~~JCI~~
~~Vacant~~	~~020~~	~~Section Leader, Decontamination and Decomissioning~~	~~EM-7~~
~~M. Romero, Supervisor~~	~~021~~	~~Health Protection Technician II/III~~	~~EM-7~~
~~M. Sanchez~~	~~021~~	~~Health Protection Technician II/III~~	~~EM-7~~
~~Vacancy~~	~~022~~	~~Staff Member, Waste Generator Interface~~	~~EM-7~~
~~F.M. Jackson~~	~~023~~	~~Technical Coordinator for Operations~~	~~M-DO~~

~~RCRA JOB DESCRIPTION TABLE~~
~~(continued)~~

~~Name~~	~~Number~~	~~Title~~	~~Group~~
~~S. Hildner~~	~~024~~	~~Testing Technician III~~	~~M-1~~
~~C.C. Maxwell~~	~~025~~	~~Technical Administrative Specialist~~	~~M-1~~
~~A.D. Bonner~~	~~026~~	~~Remote Site Supervisor~~	~~M-6~~
~~D.T. Torres~~	~~027~~	~~Mechanical Technician II~~	~~M-6~~
~~W. Patterson~~	~~028~~	~~Technical Supervisor IV~~	~~M-7~~
~~S. Trujillo~~	~~029~~	~~Technical Supervisor III~~	~~M-7~~
~~L.W. Creamer~~	~~030~~	~~Group Safety Committee Chairman~~	~~M-7~~
~~C.M. Montoya~~	~~031~~	~~Safety Officer~~	~~M-8~~
~~C.M. Montoya~~	~~032~~	~~Firing Operations Supervisor~~	~~M-8~~
~~J. Maestas~~	~~033~~	~~Disposal Operations Materials Technician~~	~~WX-3~~
~~S. Ortiz~~	~~033~~	~~Disposal Operations Materials Technician~~	~~WX-3~~
~~J. Gallegos~~	~~033~~	~~Disposal Operations Materials Tecnician~~	~~WX-3~~
~~R. Garcia~~	~~033~~	~~Disposal Operations Materials Technician~~	~~WX-3~~
~~A. Montano~~	~~033~~	~~Disposal Operations Materials Technician~~	~~WX-3~~
~~P. Velarde~~	~~034~~	~~Disposal Operations Materials Technician~~	~~WX-3~~
~~B. McCormick~~	~~035~~	~~Plant Engineering Specialist Technician IV~~	~~WX-12~~
~~B. McCormick~~	~~036~~	~~Certifying Agent~~	~~WX-12~~
~~J. Martinez~~	~~036~~	~~Certifying Agent~~	~~WX-12~~
~~D. Sharpless~~	~~037~~	~~Plant Engineering Specialist Technician IV~~	~~WX-12~~
~~Z. Macbain~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~EMO~~
~~F. Pearce~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~EMO~~
~~J. Griffiths~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~EMO~~
~~D. Winston~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~EMO~~

~~RCRA JOB DESCRIPTION TABLE~~
~~(continued)~~

~~Name~~	~~Number~~	~~Title~~	~~Group~~
~~D. Seitz~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~EMO~~
~~G. Bequett~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~EMO~~
~~T. Hower~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~HS-5~~
~~D. Volz~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~HS-5~~
~~T. Montoya~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~HS-5~~

~~FIGURE C-1~~
~~OUTLINE OF LOS ALAMOS NATIONAL LABORATORY'S TRAINING PROGRAM~~

~~IC - internal classroom instruction~~
~~EC - external classroom instruction~~
~~OJT - on-the-job training~~

~~I. RCRA PROVISIONS~~

~~A. Legislation (Federal/State) - (IC, EC) introductory with annual update.~~

~~Brief overview of legislative mandates.~~

~~B. Regulations (Federal/State) - introductory with annual update.~~

~~1. Overview of 40 CFR 260-265 (N.M. Hazardous Waste Regs. Parts I & II)~~
~~2. Overview of DOT shipping regulations.~~
~~3. Familiarization with Los Alamos National Laboratory emergency response, recordkeeping.~~

~~II. PERSONNEL HEALTH AND SAFETY~~

~~A. Familiarization with Standard Operating Safety Guidelines (IC)~~

~~B. Safe Handling of Chemicals (EC)~~

~~1. Explosive/fire hazards, chemical burns, chemical compatibility~~
~~2. Eye/skin hazards and protection~~
~~3. Respiratory hazards and protection~~

~~C. First Aid (IC) introductory, triennial recertification~~

~~D. CPR (IC) introductory, annual recertification~~

~~E. Use of H&S equipment~~

~~1. Safety showers, eyewashers~~
~~2. Fire extinguishers~~
~~3. Alarm system~~
~~4. Communication system~~

~~FIGURE C-1~~
~~OUTLINE OF LOS ALAMOS NATIONAL LABORATOROY'S TRAINING PROGRAM~~
~~(continued)~~

~~III. RESPIRATOR~~

~~A. Air Purifying Devices (IC) introductory, annual~~

~~1. Use~~
~~a. Operation of device~~
~~b. Changing of filters~~
~~c. Donning and taking off equipment~~
~~d. Safety features~~

~~2. Care and cleaning~~
~~3. Inspection~~
~~4. Fitting~~

~~B. Self Contained Breathing Apparatus (IC) introductory, annual~~

~~1. Use~~
~~a. Operation of device~~
~~b. Changing compressed air bottles~~
~~c. Donning and taking off equipment~~
~~d. Safety features~~

~~2. Care and cleaning~~
~~3. Inspection~~
~~4. Fitting~~

~~IV. HAZARDOUS WASTE HANDLING AND OPERATIONS~~

~~A. Controlled Air Incineration (OJT) introductory with annual update~~

~~1. Familiarization of SOP~~
~~2. Familiarization of Operating Manual~~
~~3. Supervised Operation of Facility~~
~~4. Emergency Shutdown Procedures~~
~~5. Evacuation Procedures~~
~~6. Accidental Release Procedure~~
~~7. Familiarization with Emergency Equipment Use, Inspection, Repair, etc.~~
~~8. Use of Communication/Alarm System~~

~~FIGURE C-1~~
~~OUTLINE OF LOS ALAMOS NATIONAL LABORATOROY'S TRAINING PROGRAM~~
~~(continued)~~

~~B. Detonation/Burning HE (OJT) introductory with annual update~~

~~1. Familiarization of SOP~~
~~2. Supervised Operation of Facility~~
~~3. Emergency Shutdown Procedures~~
~~4. Accidental Release Procedure~~
~~5. Familiarization with Emergency Equipment Use, Inspection, Repair, etc.~~
~~6. Use of Communication/Alarm System~~

~~D. Non HE Reactives, Corrosives, Ignitables, Toxics~~

~~1. Chemical Hazards and Reactions (EC)~~
~~2. Emergency Procedures (OJT)~~
~~3. Accidental Release Procedures (OJT)~~
~~4. Emergency Equipment~~
~~5. Communication/Alarm System~~

~~V. RECORDKEEPING/INSPECTIONS (IC, EC, OJT) introductory~~

~~A. Use of Manifest System (on-site)~~

~~B. Operating Records~~

~~C. Reporting~~

~~D. Inspections~~

~~1. Facility~~
~~2. Operating Equipment~~
~~3. Safety/Emergency Equipment~~
~~4. Security System~~

~~VI. TRANSPORTATION (OJT) introductory~~

~~A. On-Site~~
~~1. Packaging~~
~~2. Placarding/labeling~~
~~3. Manifesting/recordkeeping~~
~~4. Internal Procedures~~
~~5. Waste Segregation~~

~~FIGURE C-1~~
~~OUTLINE OF LOS ALAMOS NATIONAL LABORATOROY'S TRAINING PROGRAM~~
~~(continued)~~

~~**B. Off-Site**~~
1. ~~**Packaging**~~
2. ~~**Placarding/labeling**~~
3. ~~**Manifesting/recordkeeping**~~
4. ~~**Internal Procedures**~~
5. ~~**Waste Segregation**~~

~~Supervisors and staff receive training appropriate to their degree of handling hazardous waste (e.g., reporting and other procedures required for compliance). Material handlers are trained in the hands-on aspects such as maintenance of operating records, plant operation, and response to spills or other emergencies.~~

ATTACHMENT C
PERSONNEL TRAINING

This attachment describes the personnel training program for Los Alamos National Laboratory (LANL) in accordance with the regulatory requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.16, "Personnel Training," revised November 1, 1995. The information presented outlines the personnel training program at LANL. The primary objective of the training program is to prepare persons to operate and maintain safely those areas managing hazardous and/or mixed waste in accordance with 20 NMAC 4.1, Subpart V, revised November 1, 1995. This training program applies to all employees of the U.S. Department of Energy, the University of California, and any of their subcontractors who work regularly at LANL and who handle or generate hazardous and/or mixed waste. The degree of training varies with the job duties. However, all personnel who may handle or generate hazardous and/or mixed waste receive an introduction to RCRA.

C.1 HAZARDOUS AND MIXED WASTE MANAGEMENT/RESPONSIBILITIES

Waste management groups within the Chemical Science and Technology Division (CST) and the Hazardous and Solid Waste Group (ESH-19) are responsible for most waste management activities at LANL. Waste management activities associated with high-explosive waste treatment are handled by the Engineering Sciences and Applications Division (ESA) and the Dynamic Experimentation Division (DX). The Nuclear Materials Technology Division (NMT) is responsible for waste management activities at Technical Area 55. With the noted exceptions, CST waste management groups are responsible for all day-to-day operational aspects of waste management. ESH-19 is responsible for providing waste management regulatory guidance to CST personnel and to waste generators at LANL.

Other LANL groups and various support personnel assist in waste management activities and provide support to ESH-19 and CST. Johnson Controls World Services Inc. (JCI) provides trained personnel to assist CST in waste-handling activities. Personnel in the Health Physics Operations Group (ESH-1), Occupational Medicine Group (ESH-2), Industrial Hygiene and Safety Group (ESH-5), Occurrence Investigation Group (ESH-7), Hazardous Materials Response Group (ESH-10), Air Quality Group (ESH-17), Water Quality and Hydrology Group (ESH-18), Environmental Assessments and Resource Evaluations Group (ESH-20), and personnel in ESH-19 are trained in their specialities to provide emergency response support. Protection Technology Los Alamos (PTLA) is responsible for LANL security, traffic control, and site access control.

The Emergency Management and Response (EM&R) Office provides emergency planning and response at LANL and has the overall responsibility for LANL's Emergency Management Plan (EMP) training. The Environment, Safety, and Health (ESH) Division Training Group (ESH-13) is responsible for developing and delivering LANL-wide Environment, Safety, and Health (ES&H) training. Environmental courses are designed with substantial input from ESH-19, the CST waste management groups, and others, as appropriate.

C.2 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES

The training program instituted at LANL includes a combination of LANL-wide courses (received internally or through external vendors and usually classroom-based), facility-specific training (developed and delivered within a particular facility), and on-the-job training (OJT) (performance-based courses that focus primarily on procedures

performed by individual workers). Each of these types of training is described briefly in Sections C.2.1 through C.2.3. All LANL, JCI, and PTLA employees will receive the appropriate level of training within six months of their date of hire or transfer. Personnel will not work in unsupervised positions until they successfully complete the appropriate level of training for their positions and responsibilities.

Records of LANL-wide training currently sponsored or administered by ESH-13 are entered by that group into the Employee Development System (EDS), the official LANL training database. These records document that the required training has been successfully completed by the worker. Training records of former workers are kept for at least three years from the date last worked at the facility. It is required that records documenting successful completion of facility-specific, on-the-job, or externally provided training be entered into the EDS by sponsoring organizations. Group or section training personnel or document control custodians will maintain, at a minimum, hard copies of training records for currently employed workers until the facility closes.

Table C-1 summarizes the components of the LANL-wide training program as administered through ESH-13. This table includes a listing of the relevant training courses, a summary of topics, and a designation of the relevant courses for each job category. Categories of workers summarized in Table C-1 include hazardous/mixed waste workers, managers and supervisors of hazardous/mixed waste workers, emergency responders, and uncontrolled area potential release site workers. Table C-2 summarizes the components of facility-specific training and OJT that workers must receive. Each training element was designed to ensure that every worker involved in hazardous and/or mixed waste operations is properly trained in procedures relevant to the positions in which they are employed. Tracking the completion of training is possible through the EDS training plans.

The responsibilities of the worker categories summarized in Table C-1 are presented herein. Hazardous/mixed waste workers are responsible for handling and/or managing hazardous/mixed wastes and assisting in spill and emergency response activities, as required. Managers and supervisors of hazardous/mixed waste workers are directly responsible for day-to-day operations related to waste management activities and ensuring that personnel safety and training requirements are met. Emergency responders are trained emergency response personnel (e.g., ESH-10) that respond to emergencies (e.g., spills, fires, explosions) involving hazardous and/or mixed wastes that provide support for emergency response activities. Uncontrolled area potential release site workers conduct investigations and remedial activities at potential release sites and are responsible for proper waste management from generation to disposal, including waste characterization, treatment, and storage.

Training materials of LANL-wide training courses are on file in the ES&H Training Center and are available for review by all hazardous/mixed waste management and handling personnel, emergency response personnel, and regulatory agencies. Course content will be reviewed annually and updated as required to remain current with RCRA regulations. Alternative forms of training (e.g., paper-based self-study courses, computer-based training) may be taken to meet specific training requirements. Such alternate forms of training must be approved by ESH-13 personnel and determined to be equivalent in content to more traditional classroom-based training courses. Files listing the requisite skills, education, and training for workers who handle hazardous and/or mixed waste and the duties and responsibilities for each job description, as well as the name of each worker filling a job description, are maintained, as required by 20 NMAC 4.1, Subpart V, 264.16(d)(2), revised November 1, 1995. This information is located in the EDS as well as maintained at the facility by the group or section document control custodian.

C.2.1 LANL-Wide Training

The RCRA Personnel Training course provides an overview of RCRA regulations and emphasizes compliance with the RCRA requirements that apply to job-related activities, such as the safe handling of hazardous and mixed waste. Program instructors are trained in hazardous and mixed waste management programs and procedures and in RCRA provisions. The course is designed to provide training that is appropriate for the worker's responsibilities. ESH-13, with guidance from ESH-19, provides an annual refresher of applicable RCRA requirements. Personnel who handle hazardous/mixed waste and/or clean up spills or releases of hazardous/mixed waste and the managers and supervisors of these workers receive instruction on appropriate topics listed in Table C-1. In addition, personnel responsible for requisitioning the transport, treatment, or storage of hazardous and/or mixed waste receive supplemental training, as necessary, as listed in Table C-1. Training is typically provided by LANL training instructors or by external vendors knowledgeable about a particular subject.

C.2.2 Facility-Specific Training

All waste-handling personnel will participate in facility-specific training at their work locations. Table C-2 addresses program requirements that ensure that hazardous and mixed waste management and handling personnel know the specific requirements for their facilities and are able to respond effectively to emergencies. Personnel will become familiar with emergency and monitoring equipment use, inspection, repair, and replacement at their facility. In addition, they will receive instruction on contingency plan contents and implementation (as they apply to their facility) including, but not limited to, communications or alarm systems, response to fires and explosions at their facility, and key parameters for automatic waste-feed cutoff systems and shutdown of facility operations.

C.2.3 On-the-Job Training

Performance-based OJT is developed in conformance with LANL standards. Supervisors or other experts who can evaluate worker proficiency provide training appropriate for the procedures required of each function-specific position. To become proficient in hazardous and/or mixed waste procedures, workers receive this performance-based training, as necessary.

OJT topics include implementing facility-specific procedures, maintaining operating records, fulfilling reporting requirements, and conducting inspections specific to the facility. Workers whose duties include packaging and transportation support receive training on packaging, labeling, recordkeeping, and waste segregation for transportation within their facility. Emergency responders receive facility-specific training regarding emergency response and shutdown procedures at the facility to which they are assigned.

C.2.4 Training Coordinator

The ESH-13 Group Leader directs the LANL-wide ES&H training program. The Group Leader is trained in the operation of hazardous and mixed waste management facilities, waste management practices, and emergency procedures and is responsible for coordinating training courses. Line managers are responsible for ensuring that personnel under their supervision receive necessary training.

C.3 EMERGENCY TRAINING

If called upon by the EM&R Office, additional non-LANL emergency response personnel (e.g., JCI, PTLA) may assist the LANL Emergency Manager at the scene of a hazardous or mixed waste emergency. These professionals are trained in their specialties (e.g., heavy equipment operation, hazardous material cleanups, traffic control, security). JCI personnel are also trained in personal safety. At all times during an emergency, these workers are under the direct supervision of the Incident Commander in the Unified Command or the designated Crisis Manager, as appropriate. A more detailed discussion of emergency procedures, personnel, and equipment is provided in Permit Attachment D.

To ensure maximum protection of life and property and to mitigate the consequences of an emergency situation, facility personnel involved in waste handling and emergency response must be knowledgeable about appropriate building and operating area emergency procedures. These workers receive training in facility-specific emergency procedures or participate in the LANL-wide emergency training program. Group leaders and immediate supervisors are responsible for ensuring that education and training in facility-specific emergency procedures are provided to all personnel under their supervision. Training in facility-specific emergency procedures is given by the operating group. Periodic announced and unannounced emergency drills and exercises are used to familiarize workers with emergency procedures. Training is also provided to workers through prominent instructional displays and through presentations and discussions in safety meetings.

Each new or transferred worker is indoctrinated by an immediate supervisor regarding the general and specific emergency procedures related to the work area. The immediate supervisor also advises each worker of changes to any emergency procedures and provides an annual refresher of procedures affecting the work area. The organization that develops and delivers facility-specific training maintains these training records.

Specialized training is given to personnel assigned special functions or specific emergency duties. Emergency response personnel are required to attend courses on implementation of the RCRA contingency plan, spill response, and Occupational Safety and Health Administration (OSHA) emergency response provisions. The EM&R Office provides training related to implementing LANL's EMP. All waste management and handling personnel participate in a training program in which they are instructed in emergency procedures pertinent to their work areas. The operating group provides this site-specific instruction.

C.4 IMPLEMENTATION OF TRAINING PROGRAMS

General Employee Training (GET), an ES&H orientation course, is given on the first day of employment to all new employees. GET is also required of contract workers and visitors who work on site at LANL for ten or more consecutive days. GET includes, but is not limited to, ES&H policy, OSHA rights and regulations, industrial safety, waste minimization, general radiation protection, industrial hygiene, emergency management, and fire protection. Personnel who will handle or be associated with hazardous waste are required to take the hazard communications and waste generator training courses. All workers who will handle or be associated with mixed waste also receive courses in hazard communications and waste generator training as well as radiation worker protection. Workers will not work without direct supervision or at a new position until they have been trained.

The Waste Generation Overview training course provides hazardous and mixed waste generators with information needed to identify wastes that are subject to RCRA regulations in 20 NMAC 4.1, Subpart II, revised November 1, 1995. The training defines hazardous waste and hazardous constituents (including hazardous components in mixed

waste) and addresses how to identify hazardous waste and hazardous constituents. A second course, Waste Documentation Forms, focuses on documenting characterized waste according to RCRA and LANL requirements. Both training courses inform hazardous and mixed waste generators of their responsibilities and requirements and supports the documentation of process knowledge, which generators may use to characterize hazardous and mixed waste. All workers who handle hazardous and/or mixed waste are required to have RCRA Personnel Training, and those who work at treatment, storage, or disposal units are required to have Hazardous Waste Operations and Emergency Response (HAZWOPER) Occasional Site Worker training.

All hazardous and mixed waste management and handling personnel must attend annual refresher courses. These courses are intended to update personnel on LANL procedures and changes in RCRA provisions and to provide them with an overview of their introductory training. Line managers and group leaders will ensure that personnel participate in the appropriate introductory and annual training courses.

TABLE C-1
LOS ALAMOS NATIONAL LABORATORY-WIDE TRAINING PROGRAM

COURSES[a]	Hazardous/Mixed Waste Worker	Manager/Supervisor of Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
Criticality Safety Training (presents nuclear theory, criticality reactions, characteristics, exposure protection principles, and criticality prevention measures)	*[b]	*	*	*
General Employee Training (includes familiarization with standard operating safety guidelines)	X[c]	X	X	X
Hazard Communication Introduction (includes information on explosion/fire hazards, chemical burns, chemical compatibility, eye/skin hazards and protection, respiratory hazards and protection)	X	X	X	X
HAZWOPER[d]: First Responder (Operations Level) (provides an overview of hazardous materials emergency response including recognition and identification of hazardous materials and associated risks, required actions, and relationships with other emergency responders)			X	
HAZWOPER: General Site Worker (provides general information on hazardous waste operations and emergency response for general site workers engaged in corrective action, remediation, or decontamination and decommissioning activities)				X
HAZWOPER: Occasional Site Worker (provides general information on hazardous waste operations and emergency response for occasional and regular site workers)	X	X		

Refer to footnotes at end of table.

TABLE C-1
LOS ALAMOS NATIONAL LABORATORY-WIDE TRAINING PROGRAM
(continued)

COURSES[a]	Hazardous/Mixed Waste Worker	Manager/Supervisor of Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
HAZWOPER: Refresher for General Site Workers (provides general information on hazardous waste operations to general site workers)				X
HAZWOPER: Refresher for TSD[e] Workers (provides general information on hazardous waste operations to TSD workers)	X	X		
OSHA[f] Rights and Responsibilities (provides general information on worker's rights in relation to OSHA)	X	X	X	X
RCRA[g] Personnel Training (includes an overview of Code of Federal Regulations Title 40, Parts 260-265, 268; New Mexico Administrative Code, Title 20, Chapter 4, Part 1, revised November 1, 1995; Department of Transportation shipping regulations; internal and external protocol for facility inspections; operating equipment, communication systems, security systems; contingency plan; and emergency equipment use, inspection, and repair)	X	X	*	*
RCRA Refresher Training (includes regulatory and legislative updates, occurrence reports and lessons learned, audit findings, modification/review of the contingency plan; provides required retraining)	X	X	*	*
Refresher General Employee Radiological Training (provides refresher general radiological training)	X	X	X	X
Radiological Worker I and II Training (requires recertification every two years)	*	*	X	X

Refer to footnotes at end of table.

TABLE C-1
LOS ALAMOS NATIONAL LABORATORY-WIDE TRAINING PROGRAM
(continued)

COURSES[a]	Hazardous/Mixed Waste Worker	Manager/Supervisor of Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
Refresher Radiological Worker I and II Training (provides refresher radiological training)	*	*	X	X
Waste Generation Overview (includes waste management regulations and policies, definition of hazardous waste, waste minimization, cycle of waste management at Los Alamos National Laboratory, storage and disposal)	X	X	X	X
Waste Management Coordinator Requirements (provides training on waste management to coordinators)	*	*		*
Cardiopulmonary Resuscitation: Adult (requires annual recertification)	*	*	*	*
First Aid: Standard (requires recertification every three years)	*	*	*	*
Health Physics Checklist Indoctrination (provides health physics information to new workers)	*	*	X	X
HMPT[b] Training - General (includes introduction to HMPT regulations, identification and segregation of hazardous materials, packaging, placarding/labeling, manifesting/recordkeeping)	*	*		
Lockout/Tagout (provides information on lockout/tagout procedures and policy)	*	*	*	*
Respirators: Air-Purifying (provides required annual retraining for operation and inspection of device, changing filters, donning and doffing)	*	*	X	*

Refer to footnotes at end of table.

TABLE C-1
LOS ALAMOS NATIONAL LABORATORY-WIDE TRAINING PROGRAM
(continued)

COURSES[a]	Hazardous/Mixed Waste Worker	Manager/Supervisor of Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
Respirators: Self-Contained Breathing Apparatus (provides required annual retraining for operation and inspection, changing compressed air bottles, donning and doffing, safety features, care and cleaning, fitting)	*	*	X	*
Waste Documentation Forms (includes use of Waste Profile Form, use of waste disposal forms, use of manifest system, as applicable)	*	*		*

[a] Additional training courses (not listed in this attachment) may also be taken by personnel depending on the types of hazards (e.g., chemical) associated with a particular job description.
[b] * indicates that a course may be required for specific job tasks and/or work areas.
[c] X indicates a required course.
[d] HAZWOPER = Hazardous waste operations and emergency response
[e] TSD = Treatment, storage, and disposal
[f] OSHA = Occupational Safety and Health Act
[g] RCRA = Resource Conservation and Recovery Act
[h] HMPT = Hazardous materials packaging and transportation

TABLE C-2
FACILITY-SPECIFIC AND ON-THE-JOB TRAINING FOR HAZARDOUS AND MIXED WASTE HANDLING OPERATIONS

The following categories of facilities will provide facility-specific training for all workers and on-the-job training on procedures directly applicable to an individual's work assignment:

- Treatment units
- Incinerators
- Open burning and explosives detonation areas
- Container and tank storage areas
- Other categories, as necessary.

Facility-specific training will include the following topics:

- Supervised operation of the facility
- Emergency shutdown and evacuation procedures
- Accidental release and spill response procedures
- Familiarization with emergency equipment use, inspection, and repair
- Use of communication/alarm system
- Contingency plan training
- Operations manual specific to the facility
- Specialized equipment at the facility
- Information about the particular chemical and radioactive hazards present at the facility.

On-the-job training will consist of training individuals to be familiar with and use the standard operating procedures that apply to their jobs.

CONTINGENCY PLAN
PERMIT ATTACHMENT D
NM0890010515-1

~~ATTACHMENT D~~
~~HAZARDOUS WASTE FACILITY CONTINGENCY PLAN~~

~~D.1 INTRODUCTION~~

~~The Los Alamos National Laboratory and the resident communities of Los Alamos and White Rock are located in north central New Mexico on the Pajarito Plateau, situated west of the Rio Grande on the eastern slopes of the Jemez Mountains. The Laboratory site covers about 111 km^2 (27,500 acres) in and adjacent to Los Alamos County and includes 32 active Technical Areas (TAs)(Figure D-1).~~

~~The principal mission of the Laboratory is the design and development of weapons for the nation's nuclear arsenal; however, considerable research and development (R&D) is directed toward the development of advanced technology. In executing its research mission, the Laboratory produces hazardous wastes in small quantities, the nature of which varies with changes in the research projects conducted. The potential exists for hazardous waste generation to occur at virtually all of the technical areas.~~

~~Overall responsibility for Hazardous Waste Management is with the HSE-7 Waste Management Group in the Health, Safety and Environment (HSE) Division (Figure D-2). Generators of hazardous wastes are responsible for proper identification, segregation, and documentation of their wastes. Except for HE wastes, packaging, transportation, and final disposition of hazardous wastes are the responsibility of HSE-7 Chemical Waste Operations.~~

~~HE wastes are handled by Dynamic Testing (M) and Design Engineering (WX) Division groups whose central purpose is the design and testing of explosives. Activities within HSE-7 include liquid waste treatment, hazardous chemical waste packaging, transport, treatment, and disposal.~~

~~The Laboratory maintains its own response forces to handle emergencies. Emergency resources available to the Laboratory include the Fire Department, the contracted services of the Mason Hanger Protective Force (security), Pan Am World Services (PAWS) (maintenance), Los Alamos Medical Center, internal laboratory services including medical facilities, and minor external assistance from the Los Alamos County Police.~~

~~D.1.1 Hazardous Wastes~~

~~The hazardous wastes generated by the Laboratory activities can be considered as three types:~~

~~Wastes from research and development;~~
~~Wastes from process operations; and~~
~~High explosive wastes (HE).~~

~~In addition to the wastes noted above, various laboratory items that contain chemical residues or are otherwise chemically contaminated are considered hazardous waste.~~

~~D.1.2 Hazardous Waste Units~~

~~The safe handling, treatment, and/or storage of hazardous wastes is the responsibility of HSE-7. Daily operations involving hazardous wastes are performed by Solid Waste Operations. HE wastes are an exception, their treatment being the responsibility of M and WX Divisions. HSE-7 is only responsible for residuals from HE treatment when these residuals are determined to be hazardous wastes.~~

~~Hazardous Waste Units currently in operation are summarized in Table D-1. The locations of the units are shown as the shaded areas on Figure D-1. The flow plan for hazardous wastes within the Laboratory is shown in Figure D-3.~~

~~D.2 HAZARDOUS WASTE EMERGENCY RESPONSE RESOURCES~~

~~The Laboratory maintains its own response resources to handle emergencies. Interaction with outside agencies is limited for security reasons and because it is impractical to train these agencies to cope with the technical diversity of the Laboratory's operations such that they could safely contribute in an emergency. Response resources include personnel, emergency equipment, and communication systems.~~

~~D.2.1 Response Groups~~

~~The emergency response groups available to the laboratory include the Fire Department, the contracted services of the Mason hanger Protective Force (security), Pan Am World Services (PAWS) (maintenance), Los Alamos Medical Center, internal Laboratory services including medical facilities, and minor external assistance from the Los Alamos County Police. The services offered by these response groups are itemized on Table D-2 and discussed briefly in the following. Each of the emergency response groups retains a current copy of the HWF Contingency Plan.~~

~~D.2.1.1 Medical Facilities~~

~~The Laboratory maintains its own medical facility, HSE-2 Occupational Medicine, to handle job-related injuries and to monitor employee health. Medical facilities include a staff of six physicians, two physician assistants, ten nurses, six x-ray technicians, and two laboratory technicians.~~

~~HSE-2 is supported by HSE-5, Industrial Hygiene. HSE-5 can provide exposure and treatment information via telephone access to Chemtrec and the National Library of Medicine, and via computer access to TOXLINE, CHEMLINE, and Toxicity Data Bank.~~

~~Those cases which cannot be handled by HSE-2 would be forwarded to the Los Alamos County Hospital, where the Laboratory maintains a fully equipped decontamination room. The HSE-2 staff meets with the hospital's emergency staff monthly to go over procedures. In the event that a case is sent to the hospital, staff from HSE-2 provide assistance at the hospital.~~

~~D.2.1.2 HSE-3 Safety~~

~~HSE-3 reviews and approves fire protection procedures. They may assist in process shutdown and evacuation.~~

~~D.2.1.3 HSE-5 Industrial Hygiene~~

~~In addition to medical support, HSE-5 provides site field testing to determine the nature (nonradiological) and extent of contamination, provide information on current handling of chemicals, and specify protective clothing and equipment.~~

~~D.2.1.4 HSE-7 Waste Management~~

~~Provides cleanup operations and proper treatment and disposal of hazardous materials and supervises emergency response operations. Since HSE-7 normally handles hazardous waste, the group is highly trained and equipped. This group represents the nucleus of the hazardous waste emergency response.~~

~~D.2.1.5 HSE-8 Environmental Surveillance~~

~~Provides field surveys of soils, water, air and biota to determine environmental effects of exposure. The group includes expertise in geohydrology and meteorology.~~

~~D.2.1.6 Fire Department~~

~~The Fire Department provides fire protection for the Laboratory as well as the communities of Los Alamos and White Rock. The department includes 98 personnel.~~

~~In case of an emergency within the Laboratory, the Fire Department puts itself under the direction of the Laboratory response team. The Fire Department personnel make regular tours of the Laboratory facilities to detect and discuss hazards associated with individual facilities and are instructed in hazardous material handling and emergency procedures. They are aware of the hazardous waste practices at the Laboratory, and are well equipped to handle any credible emergency situation.~~

~~D.2.1.7 Mason & Hanger Protective Force (Pro-Force)~~

~~The Pro-Force consists of more than 300 personnel who are responsible for Laboratory security. the security force is provided by Mason & Hanger, Silas Mason, under contract to the Laboratory.~~

~~During an emergency, the Pro-Force activities include maintenance of security, direction of traffic within the Laboratory, and control of access to the emergency site. The Pro-Force maintains the necessary equipment to perform these functions such as crowd equipment, patrol cars, etc.~~

~~D.2.1.8 PAWS~~

~~PAWS provides a maintenance support force on contract to the Laboratory. This support force is under the Laboratory's direction in an emergency. PAWS conducts inspections of Laboratory equipment, maintains equipment, and participates in emergency cleanup.~~

~~D.2.1.9 Los Alamos County Police~~

~~In keeping with the principle of handling emergencies internally, the Los Alamos County Police have only a minimal interaction with the laboratory in an emergency. That interaction is limited to traffic control on DOE roads with public access. The limits of interaction are included in a signed agreement, a copy of which is included as an attachment to this document. There are no agreements with other agencies.~~

~~D.2.1.10 WX and M Division Personnel~~

~~Personnel in WX and M Divisions are trained to safely handle and dispose of highly reactive materials (High Explosives). Any spill or uncontrolled release of material at the burning grounds (TA-14 and 16) or the detonation pads (TAs 14,15,36, and 39) will be cleaned up by personnel from these divisions. The fire Department may be called to respond if a burn or detonation results in an uncontrolled fire.~~

~~D.2.1.11 Operational Management Group I (Emergency Management)~~

~~This group provides a 24-hour duty officer, called the Laboratory Emergency Duty Officer (LEDO), to respond to all credible emergencies, including hazardous materials releases. The LEDO is the On-Scene Commander (OSC) for all emergencies, including releases of hazardous materials when an On-Scene Control Group (OSCG) is formed. Emergency Management maintains the Emergency Operations Center (EOC) in operational ready status should the center be required.~~

~~D.2.2 Emergency Equipment~~

~~A list of emergency equipment for use at the laboratory and the location of this equipment can be found in Table D-3. The equipment immediately available for use is located at TA-54, Area L, the TA-50 batch treatment system and modular container storage buildings, the TA-50 waste incinerator and Room-117 storage, the TA-16 incinerator, and the TA-50 storage pads.~~

~~In addition, PAWS, the Fire Department, and HSE-2 maintain emergency equipment. Major emergency facilities are shown in Figure D-4.~~

~~D.2.3 Communications~~

~~Effective emergency response at Los Alamos National laboratory requires an efficient communication system which will integrate all personnel into the emergency response procedure.~~

~~There are two central alarm systems (CAS) at the Laboratory; an emergency CAS and a mechanical CAS. The emergency CAS is activated by:~~

~~Telephone communication (9-911)~~
~~Automatic Fire Alarms~~
~~Manual Pull Alarms~~

~~Computer Interface (to warn of critical events or loss of confinement at selected facilities)~~
~~Break-in Security~~
~~Radio Communications~~

~~The emergency CAS is located in the central control room in Building 440 at TA-3. The control room is manned 24 hours a day and is equipped with telephones, medium and short range radios, direct line telephones, a National Warning System (NAWAS) station, and an emergency power system. The fire alarm board at the control room gives the location of automatic and pull fire alarms.~~

~~The maintenance CAS board, located in Building 223 at TA-3, is manned by PAWS personnel 245 hours a day. The maintenance CAS board interfaces with computers which monitor critical equipment throughout the Laboratory. Activation of an alarm triggers a call-out procedure to provide maintenance personnel and management supervision to correct the malfunction. The maintenance CAS does not directly trigger an emergency response.~~

~~Internal communication systems at the Laboratory include:~~

~~Centrex telephone system~~
~~Medium range radio nets (30-60 miles)~~
~~Limited range radio nets (3-10 miles)~~
~~Telephone/radio paging~~
~~Two-way hand-held radios~~

~~Off-site communications with Federal,state, county and other agencies are maintained by the following:~~

~~Centrex telephone system~~
~~Private telephone lines (if Centrex fails)~~
~~Medium range radio nets (30-6- miles)~~
~~Limited range radio nets (3-10 miles)~~
~~Two National Warning system Stations (NAWAS)~~
~~Direct line to KRSN (local radio station)~~
~~470-2657- telephone to Santa Fe switchboard~~

~~All alarm systems and internal and external communication systems are available for use by all employees.~~

~~Activation of the emergency CAS automatically alerts the Fire Department, the Mason Hanger Pro-Force, and the CAS dispatcher. For hazardous waste emergencies, the CAS dispatcher notifies the Emergency Preparedness Office Deputy Officer (EPODO) who notifies upper management of the problem.~~

~~HSE-7 has access to all communications systems including a short wave radio base station located at TA-50-4. During normal working hours, communications to support response groups can be handled by HSE-7. During off hours, the EPODO uses the CAS Dispatcher to contact support groups.~~

~~D.3 NONSUDDEN RELEASES~~

~~Nonsudden releases include those incidences which, if uncontrolled, impact the environment over a long period of time. Such incidences include minor leaks of containers, loss of integrity of secondary containment, incomplete treatment, and leachate migration from disposal areas.~~

~~D.3.1 Responsibility~~

~~Correction of nonsudden release shall be the responsibility of the operating group and can be handled with normal maintenance and management procedures. Correction methods for nonsudden releases that have resulted in environmental contamination shall be coordinated with the New Mexico Environmental Improvement Division (NMEID).~~

~~D.3.2 Credible Nonsudden Releases~~

~~Not all failures can be predicted. In general, the response to nonsudden release will (1) contain the release, (2) correct the cause of the release, and (3) clean up any release to a level that protects health and the environment.~~

~~D.3.3 Nonsudden Release Surveillance~~

~~In addition to routine inspection and site specific sampling and testing, the Laboratory maintains an area-wide environmental monitoring network maintained by HSE-8. Routine monitoring for radiation, radioactive materials, and chemical substances on the Laboratory site helps to fulfill the Laboratory's policy to protect the general public, employees, and the environment.~~

~~Monitoring and sampling locations for various types of measurements are organized into three main groups. Regional monitoring stations are located within the five counties surrounding Los Alamos County. They are placed up to 80 kilometers (50 miles) from the Laboratory, and serve to determine background conditions. Perimeter stations are located within approximately four kilometers (2.5 miles) of the Laboratory boundary, and document conditions in residential areas surrounding the Laboratory. On-site stations are within the Laboratory boundary, and most are accessible only to employees during work hours.~~

~~The types of routine surveillance conducted at these stations includes radiation measurements and collection of air particulates, waters, soils, sediments, and foodstuffs for subsequent analysis.~~

~~Additional samples are collected to gain information about particular events such as major runoff events and nonroutine releases. Data are used for comparison with standards, background radiation levels, and dose calculations.~~

~~D.4 SUDDEN RELEASES~~

~~This section deals with incidents involving sudden release such as spills, fires, or explosions which pose a significant threat to human health or the environment and includes the release of hazardous materials and hazardous wastes. Hazardous materials are chemical substances that become a regulated waste as the result of the incident and can include hazardous raw materials that are spilled, products of combustion,~~

~~and products of uncontrolled reactions.~~

~~D.4.1 Hazardous Waste Emergency Coordination~~

~~The EPODO is responsible for coordinating all emergency response measures involving sudden releases of hazardous wastes with the exception of the open burning and open detonation units at TA-14, 15, 16, 36 and 39. HE waste handling is the responsibility of M and WX divisions, who have developed Standard Operating Procedures (SOPs) based on safe handling practices designed to eliminate the risk of fire and explosions. Unplanned detonation or combustion of HE renders the HE waste nontoxic. In some cases, residuals contain barium. Cleanup of barium contaminated areas due to unplanned detonations shall be coordinated with the EPODO. The EPODO can be reached during working hours by contacting the Emergency Management Office (7-6211) or the CAS dispatcher during off-hours (Table D-4).~~

~~The EPODO shall respond to all incidents involving the release of hazardous wastes including spills, fires, or explosions; assess the possible hazards to human health or the environment; and use whatever response group or emergency equipment needed to control and contain the wastes.~~

~~D.4.2 HWF Emergency Contingency Plan~~

~~This section defines the guideline used to initiate the HWF Emergency Contingency Plan and the resulting actions taken.~~

~~D.4.2.1 Guidelines for Implementation~~

~~The decision to implement the HWF Emergency Contingency Plan depends upon whether or not an imminent or actual incident could threaten human health or the environment. The following guidelines shall be sued by the EPODO in making the decision whether or not to institute the HWF Emergency Contingency Plan.~~

~~The HWF Emergency Contingency Plan could be implemented in the following situations involving hazardous wastes or hazardous materials:~~

~~Spills~~

~~A hazardous waste or hazardous material spill cannot be contained with secondary containment or application of absorbents;~~

~~Precipitation threatens to move spilled material off site;~~

~~A hazardous waste or hazardous material spill causes the release of flammable material, creating a fire or explosion hazard;~~

~~A hazardous waste or hazardous material spill results in toxic fumes which threaten human health; or~~

~~An earthquake or other natural disaster threatens containment integrity.~~

~~Explosions~~

~~An unplanned explosion involving hazardous wastes occurred (except at TA-14, 15, 16, 36, and 39); or~~

~~An imminent danger exists that an explosion involving hazardous wastes or hazardous material could occur.~~

~~Fires~~

~~Any fire involving hazardous wastes or hazardous material (except planned burning of HE waste); or~~

~~Any building, grass, forest, nonhazardous waste fire that threatens to ignite hazardous wastes.~~

~~D.4.2.2 Emergency Notification~~

~~Immediately upon discovery of an imminent or actual incident involving hazardous wastes or hazardous materials, the EPODO will be notified first. In the case of fire involving hazardous wastes or hazardous materials, this is superseded by the Laboratory fire alarm system. A fire is reported by dialing 9-911, activation of automatic alarms, or activation of a fire pull box. All fire alarms simultaneously alert the CAS Dispatcher, the Fire Department, and the Mason and Hanger pro Force. For fire involving hazardous wastes, hazardous materials, or hazardous waste units, the CAS Dispatcher shall contact the EPODO (Figure D-5). Orange 1 signs on building which contain HE are a warning to fire fighters not to approach or enter the building without obtaining information from WX or M Division personnel about the nature and location of HE materials in the building.~~

~~During off hours, all incidents involving hazardous wastes or hazardous materials shall be reported to the CAS Dispatcher, who will contact eh on call EPODO.~~

~~The EPODO shall proceed to the incident and assess the nature of the problem. On an as needed basis, the EPODO shall contact response groups directly or instruct the CAS Dispatcher to contact them or contact the HSE Duty Officer (HSE-DO) who will notify the appropriate HSE groups. Table D-2 shows the assistance available from each emergency response group. The EPODO will use this list as criteria to determine which groups to contact in an emergency.~~

~~Each response group maintains an on-call person and/or a call-down procedure to answer emergencies. Because the initial observer may not be able to recognize the involvement of hazardous materials, the EPODO shall be notified of any incident as described in Section D.4.1. The EPODO shall use~~

~~whatever means available including the assistance of other response groups, computer data searches, and sampling to determine if a hazardous waste is generated. HSE-5 and HSE-8 have the expertise to determine the nature and extent of contamination, the chemicals involved in the incident, and the characteristics of the hazardous waste.~~

~~D.4.2.3 EPODO Actions~~

~~Upon notification of an incident, the EPODO shall:~~

1. ~~Proceed directly to the site;~~

2. ~~Assess the nature of the incident, and quantities and types of hazardous wastes or hazardous materials involved; and~~

3. ~~Based on the guidelines in Section D.4.2.1 of the Contingency Plan, determine if implementation of the HWF Emergency Contingency Plan is warranted.~~

~~Upon the decision to implement the HWF Emergency Contingency Plan, the EPODO shall perform, in this order, the following actions:~~

1. ~~Assess the hazards to human health and the environment including both direct and indirect effects such as generation of toxic, irritating, or asphyxiating gases, hazards of runoff of fire water or treatment chemicals. The EPODO will use the guidelines in Section D.4.2.1 to assess the hazards to human health and the environment. If any of the criteria under Section D.4.2.1 are met, evacuation of the immediate area will be initiated.~~

2. ~~Determine if evacuation of the local area is advisable, and if so, immediately notify appropriate response groups and/or the Los Alamos County Police.~~

3. ~~Notify required response personnel and DOE LAAO by phone, radio, or through the CAS Dispatcher in the case of a spill or incident other than fire. In the case of fire, since the fire fighters have already responded, he shall confirm that the Fire Department Officer in Charge is aware of the hazardous waste or hazardous materials involvement and the special hazards associated with the wastes.~~

4. ~~Warn the remaining personnel of imminent or actual hazards using the radio and/or the PA system.~~

5. ~~DOE LAAO through the Emergency Management office will notify the New Mexico Environmental Improvement Division (505) 827-9329, and the National Response Center (800) 424-8802, reporting:~~

   ~~— Name and telephone number of the reporter~~
   ~~— Name and address of the facility~~
   ~~— Time and type of incident~~
   ~~— Name and quantity of materials involved, to the extent known~~

~~- The extent of injuries, if any~~
~~- The possible hazards to human health or the environment outside the facility.~~

~~6. Advise the response groups as needed to minimize personnel exposure and expedite control; and~~

~~7. For the Batch Treatment Plant and Controlled Air Incinerator, where the emergency stops operations, HSE-7 personnel must monitor for leaks, pressure buildup, gas generation or equipment ruptures. The instruments that are monitored during the shutdown and what they are monitored for are shown on Table D-5 for the Batch Treatment Plant and Table D-6 for the incinerator.~~

~~Once control of the emergency is established, the EPODO shall:~~

~~1. Arrange for site cleanup;~~

~~2. Provide for treating, storing, or disposing of recovered wastes, contaminated soil or contaminated surface waters;~~

~~3. Provide for decontamination of equipment as needed;~~

~~4. Replace and/or repair equipment as needed;~~

~~5. Conduct testing as needed to verify successful cleanup;~~

~~6. Within 15 days of the incident, submit to the Regional Administrator and Environmental Improvement Division the report described in Section D.10.~~

~~D.5 SPECIFIC EMERGENCY RESPONSE PROCEDURES FOR HAZARDOUS WASTE UNITS~~

~~The following section summarizes the guidelines for handling emergencies.~~

~~D.5.1 Chemical Spills~~

~~Hazardous wastes are handled and stored in small containers, lab packs, 55-gal. drums, and dumpster tanks. The individual volumes handled are small. Handling of hazardous materials may involve truckload quantities of material such as solvents, fuels, acids, and bases.~~

~~The general steps in handling hazardous wastes are:~~

~~Containment including spreading of absorbents or forming of temporary dikes;~~

~~Waste pickup and packaging in sound containers; and~~

~~Decontamination followed by testing to assure adequate clean-up.~~

~~The emergency preparedness procedures related to flammable organic solvent spills call for stabilization of the spilled material with the organic solvent spill kit. Other chemical spills are to be stabilized using the acid and caustic spill kits or by the addition of absorbents such as vermiculite. Personnel protective equipment will be worn during spill control and cleanup. The stabilized material will be treated as hazardous waste. Runoff which might occur from spills outside containment areas during precipitation must be contained and handled as a hazardous waste unless analyzed and found to be nonhazardous. Temporary dikes can be constructed to contain runoff.~~

~~D.5.1.1 Spill Control Procedures~~

~~Vermiculite or Pell-O-Cell will be used to control all chemical spills except hydrofluoric acid spills. Vermiculite and Pell-O-Cell are compatible will all chemicals except fluorine and hydrofluoric acid. Hydrofluoric acid is generally only handled in very small volumes, in small containers, so that a spill would be limited to a very small volume (less than one gallon). A hydrofluoric acid spill will be neutralized by carefully adding calcium hydroxide or other caustic to the spill. After an excess of caustic has been added and the reaction has ceased, the resulting solution will be cleaned up using vermiculite. Vermiculite and caustic are stored at all the TSD units at the Laboratory.~~

~~DOT approved drums will be used to collect all spilled material and contaminated absorbent. There are many drums of this type, located at all treatment and storage facilities at the laboratory. For corrosives, the drums will be lined with polyethylene drum liners. The list of emergency equipment (Table D-3) shows the equipment available at each area to be used to control a spill. The ultimate disposition of any contaminated absorbent or waste material will be decided by HSE-7 according to permit conditions and RCRA standards. The material will be temporarily stored at TA-54, Area L.~~

~~Decontamination will be accomplished at the spill site. After the spilled material has been absorbed by vermiculite or Pell-O-Cell, the material will be drummed. If the spill occurs on a cemented area, water or an appropriate solvent will be used to clean the area and this liquid will be absorbed onto vermiculite or Pell-O-Cell and drummed. A composite sample will be taken of the material used to absorb the final waste water. No contamination should be present in this sample. If contamination is present, the procedure will be repeated (i.e. clean the area and collect and analyze a composite sample). The composite sample will be taken from a drum using a thief or trier as specified in SW-846.~~

~~If the spill occurs on soil, any free liquid present will be adsorbed onto vermiculite and the resulting material will be drummed. The contaminated soil will be dug up and drummed. For a spill of less than one gallon, the visibly contaminated dirt plus a sufficient amount of dirt around the spill site will be dug up. For a spill of more than one gallon, the contaminated dirt plus the perimeter dirt will be drummed and a sample taken of the perimeter dirt using the same method as discussed for the vermiculite sample.~~

~~There will be no sampling for a spill in a sealed storage area. Once all visible signs of contamination have been removed, it will be simple to verify any remaining contamination because the floors are sealed with epoxy. In addition, sealed storage areas have secondary containment structures that will control potential spills. At closure, if there is any residual contamination, it will be removed.~~

~~If a spill is from a known source, the waste will be analyzed for materials present in that container. Analytical procedures specified in Table D-7 will be used. If the spill is from an unknown source, the chemical composition will be determined by using the parameters and test methods specified in Table D-7.~~

~~D.5.2 Fire~~

~~Depending on the size of the fire and fuel source, portable ABC fire extinguishers may be used to put out fires. However, the Laboratory is discouraging the use of portable fire extinguishers by employees and encouraging the immediate evacuation and notification of the Fire Department. The person fighting the fire must wear appropriate protective equipment. If the fire spreads or increases in intensity, all personnel should evacuate to an upwind point at least 100 yards away from the fire. For any fire involving hazardous waste, the EPODO must be contacted immediately, and he will alert all necessary emergency management personnel. The Fire Department is automatically alerted when the CAS is activated. The EPODO should remain near the site, but at a safe distance, so he can advise the personnel responding to the fire of the known hazards. The EPODO is familiar with RCRA provisions, spill response, and emergency actions and therefore, is qualified to advise firefighting personnel of the potential hazards involved. Upon arrival at a fire, the Fire Department Officer in Charge will be in command of fire fighting. He will accept and evaluate the advice of Los Alamos personnel and emergency management organization members, but he will retain the responsibility to select the fire fighting methods and tactics. The EPODO will be in overall control of the Laboratory's emergency response efforts until the emergency is terminated.~~

~~D.5.3 Explosion~~

~~In the case of explosions, all personnel will immediately evacuate the area. Any injured personnel will be immediately transported to the Medical Department for treatment. The EPODO must be contacted immediately upon activation of the CAS, and they he must alert all necessary emergency response personnel. The Fire Department is notified automatically upon CAS activation. The EPODO will remain near the site, but at a safe distance, so he can advise the personnel responding to the explosion of the known hazards.~~

~~Upon arrival at the site, the Fire Department Officer in Charge will be in command of fire fighting. He will accept and evaluate the advice of Los Alamos personnel and emergency management organization members, but he retains the responsibility to select the fire fighting methods and tactics. The EPODO will be in overall control of the laboratory's emergency response efforts until the emergency is terminated.~~

~~D.5.4 Exposure~~

~~Chemical material in the eye or on the skin will be washed either with the entire contents of the portable eye wash station or for at least 15 minutes. The eyelids will be held open during washing. The injured person will then be quickly transported to the Medical Department for evaluation. If possible, the chemical material involved in the injury will be ascertained and the information given to the Medical Department.~~

~~Other potential chemical exposures will necessitate evacuation. If anyone notices any of the following~~

~~conditions:~~

~~Irritation of the eyes, breathing passages or skin;~~
~~Difficulty in breathing; or~~
~~Nausea, light headedness, vertigo, or blurred vision~~

~~The affected person will be transferred to the Medical Department and the HSE-5 Group representative will attempt to ascertain what, if any, chemical exposure occurred and what corrective measure is appropriate.~~

~~D.5.5 Flood~~

~~The U. S. Army Corps of Engineers has documented that Los Alamos National Laboratory's waste management facilities are not located within the 100 year floodplain. This documentation has been included as an attachment to this document.~~

~~D.6 EVACUATION~~

~~A facility will be evacuated upon the voice command of "evacuate the area," or upon the sounding of the evacuation alarm, or upon the fire alarm.~~

~~D.6.1 Evacuation Plan~~

~~Emergency situations may warrant the shutdown and evacuation of an area(s) or building(s) in order to protect personnel and property, to anticipate the emergency condition, or to enhance the appropriate response. Table D-8 shows the criteria for evacuation, persons responsible for initiating evacuations, and reentry conditions.~~

~~To initiate building evacuation, the evacuation alarm is sounded and/or the public address system is used. The evacuation alarm, which is more suitable for evacuation of the whole facility, is a steady, continuous, audible signal. This alarm cannot be silenced and reset by site personnel. The Fire Alarm Maintenance Section at 667-4027 and the Fire Department Platoon Chief at 667-7026 can silence and reset the alarm.~~

~~To evacuate a portion of the building, the public address system is more appropriate. The PA system will notify the occupants of the area to be evacuated, and additionally, will advise personnel in the rest of the facility of the existence of a problem in that specific area.~~

~~Upon initiation of an evacuation, either via the PA or evacuation alarm, all personnel are to leave the specified area and go to the muster area, turning off all equipment that could contribute to the hazard if left unattended.~~

~~In the event of an evacuation of only a portion of the building, one of the out buildings, or outlying work areas, the Group Leader will designate a control point at the closest and/or the most convenient location. This area will be outside the affected area and will serve as a muster point and provide control of the affected area to prevent further spread of the hazard.~~

~~Sweep Team personnel will remain in the area for a visual inspection of all the affected work areas, laboratories, and offices. At least two persons will do the sweep to insure that if an injured person is found or if a single person is fighting a small fire, turning off equipment or activating fire suppression systems, one sweep team member can give assistance while the other reports to the muster area or control point to obtain additional aid. If the building is evacuated during normal working hours, the secretary will remove the personnel attendance roster that is posted near the secretary's desk, take it to the muster area, call roll, and report the personnel accounting to the Group Leader. During second or third shift operations, the lead engineer will be responsible for evacuation and roll call. The evacuation procedure follows:~~

~~Group Leader determines cause and probable extent of hazard;~~

~~Group Leader will sound the evacuation alarm or make an announcement on the PA system;~~

~~Group Leader will designate an assembly area if other than muster area;~~

~~Group Leader will notify the on-call EPODO;~~

~~Personnel will shut down equipment that might contribute to the hazard;~~

~~Personnel will activate fire suppression systems;~~

~~Personnel will not remain in affected area except to assist injured personnel;~~

~~Personnel will report to the muster area or designated control point;~~

~~Roll call (general evacuation) or personnel accounting (partial evacuation); and~~

~~Building or Area sweep by assigned personnel.~~

~~For a small scale evacuation, the Group Leader takes control. For a large scale evacuation, the CAS will be activated, the EPODO will be notified and will be responsible for the evacuation.~~

~~D.6.2 Process Shutdown~~

~~Personnel are instructed to shut down equipment prior to evacuating a building unless an immediate building evacuation is announced. To ensure efficient shutdown, training and exercises in process shutdown are required. In the case of an immediate evacuation, a selected team may shutdown designated equipment in an evacuated area. The team will be equipped with the proper equipment, clothing and breathing apparatus. If present, HSE-1, HSE-3, and HSE-5 will provide advice and assistance. Process shutdown procedures only apply to the TA-50 batch treatment system and waste incinerator and the TA-16 Industrial Incinerator. Process shutdown procedures are as follows.~~

~~D.6.2.1 TA-50 Batch Treatment System~~

~~The Batch Treatment System will be operated in accordance with current Standard Operating Procedures. If a fire or evacuation alarm sounds during the operation of the Batch Treatment System, the operating crew sill initiate a process shutdown. Because the process is a batch treatment, cessation of treatment is adequate to bring the process to a safe condition. In general, the process shutdown should include the following:~~

~~Shutdown of treatment chemical feeds;~~

~~Shutdown of the waste pump discontinuing waste transfer or circulation;~~

~~Shutdown of steam/hot water to the reactor jacket, if any;~~

~~Shutdown cooling water only if there is a risk of contamination of the water with waste (continued cooling removes residual heat from the system); and~~

~~Allow the reactor mixer to operate unless its operation poses a unique hazard (operation helps remove heat and prevents stratification).~~

~~D.6.2.2 TA-50 Waste Incinerator~~

~~If a fire or evacuation alarm sounds during the operation of the controlled air incineration process, the operating crew will initiate a process shutdown in accordance with the current operating instructions. Three logic sequences are provided to shut down the process in a safe and orderly manner.~~

~~Controlled Shutdown - Initiated when there is potential for significant damage to minor process components. This is also the normal shutdown mode at the completion of a run. When controlled shutdown is initiated, feeding of waste to the incinerator is stopped and a programmable set point generator is activated that directs remote set point inputs to the temperature controllers, causing a gradual decrease in chamber temperatures. Switches internal to the set point generator cause an orderly timed shutdown of process components.~~

~~Fast Shutdown - Initiated for conditions that could likely result in loss of containment or damage to major process components. Waste feeding is stopped. Following a two minute timed interval following the last feeding of solid waste (immediate, if feeding liquid waste), the upper and lower chamber burners are shut down and the system valves and dampers are positioned so as to maintain a negative pressure in the system while minimizing flow through the system. Snuffing steam is introduced into the lower chamber. The two minute delay when feeding solid waste allows for the ignition of pyrolltic gases formed immediately after feeding.~~

~~Scram Shutdown - Initiated at the discretion of an operator. The chain of events are identical to the fast shutdown except that the sequence is not delayed when feeding solid waste. Scram buttons are located at the incinerator and in the control room.~~

~~The last two shutdown modes are potentially destructive to the incinerator refractory and are initiated only when the consequences of not shutting down are greater than the consequences to the incinerator during a scram or fast shutdown. It is the responsibility of the operating personnel and the process lead engineer to assess any situation and initiate the proper process shutdown sequence.~~

~~D.6.2.3 Industrial Incinerator~~

~~If a fire or evacuation alarm sounds during the operation of the TA-16 Industrial Incinerator, the operating crew will initiate a process shutdown. The TA-16 incinerator is equipped with automatic and manual controls for shutdown of burners. Burners may be shut down manually by tripping a single switch. Automatic shutdown of the burners will occur on occurrence of a power failure, limit failure, or flame failure.~~

~~D.7 SALVAGE AND CLEANUP~~

~~The affected area will be surveyed by appropriate representatives from HSE Groups before salvage, cleanup and return to normal operations. Visual inspections of the affected area will be supplemented by sampling to determine whether cleanup is complete. After determination of any existing hazards from toxic or hazardous gases or fumes, electrical hazards, or other unsafe conditions, personnel or selected teams, equipped with proper breathing apparatus and protective clothing, will reenter the are to perform designated tasks to affect decontamination, repairs, and salvage to allow the return to normal operations. After an emergency, the EPODO will:~~

> ~~Provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion. Contaminated material will be treated as a hazardous waste and temporarily stored at one of the permitted hazardous waste storage areas at the laboratory. HSE-7 will be responsible for determining the final disposition of the waste. This determination will be made in compliance with the permit and RCRA standards.~~
>
> ~~Remain at the site to ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed.~~
>
> ~~Ensure that emergency equipment is cleaned and fit for its intended use before operations are resumed. Equipment will be visually inspected and sampled to determine the type and degree of contamination and appropriate cleanup measures will be used.~~

~~Prior to resuming operations, appropriate local authorities will be notified that cleanup procedures are completed and emergency equipment is cleaned and fit for its intended use.~~

~~Damage assessment and recovery shall be performed within the reporting and investigative requirements of DOE Order 5484.1. The EPODO has general responsibility for coordinating post-emergency actions, particularly during the time period immediately after the emergency. Such actions include cleanup operations, repair of vital equipment, or interim hazard-removing operations (such as demolition of unstable walls). The services of the affected operational organizations, HSE Division, the PAWS, and~~

~~other on-site talent will also be utilized to estimate cleanup costs and operational impact. The EPODO declares the end of the emergency; an Incident Report is filled out, and the Group Leader and his staff review emergency actions.~~

~~D.8 POST EMERGENCY ASSESSMENT~~

~~When the emergency is over, the causes of the emergency and the effectiveness of the response are investigated, in order that future emergencies may either be prevented, or that the response to them amy be more effective. Following each event requiring the implementation of the HWF Contingency Plan, the EPODO shall meet with representatives of all response functions to determine the adequacy of the response.~~

~~D.9 EMERGENCY RECORDS~~

~~The details of any incident that requires implementation of the HWF Emergency Contingency Plan must be noted in that unit's log book. This record must include the time, date, and full description of the incident.~~

~~D.10 EMERGENCY REPORTS~~

~~Any emergency that requires implementation of the HWF Emergency Contingency Plan will be reported in writing within 15 days to the EPA Regional Administrator and to the New Mexico Environmental Improvement Division (EID).~~

~~The report shall include the following date:~~

~~Name, address, and phone number of owner or operator;~~

~~Name, address and phone number of the facility;~~

~~Date, time, and type of incident (e.g. fire, explosion, spill);~~

~~Name of material involved;~~

~~Quantity of material involved;~~

~~Extent of injuries (if any);~~

~~Assessment of actual or potential hazards to human health or the environment;~~

~~Estimated quantity and disposition of material recovered from the incident.~~

~~D.11 CONTINGENCY PLAN AMENDMENT~~

~~The Contingency Plan shall be reviewed by EPODO, HSE-7, and HSE-8 and immediately amended if determined to be inadequate to handle nonsudden and sudden releases, and whenever:~~

~~The HWF permit is revised;~~

~~There is significant change in the design or operation of the HWF (i.e., waste quantities handled, handling techniques, or final disposition);~~

~~The list of emergency coordinators changes;~~

~~The list of emergency equipment significantly changes;~~

~~Operating experience, drills, or technical review demonstrates the plan is inappropriate;~~

~~Actual implementation of the plan demonstrates inadequacies.~~

~~The Contingency Plan shall have a cover sheet noting the date of the last amendment. Amendments shall be issued to all HWF Contingency Plan holders and shall include a cover letter that describes the plan changes and rationale for those changes.~~

~~FIGURE D-1~~

~~LOS ALAMOS TECHNICAL AREAS~~

~~FIGURE D-2~~

~~HEALTH, SAFETY, AND ENVIRONMENT~~
~~DIVISION ORGANIZATION CHART~~

~~FIGURE D-3~~

~~SCHEMATIC DIAGRAM OF LOS ALAMOS HAZARDOUS WASTE MANAGEMENT ACTIVITIES~~

~~FIGURE D-4~~

~~EMERGENCY FACILITIES~~

~~FIGURE D-5~~

~~HAZARDOUS WASTE EMERGENCY NOTIFICATION STRUCTURE~~

~~TABLE D-1~~
~~SUMMARY OF HAZARDOUS WASTE UNITS~~
~~LOS ALAMOS NATIONAL LABORATORY~~

~~Technical Area and Building or Area Designation~~	~~Wastes Handled~~	~~Activity Description~~
~~TA-14, 15, 16, 36, and 39~~	~~High explosives (HE)~~	~~Open burning/open detonation units used to react waste HE and HE-contaminated material~~
~~TA-50-01~~	~~Electrochemistry wastes~~ ~~Isotope separation wastes~~	~~Chemical batch treatment by neutralization, metal precipitation, and cyanide destruction~~
~~TA-50 Modular Storage Units~~	~~Shops department wastes-~~ ~~Wastes from Basic and Applied Chemistry R&D programs~~ ~~Electrochemistry wastes-~~ ~~Isotope separation wastes~~	~~Storage of wastes prior to treatment, incineration~~
~~TA-50-37~~	~~Combustible liquids and solids, including chlorinated and fluorinated hydrocarbons, and carcinogenic materials~~	~~Waste incineration with flue gas treatment~~
~~TA-37-50~~ ~~Room 117~~ ~~Storage Area~~	~~Combustible liquids and solids, including chlorinated and fluorinated hydrocarbons, and carcinogenic materials~~	~~Storage/Staging area for incinerator~~
~~TA-50 Storage Pads~~	~~Shops department wastes-~~ ~~Wastes from Basic and Applied Chemistry R&D programs~~	~~Waste storage prior to treatment, incineration, or shipment off-site.~~
~~TA-54, Area L~~	~~Shops department wastes-~~ ~~Wastes from Basic and Applied chemistry R&D programs~~	~~Wastes are segregated and stored prior to treatment, incineration, recycling, or shipment off-site~~

~~TABLE D-2~~
~~HAZARDOUS WASTE EMERGENCY RESPONSE GROUPS~~

~~Laboratory Controlled Response Group~~	~~Emergency Telephone~~	~~Assistance Available~~
~~HSE-2 Occupational Medicine~~	~~667-7878 (8 am – 5 pm) 988-0539 (off-duty hours)~~	~~Emergency medical treatment~~
~~HSE-3 Safety~~		~~Reviews and approves fire protection procedures. May assist in process shutdown and evacuation.~~
~~HSE-5 Industrial Hygiene~~		~~Site evaluation – field testing to determine the nature and extent of contamination (nonradiological).~~
		~~Specify protective clothing and equipment.~~
		~~Information services regarding hazards of wastes and treatment for exposure.~~
~~HSE-7 Waste Management~~		~~Hazardous waste cleanup, handling, treatment, and disposal.~~
~~HSE-8 Environmental Surveillance~~		~~Field surveys to determine spread of contamination and adequacy of clean up.~~
		~~Meteorological information.~~
		~~Geohydrologic support.~~
~~HSE-9 Health and Environmental Chemistry~~		~~Chemical analytical services.~~
~~Fire Department~~	~~9-911~~	~~Firefighting personnel and equipment.~~
		~~Ambulance and paramedic service.~~
~~Mason & Hanger Protective Force (Pro Force)~~	~~667-4437~~	~~Traffic Control~~
~~Pan Am World Services~~	~~667-6196~~	~~Maintenance personnel and equipment~~

~~TABLE D-2~~
~~HAZARDOUS WASTE EMERGENCY RESPONSE GROUPS~~
~~(continued)~~

~~Laboratory Controlled Response Group~~	~~Emergency Telephone~~	~~Assistance Available~~
~~Non-Laboratory Controlled~~		
~~Los Alamos County Police~~	~~662-4176~~	~~Traffic control on DOE roads with public access.~~
~~Los Alamos Medical Center[a]~~	~~662-4201~~	~~Medical Services~~

~~[a]Medical services related to hazardous wastes injuries provided under the direction of HSE-2.~~

~~TABLE D-3~~
~~EMERGENCY EQUIPMENT~~

~~EMERGENCY EQUIPMENT AT THE BURNING GROUND AND THE OPEN DETONATION PADS, TAs 14, 15, 16, 36, AND 39~~

~~Fire Control Equipment~~

~~Fire Extinguisher in each vehicle used to transport HE material~~
~~Fire Extinguisher in each control bunker~~

~~Description of General Capabilities:~~

~~These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in case of fire. Fire extinguishers are never used to put out controlled fires at the burning grounds.~~

~~Communication Equipment~~

~~Telephones~~
~~Two-way radios~~

~~Description of General Capabilities:~~

~~Telephones for internal communication at the Laboratory and off-site communication with federal, state, county, and other agencies are available. A Centrex telephone system and a private telephone line (if Centrex fails) are available for use by all employees.~~

~~Located in each control bunker, in the control building at the burning ground, and at the waste water treatment facility at the burning ground. Radios allow communication between each vehicle.~~

~~TABLE D-3~~
~~(continued)~~

~~EMERGENCY EQUIPMENT AT THE TA-50 CHEMICAL WASTE INCINERATOR AND ROOM 117 STORAGE AREA~~

~~Fire Control Equipment~~

~~13 fire extinguishers (9C-CO; 4-A-water)~~

~~Description of General Capabilities:~~
~~These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in the event of fire.~~

~~Manually operated fire alarm may be activated by any employee in the event of fire to notify Central Alarm Station.~~

~~The sprinkler system is an automatic system which delivers a maximum of 200 psi of water spray through shower heads placed at locations which maximize fire suppression range capability. In the event of fire, this system should function automatically, requiring no manual assistance.~~

~~Halon Extinguishing Systems are indicated to supplement automatic sprinkler systems which protect high value equipment, or suppress special hazardous operations or occupancies.~~

~~Location:~~
- ~~1 - Mechanical Equipment Room 111~~
- ~~2 - High Bay Room 112~~
- ~~2 - High Bay Room 114~~
- ~~1 - South of Library and Conference Room~~
- ~~1 - Chemistry Laboratory Room 107~~
- ~~1 - Process Engineering Laboratory Room 209~~
- ~~1 - Office Area Room 202~~
- ~~1 - Room 21~~
- ~~1 - Room 117~~

~~11 Fire Alarm Pull Boxes connected to the CAS~~
~~Location:~~
- ~~1 - Mechanical Equipment Room 111~~
- ~~1 - High Bay Room 112~~
- ~~2 - South of Library and Conference Room~~
- ~~2 - High Bay Room 114~~
- ~~1 - East of women's changing room~~
- ~~1 - Process Engineering Laboratory~~
- ~~1 - Office Area Room 202~~
- ~~2 - Room 21~~

~~TABLE D-3~~
~~(continued)~~

~~EMERGENCY EQUIPMENT AT THE TA-50 CHEMICAL WASTE INCINERATOR AND ROOM 117 STORAGE AREA~~

~~Automatic thermal alarm on inlet and exhaust of ventilation system~~
~~Automatic thermal sprinkler system throughout offices~~

~~4 Fire Hydrants~~
~~Location:~~
~~1 - Northeast corner of Building 84~~
~~1 - West of Building 69~~
~~1 - Northeast of Building 37~~
~~Halon Extinguishing System, manual and ultraviolet in Room 115~~

~~Communication Equipment~~

~~Telephones throughout building with building wide paging system~~

~~Description of General Capabilities:~~
~~Telephones for internal communication at the Laboratory and off-site communication with federal, state, county and other agencies are available. A Centrex telephone system and a private telephone line (if Centrex fails) are available for use by all employees.~~

~~Radio located in Room 202~~

~~Spill Control Equipment~~

~~Absorbent kept onsite~~
~~PCB room is bermed to handle all liquids stored~~
~~Have Spill Prevention and Containment Plan~~

~~Description of General Capabilities~~
~~Containment is designed to handle all liquids stored. Absorbent is used in the event of a small spill.~~

~~TABLE D-3~~
~~(continued)~~

~~EMERGENCY EQUIPMENT AT THE TA-50 CHEMICAL WASTE INCINERATOR AND ROOM 117 STORAGE AREA~~

~~Decontamination Equipment~~

~~Showers~~
~~Emergency eye wash~~

~~Description of General Capabilities~~
~~Safety showers and eye washes are used by personnel who receive a chemical splash to skin or eyes. Specific material safety data sheets for the chemical should be obtained prior to working with the chemical to determine if the application of water is indicated for decontamination.~~

~~**TABLE D-3**~~
~~**(continued)**~~

~~**EMERGENCY EQUIPMENT - HSE-7 CONTROLLED**~~

~~Spill Control Equipment: Located at TA-54, Area G~~

~~Heavy equipment available for emergencies may include~~

~~2 - scrapers~~
~~1 - bulldozer~~
~~1 - tractor (front end loader)~~
~~Shovels~~
~~Absorbents (vermiculite) in combustibles storage shed~~

~~Description of General Capabilities:~~
~~The following pieces of heavy equipment will be used in the event of large spills. Small spills will be absorbed with absorbent.~~

~~Decontamination Equipment~~

~~Small decontamination pit for heavy equipment~~
~~Showers (MD-11)~~

~~Other~~

~~Change room with protective clothing (MD-11)~~
~~2-3 - dozen respirators (particulates) (MD-11)~~
~~2 - self-contained, portable air masks (MD-11)~~
~~2 - emergency generators, portable~~
~~3 - vehicles are available for evacuation of personnel:~~
~~2 - sanfu~~
~~2 - Jeep (with emergency equipment, e.g., coveralls, booties, tape, rope)~~

~~**TABLE D-3**~~
~~**(continued)**~~

~~**EMERGENCY EQUIPMENT AT TA-54, AREA L**~~

~~Fire Control Equipment~~

~~1 fire hydrant located 30 feet south of site entrance to site~~
~~1 CO fire extinguisher located inside trailer at west end of site (B, C)~~
~~1 CO fire extinguisher located inside storage shed (B, C)~~
~~1 freeze-proof faucet located immediately east of shed~~

~~Description of General Capabilities:~~
~~These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in the event of fire.~~

~~Spill Control Equipment~~

~~Shovels~~
~~Oversized drums~~
~~Absorbent inside storage shed~~
~~Heavy equipment from Area G available for any emergencies at Area L~~
~~Bermed storage area~~

~~Description of General Capabilities:~~
~~The following pieces of heavy equipment will be used in the event of large spills. Small spills will be absorbed with absorbent.~~

~~Communications Equipment~~

~~2 way radios are available to all personnel when in area~~
~~2 way radios are in all vehicles used for moving hazardous waste~~
~~Telephone located inside trailer~~

~~Description of General Capabilities~~

~~External and internal Laboratory communications which may be used in emergency situations are listed.~~

~~**TABLE D-3**~~
~~**(continued)**~~

~~**EMERGENCY EQUIPMENT AT TA-54, AREA L**~~

~~Decontamination Equipment~~
~~1 emergency shower and eye wash located immediately east of shed~~

~~Description of General Capabilities:~~
~~Safety showers and eye washes are used by personnel who receive a chemical splash to skin or eyes. Specific material safety data sheets for the chemical should be obtained prior to working with the chemical to determine if the application of water is indicated for decontamination.~~

~~Other~~
~~2 self-contained, portable air masks located inside trailer~~

~~TABLE D-3~~
~~(continued)~~

~~SUPPLEMENTARY EMERGENCY EQUIPMENT~~

~~PAN AM WORLD SERVICES (667-6196)~~

~~Equipment~~	~~Number~~
~~A. Transportation~~	
~~1. Pickups, 1/2 through 3/4 ton~~	~~183~~
~~2. Trucks, 1 through 3 ton~~	~~25~~
~~3. Powerwagon (E-2078) with welder (PN-3-30256) mounted on vehicle, CC-135~~	~~1~~
~~4. Buses (11-passenger)~~	~~2~~
~~5. Stationwagons~~	~~11~~
~~6. Vans, panels and carryalls~~	~~24~~
~~B. Special Equipment~~	
~~1. Road grader, Champion, self-propelled blade, with radio~~	~~1~~
~~2. Grader, John Deere, self-propelled, with radio~~	~~1~~
~~3. Loaders, bucket, Melroe, Bobcat, 1/3 cubic yards~~	~~3~~
~~4. Loader, bucket, Michigan, 2-3/4 cubic yards~~	~~1~~
~~5. Loader, Fiat Ellis, 3 cubic yards~~	~~1~~
~~6. Loader, bucket, Michigan, 2-1/2 cubic yards~~	~~1~~
~~7. Loader, bucket, Michigan, 3-1/4 cubic yards~~	~~1~~
~~8. Loader, bucket, Yale, 3 cubic yards, with radio~~	~~1~~
~~9. Loader, bucket, backhoe, International, 1-1/2 cubic yards~~	~~1~~
~~10. Loaders, bucket, backhoe, Case, 7/8 cubic yards~~	~~2~~
~~11. Loader, backhoe, Ford, 1 cubic yard~~	~~1~~
~~12. Snowplows, Bombardier, with blade~~	~~2~~

~~TABLE D-3~~
~~(continued)~~

~~SUPPLEMENTARY EMERGENCY EQUIPMENT~~

~~PAN AM WORLD SERVICES (667-6196)~~

~~Equipment~~	~~Number~~
~~B. Special Equipment (continued)~~	~~1~~
~~13. Bulldozer, D-8, Crawler~~	
~~14. Bulldozers, TD-25, International~~	~~2~~
~~15. Scraper, Terex, self-propelled~~	~~1~~
~~16. Scraper, Fiat-Ellis, self-propelled~~	~~1~~
~~17. Scraper, 280, rubber-tired, with radio~~	~~1~~
~~18. Semitrailers~~	~~5~~
~~19. Lights, camp (electrical, plant, portable, 1000 to 5000 watts)~~	~~4~~
~~20. Power saws (approximate)~~	~~14~~
~~21. Flusher, street, 3000-gallon Truck, tanker, 500-gallon, International~~	~~1~~
~~22. Mobile transceivers (2-way, KOB-753)~~	~~64~~
~~23. Mobile transceivers (2-way, fire network)~~	~~7~~
~~24. Handsets (2-way)~~	~~8~~
~~25. Pageboys (1-way)~~	~~235~~
~~26. Welders, mounted on trailers and trucks~~	~~32~~
~~27. Fire tools (hand) (approximate)~~	~~150~~
~~C. Supplies~~	
~~1. Food~~	
~~Box lunches~~	~~150~~

~~TABLE D-3~~
~~(continued)~~

~~SUPPLEMENTARY EMERGENCY EQUIPMENT~~

~~PAN AM WORLD SERVICES (667-6196)~~

~~Equipment~~	~~Number~~
~~D. Other Supplies~~	
~~1. Bedding~~	
~~Blankets~~	~~60~~
~~Bedrolls (disposable) (from U.S. Forest Service an Santa Fe)~~	~~50~~
~~2. Butane gas (25 gallon tanks)~~	4
~~3. Fuel and lubricants~~	
~~4. Miscellaneous Supplies~~	

~~TABLE D-3~~
~~(continued)~~

~~SUPPLEMENTARY EMERGENCY EQIUPMENT~~

~~PAN AM WORLD SERVICES (667-6196)~~

~~Manpower~~	~~Number~~
~~A. Fire Bosses~~	
~~1. Crew bosses~~	~~3~~
~~2. Straw bosses~~	~~12~~
~~B. Service Bosses~~	
~~1. Transportation boss~~	~~1~~
~~C. Specialists~~	
~~1. Cat bosses~~	~~2~~
~~2. Bulldozer operators~~	~~14~~
~~3. Clerks~~	~~10~~
~~4. Dispatchers~~	~~3~~
~~5. Mechanics~~	~~17~~
~~6. Power saw operators~~	~~8~~
~~7. Radio and telephone operators~~	~~10~~
~~8. Truck drivers~~	~~13~~
~~9. Tool sharpeners~~	~~4~~
~~D. Firefighters~~	
~~1. Organized crews (approximately 8 men per crew)~~	~~14 crews~~

~~TABLE D-3~~
~~(continued)~~

~~EMERGENCY EQUIPMENT AT THE FIRE DEPARTMENT (9-911)~~

~~Equipment~~	~~Number~~
~~1000-gallons-per-minute pumper trucks~~	~~8~~
~~Minipumper trucks~~	~~5~~
~~1500-gallon tank trucks~~	~~5~~
~~Modular ambulances~~	~~4~~
~~Rescue vehicle~~	~~1~~
~~Self-contained breathing apparati~~	~~69~~
~~Various firefighting equipment~~	
~~Emergency Medical Technician (EMT) medical equipment~~	
~~Personnel with 81 hours of MTA training~~	~~98~~
~~75-foot elevated platform~~	~~1~~

~~**TABLE D-3**~~
~~**(continued)**~~

~~**EMERGENCY RESOURCES AT THE MEDICAL FACILITY (HSE-2)**~~
~~**(677-7878) 8 AM — 5 PM**~~
~~**(988-0539) OFF-DUTY HOURS**~~

~~Manpower~~
- ~~6 (2 casual) physicians~~
- ~~2 physician's assistant~~
- ~~10 (1 part time) nurses~~
- ~~3 (2 casual) x-ray technicians~~
- ~~2 laboratory technicians~~

~~Special Equipment – Portable~~
- ~~1 radio base station (HSE Div. net, being installed)~~
- ~~3 walkie-talkies (HSE Div. net)~~
- ~~1 portable cardiac monitor and defibrillator~~
- ~~1 crash cart – emergency equipment~~
- ~~1 portable physicians bag – drugs~~
- ~~1 portable suction unit~~
- ~~5 portable stretchers~~
- ~~1 ambulance stretcher with straps~~
- ~~6 wheel chairs~~
- ~~1 manual resuscitator~~
- ~~6 portable oxygen units~~
- ~~Several intravenous holders and solutions~~
- ~~6 otoscope/ophthalmoscope sets~~
- ~~1 portable sphygmomanometer~~
- ~~10 stethoscopes~~
- ~~Many contamination apparel~~
- ~~1 eye irrigation system~~
- ~~Many inflatable limb traction splints~~
- ~~3 industrial first aid kits~~
- ~~Many extrication and cervical collars~~
- ~~Many crutches and canes~~
- ~~Many suture sets~~

~~Supplies~~
- ~~Bedding and pillows~~
- ~~Rescue blankets~~
- ~~Burn blankets~~
- ~~Multitrauma dressing and bandages~~
- ~~Thermal/icing pouches~~

~~**TABLE D-3**~~
~~**(continued)**~~

~~**EMERGENCY RESOURCES AT THE MEDICAL FACILITY (HSE-2)**~~
~~**(677-7878) 8 AM — 5 PM**~~
~~**(988-0539) OFF-DUTY HOURS**~~

~~Special Facilities – Nonportable~~

~~Completely equipped medical clinic with emergency lighting system, x-ray machine, and ambulance entrance. Contamination showers, protective clothing, and wound counters. Suction unit, electrocardiograph (12 lead), pulse rate monitor/recorder, primary response trauma kits are included.~~

~~Transportation~~

~~1970 Plymouth Sedan~~

~~TABLE D-4~~
~~HAZARDOUS WASTE EMERGENCY COORDINATORS~~

~~(To be notified in succession)~~

~~Primary Coordinators~~	~~Laboratory Telephone~~	~~Home Telephone~~	~~Home Address~~
~~1. Donald Winston Emergency Management~~	~~7-6211~~	~~662-2453~~	~~450 Navajo Road Los Alamos, NM~~
~~2. James F. Griffin Emergency Management Coordinator~~	~~7-6211~~	~~662-5436~~	~~1057 Cedro Court Los Alamos, NM~~
~~3. Z. Edward MacBain Emergency Management Coordinator~~	~~7-6211~~	~~662-6211~~	~~1856 Cooper Place Los Alamos, NM~~
~~4. James S. Griffiths Emergency Management Coordinator~~	~~7-6211~~	~~662-9155~~	~~190 Manhattan Loop Los Alamos, NM~~

~~TABLE D-5~~
~~ITEMS MONITORED AT THE BATCH TREATMENT PLANT~~
~~DURING EMERGENCY SHUTDOWN~~

~~Item~~	~~Monitored For~~
~~Piping/Valves~~	~~Leaks, damage, poor seals~~
~~Gauges~~	~~Acceptable range~~

~~TABLE D-6~~
~~ITEMS MONITORED AT THE WASTE INCINERATOR~~
~~DURING EMERGENCY SHUTDOWN~~

~~Item~~	~~Monitored For~~
~~Incinerator/Equipment~~	~~Functioning~~
~~Pumps, valves, pipes~~	~~Leaks~~
~~Tank by-pass~~	~~Leaks~~
~~Emergency waste feed cutoff system~~	~~Functioning~~
~~HEPA Filtration System~~	~~Functioning~~
~~Radiation~~	~~Levels~~

~~TABLE D-7~~
~~WASTE ANALYSIS PARAMETERS AND TEST METHODS~~

~~Parameter~~	~~Test Method~~	~~Reference[1]~~
~~Ignitability~~	~~Pensky-Martens~~	~~(L) SW1010~~
	~~Closed-Cup Method~~	~~(L) ASTM D93-80~~
~~Reactivity~~	~~Numerous methods and tests[2]~~	~~(L,S) SW Section 2.1.3~~
~~pH~~	~~Electrometric~~	~~(L) SW9040~~
~~EP Toxicity~~	~~EP Toxicity Extraction[3] and Graphite Furnace AA Spectroscopy~~	~~(L,S) SW1310~~
~~- Arsenic~~		~~(L) SW7060~~
~~- Barium~~		~~(L) SW7081, SW7080~~
~~- Cadmium~~		~~(L) SW7131, SW7130~~
~~- Chromium~~		~~(L) SW7191, SW7190~~
~~- Lead~~		~~(L) SW7421, SW7420~~
~~- Selenium~~		~~(L) SW7740~~
~~- Silver~~		~~(L) SW7761, SW7760~~
~~- Mercury~~	~~EP Toxicity Extraction[3] and Manual Cold Vapor Technique~~	~~(L,S) SW1310~~
~~- Organochlorine Pesticides~~	~~EP Toxicity Extraction[3] and Gas Chromatography~~	~~(L) SW8080~~
~~- Chlorinated Herbicides~~		~~(L) SW8150~~

~~TABLE D-7~~
~~WASTE ANALYSIS PARAMETERS AND TEST METHODS~~
~~(continued)~~

~~Parameter~~	~~Test Method~~	~~Reference[1]~~
~~Toxicity Characteristic Leaching Procedure (TCLP)~~		~~(L,S) 40 CFR Part 268, Appendix I~~
~~Chemical Composition~~	~~95% organic composition by GC/FID~~	~~(L) SW-8100~~
~~Trace Organic Analysis~~	~~Any of the following:~~	
	~~Volatile organic compounds GC/MS~~	~~(L) SW8240~~
	~~Semivolatile organic compounds GC/MS~~	
	~~- Packed column~~	~~(L) SW8250~~
	~~- Capillary column~~	~~(L) SW8270~~
~~Heat Value~~	~~Bomb calorimeter~~	~~(L) A006, ASTM D240~~
~~Organic Chlorine~~	~~Halide titration of combustion residue~~	~~(L,S) A004, ASTM D2361~~
~~Ash Content~~	~~Residue after combustion in muffle furnace~~	~~(L) A001, ASTM D482~~ ~~(S) A001, ASSTM D3174~~
~~Cyanide Free and Total~~	~~Distillation and colorimetric (UV)~~	~~(L) SW9012~~
~~Chrome~~	~~Colorimetric method for hexavalent chromium~~	~~(L) SW7196~~

~~TABLE D-7~~
~~WASTE ANALYSIS PARAMETERS AND TEST METHODS~~
~~(continued)~~

~~Parameter~~	~~Test Method~~	~~Reference~~[1]
~~Sulfide~~	~~Colorimetric Titration~~	~~(L) SW9030~~
~~Total Methods~~	~~Digestion and inductively coupled plasma method~~	~~SW3020~~
~~Arsenic~~		~~(L) SW6010~~
~~Barium~~		~~(L) SW6010~~
~~Beryllium~~		~~(L) SW6010~~
~~Cadmium~~		~~(L) SW6010~~
~~Chromium~~		~~(L) SW6010~~
~~Lead~~		~~(L) SW6010~~
~~Nickel~~		~~(L) SW6010~~
~~Selenium~~		~~(L) SW6010~~
~~Silver~~		~~(L) SW6010~~
~~Thallium~~		~~(L) SW6010~~
~~Zinc~~		~~(L) SW6010~~
~~Mercury~~	~~Manual Cold Vapor Technique~~	~~(L) SW7470~~ ~~(S) SW7471~~
~~Free Liquids~~	~~Paint Filter Liquids Test~~	~~(S) SW9095~~

~~[1] "A" refers to Sampling and Analysis Methods for Hazardous Waste Combustion, EPA 600/8-84-002, February 1984.~~
~~"ASTM" refers to American Society for Testing Material Standards.~~
~~"SW" refers to Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd Edition, EPA, November 1986.~~
~~"L" refers to liquid waste~~
~~"S" refers to solid waste.~~
~~[2] Methods for cyanide and sulfide gas generation are pending. SW 846 methods will be used when they become available. Methods recommended by the EPA will be used in the interim.~~
~~[3] If EP Toxicity and other analyses do not permit identification of an unknown chemical waste, digested metal samples (per SW3020) will be analyzed for the metals noted.~~

~~TABLE D-8~~
~~EVACUATION DETERMINATION AND REENTRY~~

~~Reason for Evacuation~~	~~Determination Made By~~	~~Reentry Conditions~~
~~Fire~~	~~Fire or Evacuation alarm, Group Leader, Alternate, Lead Engineer, Senior Staff Member present, or HWEC~~	~~Following survey by the Chief Fire Officer, HSE-1 and/or HSE-5, and R&D Supervision~~
~~Explosion~~	~~Same as above~~	~~Same as above plus HSE-3~~
~~Loss of Ventilation~~	~~Group Leader, Alternate, Senior Staff Member, Lead Engineer, or Senior Technician~~	~~Following survey by HSE-1, and/or HSE-5, and R&D Supervison~~
~~Loss of Electric Power~~	~~Same as above~~	~~Same as above~~
~~Extensive Contamination~~	~~Same as above or HSE-1 Representative~~	~~Same as above~~
~~Airbone Contamination~~	~~Same as above or Rad Monitor~~	~~Same as above~~
~~Excape or Release of Toxic or Hazaardous Gas or Fumes~~	~~Group Leader, Alternate, Senior Staff Member, Lead Engineer, Senior Technician, or HWEC~~	~~Same as above plus HSE-5~~
~~Bomb Threat~~	~~HSE-3 or Protective Force Representative, R&D Section Leader, Alternate, Senior Staff Member or Lead Engineer~~	~~Following determination by HSE-___ or Protective Force Representative (illegible handwrritten note)~~

ATTACHMENT D
CONTINGENCY PLAN

This attachment presents contingency measures for hazardous and mixed waste units at Los Alamos National Laboratory (LANL). The contingency plan is intended to meet the requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, Part 264, Subpart D, revised November 1, 1995, "Contingency Plan and Emergency Procedures," for Resource Conservation and Recovery Act (RCRA) treatment, storage, or disposal (TSD) facilities. In addition, this document is consistent with the LANL Emergency Management Plan (EMP) (LANL, 1993), prepared by the LANL Emergency Management and Response (EM&R) Office. The provisions of this plan will be carried out immediately to minimize hazards whenever there is a fire, explosion, or release of hazardous or mixed waste or hazardous or mixed waste constituents that could threaten human health or the environment [20 NMAC 4.1, Subpart V, 264.51(b), revised November 1, 1995].

D.1 HAZARDOUS AND MIXED WASTE EMERGENCY RESPONSE RESOURCES

The primary resources for management of emergency incidents at LANL reside within the EM&R Office, which is part of the Facilities, Security, and Safeguards (FSS) Division. During an emergency situation, line management (i.e., the Group Leader of the affected area) works with the Duty Emergency Manager from the EM&R Office (FSS-20). The Emergency Manager has primary responsibility for managing emergency response operations, making appropriate notifications, activating the emergency response organizations, and proceeding to the scene. The Emergency Manager has authority to assume the role of Incident Commander (IC) during an emergency and typically assumes full responsibility for management of the emergency response operations at the scene. If an emergency can be resolved primarily by site-specific emergency response personnel, the Emergency Manager may choose not to assume command of the emergency response but will remain on standby in case additional response resources are needed. In these situations, site-specific management personnel (e.g., Group Leaders, Deputy Group Leaders) form a facility command and designate a Facility Incident Commander (FIC). Site-Specific emergency response personnel would then report directly to the FIC. Figure D-1 depicts the structure of a facility command.

Additional LANL resources that may provide assistance in an emergency include personnel from the Environment, Safety, and Health (ESH) Division and the Chemical Science and Technology (CST) Division at LANL. These groups are discussed in Sections D.1.2, D.1.3, and D.1.6.

Contracted services and other agencies are also available for assistance during emergencies. These are discussed in Section D.1.5 and include the contracted services of Protection Technology Los Alamos (PTLA) for security, Johnson Controls World Services Inc. (JCI) for facility maintenance, and the Los Alamos County Fire Department (LACFD). Other outside response agencies are discussed in Section D.1.7 and include the Los Alamos County Police Department (LACPD) and the Los Alamos Medical Center (LAMC). The LACPD and the LAMC each provide assistance under a memorandum of understanding (MOU).

Emergency response protocol at LANL is currently being modified to be consistent with the National Interagency Incident Management System (NIIMS). The NIIMS is a national standard that provides

consistency in terminology/methodology and allows for an integrated emergency response both locally and nationally, if necessary.

The IC (e.g., the Duty Emergency Manager, the FIC) coordinates all groups and agencies responding to the emergency and personnel operating at the scene in what is called the Unified Command (UC). If the FIC is in charge during an emergency and the Emergency Manager decides that additional resources are needed and assumes the position of IC, then the facility command formed by the FIC becomes the Facility Branch of the UC. The emergency response structure at LANL, as shown on Figure D-2, is designed to expand and collapse to include the response groups/agencies needed to address any particular emergency.

The IC may appoint and utilize a network of support personnel to assess, plan for, and mitigate emergencies. These personnel include a Safety Officer, a Public Information Officer, and a Liaison Officer than report directly to the IC and are responsible for issues related to safety, information, and the interaction of various groups associated with the overall emergency. Also reporting directly to the IC are an Operations Chief, a Logistics Chief, a Plans Chief, and an Administrative Chief. The Operations Chief oversees the Fire Branch, the Emergency Medical Services Branch, and the Facility Branch and is responsible for the actual emergency response. The Logistics Chief is responsible for providing support personnel and equipment necessary for the emergency response. The Plans Chief is responsible for planning the active mitigation and recovery for the emergency and the Administrative Chief is responsible for keeping records of expenditures. In some instances, one person may be assigned more than one of these positions. During an emergency at LANL, assistance may be provided to the IC and the IC's appointees by a large variety of response groups/agencies. The responsibilities and/or assistance available from the various response groups/agencies are listed in Table D-1 and discussed briefly in Sections D.1.2 through D.1.7

Each of the emergency response groups/agencies and the appropriate facility operators will retain a current copy of this contingency plan. The Hazardous and Solid Waste Group (ESH-19) is responsible for the controlled distribution of the contingency plan.

D.1.1 Emergency Management and Response Office

The Director of LANL has delegated the authority and responsibility for administering and implementing LANL's emergency management program to the FSS Division, which includes the EM&R Office. The EM&R Office coordinates and issues LANL's EMP and provides response coordination for emergencies. The EM&R Office also provides a 24-hour Duty Emergency Manager to respond to emergencies, including hazardous and mixed waste releases. The LANL Emergency Manager is the functional equivalent of the RCRA Emergency Coordinator (20 NMAC 4.1, Subpart V, 264.55, revised November 1, 1995). The EM&R Office maintains an Emergency Operations Center (EOC) in a ready condition should a center be required. The primary EOC is located at Technical Area (TA) 59, Building 1 (TA-59-1). An alternate EOC is located at TA-49-113. Should an EOC be activated during an emergency, all other emergency personnel including the IC and the entire facility or Unified Command fall under the control and direction of the EOC.

EM&R Office personnel designated as Emergency Managers are listed in Table D-2. Assignment as the Duty (i.e., primary) Emergency Manager is rotated. The Duty Emergency Manager can be reached by

contacting the EM&R Office (667-6211 during working hours, 667-7080 after working hours) or the Central Alarm Station (CAS) operator (911).

The Duty Emergency Manager will respond to emergency incidents involving the release of hazardous or mixed waste to the environment, including spills, fires, and explosions. With input from the appropriate LANL groups (e.g., ESH, CST, and site groups), the Duty Emergency Manager will initially assess the possible hazards to human health or the environment and, if assuming incident command, will use whatever response personnel and/or emergency equipment necessary in order to control and contain the waste, as necessary. In the event of an emergency, the Emergency Manager becomes the IC with full responsibility for field activities (including logistics, planning, and operations or establishing these positions within the UC). The exception to this is when on-site personnel can adequately address the emergency and maintain incident command internally. At the scene of the emergency, the IC will assemble a UC consisting of the senior person from each responding organization, functional specialists, and the Duty Emergency Manager (if not the IC). Additional technical or management representation may be integrated into the emergency response, as needed. The UC will receive direction from the IC and the members of the UC will work together to mitigate emergency situations.

The Duty Emergency Manager responding to an emergency will have access to a copy of the appropriate building emergency plan(s) (BEP) relating to the area in which the incident is occurring. These plans are maintained by the EM&R Office at TA-59 as well as located on site for use by emergency response personnel. The various response groups will obtain specific information relating to the facilities involved (including the layout of all affected buildings; the location of evacuation routes, equipment, and personnel; properties of the materials/wastes managed at the facility; and the hazards associated with these materials/wastes) from the BEP(s) and other site-specific information.

D.1.2 Hazardous Materials Response Group

The Hazardous Materials (HAZMAT) Team is comprised of personnel from the Hazardous Materials Response Group (ESH-10). The HAZMAT Team is responsible for the aggressive mitigation of chemical, radiological, hazardous waste, and mixed waste emergencies, including field decontamination of responders and response equipment. The HAZMAT Team may provide the LACFD with limited field decontamination support for victims. The HAZMAT Team is capable of providing a contamination-control station at the scene of a hazardous material incident to process people working in a contaminated area and is prepared to perform decontamination of personnel. LANL standards require that the HAZMAT Team meet the training criteria for emergency response personnel specified in the Code of Federal Regulations, Title 29 (29 CFR), Subparts 1910.120(q)(6)(iii), (iv), and (v). The HAZMAT Team acts as part of the UC reporting through the HAZMAT Group Supervisor (HMGS). The LANL HMGS coordinates the HAZMAT Team and radiological field monitoring activities.

During an emergency response, ESH-10 may also provide site field monitoring to determine the nature and extent of contamination, provide information on correct handling of chemicals, make recommendations on protective clothing and equipment, and provide exposure and treatment information to responders. To operate effectively, ESH-10 may obtain resources from other ESH groups, such as the Health Physics Operations Group (ESH-1) and the Industrial Hygiene and Safety Group (ESH-5).

D.1.3 CST and ESH Response Groups

At the scene, the IC coordinates representatives and technical advisors from the CST and ESH groups. In addition to their post-emergency duties, the groups discussed below may also be responsible for on-scene emergency operations such as planning. Depending on the type of emergency and the associated hazards, an individual from the most relevant group in the ESH Division will assume the position of the Environmental Safety and Health Advisor, will provide technical support, and will ensure LANL compliance with applicable federal, state, and local regulations.

D.1.3.1 Chemical Science and Technology Division

Waste management groups within CST Division are responsible for initial response actions at hazardous and mixed waste treatment and storage units at TA-21, TA-50, and TA-54. These groups also provide guidance on proper treatment, storage, and transportation of hazardous and mixed waste.

D.1.3.2 Air Quality Group

The Air Quality Group (ESH-17) provides field surveys of air to determine potential environmental effects of exposure after an emergency. In addition, ESH-17 provides expertise in meteorology to establish potential short- and long-term environmental effects of emergency conditions.

D.1.3.3 Water Quality and Hydrology Group

After an emergency, the Water Quality and Hydrology Group (ESH-18) provides sampling of water to determine potential environmental effects of an emergency and performs assessments for reporting requirements. ESH-18 also provides expertise in hydrogeology to establish potential short- and long-term environmental effects of emergency conditions.

D.1.3.4 Hazardous and Solid Waste Group

ESH-19 provides guidance on regulatory requirements to other groups. After an emergency, ESH-19 provides field sampling (e.g., of soil, surface water runoff, and sediments) to determine potential environmental effects of exposure.

D.1.3.5 Environmental Assessments and Resource Evaluations Group

The Environmental Assessments and Resource Evaluations Group (ESH-20) provides field surveys of biota to determine potential environmental effects of exposure after an emergency.

D.1.4 Other LANL Response Resources

Appropriate personnel from the Nuclear Materials Technology Division (NMT) have been trained in emergency procedures. If an emergency occurs at TA-55, NMT personnel are responsible for monitoring for leaks, pressure buildup, gas generation, and/or equipment ruptures. Dynamic Experimentation Division (DX) personnel are responsible for the hazardous and mixed waste treatment units (i.e., open burning/open detonation units) at TA-14, TA-15, TA-36, and TA-39. Appropriate DX personnel responsible for these

units are trained in emergency procedures and may provide information and/or assistance during emergencies involving high-explosive waste. Engineering Science and Applications Division (ESA) personnel are responsible for treatment and storage units at TA-16. Appropriate ESA personnel are also trained in emergency procedures and may provide information and/or assistance during emergencies involving units at TA-16.

D.1.5 Contracted Response Groups

Contracted response groups report to the Crisis Manager in the UC if the EOC is activated. In a smaller emergency, the EOC is not activated and the contracted response groups report directly to the IC. If the IC deems it necessary, the IC may designate an Operations Chief to aid in the coordination and direction of these groups.

D.1.5.1 Protection Technology Los Alamos

PTLA is responsible for LANL security, which is provided by PTLA under contract to LANL. During an emergency, PTLA activities include maintaining security, directing traffic within LANL, and controlling access to the emergency scene. PTLA maintains the necessary equipment (such as crowd-control equipment and patrol vehicles) to perform these functions. In addition, the CAS at TA-64-1 is manned by PTLA personnel 24 hours a day.

D.1.5.2 Johnson Controls World Services Inc.

JCI provides a maintenance support force under contract to LANL. This support force is under LANL's direction in an emergency. JCI conducts inspections of LANL equipment, maintains equipment, and participates in post-emergency cleanup under the direction of a Recovery Manager designated by the IC. The Utilities Control Center (UCC) at TA-3-223 is maintained by JCI personnel 24 hours a day.

D.1.5.3 Los Alamos County Fire Department

The LACFD provides fire protection and ambulance coverage for the residential communities of Los Alamos and White Rock and for LANL. In the case of an emergency within LANL, the LACFD coordinates fire suppression and Emergency Medical Services (EMS) efforts, while the IC retains overall responsibility for the emergency response effort. The U.S. Department of Energy (DOE) requires that LACFD personnel meet the training criteria for emergency response personnel specified in 29 CFR 1910.120(q)(6)(i) and (ii). A contract has been established between the DOE and the Incorporated County of Los Alamos.

D.1.6 LANL Support Groups

D.1.6.1 Health Physics Operations Group

ESH-1 provides field personnel to perform routine site evaluation and monitoring to determine the nature and extent of radiological contamination. ESH-1 also provides routine guidance on radiological decontamination. Field personnel conduct these activities under the supervision of certified health

physicists. In addition, this group augments the assessment and monitoring functions of the HAZMAT Team.

D.1.6.2 Occupational Medicine Group

LANL maintains its own medical facility operated by the Occupational Medicine Group (ESH-2). ESH-2 provides appropriate medical treatment for occupation-related illnesses and injuries and monitors employees to assess the effectiveness of health protection programs. In addition to promoting early identification and prevention of illnesses or injuries that may arise from exposures to hazardous or radioactive materials, ESH-2 maintains documented records of the health status of employees and related occupational medicine activities.

Although ESH-2 is not routinely involved with on-scene emergency response, the group maintains a central medical facility with a fully equipped emergency room and decontamination facilities at TA-3, Building 409 (SM-409). The location of this and other emergency facilities is shown on Figure D-3. Medical staff at SM-409 includes physicians, physician's assistants, registered nurses, x-ray technicians, and clinical laboratory technicians. All full-time physicians and nurses receive radiation accident training.

ESH-2 also maintains access to a software program called the TOMES™ system at the central medical facility in SM-409. This extensive database provides the clinical staff with timely exposure and treatment information. ESH-2 is supported by ESH-5, as described below.

D.1.6.3 Industrial Hygiene and Safety Group

ESH-5 provides support to ESH-2 with its ability to obtain additional exposure and treatment information via telephone access to the National Library of Medicine's TOXLINE™ and CHEMLINE™, the Toxicity Databank files POISONDEX™ and TOMESPLUS™ (Micromedics), and the CC/INFO™ database files on Material Safety Data Sheets. In addition, ESH-5 maintains access to the National Institute of Occupational Safety and Health Technical Information Center and the Registry of Toxic Effects of Chemical Substances. During routine operations, ESH-5 performs site evaluations and field testing to determine the nature and extent of chemical contamination and specifies protective clothing and equipment.

D.1.6.4 Occurrence Investigation Group

The Occurrence Investigation Group (ESH-7) is responsible for the Occurrences Reporting and Processing System at LANL and has the lead in reporting the occurrence of an on-site emergency. ESH-7 is in part responsible for tracking follow-up corrective actions. ESH-7 personnel assist the facility manager in investigating the occurrence, determining the causal factors, identifying the appropriate corrective actions, and assisting in the preparation of reports documenting the occurrence to DOE. This group tracks the target and actual completion dates for all corrective actions associated with an emergency and maintains the information in an on-site database.

D.1.7 Outside Response Agencies

During an emergency, outside response agencies report directly to the IC. The IC may designate an Operations Chief to aid in coordinating and directing the groups responding to an emergency.

D.1.7.1 Los Alamos County Police Department

The LACPD has only minimal interaction with LANL in an on-site emergency. This interaction is limited to traffic control on DOE roads with public access and to criminal investigations. An MOU for mutual aid assistance has been established between the DOE and the Incorporated County of Los Alamos.

D.1.7.2 Los Alamos Medical Center

LANL maintains a fully equipped decontamination room adjacent to the emergency room at LAMC. In the event that a case is sent to LAMC, support for the emergency room staff is provided by ESH-2 medical personnel. ESH-1, ESH-5, and ESH-10 personnel also provide assistance to the emergency room staff. This assistance is coordinated through the EM&R Office. An MOU has been established between the DOE Los Alamos Area Office (DOE/LAAO) and LAMC.

D.2 EMERGENCY EQUIPMENT AND COMMUNICATIONS

D.2.1 Emergency Equipment

20 NMAC 4.1, Subpart V, Part 264, Subpart D, revised November 1, 1995, requires a listing of all emergency response equipment available that can be used in the event of an emergency. Appendix D-1 lists all emergency equipment available at or near the waste management units addressed in this permit and in LANL's HAZMAT vehicles and trailers. Appendix D-1 also includes a list of supplemental emergency equipment maintained by JCI, the LACFD, and ESH-2. The locations of emergency facilities are shown on Figure D-3.

D.2.2 Emergency Communications

Effective emergency response at LANL requires an efficient communication system that will integrate required personnel into the emergency response. The initial phase of an emergency will involve a small number of individuals at the affected area and notification of the Duty Emergency Manager. For small scale emergencies, local communication equipment/systems will be utilized. When responding to hazardous or mixed waste emergencies, the EM&R Office provides communications between response units and emergency organizations.

D.2.2.1 Emergency Central Alarm Station

The LANL emergency CAS is located at TA-64-1. This station is manned by PTLA personnel 24 hours a day and is equipped with telephones (including direct-line telephones), medium- and short-range radios, a National Warning System (NAWAS) station, and an emergency power system. The fire alarm board at the control room gives the location of automatic and manual fire alarm equipment. The CAS receives alarms from several sources and, in turn, notifies the Duty Emergency Manager of a hazardous or mixed waste emergency. Sources include:

- Telephone communication (911)
- Automatic fire alarms
- Manual pull alarms
- Computer interface (to warn of critical events at selected facilities)
- Security alarms
- Radio communications.

Upon receipt of an alarm, the CAS operator then notifies the LACFD and the Duty Emergency Manager. The Emergency Manager, the HMGS, the EOC communicator, and/or the CAS operator may request emergency response groups to respond. Should the LANL 911 system fail, the Los Alamos County System, located at the LACPD Station, will be used to activate emergency response groups.

D.2.2.2 Utilities Control Center

JCI personnel maintain the UCC at TA-3-223. This facility is maintained 24 hours a day. Alarms at this facility are connected to LANL experiments, equipment, and/or buildings to record outages and hazardous conditions. Any conditions that activate these alarms will be reported immediately to building management or to the CAS operator for notification and response.

D.2.2.3 Additional Communication Systems

Internal communication systems at LANL include:

- The Centrex telephone system

- A telephone paging system

- A variety of FM VHF simplex repeater and trunked radio systems, including:
  - Multiple base stations
  - Mobile and hand-held units
  - Links to New Mexico public safety agencies

- A UHF radio system, including:
  - Multiple antenna sites
  - Mobile and base units
  - Links with the LACPD, the LACFD, and the State Medical System

- A 400-megahertz trunked radio system that includes a link with the LACFD

- Transmission and reception (through EOC) for:
  - Secure telephone
  - Secure fax
  - Secure still video

- Access to all radio systems outlined above (through EOC).

Off-site communications with federal, state, tribal, county, and other agencies are available through the following:

- A Centrex telephone system
- Private telephone lines (if Centrex fails)
- Two NAWAS stations
- A link to KRSN radio (local radio station)
- The local cable television
- A Community Alert Network.

The LANL EOC, maintained by the EM&R Office, operates radio systems on key LANL and off-site channels. Emergency personnel responding to on-site incidents have the benefit of wide-area radio coverage using EOC facilities. After hours, the Duty Emergency Manager is responsible for activating whatever support personnel, equipment, or services are needed.

D.3 CONTINGENCY PLAN IMPLEMENTATION

The following sections discuss guidelines used to implement this contingency plan, for emergency notifications, and for Emergency Manager actions in various types of emergencies.

D.3.1 Guidelines For Implementation

The decision to implement this contingency plan depends upon whether an imminent or actual incident involving a release of hazardous or mixed waste to the environment could threaten human health or the environment. The Duty Emergency Manager will use the guidelines listed below to decide whether to implement this plan.

This contingency plan will be implemented immediately in the following situations involving releases or potential releases of hazardous or mixed waste:

- Spills:
  - If a hazardous or mixed waste spill cannot be contained with secondary containment or application of sorbents.
  - If precipitation threatens to move spilled material off site.
  - If a hazardous or mixed waste spill causes the release of flammable material, creating a fire or explosion hazard.
  - If a hazardous or mixed waste spill results in toxic fumes that threaten human health.
  - If an earthquake or other natural disaster threatens containment integrity.

- Explosions:
  - If an unplanned explosion involving hazardous or mixed waste occurs (except at TA-14, TA-15, TA-16, TA-36, and TA-39).
  - If an imminent danger of an explosion involving hazardous or mixed waste exists.
- Fires:
  - If a fire involving hazardous or mixed waste occurs (except planned burning of HE waste).
  - If any building, grass, forest, or nonhazardous waste fire exists that threatens to volatilize or ignite hazardous or mixed waste.

D.3.2 Emergency Notification

During working hours, immediately upon discovery of an imminent or actual incident involving hazardous or mixed waste, on-site personnel will notify line management and the EM&R Office. During nonworking hours, personnel will report all incidents involving hazardous or mixed waste to the Duty Emergency Manager or the CAS operator. In the case of fire involving hazardous or mixed waste, notification of these individuals is superseded by the LANL fire alarm system. A fire is reported by dialing 911 (from telephone exchanges 667 and 665) or 667-7080 (from all exchanges), activating automatic alarms, or activating a fire alarm pull box. All fire alarms alert the CAS operator, the LACFD, and PTLA. In case of a fire involving hazardous or mixed waste or a hazardous or mixed waste unit, the CAS operator will contact the Duty Emergency Manager.

Upon recognition of a hazardous or mixed waste emergency, the first arriving emergency-trained person will become the temporary IC. Once the EM&R Office is notified of the emergency, the Duty Emergency Manager will proceed to the scene and be briefed by the temporary IC, building/area personnel, and/or other emergency units/teams. The Emergency Manager may then assume the position of IC. If necessary, the IC may recommend that the EOC be activated and that the necessary members of the emergency management team be determined. The IC will form a UC and contact the HMGS. The HMGS will notify the appropriate emergency response groups. The IC may determine from the list of response groups described in Table D-1 which groups to contact in an emergency. Each response group maintains an on-call person and/or a call-down procedure to respond to emergencies.

The EM&R Office will be notified of any potential hazardous or mixed waste emergency (e.g., spills, fires, explosions). The IC and the HMGS will use whatever means are available (including the assistance of other response groups, computer data searches, and sampling) to determine if a hazardous or mixed waste is being or has been generated and/or released. ESH-10, ESH-19, and waste management groups within CST Division have the expertise to determine the nature and extent of contamination and the characteristics of the hazardous or mixed waste involved.

D.3.3 Emergency Manager Actions

Upon notification of an incident, the Duty Emergency Manager may:

- Proceed directly to the scene.
- Call the HMGS.
- Assess the nature of the incident (e.g., through communication with the temporary IC).
- Assume incident command.
- Make an initial assessment of the incident and, in conjunction with the UC, obtain resources to determine the source, quantities, and types of hazardous or mixed waste involved and the areal extent of any released materials.
- Based on the guidelines in Section D.3.1 of this plan, determine if implementation of this contingency plan is warranted.
- Recommend activation of the EOC, if necessary.

Upon deciding to implement this contingency plan, the IC will, when appropriate:

- Assess the hazards to human health and the environment, including both direct and indirect effects, such as generation of toxic, irritating, or asphyxiating gases and/or hazards of runoff of water or chemicals used for fire suppression. An individual designated by the IC will use the guidelines in Section D.3.1 to assess the hazards to human health and the environment. If any of the criteria under Section D.3.1 are met and if the responsible Group Leader or designee has not already accomplished evacuation of the area, the IC will initiate evacuation of the immediate area.
- Determine if evacuation of the local area is advisable and, if so, immediately notify appropriate response groups and the LACPD, if appropriate. The IC may activate one or more of the following community alert mechanisms: the Community Alert (telephone) Network, the KRSN radio remote input system, or the cable television capture system.
- Notify required response personnel and DOE/LAAO. In the case of fire, the IC will confirm that the LACFD Senior Officer at the scene is aware of the special hazards associated with hazardous or mixed waste.
- Warn the remaining on-scene and response personnel of imminent or actual hazards using internal radio communication systems or the public address (PA) system. A radio/PA system at key facilities throughout LANL may be used for emergency notification.
- In emergency situations, the appropriate ESH representative will notify the New Mexico Environment Department (NMED) at (505) 827-9329 and the National Response Center at (800) 424-8802, reporting:
  - The name and telephone number of the ESH representative
  - The name and address of the facility
  - The time and type of incident

- The name and quantity of material involved, to the extent known
- The extent of injuries, if any
- The possible hazards to human health or the environment outside the facility.

- Advise the response groups of hazards in order to minimize personnel exposure and expedite mitigation.

- When an emergency occurs at hazardous or mixed waste treatment units, ensure that CST waste management personnel or, in the case of TA-55, the NMT emergency response personnel monitor for leaks, pressure buildup, gas generation, or equipment ruptures. The instruments monitored at the incinerator and what they are monitored for are listed in Table D-3.

Once control of the emergency is established, the IC will take all reasonable measures to minimize the occurrence, recurrence, or spread of fires, explosions, or releases. In addition, the IC will delegate cleanup and decontamination responsibilities to include:

- Arranging for site cleanup.

- Providing for proper handling of recovered waste, contaminated soil, or contaminated surface/ground water.

- Providing for decontamination of equipment, as needed.

- Arranging for replacement and/or repair of equipment, as needed.

- Ensuring that testing is conducted to verify successful cleanup.

Within 15 days of the incident, DOE/LAAO will submit a report to the Secretary, NMED. The contents of this report will be generated by several LANL groups responding to the emergency, as detailed in Section D.12.

D.4 SPILLS

Sudden releases include spills of hazardous or mixed waste that pose a significant threat to human health or the environment. Spill incidents resulting in a sudden release of hazardous or mixed waste that presents a potential threat to human health or the environment, as listed in Section D.3.1, require implementation of this contingency plan.

Hazardous and mixed wastes are stored on site in a variety of containers including, but not limited to, 55-gallon drums, lab packs, tanks, fiberglass-reinforced plywood boxes, standard waste boxes, and small laboratory bottles. Volumes of hazardous or mixed waste stored or treated will vary from unit to unit. The general steps in handling hazardous and/or mixed waste spills are as follows:

- Isolate the immediate area and deny entry to all unauthorized personnel

- Contain the spill by spreading sorbents or forming temporary dikes to prevent further migration (performed by properly trained personnel, if safe)
- Monitor the spill area and sample the spilled waste and contaminated media
- Package the waste and contaminated media in sound containers
- Decontaminate the area and all involved equipment and personnel (follow by testing to assure adequate cleanup)
- Remove the waste and contaminated media (performed by appropriate waste management personnel).

The IC will determine the steps to be taken for spill mitigation. If initial mitigation of the spill is necessary and can be accomplished safely before the Emergency Manager arrives, a qualified member of the affected area's operating group will serve as the temporary IC.

The emergency preparedness procedures related to flammable organic solvent spills require stabilization of the spilled material with an organic solvent spill kit. Other chemical spills are to be stabilized using acid and caustic spill kits or by the addition of sorbents. During spill control and cleanup, all personnel will wear personal protective equipment (PPE). ESH-5 will conduct monitoring to ensure that chemical exposure is minimized. ESH-1 will conduct health physics monitoring whenever mixed waste is involved to ensure that radiation exposure is also minimized. The stabilized material may be treated as hazardous or mixed waste, depending on the components present. Runoff from spills of listed hazardous or mixed waste that have migrated outside waste storage and/or treatment areas must be contained and managed as hazardous or mixed waste, as appropriate. If the spill was from a characteristic hazardous or mixed waste and if analysis shows that the runoff does not exhibit the characteristic (i.e., ignitability, corrosivity, reactivity, and/or toxicity), then the runoff need not be managed as characteristic waste. Temporary dikes may be constructed to contain runoff.

D.4.1 Spill Control Procedures

When a flammable organic solvent spill, a highly acidic spill, or a highly caustic spill has been stabilized with the contents of an organic solvent spill kit, an acid spill kit, or a caustic spill kit, respectively, the resulting material may be sorbed using a nonbiodegradable sorbent. Nonbiodegradable sorbent can be used to control spills if it is known to be compatible with the spilled material. Approved drums or packaging will be used to collect all spilled material and contaminated sorbent. For corrosives, the drums will be lined with polyethylene drum liners. Appendix D-1 lists emergency equipment available for spill control at each waste management unit addressed in this permit. Appropriate waste management personnel will determine the ultimate disposition of any contaminated sorbent or waste material, according to RCRA regulatory requirements.

D.4.2 Decontamination Verification

Decontamination will be accomplished at the spill site. After the spilled material has been sorbed, the material will be containerized. If the spill occurs on a cemented or asphaltic concrete area, water or an

appropriate solvent will be used to clean the area. Liquids (i.e., spilled material and cleaning water or solvents used to clean a spill) will be sorbed with a compatible, nonbiodegradable sorbent and will be containerized. If a spill is from an identifiable source, then the spilled material will be analyzed for the hazardous waste constituents known to be components of the waste managed at that unit. The appropriate analytical method(s) given in Table D-4 will be utilized. If the spill is from other than an identifiable source, then the spilled material will be analyzed for all of the parameters listed in Table D-4. All personnel conducting decontamination verification will wear PPE. ESH-1 will conduct health physics monitoring whenever mixed waste is involved to ensure that radiation exposure is minimized. Any hazardous or mixed waste collected from decontamination activities will be handled appropriately.

In order to establish baseline data, a sample of decontamination water or solvent and nonbiodegradable sorbent material will be taken prior to the start of the decontamination effort. A sample of the material used to sorb the final wash water will then be taken. No hazardous waste constituents should be present in this sample at levels above those found in the baseline data. If the sample exhibits any of the characteristics of a hazardous waste as defined in 20 NMAC 4.1, Subpart II, Part 261, Subpart C, revised November 1, 1995, or if a hazardous constituent listed in 20 NMAC 4.1, Subpart II, Part 261, Appendix VIII, revised November 1, 1995 (and not detected in the baseline data), is present above established health-based levels, the decontamination procedure will be repeated. An alternative demonstration of decontamination may be proposed and justified to NMED, who will evaluate the proposed alternative in accordance with the standards and guidance then in effect. If the proposed alternative is accepted, decontamination levels will meet the levels approved by NMED. Each sample will be collected with an appropriate sampling device (e.g., thief or trier) as specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1992).

If the spill occurs on soil, any free liquid present will be sorbed with a compatible nonbiodegradable sorbent, and the resulting material will be containerized. For such a spill, all contaminated soil will be excavated and containerized. ESH-5 will conduct industrial hygiene monitoring, and if mixed waste is involved, ESH-1 will conduct health physics monitoring to minimize exposure during soil removal operations. To establish comparative background data, one or more samples will be collected from an unaffected area near the spill site. The spill site will then be characterized, and the data will be compared to the background data to ensure that all contaminated material has been removed.

If a spill occurs in an area with sealed floors, verification sampling will be performed after decontamination. Swipe samples or other types of sampling appropriate for the contaminant will be collected at random in the area and analyzed. For a spill that occurs in an area that does not have sealed floors, random samples of the floor material, such as concrete chips, will be collected and analyzed for decontamination verification. Contaminated floor material will be removed if the level of contamination remains above that detected in the background data after repeated decontamination attempts. If a spill occurs on asphaltic concrete, the asphaltic concrete will be decontaminated, and a sample of the final wash water and/or the material used to sorb the final wash water will be collected and analyzed for decontamination verification. Contaminated asphaltic concrete that cannot be decontaminated will be removed.

D.5 EXPLOSION

Explosions and resultant releases may result in a significant threat to human health or the environment. The potential exists for hazardous or mixed waste to be released during an explosion. Implementation of this contingency plan is required whenever a sudden release that cannot be contained or that presents a threat to human health or the environment occurs as a result of an explosion.

In the case of an explosion at LANL, all personnel will immediately evacuate the area. Any injured personnel will be decontaminated at the site, if required and if time allows. An LACFD ambulance will transport these personnel to the ESH-2 facility or to LAMC for treatment. If an injury is severe and requires immediate medical evacuation, the injured person will be wrapped to contain contamination, if necessary. In the case of an actual or potential explosion, on-site personnel will contact the EM&R Office immediately so that the Emergency Manager can ensure that all necessary emergency response personnel are alerted. The LACFD is notified automatically upon central alarm system activation. The Emergency Manager assumes incident command and will remain near but at a safe distance from the site in order to inform personnel responding to the explosion of the known hazards.

If a fire results from an explosion, the LACFD Senior Officer will, upon arrival at the scene, evaluate all available information and determine the appropriate firefighting methods and tactics. The LACFD Senior Officer will direct firefighting operations under the general direction of the IC.

D.6 FIRE

Fires and resultant releases of hazardous or mixed waste may result in a significant threat to human health or the environment. Implementation of this contingency plan is required whenever a fire incident results in a sudden release of hazardous or mixed waste that cannot be contained or that presents a threat to human health or the environment.

Depending on the size of the fire and the fuel source, portable fire extinguishers may be used. However, LANL policy does not encourage the use of portable fire extinguishers by employees unless properly trained. Instead, LANL policy encourages immediate evacuation of the area and notification of the LACFD. For any fire, including a fire that involves hazardous or mixed waste, the responsible Group Leader and the EM&R Office must be contacted immediately. The Emergency Manager will alert the LACFD and all other necessary emergency response personnel. If the fire spreads or increases in intensity, all personnel must evacuate to an area designated by the responsible Group Leader, Group Leader designee, or Emergency Manager. The Emergency Manager assumes incident command and will remain near the scene to advise personnel responding to the fire of the known hazards.

Upon arrival at the scene, the LACFD Senior Officer will evaluate all available information and determine the appropriate firefighting methods and tactics. The LACFD Senior Officer will direct firefighting operations under the general direction of the IC.

D.7 UNPLANNED NONSUDDEN RELEASES

Nonsudden releases include those incidents that, if uncontrolled, impact the environment over a long period of time. Such incidents include minor leaks from containers, loss of secondary containment integrity, and incomplete treatment.

D.7.1 Responsibility

The operating group is responsible for correction of a nonsudden release from a hazardous or mixed waste unit if the correction can be performed safely with normal maintenance and management procedures. Personnel from the EM&R 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 NMED.

D.7.2 Nonsudden Releases

Not all failures can be predicted. In general, the response to a nonsudden release will be (1) to contain the release, (2) to correct the cause of the release, and (3) to clean up any release to a level that protects human health and the environment.

The operating group will conduct regularly scheduled inspections to detect failure of containment at the hazardous and mixed waste units addressed in this permit. Inspections of these units will be conducted to ensure that containers and tanks are not leaking. In addition, the operating group will inspect the secondary containment systems regularly to ensure that the integrity of the containment systems has not deteriorated. If an inspection reveals that containers or tanks are leaking or that secondary containment has deteriorated, operating group personnel will ensure that maintenance or replacement of containment is performed, as appropriate.

D.7.3 Nonsudden Release Surveillance

In addition to routine inspection and site-specific sampling and testing, LANL has established an areawide environmental monitoring network maintained by ESH. Monitoring and sampling locations for various types of measurements are organized into three main groups. Regional monitoring stations located within the five counties surrounding Los Alamos County are placed up to 80 kilometers (50 miles) from LANL. These stations serve to determine background conditions. Perimeter stations, located within approximately 4 kilometers (2.5 miles) of the LANL boundary, document conditions in residential areas surrounding LANL. On-site stations, most of which are accessible only to employees during normal working hours, are within the LANL boundary.

Routine surveillance conducted at these stations includes measuring radiation and collecting samples of air particulates, surface waters, ground waters, soil, sediment, and foodstuffs for subsequent analysis. Additional samples provide information about particular events, such as major runoff events and nonroutine releases. Data from these efforts are used for comparison with standards, for background levels, and for radiation dose calculations.

D.8 EXPOSURE TO HAZARDOUS OR MIXED WASTE

If a person is exposed to hazardous or mixed waste, the affected person, a co-worker, or line management will notify the EM&R Office. Appropriate first aid should be administered immediately. An EM&R Office representative will notify ESH-10 directly, as soon as possible, so that exposure levels and decontamination requirements can be established. The injured person will then be quickly transported to the ESH-2 medical facility or to LAMC for evaluation. If possible, the material involved in the injury will be ascertained and the information given to the medical staff.

Other potential exposures will necessitate evacuation of the area, if appropriate, or under any of the following conditions:

- Irritation of the eyes, breathing passages, or skin
- Difficulty in breathing
- Nausea, lightheadedness, vertigo, or blurred vision.

The affected person will be transferred to the ESH-2 medical facility or to LAMC. An ESH-1, ESH-5, or ESH-10 representative will attempt to ascertain what, if any, exposure occurred and what corrective measure is appropriate.

D.9 EVACUATION

A facility will be evacuated upon the voice command to evacuate the area or upon the sounding of the evacuation or fire alarm.

D.9.1 Emergency Process Shutdown Prior To Evacuation

Personnel are instructed to shut down equipment prior to evacuating a building unless an immediate building evacuation is announced or signaled. To ensure efficient shutdown, training and exercises addressing the shutdown process are performed. In the case of an immediate evacuation, a selected team may shut down designated equipment in an evacuated area. The team will be equipped with the proper equipment, clothing, and breathing apparatus. If they are on location, ESH-1, ESH-5, and/or ESH-10 will provide advice and assistance. Process-shutdown procedures apply mainly to hazardous or mixed waste treatment units only. Process-shutdown procedures are described below.

~~D.6.2.2~~ D.9.1.1 TA-50 Waste Incinerator

If a fire or evacuation alarm sounds during the operation of the controlled air incineration process, the operating crew will initiate a process shutdown in accordance with the current operating instructions. Three logic sequences are provided to shut down the process in a safe and orderly manner.

Controlled Shutdown - Initiated when there is potential for significant damage to minor process components. This is also the normal shutdown mode at the completion of a run. When controlled shutdown is initiated, feeding of waste to the incinerator is stopped and a programmable set-point generator is activated that directs remote set-point inputs to the

temperature controllers, causing a gradual decrease in chamber temperatures. Switches internal to the set-point generator cause an orderly, timed shutdown of process components.

Fast Shutdown - Initiated for conditions that could likely result in loss of containment or damage to major process components. Waste feeding is stopped. Following a two-minute timed interval following the last feeding of solid waste (immediate, if feeding liquid waste), the upper and lower chamber burners are shut down and the system valves and dampers are positioned to maintain a negative pressure in the system while minimizing flow through the system. Snuffing steam is introduced into the lower chamber. The two-minute delay when feeding solid waste allows for the ignition of pyrolitic gases formed immediately after feeding.

Scram Shutdown - Initiated at the discretion of an operator. The chain of events are identical to the fast shutdown except that the sequence is not delayed when feeding solid waste. Scram buttons are located at the incinerator and in the control room.

The last two shutdown modes are potentially destructive to the incinerator refractory and are initiated only when the consequences of not shutting down are greater than the consequences to the incinerator during a scram or fast shutdown. It is the responsibility of the operating personnel and the process lead engineer to assess any situation and initiate the proper process shutdown sequence.

~~D.6.2.3~~ D.9.1.2 Industrial Incinerator

If a fire or evacuation alarm sounds during the operation of the TA-16 Industrial Incinerator, the operating crew will initiate a process shutdown. The TA-16 incinerator is equipped with automatic and manual controls for shutdown of burners. Burners may be shut down manually by tripping a single switch. Automatic shutdown of the burners will occur on occurrence of a power failure, limit failure, or flame failure.

D.9.2 Evacuation Plan

Emergency situations may warrant the shutdown and evacuation of areas or buildings in order to protect personnel and property, to anticipate the emergency condition, or to enhance the appropriate response. Table D-5 lists the criteria for evacuation, persons responsible for initiating evacuations, and reentry conditions.

To initiate the evacuation of a building/area, the evacuation or fire alarm is sounded and/or the PA system may be used. Evacuation alarms cannot be silenced and reset by site personnel. Only the Fire Alarm Maintenance Section at 667-4027 and the LACFD Battalion Chief at 667-7026 can silence and reset alarms. To evacuate a portion of a building or area, use of the PA system may be more appropriate. The PA system will notify the occupants of the area to be evacuated and will advise personnel throughout the building of the existence of a problem in a specific area. Once evacuation has been initiated and if conditions allow, personnel will turn off all equipment that could contribute to the hazard if left unattended. All personnel will then proceed from the affected area to the assembly/muster area.

In the event of the evacuation of a building, an outbuilding, or an outlying work area, the responsible Group Leader or designee will establish a control point at the closest safe location (e.g., considering wind

direction). The designated area will be outside the affected area and will serve as an assembly/muster area where the Group Leader or designee can oversee evacuation operations and work to prevent further spread of the hazard.

As personnel exit an affected building/area, a primary sweep of the building/area will be performed to ensure that all personnel have evacuated. If the building/area is evacuated, a Group Leader designee will take attendance at the assembly/muster area and report personnel accountability to the IC. The evacuation procedure follows:

- Person discovering the accident or emergency will call 911 and ensure that line management and the EM&R Office are notified.

- Site-specific BEPs and/or emergency action procedures will be followed concerning evacuation, sweep, personnel accountability, and equipment shutdown procedures.

For a small-scale evacuation, a responsible on-site person may direct the evacuation. For a large-scale evacuation, the central alarm system may be activated. The EM&R Office will be notified immediately and will dispatch the Duty Emergency Manager. A responsible on-site person may begin the evacuation process until the Duty Emergency Manager arrives at the scene to assume that responsibility.

D.10 SALVAGE AND CLEANUP

Appropriate representatives from the ESH groups will survey the affected area before salvage and cleanup begin. They will conduct visual inspections and sampling of the affected area to determine whether cleanup is complete. If gases or fumes, electrical or radiological problems, or other conditions present a hazardous situation, personnel or selected teams equipped with proper breathing apparatus and protective clothing will reenter the area to perform designated decontamination tasks, repairs, and salvage to allow the return to normal operations. After an emergency, the IC will turn the operation over to the Recovery Manager, who will:

- Provide for proper handling of recovered waste, contaminated soil or surface water, or any other material that results from a spill, fire, or explosion. Contaminated material will be managed appropriately and temporarily stored at one of the hazardous or mixed waste storage areas at LANL. Waste management personnel will be responsible for determining the final disposition of the waste. This determination will be made in compliance with RCRA TSD standards.

- Arrange to monitor for damage or improper operation of the unit and associated equipment as a result of the emergency or of plant shutdown in response to the emergency.

- Arrange for site cleanup procedures to be completed and ensure that no waste that may be incompatible with the released material is treated or stored in the same area.

- Ensure that emergency equipment is cleaned, decontaminated, and fit for its intended use before operations are resumed. Equipment will be inspected visually and then sampled, if necessary, to determine the type and degree of contamination and to determine appropriate cleanup measures.

The Recovery Manager is the functional equivalent of the RCRA Emergency Coordinator for post-emergency actions.

Prior to resuming operations, facility management will verify that the previously mentioned tasks have been performed. The owner/operator (DOE/LAAO) will notify appropriate state and local authorities that cleanup procedures are completed and that emergency equipment is clean and fit for its intended use.

The IC assumes the coordination of post-emergency actions (particularly during the time period immediately following the emergency) until a Recovery Manager is appointed. The Recovery Manager then assumes this coordination role. The post-emergency actions include cleanup operations, repairing vital equipment, or interim hazard-removal operations (such as arranging for the demolition of unstable walls). The services of the affected operational organizations, ESH groups, JCI, and other on-site resources will also be used to estimate cleanup costs and operational impact.

D.11 POST-EMERGENCY ASSESSMENT

When the emergency is over, the cause of the emergency and the effectiveness of the response are investigated in an effort to prevent future emergencies and to facilitate more effective responses to them. Following each event requiring the implementation of this contingency plan, the EM&R Office will schedule and conduct a critique with representatives from all response groups, from representatives in the building/area in which the emergency occurred, and from LANL management to determine the adequacy of the response.

D.12 EMERGENCY RESPONSE RECORDS AND REPORTS

Any emergency that requires implementation of the contingency plan will be documented by the Group Leader or designee responsible for the hazardous or mixed waste unit, and reported in writing within 15 days to the NMED. The incident report, submitted by DOE/LAAO, will include the following data:

- Name, address, and phone number of owner or operator
- Name, address, and phone number of the facility
- Date, time, and type of incident (e.g. fire, explosion, spill)
- Name of material(s) involved
- Quantity of material(s) involved
- Extent of injuries (if any)
- Assessment of actual or potential hazards to human health or the environment
- Estimated quantity and disposition of material recovered from the incident.

Various LANL personnel responding to the emergency will record the details of any incident requiring implementation of this plan. The CAS operator, the EOC communicator, the Emergency Manager, and/or the Group Leader or designee responsible for the hazardous or mixed waste management area in which the emergency occurred will record the date, time, location of the incident, wastes/materials involved, injuries (if any), property damage (if any), and a detailed description of the incident. This information will be maintained in the facility operating record. ESH-7 will supply information concerning any follow-up actions. Appropriate LANL personnel will provide details regarding the removal and disposition of hazardous and mixed wastes associated with the emergency.

D.13 CONTINGENCY PLAN AMENDMENT

This contingency plan will be reviewed periodically by the EM&R Office, waste management groups, and ESH-19 and, if necessary, will be reviewed as appropriate by ESH-10. The plan will be amended immediately if determined to be inadequate to handle releases (spills, explosions, and/or fires), and whenever:

- The facility permit is revised
- There is significant change in the design or operation of the facility (e.g., quantities of waste handled and handling techniques) that increases the likelihood of an emergency and requires changes in emergency response
- The list of Emergency Managers changes
- The list of emergency equipment changes significantly.

This plan is a controlled document distributed by ESH-19. Amendments to this contingency plan will be distinguished by the revision number and date of revision noted in the upper right corner of each page. Amendments will be issued to all contingency plan holders and will include a cover letter that describes the plan changes and the rationale for those changes.

TABLE D-1
RESPONSE GROUPS AND AGENCIES AVAILABLE TO THE EMERGENCY MANAGEMENT AND RESPONSE OFFICE FOR GUIDANCE AND/OR EMERGENCY ASSISTANCE

LANL*-Controlled Response Group	Telephone	Responsibilities
CST, Chemical Science and Technology Division	667-7579 667-6095	Provides guidance on proper treatment, storage, and off-site shipment of hazardous and mixed waste.
ESH-1, Health Physics Operations	667-5296	Provides routine guidance on radiological decontamination. Provides routine site evaluation and monitoring to determine the nature and extent of contamination (radiological).
ESH-2, Occupational Medicine	667-7251	Provides emergency medical treatment.
ESH-5, Industrial Hygiene and Safety	667-4644	Provides guidance on industrial hygiene equipment and on operational safety.
	665-4427	Provides routine site evaluation/support field testing to determine the nature and extent of contamination (chemical).
ESH-7, Occurrence Investigation	667-0598	Reports occurrences and tracks follow-up actions.
ESH-10, Hazardous Materials Response	665-5237	Provides emergency site evaluation/field monitoring (chemical and radiological). Specifies protective clothing and equipment. Dispatches Hazardous Materials Response Team. Provides support for chemical, radiological, hazardous, and mixed waste incidents and decontamination of responders and response equipment.

TABLE D-1
RESPONSE GROUPS AND AGENCIES AVAILABLE TO THE EMERGENCY MANAGEMENT AND RESPONSE OFFICE FOR GUIDANCE AND/OR EMERGENCY ASSISTANCE
(continued)

LANL*-Controlled Response Group	Telephone	Responsibilities
ESH-17, Air Quality	665-8855	Provides information on meteorological conditions.
ESH-18, Water Quality and Hydrology	665-0453	Provides information on hydrologic conditions.
ESH-19, Hazardous and Solid Waste	667-0666	Provides guidance on regulatory requirements. Conducts field surveys to determine spread of contamination and adequacy of cleanup.
ESH-20, Environmental Assessments and Resource Evaluations	667-0730	Provides information on biotic conditions.
NMT, Nuclear Materials Technology Division	667-2556	Provides initial emergency site evaluations at Technical Area (TA) 55 and conducts activities related to the prevention, notification, and control of emergencies at TA-55. In the event of an emergency at TA-55, monitors for leaks, pressure buildup, gas generation, or equipment ruptures, if necessary. Maintains and operates TA-55 Emergency Response Team.
ESA, Engineering Science and Applications Division	667-4136	Provides information and/or assistance during emergencies involving units at TA-16.
DX, Dynamic Experimentation Division	667-5653	Provides information and/or assistance during emergencies involving units at TA-14, TA-15, TA-36, and TA-39.

TABLE D-1
RESPONSE GROUPS AND AGENCIES AVAILABLE TO THE EMERGENCY MANAGEMENT AND RESPONSE OFFICE FOR GUIDANCE AND/OR EMERGENCY ASSISTANCE
(continued)

LANL*-Controlled Response Group	Telephone	Responsibilities
PTLA, Protection Technology Los Alamos	667-4437	Provides traffic control, security.
JCI, Johnson Controls World Services Inc.	667-6191	Dispatches maintenance personnel and equipment. Assists in waste cleanup under direction of Recovery Manager.

TABLE D-1
RESPONSE GROUPS AND AGENCIES AVAILABLE TO THE EMERGENCY MANAGEMENT AND RESPONSE OFFICE FOR GUIDANCE AND/OR EMERGENCY ASSISTANCE
(continued)

Non-LANL[a]-Controlled Response Group	Telephone	Responsibilities
Los Alamos County Fire Department	667-7080 9-911	Dispatches firefighting personnel, equipment, and Emergency Medical Services.
Los Alamos County Police Department	662-8222	Provides traffic control on public access roads.
Los Alamos Medical Center[b]	662-4201 662-2455	Provides medical services. Provides and maintains Emergency Room.

[a] Los Alamos National Laboratory.
[b] Medical services related to hazardous and mixed waste injuries are provided under the direction of ESH-2.

TABLE D-2
EMERGENCY MANAGEMENT AND RESPONSE OFFICE
EMERGENCY MANAGERS[a]

Emergency Managers[b]	Laboratory Telephone	Home Telephone	Home Address
Gary W. Bequette	667-6211	662-5636	1781 37th St., Los Alamos, NM
Cheryl S. Bequette	667-6211	662-5636	1781 37th St., Los Alamos, NM
George Van Tiem	667-6211	662-4623	197 El Viento St., Los Alamos, NM
Ed Nettles	667-6211	662-5690	1461 Oakwood Lp., Los Alamos, NM
Eugene Darling	667-6211	662-2521	1860 Camino Redondo, Los Alamos, NM
Douglas Tuggle	667-6211	672-1231	117 Grand Canyon Drive, White Rock, NM

[a] To ensure immediate response, the Emergency Manager may be reached at the Emergency Management and Response Office (667-6211 or after hours, 667-7080).
[b] Assignments as the designated (i.e., primary) Emergency Manager are rotated. A current schedule is maintained at the Emergency Management and Response Office (667-6211 or after hours, 667-7080) and at the Central Alarm Station (911).

TABLE D-63
ITEMS MONITORED AT THE WASTE INCINERATOR DURING EMERGENCY SHUTDOWN

Item	Monitored For
Incinerator/Equipment	Functioning
Pumps, valves, pipes	Leaks
Tank by-pass	Leaks
Emergency waste feed cutoff system	Functioning
HEPA Filtration System	Functioning
Radiation	Levels

TABLE D-4
WASTE ANALYSIS PARAMETERS AND TEST METHODS[a]

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L) SW1010 (L) ASTM D93-80
Reactivity	Test method to determine hydrogen cyanide released from waste Test method to determine hydrogen sulfide released from waste	(L, S) HCN Test Method, Section 7.3 (L, S) H_2S Test Method, Section 7.3
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic:	Toxicity characteristic leaching procedure (TCLP) extraction	(L, S) SW1311
Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A
Volatile organics	Gas chromatography(GC)/mass spectrometry (MS) GC/MS capillary column technique	(L, S) SW8240B (L, S) SW8260A

Refer to footnotes at end of table.

TABLE D-4
WASTE ANALYSIS PARAMETERS AND TEST METHODS[a]
(continued)

Parameter	Test Method	Reference[b]
Semivolatile organics	GC/MS GC/MS capillary column technique	(L, S) SW8250A (L, S) SW8270B
Organochlorine pesticides Chlorinated herbicides	TCLP extraction and GC	(L, S) SW8080A (L, S) SW8150B
Heat value	Bomb calorimeter	(L) A006, ASTM D240
Organic chloride	Halide titration of combustion residue	(L, S) A004, ASTM D2361
Ash content	Residue after combustion in muffle furnace	(L) A001, ASTM D482 (S) A001, ASTM D3174
Cyanide, free and total	Distillation and colorimetric ultraviolet	(L, S) SW9010A, SW9012
Total chromium	Colorimetric method for hexavalent chromium	(L, S) SW7196A
Sulfide	Colorimetric titration	(L, S) SW9030A

Refer to footnotes at end of table.

TABLE D-4
WASTE ANALYSIS PARAMETERS AND TEST METHODS[a]
(continued)

Parameter	Test Method	Reference[b]
Total metals[c]:	Acid digestion	(L) SW3010A, (S) SW3050A
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010A
Arsenic		(L, S) SW6010A
Barium		(L, S) SW6010A
Beryllium		(L, S) SW6010A
Cadmium		(L, S) SW6010A
Chromium		(L, S) SW6010A
Lead		(L, S) SW6010A
Nickel		(L, S) SW6010A
Selenium		(L, S) SW6010A
Silver		(L, S) SW6010A
Thallium		(L, S) SW6010A
Zinc		(L, S) SW6010A
Mercury	Manual cold-vapor technique	(L) SW7470A (S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

Refer to footnotes at end of table.

TABLE D-4
WASTE ANALYSIS PARAMETERS AND TEST METHODS[a]
(continued)

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include gross alpha, beta, and gamma screening.

[b] "A" (e.g., A006) refers to U.S. Environmental Protection Agency, 1984, "Sampling and Analysis Methods for Hazardous Waste Combustion," *EPA-600/8-84-002*.
"ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.

[c] See also atomic absorption methods.

TABLE D-5
EVACUATION DETERMINATION AND REENTRY CONDITIONS

Reason for Evacuation	Evacuation Determination Made by	Reentry Conditions[a]
Fire	Fire or evacuation alarm, Group Leader or alternate, Lead Engineer, Senior Staff Member present, Senior Technician, or Emergency Manager	Following survey by the Chief Fire Officer, ESH-1[b], ESH-5[c], and/or ESH-10[d], and R&D[e] supervision
Explosion	Same as above	Same as above
Loss of ventilation	Group Leader or alternate, Senior Staff Member, Lead Engineer, or Senior Technician	Following survey by ESH-1 and/or ESH-5, and R&D supervision
Loss of electric power	Same as above	Same as above
Extensive contamination	Same as above or ESH-1 Representative	Same as above or ESH-10
Airborne contamination	Same as above or Radiation Monitor	Same as above or ESH-10
Escape or release of toxic or hazardous gas or fumes	Group Leader or alternate, Senior Staff Member, Lead Engineer, Senior Technician, or Emergency Manager	Same as above plus ESH-5 or ESH-10
Bomb or bomb threat	EM&R[f] or PTLA[g] representative, R&D Section Leader or alternate, Senior Staff Member, or Lead Engineer	Following determination by the Emergency Manager or HDT[h] Leader

[a] All reentries are authorized by the Incident Commander.
[b] "ESH-1" refers to the Health Physics Operations Group.
[c] "ESH-5" refers to the Industrial Hygiene and Safety Group.
[d] "ESH-10" refers to the Hazardous Materials Response Group.
[e] "R&D" refers to the Research and Development Section.
[f] "EM&R" refers to the Emergency Management and Response Office.
[g] "PTLA" refers to Protection Technology Los Alamos.
[h] "HDT" refers to the Hazardous Devices Team.

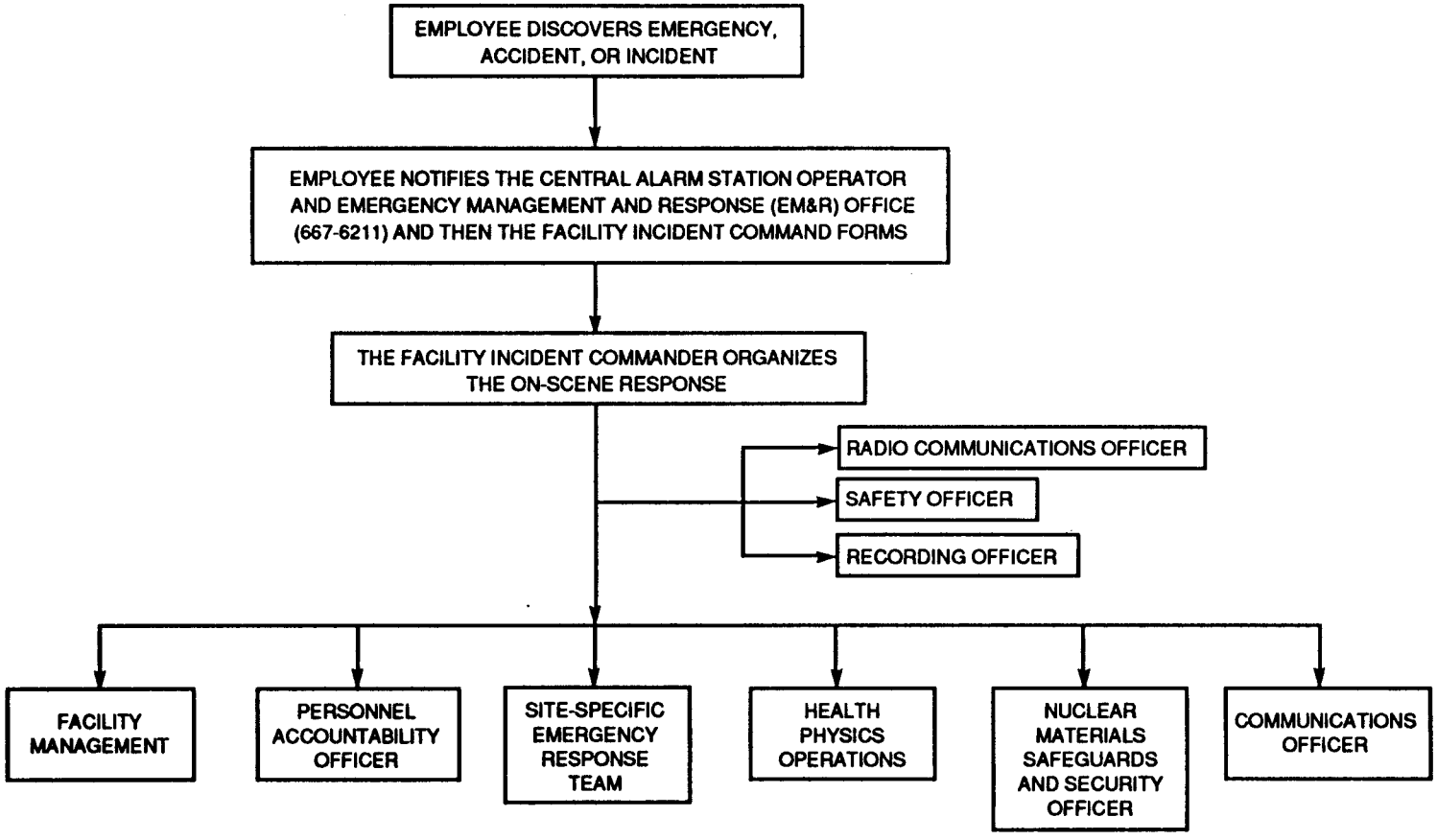


FIGURE D-1
EMERGENCY NOTIFICATION STRUCTURE FOR SITE-SPECIFIC EMERGENCY RESPONSES

Los Alamos National Laboratory
Hazardous Waste Permit
NMED Control Copy
Page Modified 12-22-95

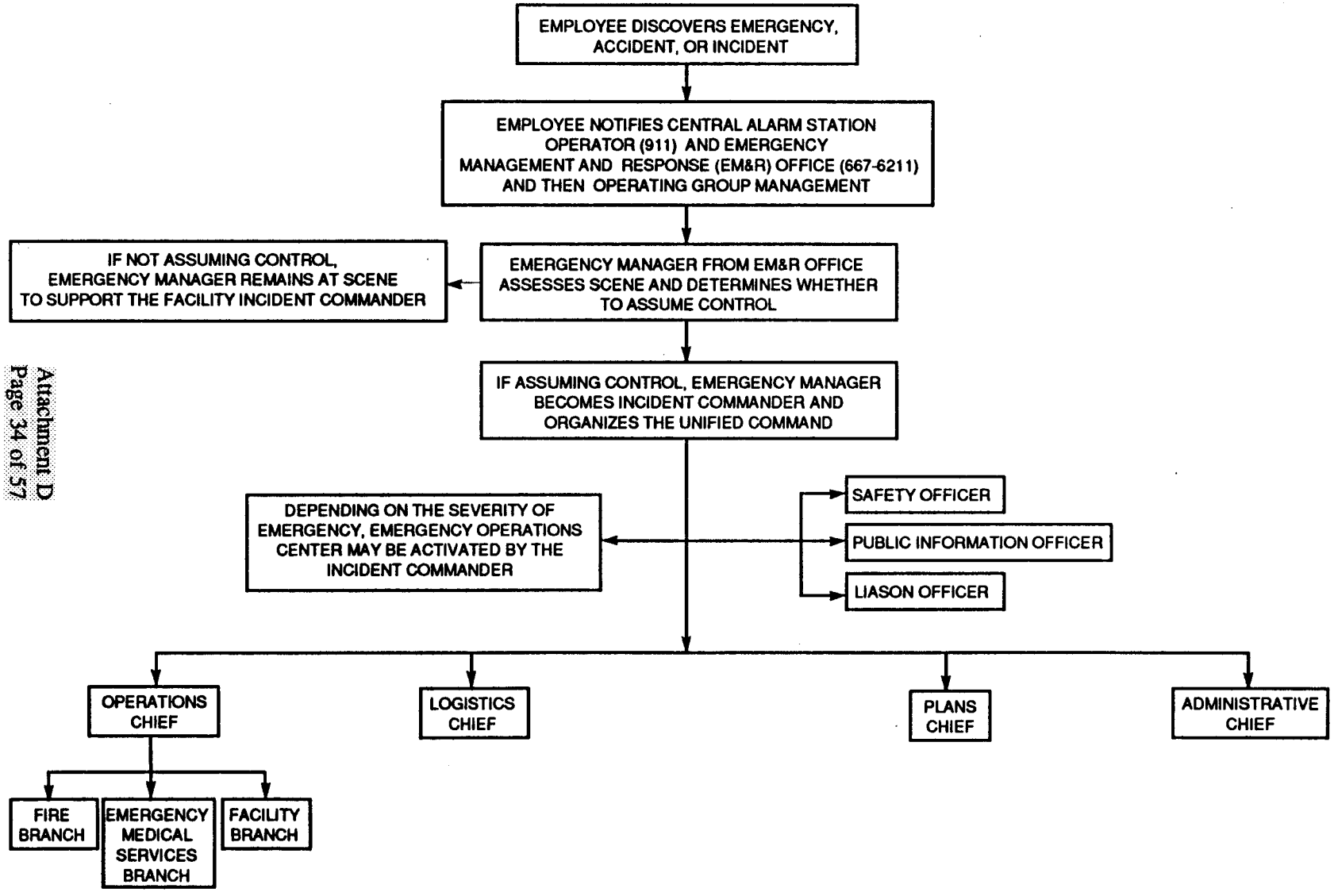
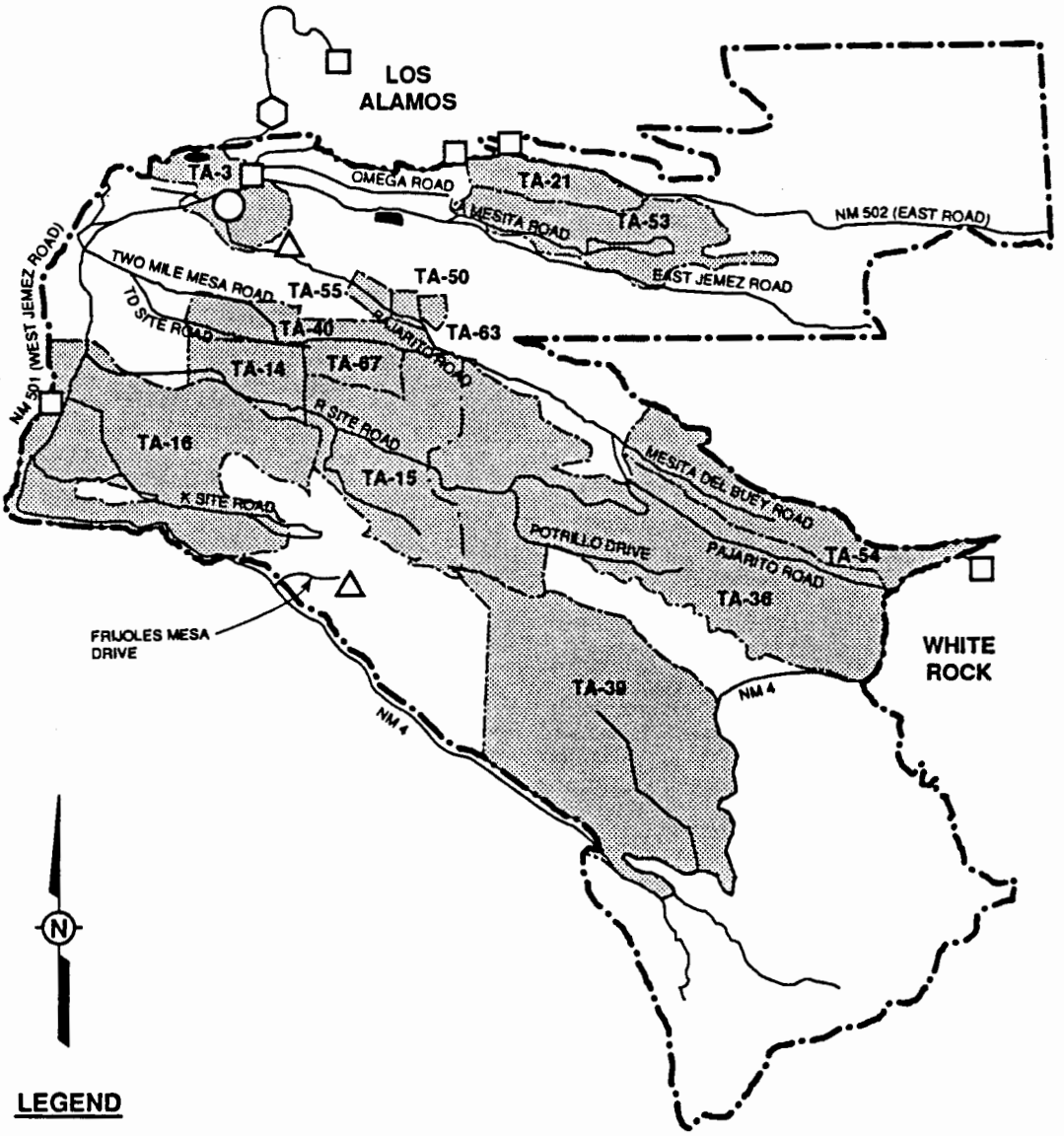


FIGURE D-2
GENERAL HAZARDOUS AND MIXED WASTE EMERGENCY NOTIFICATION STRUCTURE

Los Alamos National Laboratory
Hazardous Waste Permit
NMED Control Copy
Page Modified 12-22-95



LEGEND

- Fire Station
- Medical Facility at Technical Area 3
- Hospital
- Emergency Operations Center
- Shading indicates areas in which hazardous or mixed waste management units are located or planned for construction.
- Not Los Alamos National Laboratory property.

4800 0 4800
Scale in Feet

FIGURE D-3

EMERGENCY FACILITIES

APPENDIX D-1

Emergency Equipment

APPENDIX D-1
EMERGENCY EQUIPMENT

Hazardous Materials (HAZMAT) Vehicles and Associated Emergency Equipment:

Hazardous Materials (HAZMAT) vehicles and trailers are located at Technical Area (TA) 64, Building 39 (TA-64-39). They are available to the Environment, Safety, and Health (ESH) Division Hazardous Materials Response Group (ESH-10) for emergency response to all of the TAs at Los Alamos National Laboratory (LANL). ESH-10 is responsible for maintaining the supplies of appropriate emergency equipment in each vehicle and trailer.

The HAZMAT vehicles and trailers are equipped with safety and emergency equipment, personal protective clothing, and other supplies, which may include, but are not limited to: assorted personal protective equipment, T-shirts, and gloves; safety goggles and glasses; boots and booties; face shields; totally encapsulating suits and boots; Level A and B suits; flash suits; self-contained breathing apparatus (SCBA) and SCBA bottles; hazardous chemical reference books and other reference materials; shovels; siphon pumps; assorted spill kits and sorbents; chemical burn and neutralizing solutions; two-way radios, cellular phones, and communication equipment; bottles of leak detector; leak repair kits; emergency repair packs; HAZMAT bags; gas detectors and chemical detectors; respirators and cartridges; radiological equipment; sponges and cleaners; warning signs and barricade tape; traffic control barriers; flashlights; cameras and film; knives; portable power supplies; warning and signal horns; harnesses and belts; portable emergency oxygen; decontamination equipment; sampling equipment; and assorted tools, tape, and other supplies.

~~TABLE D-3~~ APPENDIX D-1
EMERGENCY EQUIPMENT

EMERGENCY EQUIPMENT AT THE BURNING GROUND AND THE OPEN DETONATION PADS, TAs 14, 15, 16, 36, AND 39

Fire Control Equipment

Fire Extinguisher in each vehicle used to transport HE material
Fire Extinguisher in each control bunker

Description of General Capabilities:

These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in case of fire. Fire extinguishers are never used to put out controlled fires at the burning grounds.

Communication Equipment

Telephones
Two-way radios

Description of General Capabilities:

Telephones for internal communication at the Laboratory and off-site communication with federal, state, county, and other agencies are available. A Centrex telephone system and a private telephone line (if Centrex fails) are available for use by all employees.

Located in each control bunker, in the control building at the burning ground, and at the waste water treatment facility at the burning ground. Radios allow communication between each vehicle.

~~TABLE D-3~~ APPENDIX D-1
(continued)

EMERGENCY EQUIPMENT AT THE TA-50 CHEMICAL WASTE INCINERATOR AND ROOM 117 STORAGE AREA

Fire Control Equipment

13 fire extinguishers (9C-CO; 4 A-water)

Description of General Capabilities:
These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in the event of fire.

Manually operated fire alarm may be activated by any employee in the event of fire to notify Central Alarm Station.

The sprinkler system is an automatic system which delivers a maximum of 200 psi of water spray through shower heads placed at locations which maximize fire suppression range capability. In the event of fire, this system should function automatically, requiring no manual assistance.

Halon Extinguishing Systems are indicated to supplement automatic sprinkler systems which protect high value equipment, or suppress special hazardous operations or occupancies.

Location:
- 1 Mechanical Equipment Room 111
- 2 High Bay Room 112
- 2 High Bay Room 114
- 1 South of Library and Conference Room
- 1 Chemistry Laboratory Room 107
- 1 Process Engineering Laboratory Room 209
- 1 Office Area Room 202
- 1 Room 21
- 1 Room 117

11 Fire Alarm Pull Boxes connected to the CAS
Location:
- 1 Mechanical Equipment Room 111
- 1 High Bay Room 112
- 2 South of Library and Conference Room
- 2 High Bay Room 114
- 1 East of women's changing room
- 1 Process Engineering Laboratory
- 1 Office Area Room 202
- 2 Room 21

~~TABLE D-3~~ APPENDIX D-1
(continued)

EMERGENCY EQUIPMENT AT THE TA-50 CHEMICAL WASTE INCINERATOR AND ROOM 117 STORAGE AREA

Automatic thermal alarm on inlet and exhaust of ventilation system
Automatic thermal sprinkler system throughout offices

4 Fire Hydrants
Location:
1 Northeast corner of Building 84
1 West of Building 69
1 Northeast of Building 37
Halon Extinguishing System, manual and ultraviolet in Room 115

Communication Equipment

Telephones throughout building with building-wide paging system

Description of General Capabilities:
Telephones for internal communication at the Laboratory and off-site communication with federal, state, county and other agencies are available. A Centrex telephone system and a private telephone line (if Centrex fails) are available for use by all employees.

Radio located in Room 202

Spill Control Equipment

Absorbent kept onsite
PCB room is bermed to handle all liquids stored
Have Spill Prevention and Containment Plan

Description of General Capabilities
Containment is designed to handle all liquids stored. Absorbent is used in the event of a small spill.

~~TABLE D-3~~ APPENDIX D-1
(continued)

EMERGENCY EQUIPMENT AT THE TA-50 CHEMICAL WASTE INCINERATOR AND ROOM 117 STORAGE AREA

Decontamination Equipment

Showers
Emergency eye wash

Description of General Capabilities
Safety showers and eye washes are used by personnel who receive a chemical splash to skin or eyes. Specific material safety data sheets for the chemical should be obtained prior to working with the chemical to determine if the application of water is indicated for decontamination.

~~TABLE D-3~~ APPENDIX D-1
(continued)

EMERGENCY EQUIPMENT - HSE-7 CONTROLLED

Spill Control Equipment: Located at TA-54, Area G

Heavy equipment available for emergencies may include

- 2 scrapers
- 1 bulldozer
- 1 tractor (front end loader)
- Shovels
- Absorbents (vermiculite) in combustibles storage shed

Description of General Capabilities:

The following pieces of heavy equipment will be used in the event of large spills. Small spills will be absorbed with absorbent.

Decontamination Equipment

Small decontamination pit for heavy equipment
Showers (MD-11)

Other

Change room with protective clothing (MD-11)
2-3 dozen respirators (particulates) (MD-11)
2 self-contained, portable air masks (MD-11)
2 emergency generators, portable
3 vehicles are available for evacuation of personnel:
2 sanfu
2 Jeep (with emergency equipment, e.g., coveralls, booties, tape, rope)

~~TABLE D-3~~ APPENDIX D-1
(continued)

EMERGENCY EQUIPMENT AT TA-54, AREA L

Fire Control Equipment

1 fire hydrant located 30 feet south of site entrance to site
1 CO fire extinguisher located inside trailer at west end of site (B, C)
1 CO fire extinguisher located inside storage shed (B, C)
1 freeze-proof faucet located immediately east of shed

Description of General Capabilities:
These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in the event of fire.

Spill Control Equipment

Shovels
Oversized drums
Absorbent inside storage shed
Heavy equipment from Area G available for any emergencies at Area L
Bermed storage area

Description of General Capabilities:
The following pieces of heavy equipment will be used in the event of large spills. Small spills will be absorbed with absorbent.

Communications Equipment

2-way radios are available to all personnel when in area
2-way radios are in all vehicles used for moving hazardous waste
Telephone located inside trailer

Description of General Capabilities
External and internal Laboratory communications which may be used in emergency situations are listed.

~~TABLE D-3~~ APPENDIX D-1
(continued)

EMERGENCY EQUIPMENT AT TA-54, AREA L

Decontamination Equipment

1 emergency shower and eye wash located immediately east of shed

Description of General Capabilities:

Safety showers and eye washes are used by personnel who receive a chemical splash to skin or eyes. Specific material safety data sheets for the chemical should be obtained prior to working with the chemical to determine if the application of water is indicated for decontamination.

Other

2 self-contained, portable air masks located inside trailer

APPENDIX D-1
EMERGENCY EQUIPMENT

TA-50

Emergency equipment at TA-50-1, Decontamination Facility, Rooms 35, 36, and 38/38A:

FIRE CONTROL EQUIPMENT:

Two fire extinguishers

Locations:
1 Halon in Room 35.
1 BC in Room 36.

Description of General Capabilities:
These portable, manually operated units are available for use by technicians and/or firefighters.

There is a fire alarm pull station located in Room 49 that may be used by personnel working in Rooms 35, 36, and 38/38A.
A fire suppression sprinkler system is located in Rooms 35 and 36. The sprinkler system is heat activated.

Description of General Capabilities:
Fire alarms may be activated by any employee in the event of a fire to notify the Central Alarm Station (CAS).

A fire hydrant is located outdoors approximately 15 feet from the southeast corner of Room 34B, which is adjacent to Room 36.

SPILL CONTROL EQUIPMENT:

One wall-mounted chemical spill center is located in Room 35. It contains sorbent pillows, safety glasses, and gloves. Personnel working in Rooms 36 and 38/38A have access to the spill center in Room 35.

COMMUNICATION EQUIPMENT:

Telephones with public address (PA) capabilities are located in Rooms 34 and 35A. Personnel working in Rooms 35, 36, and 38/38A may use these phones to summon assistance in case of an emergency. When working in the container storage areas, the buddy system will be employed.
Fires and evacuations are announced via the building paging system.
The fire alarm is a double slow whoop sound.
The evacuation alarm is a high-pitched wailing sound.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment at TA-50-1, Decontamination Facility, Rooms 35, 36, and 38/38A, (Continued):

Description of General Capabilities:
Telephones with PA capabilities for internal and external communication are available for use by any employee. Fire and evacuation alarms are activated in the event of a fire or in case an evacuation is required.

DECONTAMINATION EQUIPMENT:

Safety showers are located in Rooms 35, 36, and 38/38A.
Eyewashes are located in Rooms 35 and 36. Personnel working in Room 38/38A have access to the eyewash in Room 36.
Material Safety Data Sheets (MSDS) are located in Rooms 34B and 49.

Description of General Capabilities:
Safety showers and eyewashes are used by personnel who receive a chemical splash to the skin or to the eyes. Specific MSDS for the chemical(s) being managed should be obtained prior to working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT:

Coveralls, gloves, and steel-toed shoes will be worn while working in Room 35. Coveralls, respirators, steel-toed shoes, gloves, and booties will be worn while working in Room 36. While working in Room 38/38A, lab coats and steel-toed shoes will be worn.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

TA-50

Emergency equipment at TA-50-69, the Waste Characterization, Reduction, and Repackaging Facility (WCRRF):

FIRE CONTROL EQUIPMENT:

Two carbon dioxide fire extinguishers are located in the WCRRF.
A fire extinguisher is located within 20 feet of the WCRRF Outdoor Container Storage Area (CSA).

Description of General Capabilities:
These portable, manually operated units are available for use by technicians and/or firefighters.

Two fire alarm pull stations are located in the WCRRF. Personnel working at the WCRRF Outdoor CSA may use the pull stations in the WCRRF in the event of a fire.
A wet-pipe sprinkler system is located in the WCRRF and in the large glovebox in the WCRRF. The sprinkler system is heat activated.

Description of General Capabilities:
Fire alarms may be activated by any employee in the event of a fire to notify the CAS.

A fire hydrant is located approximately 55 feet west of the WCRRF.

SPILL CONTROL EQUIPMENT:

Spill control kits are located in the WCRRF and at the WCRRF Outdoor CSA.

COMMUNICATION EQUIPMENT:

Three telephones with PA capabilities are located in the WCRRF. The PA system can be heard at the WCRRF Outdoor CSA. Personnel working at the WCRRF Outdoor CSA may use the telephones in the WCRRF. When working at the CSAs, the buddy system will be employed.
The fire alarm is a pulsing sound.
The evacuation alarm is a wailing sound that can be heard throughout the WCRRF and at the WCRRF Outdoor CSA.
Continuous air monitors are connected to a computer system in the vehicle airlock entrance of the WCRRF.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment at TA-50-69, the Waste Characterization, Reduction, and Repackaging Facility (WCRRF), (Continued):

Description of General Capabilities:
Telephones with PA capabilities for internal and external communication are available for use by any employee. Fire and evacuation alarms are activated in the event of a fire or in case an evacuation is required.

DECONTAMINATION EQUIPMENT:

A safety shower is located in the main room of the WCRRF, and a personnel shower is located adjacent to the change room in the WCRRF.
An eyewash is located in the main room of the WCRRF.
The safety shower and eyewash in the WCRRF may be used by personnel working at the WCRRF Outdoor CSA.
MSDS are located in the WCRRF.

Description of General Capabilities:
Safety showers and eyewashes are used by personnel who receive a chemical splash to the skin or to the eyes. Specific MSDS for the chemical(s) being managed should be obtained prior to working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT:

Protective clothing (Level D with thermoluminescent dosimeters [TLD]) will be worn when working at the WCRRF Outdoor CSA. Inside the WCRRF, workers wear anti-C coveralls, surgical gloves, booties, and respirators when unpackaging a waste item, cutting open a waste box, and during large bag-out efforts. Workers wear surgeon's gloves, lab coats, booties, and TLDs while working through enclosure gloves. Workers inside the enclosure airlock must wear anti-C coveralls, surgical gloves, booties, TLDs, and respirators. Workers inside the cutting enclosure wear at least two layers of anti-C coveralls, surgical gloves, booties, TLDs, and air-purifying respirators with supplied breathing air. Every visitor wears an anti-C lab coat, a TLD, safety glasses, and booties.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

TA-54 West

Emergency equipment at TA-54-38, the Radioassay and Nondestructive Testing (RANT) Facility:

FIRE CONTROL EQUIPMENT:

Five fire extinguishers

Locations:
4 Halon fire extinguishers are located inside TA-54-38; 2 in the high bay and 2 in the low bay. 1 Halon fire extinguisher is located at the Outdoor CSA.

Description of General Capabilities:
These portable, manually operated units are available for use by technicians and/or firefighters.

Four fire alarm pull boxes are located inside TA-54-38; 1 in the main entrance, 2 in the high bay near each fire extinguisher, and 1 in the low bay near the exit to the loading dock.

A dry-pipe sprinkler system is located throughout TA-54-38, including the loading dock area. The dry pipe sprinkler system is heat activated in the high bay and at the loading dock. It is smoke activated in the low bay.

Description of General Capabilities:
Fire alarms may be activated by any employee in the event of a fire to notify the CAS.

One fire hydrant is located approximately 220 feet west of TA-54-38 near the entrance to TA-54 West.

Three freeze-proof faucets are located on the northwest, southwest, and southeast sides of TA-54-38. A wall hydrant is located on the northwest side of the building.

SPILL CONTROL EQUIPMENT:

A mobile response kit is located at TA-54-38. The kit includes sorbent socks, pillows, and sheets; goggles; and large plastic bags.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment at TA-54-38, the Radioassay and Nondestructive Testing (RANT) Facility, (Continued):

COMMUNICATION EQUIPMENT:

Three telephones with PA capabilities are located on the first floor of TA-54-38; 1 in the high bay, 1 in the low bay, and 1 outside the main entrance. An emergency telephone is also located outside the main entrance .
The fire alarm is a double slow whoop sound.
The evacuation alarm is a high-pitched wailing sound that can be heard throughout TA-54-38 and TA-54-34.

Description of General Capabilities:
Telephones with PA capabilities for internal and external communication are available for use by any employee. Fire and evacuation alarms are activated in the event of a fire or in case an evacuation is required.

DECONTAMINATION EQUIPMENT:

Two safety showers and two eyewashes are located at TA-54-38; 1 of each is located in the high bay and 1 of each is located on the loading dock.
MSDS are located at the TA-54-38 muster area (approximately 120 feet northwest of TA-54-38) and in the TA-54-38 main entry area.

Description of General Capabilities:
Safety showers and eyewashes are used by personnel who receive a chemical splash to the skin or to the eyes. Specific MSDS for the chemical(s) being managed should be obtained prior to working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT:

Gloves and steel-toed shoes will be worn when working in the container storage areas. Coveralls may also be worn. Special crane equipment operators will wear hard hats when moving waste containers in the high bay.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplemental emergency equipment and personnel available from the Los Alamos County Fire Department (9-911):

Engine companies - 1,250 gallons per minute
- Engines 1, 3, 4, 5, 6, 10, and 40

Engine 50 (Reserve) - 1,000 gallons per minute
Mini-pumpers
- MT-1, -3, -4, and -5

Modular ambulances
- 3 First line - M1, M3, M4
- 1 Reserve Unit - M10

Rescue vehicles
- 1 First Line
- 1 Newly Purchased

Crash-Fire-Rescue (CFR) units
- CFR 6
- CFR 60 (small, fast attack unit)

SCBA units
SCBA air tanks
105-foot tower ladder with pump - 1,500 gallons per minute
Personnel with 120 hours Emergency Medical Technician training
Personnel with Advanced Life Support training
Water tankers
- T-1 = 1,500 gallons
- T-3 = 2,500 gallons
- T-4 = 3,000 gallons
- T-5 = 2,500 gallons
- T-50 = 1,500 gallons

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc. (667-6191):

TRANSPORTATION:

Pickups, 1/2 through 3/4 ton
Trucks, 1 through 3 ton
Vans, panels, and carryalls

SPECIAL EQUIPMENT:

Road grader, Cat, self-propelled blade, with radio
Grader, John Deere, self-propelled, with radio
Loaders, bucket, Melroe, Bobcat, 1/3 cubic yards
Loader, bucket, Cat, 2-3/4 cubic yards, with radio
Loader, Fiat-Allis, 3 cubic yards
Loader, bucket, Cat, 2-1/2 cubic yards
Loader, bucket, Cat, 3-1/4 cubic yards
Loader, bucket, Yale, 3 cubic yards, with radio
Loader, bucket, backhoe, Case, 1-1/2 cubic yards
Loaders, bucket, backhoe, Case, 7/8 cubic yards
Loader, backhoe, Ford, 1 cubic yard
Loader, bucket, backhoe, JCB, 7/8 cubic yards
Snowplows, Bombardier, with blade
Bulldozer, D-8, Crawler
Bulldozers, TD-25, International
Scraper, Terex, self-propelled
Scraper, Fiat-Allis, self-propelled
Bulldozer, 280, rubber-tired, with radio
Semitrailers
Chain saws
Flusher, street, 3,000-gallon truck, tanker, 500-gallon, FMC
Mobile transceivers (2-way, KOB-753)
Generators
Handsets (2-way)
Pageboys (1-way)
Welders, mounted on trailers and trucks

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc. (667-6191), (continued):

PERSONNEL:

Heavy equipment operators
Clerks
Dispatchers
Mechanics
Power saw operators
Radio and telephone operators
Truck drivers

OTHER EQUIPMENT:

Portable toilets
Light bank set 2/3 kilowatt generator
Hand-held two-way radios
6" x 8" landscape timbers
15-ton dump truck
8-ton dump truck
Fuel truck 3,000 gallons (diesel)
Service truck (petroleum, oil, lubricant)
Combination fuel truck (392 gallons diesel) (392 gallons gasoline)

SNOW REMOVAL EQUIPMENT:

Truck-mounted snow plows
Motor graders w/wing plow attachment
Truck-mounted sand/salt spreaders
Sand/salt spreader/plow
Front end loaders
Rubber-tired bulldozer
Farm tractors w/blade attachments
Skid steer loaders
Rubber tracked bombardiers
Hand-operated snow blowers
Road-configured snow blower
Wheel Horses w/blade attachments

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc. (667-6191), (continued):

SNOW REMOVAL PERSONNEL:

Laborers
Teamsters
Operators
Mechanics
Supervisors

SPILL RESPONSE EQUIPMENT:

Spill trailer
Material storage shed
Submersible pump
Acid/caustic pump
Wet/vacuums
Vacuum

SPILL RESPONSE MATERIAL:

Sorbent sheets
Zorball (sacks)
55-gallon barrel w/bung
55-gallon barrel w/o bung
3" x 96" spill booms
Sand bags
Gallon ND-165 degreaser
White mop heads w/handles

PERSONNEL:

Teamsters
Operators
Laborers
Supervisors

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc. (667-6191), (continued):

UTILITIES EQUIPMENT:

Line truck (digger derrick)
Basket truck
Backhoe
Boom truck
Dump truck
Sewage trucks
Potable water truck
Trailer-mounted generator 110 volt
Truck-mounted welders
Thawing machine

UTILITIES PERSONNEL:

Operators
Pipefitters
Laborers

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment and personnel at the Central Medical Facility, Occupational Medicine Group (ESH-2) (667-7251):

At TA-3 (SM-409) Central Clinic:

PERSONNEL:

Physicians
Physician's Assistants
Nurses
X-ray Technicians
Clinical Laboratory Technicians
Clinical Testing Technicians

SPECIAL EQUIPMENT-PORTABLE:

Multichannel emergency receiver-base station
Two-way radio on the State Med Net,
the LANL Emergency Management channel, and the LANL Health-Safety Net
Cardiac monitors and defibrillators
Crash cart emergency equipment with E-tank oxygen (O_2)
Portable physicians' bag with medications
Portable suction unit
Portable stretchers (ambulance, gurney, folding)
Wheelchairs
O_2 tanks
Manual resuscitators
Intravenous (IV) stands
IV solutions
Otoscope/ophthalmoscopes
Portable sphygmomanometers
Stethoscopes
Anticontamination apparel
Eye irritation solution
Industrial first-aid kits
Extrication and cervical collars, crutches, canes
Suture sets
Protective apparel
Morgan lends and irrigation sets
Decontamination equipment (portable)

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment and personnel at the Central Medical Facility, ESH-2 (667-7251) (continued):

At TA-3 (SM-409) Central Clinic (continued):

SUPPLIES-GENERAL:

Bedding/pillows
Rescue blankets
Burn blankets
Thermal/icing pouches
Multitrauma dressings, surgical and first aid supplies
Disposable ice bags

SPECIAL FACILITIES - NONPORTABLE:

Completely equipped emergency room with ambulance entrance
Emergency lighting system
Complete X-ray suite
Protective clothing and wound counters
12-lead electrocardiograph
Fully equipped crash cart with Life Pak, intubation equipment, emergency medications, etc.
Fully equipped decontamination room at Los Alamos Medical Center (LAMC) adjacent to the LAMC emergency room

TRANSPORTATION:

Full ambulance service is available within minutes to the central facility.

COMMUNICATION:

Base station on State Medical Net and Los Alamos County Fire Department trunked radio system.

CLOSURE PLAN
PERMIT ATTACHMENT E.10
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.10
NM0890010515-1

E.10 TECHNICAL AREA 50, BUILDING 1, DECONTAMINATION FACILITY, ROOMS 35, 36, AND 38/38A CONTAINER STORAGE AREAS

The container storage areas (CSA) addressed in this closure plan include the Rooms 35, 36, and 38/38A CSAs at the Technical Area 50, Building 1 (TA-50-1), Decontamination Facility (Figure E.10-1). The CSAs, located in the basement of the southern portion of TA-50-1, are used to store transuranic (TRU) mixed waste, low-level mixed waste, and hazardous waste.

Waste drums and boxes of various sizes and standard waste boxes are stored in the Rooms 35 and 38/38A CSAs prior to waste characterization activities. The Room 35 CSA, which consists of Room 35, is approximately 20 feet (ft) wide and 40 ft long. The floor is concrete overlain with linoleum tile. The Room 38/38A CSA consists of Rooms 38 and 38A, which together measure approximately 10 ft wide and 24 ft long. The floor is concrete and painted with epoxy paint. A 33-inch (in) by 39-in blind sump located roughly in the center of Room 38 has been locked out and epoxy painted.

The Room 36 CSA stores gloveboxes, fiberglass-reinforced plywood (FRP) boxes, and other containers. The Room 36 CSA, which consists of Room 36, is approximately 20 ft wide and 32 ft long. The floor is concrete and painted with epoxy paint. The floor slopes gently toward two recessed cadaver tanks and a central floor drain, which are both connected to the Radioactive Liquid Waste Treatment Facility at TA-50-1.

E.10.1 Estimate of Maximum Waste in Storage

The maximum inventory of waste in storage at any time at the TA-50-1 Decontamination Facility, Rooms 35, 36, and 38/38A CSAs is estimated at 1,000 gallons and 15 cubic yards (the largest anticipated FRP box bearing a waste glovebox to be managed in Room 36). A breakdown of the maximum inventories for each of these areas is as follows:

- Room 35 - 250 gallons
- Room 36 - 15 cubic yards
- Room 38/38A - 750 gallons

E.10.2 Description of Waste

TRU mixed waste stored in the TA-50-1 Decontamination Facility, Rooms 35, 36, and 38/38A CSAs is generated during research activities, processing and recovery operations, and decontamination and decommissioning operations primarily at TA-3, TA-21, TA-50, and TA-55. Low-level mixed waste stored is generated during research activities, processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities at various TAs throughout Los Alamos National Laboratory (LANL). These wastes are classified as 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. Hazardous wastes generated throughout LANL and stored at these CSAs are generated primarily from research and development activities, processing and recovery operations, decontamination and decommissioning projects, and environmental remediation/restoration activities.

E.10.3 Closure Procedure and Decontamination

E.10.3.1 Partial Closure

Partial closure would consist of closing one or more of the RCRA-regulated waste management units or subunits at the LANL facility, while leaving the other RCRA-regulated waste management units at LANL in service. In the event of a partial closure, the following procedures would apply to the unit(s) being closed.

E.10.3.2 Unit Closure

To the extent possible, all contaminated structures and equipment at the CSAs addressed in this closure plan will be decontaminated. Structures, equipment, and media that cannot be decontaminated will be containerized and managed in compliance with appropriate regulations. All sampling conducted during closure and decontamination will be done in accordance with quality assurance/quality control (QA/QC) procedures (see Section E.10.7).

Before proceeding with any closure activities, the CSAs will be surveyed for radiological contamination. Personal protective equipment (PPE) and monitoring requirements will be determined by LANL's Health Physics Operations (ESH-1) and Industrial Hygiene and Safety (ESH-5) Groups following a field inspection. Radiation and chemical monitoring will occur throughout closure activities. If any contamination is found, the contaminated materials, equipment, and/or structures will be decontaminated (if possible) or containerized and taken to an approved storage location at LANL appropriate for the waste type.

Personnel involved in closure activities will wear appropriate PPE, specified by ESH-1 and ESH-5, and will follow good hygiene practices to protect employees from exposure to hazardous and/or mixed waste. 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 ESH-1 and ESH-5 surveys do not indicate detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed boots, and safety glasses or face shields. If an overhead danger is present, a hard hat will be worn. All workers involved in closure activities will be required to have training and medical monitoring. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.

All wastes will be removed from the CSA scheduled to be closed prior to the initiation of closure activities. Containers will be removed from each storage area primarily with forklifts. Small containers may be handled manually or with dollies. All containers will be placed onto flatbed trucks or trailers for transport. Any glovebox components remaining in Room 36 will be handled similarly. All appropriate shipping papers will accompany the wastes during transport. Containers holding RCRA-regulated wastes will be moved to an approved on-site facility or permitted off-site treatment and/or disposal facility.

Before decontamination activities begin, samples of the clean water and detergent (wash water) solution squeezed from mops and/or sponges prior to use will be collected for analysis of the parameters listed in Table E.10-1. The analytical results from these samples will be used to provide a baseline for decontamination verification.

Prior to decontamination of the main surfaces of the CSA, any portable equipment to be removed from the area will be wiped down with wash water solution. This may include equipment such as self-containment pallets, wooden pallets, and miscellaneous equipment. Portable berms will be used to provide containment for the used wash water. After the washdown process, the used wash water will be collected, transferred to containers, sampled, and analyzed for the parameters in Table E.10-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise the used wash water will be managed at an appropriate on-site facility. If sampling and analysis indicate that radioactive and/or hazardous constituents are present, the wash cycles and analyses will continue until the equipment has been decontaminated or the decision is made to manage it appropriately as contaminated waste. This material may be transported to and stored at other waste management facilities to facilitate the closure process.

The walls, floors, and remaining equipment in the CSA rooms will then be wiped down with wash water solution. Portable berms will be used to collect and provide containment for the used wash water. After the washdown process, the used wash water will be collected, stored in containers at the site, sampled, and analyzed for the parameters in Table E.10-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, the used wash water will be managed at an appropriate on-site facility, depending on the regulated constituents present. If sampling and analysis indicate that hazardous and/or radioactive constituents are present, the wash cycles and analyses will continue until the area has been decontaminated or the decision is made to segregate contaminated portions of the storage area for subsequent management as contaminated waste. Decontamination verification is discussed further in Section E.10.3.3.

Under normal circumstances, the following soil sampling information will not be applicable because the CSAs are located inside a building with an impervious floor. However, if soil sampling is deemed necessary based on analytical evidence and the operational history of the unit, sampling of the area will be performed to verify that no hazardous constituents remain upon closure as a result of container storage. A grid will be sited over the area to be sampled, boreholes will be drilled through the floor material, and soil samples will be collected and analyzed to determine the horizontal and vertical extent of contamination.

Prior to use, all decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks will be collected and analyzed in accordance with QA/QC procedures (see Section E.10.7). Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution and scraped as necessary to remove any residue. 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 wash water will be collected and analyzed for the parameters listed in Table E.10-1. If the used wash water is nonhazardous and nonradioactive, the water will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

E.10.3.3 Decontamination Verification

Sufficient sampling and analysis will be required to demonstrate that hazardous or mixed waste residue is not present at the site after closure. Two samples of clean wash water solution squeezed from mops and/or sponges prior to use will be collected before initial washdown of the CSAs. The samples will be analyzed for parameters listed in Table E.10-1 to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in the most current version of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846). Used washdown solutions will also be analyzed for the parameters listed in Table E.10-1. Washdown solutions will be considered contaminated if the used wash water solution shows a significant increase (i.e., determined using statistical methods defined in SW-846) in the analytical parameters over the clean wash water solution. If subsequent washdowns are deemed necessary, an additional sample of clean wash water solution squeezed from mops and/or sponges prior to use will be taken for each additional washdown event.

Existing background soil data for TA-50 may also be used to demonstrate that hazardous or mixed waste residue resulting from storage activities is not present at the site after closure. A comparison of closure sampling data to existing background soil data will be used to establish the source of any hazardous waste or constituents present in the soil if further excavation of the underlying foundation or soil is found to be necessary. If the data comparison indicates that contamination is from container storage activities, additional contaminated soil excavations will be performed until at least one of the decontamination criteria has been met successfully.

Successful decontamination meets one of the following criteria:

- No detectable hazardous waste or constituents from container storage activities are found in the final sample.
- Detectable hazardous waste or constituents from container storage activities in the final sample are removed to statistically significant levels based on baseline concentrations in the clean wash water or established background soil data.
- Detectable hazardous waste or constituents from container storage activities in the final sample are at or below levels negotiated with the New Mexico Environment Department (NMED).
- Detectable hazardous waste or constituent concentrations from container storage activities do not significantly decrease after several washdowns.

E.10.4 Closure Schedule

Closure will not commence until all of the wastes have been removed from the CSA scheduled to be closed. Closure activities will begin in accordance with the approved closure plan, as required by the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.113(a), revised November 1, 1995, within 90 days after final receipt of waste at the CSA. This timeframe will be met as long as facilities are available for treatment and/or disposal of these wastes. In the event that closure activities cannot be completed at the CSA within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements cited in 20 NMAC 4.1, Subpart V, 264.113(a),

revised November 1, 1995. Closure activities and reporting requirements will be completed within 180 days of the receipt of the final volume of waste at the waste management area to be closed. Closure will be conducted in accordance with the schedule presented in Table E.10-2. In the event that closure of a CSA 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), revised November 1, 1995. In addition, the demonstrations in 20 NMAC 4.1, Subpart V, 264.113(a)(1) and (b)(1), revised November 1, 1995, will be made in accordance with 20 NMAC 4.1, Subpart V, 264.113(c), revised November 1, 1995.

E.10.5 Closure Certification

Within 60 days after completion of closure activities for each of the CSAs, the U.S. Department of Energy (DOE) will submit to the Secretary of the NMED, via certified mail, a certification that the area has been closed in accordance with the specifications of the closure plan. 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, revised November 1, 1995. 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 the DOE/Los Alamos Area Office and LANL's Hazardous and Solid Waste Group.

E.10.6 Sampling and Analytical Procedures

The following sections describe procedures and methods for sampling, analysis, and documentation applicable to closure activities. While the procedures and methods are specific, other applicable procedures or methods given in SW-846 may be used if conditions or experience show the alternate method to be more appropriate. All sampling and analytical procedures actually used will be annotated in the final closure report. Sampling will be conducted in accordance with procedures given in SW-846 (for hazardous components) and LANL's Inorganic Trace Analysis Group (CST-9) procedures (for radiological analysis).

E.10.6.1 Soil Sampling

Soil samples will be collected only if evidence is found that hazardous constituents have migrated from the CSAs discussed in this closure plan. The soil samples will only then be collected to determine if contaminants have migrated from the CSAs and, if so, to determine the horizontal and vertical extent of such migration.

E.10.6.1.1 Cleaning of Samplers

To prevent cross contamination, it is important to clean the samplers after each sample is collected. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry.

E.10.6.1.2 Sampling Procedures

The sampling procedures outlined below will be used to obtain samples to determine the amount of RCRA constituents in soil associated with the units undergoing closure. Soil samples will be collected from the 6-inch depth with a trowel or scoop or with a Veihmeyer soil sampler. Sampling procedures will be performed as follows:

- Trowel or Scoop
  - Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
  - Combine the samples in a container appropriate for the required analysis.
  - Cap the container, attach a label and seal, and preserve as required (see Table E.10-3). Record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form. Deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.
- Veihmeyer Sampler
  - Assemble the sampler by screwing in the tip and drive head on the sampling tube.
  - Insert the tapered handle (drive guide) of the drive hammer through the drive head.
  - Place the sampler in a perpendicular position on the soil to be sampled.
  - With the left hand holding the tube, drive the sampler into the soil to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.
  - Record the length of the tube that penetrated the material.
  - Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
  - Rotate the sampler at least two revolutions to shear off the sample at the bottom.
  - Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
  - Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a puller jack and grip.
  - Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.

- Store the sample in an appropriate sample container.

- Label the sample, affix the seals, preserve as required (see Table E.10-3), record in the field logbook, complete the sample analysis request sheet and chain-of-custody form, and deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.

E.10.6.2 Liquid Sampling

A coliwasa or similar device will be used to sample unused wash water solutions before decontamination begins in order to determine baseline parameters. It will also be used to sample the wash water used in cleaning structures and equipment. As an alternative to the coliwasa, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of appropriately after each sample is collected, thus eliminating the potential for cross contamination.

E.10.6.2.1 Cleaning of Samplers

The 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. Samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the coliwasa is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Improper cleaning of sampling equipment will cause cross contamination of samples. Clean samplers should be stored in clean polyethylene plastic tubes or bags in a clean and protected area.

E.10.6.2.2 Sampling Procedure

Liquid sampling with a coliwasa will be performed as follows:

- Ensure that the coliwasa is clean.

- Assemble the coliwasa.

- Check that the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.

- Wear necessary protective clothing and gear, and observe required sampling precautions.

- Put the sampler in the open position by placing the stopper-rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.

- Slowly lower the coliwasa into the liquid at a rate that permits the level of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.

- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.

- Slowly withdraw the sampler from the container with one hand, while wiping the sampler tube with a disposable cloth with the other hand.

- Carefully discharge the sample into a sample container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block, while the lower end of the sampler is positioned in the sample container.

- Preserve as required (see Table E.10-4), cap the container, attach a label and seal, place immediately in an insulated container with ice (if required), record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site, or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.10.6.3 Sample Handling and Documentation

Samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and sample analysis request form. 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: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the logbook. The laboratory portion is intended to be completed by the 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. Sample containers, preservation, and holding times will conform to those specified in SW-846 for the corresponding analyses. 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 packed in vermiculite, sawdust, or if refrigeration is required, an insulated container with ice. Recommended sample containers, preservation, and holding times are presented in Tables E.10-3 and E.10-4.

The sample container must be sealed with a gummed paper 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 must 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 shall 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 all information pertinent to field surveys and sampling. The logbook shall have bound and consecutively numbered pages in 8 1/2 - by 11 inch format. Minimum entries should 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, etc.
- Date and time of sample collection
- Sample destination and transporter's name (e.g., name of laboratory, United Parcel Service, etc.)
- 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 specific 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.10.7 Quality Assurance/Quality Control

A qualified individual or individuals shall be designated to independently oversee the closure activities and to report directly to senior management on the quality of the closure performance. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed, and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and

explained. The designated individual shall prepare a written statement for the final report commenting on the level of decontamination verification achieved.

E.10.8 Closure Report

Upon completion of the closure activities for each CSA addressed in this closure plan, a closure report shall be submitted to the Secretary of the NMED. The report shall document the closure and contain, at a minimum, the following:

- The certification described in Section E.10.5
- Any variance from the approved activities and the reason for the variance
- A tabular summary of all sampling results, showing:
  - Sample identification
  - Sampling location
  - The 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 QA/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.
- Disposition location of RCRA-regulated closure materials
- A certification of accuracy of the report.

TABLE E.10-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 1 (TA-50-1), DECONTAMINATION FACILITY CONTAINER STORAGE AREAS

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L) SW1010 (L) ASTM D93-80
Reactivity	Test method to determine hydrogen cyanide released from waste Test method to determine hydrogen sulfide released from waste	(L, S) HCN Test Method, Section 7.3 (L, S) H_2S Test Method, Section 7.3
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic	Toxicity characteristic leaching procedure (TCLP) extraction	(L, S) SW1311
Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761
Mercury	Manual cold-vapor technique	(L)SW7470A, (S) SW7471A

Refer to footnotes at end of attachment.

TABLE E.10-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 1 (TA-50-1), DECONTAMINATION FACILITY CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Volatile organics	Gas chromatography (GC)/mass spectrometry (MS)	(L, S) SW8240B
	GC/MS capillary column technique	(L, S) SW8260A
Semivolatile organics	GC/MS	(L, S) SW8250A
	GC/MS capillary column technique	(L, S) SW8270B
Organochlorine pesticides	TCLP extraction and GC	(L, S) SW8080A
Chlorinated herbicides		(L, S) SW8150B
Total metals[c]	Acid digestion	(L) SW3010A, (S) SW3050A
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010A
Arsenic		(L, S) SW6010A
Barium		(L, S) SW6010A
Beryllium		(L, S) SW6010A
Cadmium		(L, S) SW6010A
Chromium		(L, S) SW6010A
Lead		(L, S) SW6010A
Nickel		(L, S) SW6010A

Refer to footnotes at end of attachment.

TABLE E.10-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 1 (TA-50-1), DECONTAMINATION FACILITY CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Selenium		(L, S) SW6010A
Silver		(L, S) SW6010A
Thallium		(L, S) SW6010A
Zinc		(L, S) SW6010A
Mercury	Manual cold-vapor technique	(L) SW7470A (S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include, but are not limited to, gross alpha, beta, and gamma screening.
[b] "ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
[c] See also atomic absorption methods.

TABLE E.10-2
SCHEDULE FOR CLOSURE ACTIVITIES AT THE TECHNICAL AREA 50, BUILDING 1 (TA-50-1), DECONTAMINATION FACILITY CONTAINER STORAGE AREAS

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
Collect background samples	-5 Days
Final receipt of waste	Day 0
Begin closure activities (perform washdown of structures)	Day 10
Perform initial sampling of the waste management area	Day 15
Analyze samples	Day 45
Perform additional washdown (if necessary)	Day 50
Perform additional sampling (if necessary)	Day 60
Analyze samples (if necessary)	Day 90
Perform pad washdown and sampling	Day 100
Analyze samples	Day 130
Perform final cleanup (e.g., removal of decontaminated equipment and decontamination wastes)	Day 130
Verify decontamination	Day 140
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.

TABLE E.10-3
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES FOR SEDIMENT/SOIL/SLUDGE SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	8 ounce (oz.) WM[c]-G[d]	Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 120 milliliter (ml) G vial Teflon™-lined cap	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	8 oz. WM-G	Cool 4°C	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinative analysis
Mercury	1 liter P[e]	HNO_3[f] to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	120 ml G vial	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] WM = Wide-mouth
[d] G = Glass
[e] P = Polyethylene
[f] HNO_3 = Nitric acid

TABLE E.10-4
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES FOR LIQUID SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	2 x 40 milliliter (ml) AG[c] septa vials	HCl[d], Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 1 liter AG	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	1 liter P[e]	HNO_3[f] to pH <2	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinate analysis
Mercury	500 ml P	HNO_3 to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	40 ml G[g] vial, no septa	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] AG = Amber glass
[d] HCl = Hydrochloric acid
[e] P = Polyethylene
[f] HNO_3 = Nitric acid
G = Glass

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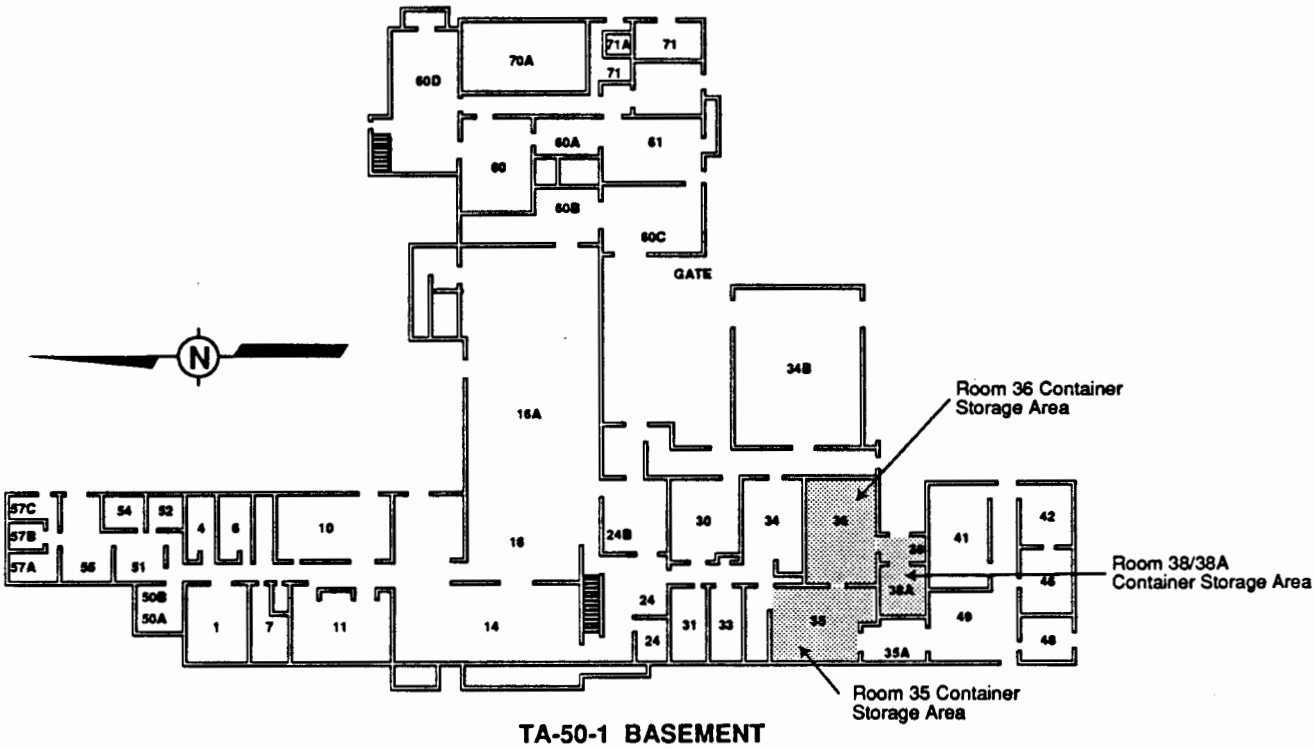

TA-50-1 BASEMENT

FIGURE E.10-1

TECHNICAL AREA (TA) 50, BUILDING 1, DECONTAMINATION FACILITY, ROOMS 35, 36, AND 38/38A CONTAINER STORAGE AREAS

CLOSURE PLAN
PERMIT ATTACHMENT E.11
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.11
NM0890010515-1

E.11 TECHNICAL AREA 50, BUILDING 69, WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS

The container storage areas (CSA) addressed in this closure plan include the Indoor and Outdoor CSAs at the Technical Area 50, Building 69 (TA-50-69), Waste Characterization, Reduction, and Repackaging Facility (WCRRF) (Figure E.11-1). The CSAs are used to store transuranic (TRU) mixed waste, low-level mixed waste, and hazardous waste.

Waste containers stored in the WCRRF Indoor CSA include drums of various sizes, fiberglass-reinforced plywood (FRP) boxes, standard waste boxes (SWB), and other irregular containers. The WCRRF Indoor CSA consists of Rooms 102 and 103. Room 102 is approximately 45 feet (ft) wide and 52 ft long. The floor is reinforced concrete slab with epoxy paint. A floor drain located near the glovebox enclosure in Room 102 is connected directly to the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50-1. Whenever waste containers known or suspected to contain free liquids are managed in this room, the floor drain grate is replaced by a metal plate and rubber gasket. Room 103 is approximately 18 ft wide and 19 ft long. The floor is epoxy painted, reinforced concrete slab. A floor drain located in the eastern part of Room 103 is plumbed directly to the RLWTF; however, the floor drain grate is replaced by a metal plate and rubber gasket whenever waste containers known or suspected to contain free liquids are managed in this room.

Waste containers stored in the WCRRF Outdoor CSA, located approximately 30 ft from the southwest corner of TA-50-69, include drums of various sizes, FRP boxes, SWBs, B25 boxes, and other irregular containers. Transportainers are also utilized at the WCRRF Outdoor CSA to provide weather protection for containers of various sizes. The Outdoor CSA is 24 ft wide and 90 ft long. It is constructed of asphaltic concrete, approximately 4 inches thick.

E.11.1 Estimate of Maximum Waste in Storage

The maximum inventory of waste in storage at any time at the TA-50-69 WCRRF Indoor and Outdoor CSAs is estimated at 31,500 gallons. A breakdown of the maximum inventories for each of these areas is as follows:

- WCRRF Indoor CSA - 1,500 gallons
- WCRRF Oudoor CSA - 30,000 gallons

E.11.2 Description of Waste

TRU mixed waste stored in the TA-50-69 WCRRF Indoor and Outdoor CSAs is generated during research activities, processing and recovery operations, and decontamination and decommissioning operations primarily at TA-3, TA-21, TA-50, and TA-55. Low-level mixed waste stored is generated during research

activities, processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities at various TAs throughout Los Alamos National Laboratory (LANL). These wastes are classified as 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. Hazardous wastes generated throughout LANL and stored at these CSAs are generated primarily from research and development activities, processing and recovery operations, decontamination and decommissioning projects, and environmental remediation/restoration activities.

E.11.3 Closure Procedure and Decontamination

E.11.3.1 Partial Closure

Partial closure would consist of closing one or more of the RCRA-regulated waste management units or subunits at the LANL facility, while leaving the other RCRA-regulated waste management units at LANL in service. In the event of a partial closure, the following procedures would apply to the unit(s) being closed.

E.11.3.2 Unit Closure

To the extent possible, all contaminated structures and equipment at the CSAs addressed in this closure plan will be decontaminated. Structures, equipment, and media that cannot be decontaminated will be containerized and managed in compliance with appropriate regulations. All sampling conducted during closure and decontamination will be done in accordance with quality assurance/quality control (QA/QC) procedures (see Section E.11.7).

Before proceeding with any closure activities, the CSAs will be surveyed for radiological contamination. Personal protective equipment (PPE) and monitoring requirements will be determined by LANL's Health Physics Operations (ESH-1) and Industrial Hygiene and Safety (ESH-5) Groups following a field inspection. Radiation and chemical monitoring will occur throughout closure activities. If any contamination is found, the contaminated materials, equipment, and/or structures will be decontaminated (if possible) or containerized and taken to an approved storage location at LANL appropriate for the waste type.

Personnel involved in closure activities will wear appropriate PPE, specified by ESH-1 and ESH-5, and will follow good hygiene practices to protect employees from exposure to hazardous and/or mixed waste. 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 ESH-1 and ESH-5 surveys do not indicate detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed boots, and safety glasses or face shields. If an overhead danger is present, a hard hat will be worn. All workers involved in closure activities will be required to have training and medical monitoring. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.

All wastes will be removed from the CSA scheduled to be closed prior to the initiation of closure activities. Containers will be removed from each storage area primarily with forklifts. Small containers may be handled manually or with dollies. All containers will be placed onto flatbed trucks or trailers for transport. All appropriate shipping papers will accompany the wastes during transport. Containers holding

RCRA-regulated wastes will be moved to an approved on-site facility or permitted off-site treatment and/or disposal facility.

Before decontamination activities begin, samples of the clean water and detergent (wash water) solution squeezed from mops and/or sponges prior to use will be collected for analysis of the parameters listed in Table E.11-1. The analytical results from these samples will be used to provide a baseline for decontamination verification.

Prior to decontamination of the main surfaces of the CSA, any portable equipment to be removed from the area will be wiped down with wash water solution. This may include equipment such as self-containment pallets, wooden pallets, and miscellaneous equipment. Portable berms will be used to provide containment for the used wash water. After the washdown process, the used wash water will be collected, transferred to containers, sampled, and analyzed for the parameters in Table E.11-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise the used wash water will be managed at an appropriate on-site facility. If sampling and analysis indicate that radioactive and/or hazardous constituents are present, the wash cycles and analyses will continue until the equipment has been decontaminated or the decision is made to manage it appropriately as contaminated waste. This material may be transported to and stored at other waste management facilities to facilitate the closure process.

The walls, floors, and remaining equipment of the WCRRF Indoor CSA will then be wiped down with wash water solution. Portable berms will be used to collect and provide containment for the used wash water. The used wash water will be collected, sampled, and analyzed for the parameters in Table E.11-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, the used wash water will be managed at an appropriate on-site facility, depending on the regulated constituents present. If sampling and analysis indicate that hazardous and/or radioactive constituents are present, the wash cycles and analyses will continue until the area has been decontaminated or the decision is made to segregate contaminated portions of the storage area for subsequent management as contaminated waste. Decontamination verification is discussed further in Section E.11.3.3.

Prior to use, all decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks will be collected and analyzed in accordance with QA/QC procedures (see Section E.11.7). Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution and scraped as necessary to remove any residue. 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 wash water will be collected and analyzed for the parameters listed in Table E.11-1. If the used wash water is nonhazardous and nonradioactive, the water will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

The transportainers used as equipment to provide weather protection for containerized wastes at the Outdoor CSA will be decontaminated as follows. The inside of the units will be scrubbed and rinsed with a wash water solution. (A sample of unused wash water solution will be collected and analyzed for parameters listed in Table E.11-1 to provide a baseline for decontamination verification.) Portable berms

will be used to collect and provide containment for the used wash water. The wash water will be pumped into U. S. Department of Transportation (DOT)-approved drums with pumps. The used wash water will be sampled and analyzed for the parameters in Table E.11-1 to demonstrate decontamination. If sampling and analysis indicate that hazardous and/or radioactive constituents are present, the inside of the units will be washed a second time in the same manner. The wash cycles and analyses will continue until the unit has been completely decontaminated. Decontamination verification is discussed further in Section E.11.3.3. If the used wash water is nonhazardous and nonradioactive, it will be disposed of via the industrial waste water sewer. Otherwise, it will be managed at the appropriate on-site facility, depending on the regulated constituents present. The outside surfaces and equipment of the transportainers will not be exposed to waste material during normal operations. Therefore, these surfaces will not be sampled beyond radiological surveying unless there is information that these surfaces have been exposed to spills during the active life of the unit or that interior spills may have caused leakage from the transportainer.

The asphaltic concrete pad at the Outdoor CSA will be washed down with a wash water solution. Portable berms or other containment structures will be used to collect the wash water from the pad. Before the first washdown, a sample of the clean wash water solution will be collected and analyzed for the parameters listed in Table E.11-1 to provide a baseline for decontamination verification. The used wash water from the pad will also be collected, transferred to DOT-approved containers, sampled, and analyzed for the parameters in Table E.11-1. If the used wash water is nonhazardous and nonradioactive, it will be discharged to the industrial wastewater sewer. Otherwise, the used wash water will be managed at the appropriate on-site facility, depending on the regulated constituents present.

Used wash water samples from the Outdoor CSA asphaltic concrete pad may exhibit anomalously high levels of organic compounds due to leaching of the pad materials during washdown. If this is the case, record reviews (e.g., manufacturer's specifications, MSDS) and additional analyses may be performed to determine if leaching of organic constituents from the pad contributed to the organic compound concentration in used wash water. If this additional evaluation confirms the asphaltic concrete materials as the source of contamination, baseline concentrations for clean wash water will be adjusted accordingly. The pad area may undergo up to two wash cycles. If decontamination verification cannot be demonstrated after two wash cycles, the asphaltic concrete material will be removed from the site and managed as appropriate for the waste type. If the wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

Soil sampling will be conducted as part of the closure activities to determine if contaminants have migrated from the south side of the WCRRF Outdoor CSA. Prior to the initiation of closure activities, background soil samples will be collected near the pad and analyzed for the parameters listed in Table E.11-1. After washdown activities at the CSA are complete, a statistically representative number of soil samples will be collected from the soil surrounding the pad. Samples will be collected 6 inches from the edge of the pad to a depth of 6 inches and equally spaced to ensure that samples are representative of the entire perimeter of the storage area. Samples will be analyzed for the parameters listed in Table E.11-1. If contamination is found in any of the soil samples as a result of container storage on the pad, the contaminated soil will be removed to statistically significant levels based on concentrations in the background soil samples.

The north, west, and east boundaries of the WCRRF Outdoor CSA are not situated near soil areas. After washdown activities at the CSA are complete, a statistically representative number of small area washdown samples will be collected from the asphalt surrounding the pad in a manner similar to the above soil samples. One-foot-square areas approximately 3 feet from the boundary of the CSA will be wiped down. The wash water will be collected and analyzed for the parameters listed in Table E.11-1. The baseline concentration asphalt leachate samples or information described above will also apply for these samples. The degree of contamination, if present, will be assessed for these areas. If the samples do not exhibit contamination, the area will be considered to be decontaminated. If contamination is found in these samples as a result of container storage on the pad, the asphalt area around the CSA may be subject to the same wash down or removal process described above for the asphalt inside the CSA.

E.11.3.3 Decontamination Verification

Sufficient sampling and analysis will be required to demonstrate that hazardous or mixed waste residue is not present at the site after closure. Two samples of clean wash water solution squeezed from mops and/or sponges prior to use will be collected before initial washdown of the CSAs. The samples will be analyzed for parameters listed in Table E.11-1 to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in the most current version of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846). Used washdown solutions will also be analyzed for the parameters listed in Table E.11-1. Washdown solutions will be considered contaminated if the used wash water solution shows a significant increase (i.e., determined using statistical methods defined in SW-846) in the analytical parameters over the clean wash water solution. If subsequent washdowns are deemed necessary, an additional sample of clean wash water solution squeezed from mops and/or sponges prior to use will be taken for each additional washdown event.

Existing background soil data for TA-50-69 may also be used to demonstrate that hazardous or mixed waste residue resulting from storage activities is not present at the site after closure. A comparison of closure sampling data to existing background soil data will be used to establish the source of any hazardous waste or constituents present in the soil. If the data comparison indicates that contamination is from container storage activities, additional contaminated soil excavations will be performed until at least one of the decontamination criteria has been met successfully.

Successful decontamination meets one of the following criteria:

- No detectable hazardous waste or constituents from container storage activities are found in the final sample.
- Detectable hazardous waste or constituents from container storage activities in the final sample are removed to statistically significant levels based on baseline concentrations in the clean wash water or established background soil data.
- Detectable hazardous waste or constituents from container storage activities in the final sample are at or below levels negotiated with the New Mexico Environment Department (NMED).
- Detectable hazardous waste or constituent concentrations from container storage activities do not significantly decrease after several washdowns.

E.11.4 Closure Schedule

Closure will not commence until all of the wastes have been removed from the CSA scheduled to be closed. Closure activities will begin in accordance with the approved closure plan, as required by the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.113(a), revised November 1, 1995, within 90 days after final receipt of waste at the CSA. This timeframe will be met as long as facilities are available for treatment and/or disposal of these wastes. In the event that closure activities cannot be completed at the CSA within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements cited in 20 NMAC 4.1, Subpart V, 264.113(a), revised November 1, 1995. Closure activities and reporting requirements will be completed within 180 days of the receipt of the final volume of waste at the waste management area to be closed. Closure will be conducted in accordance with the schedule presented in Table E.11-2. In the event that closure of a CSA 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), revised November 1, 1995. In addition, the demonstrations in 20 NMAC 4.1, Subpart V, 264.113(a)(1) and (b)(1), revised November 1, 1995, will be made in accordance with 20 NMAC 4.1, Subpart V, 264.113(c), revised November 1, 1995.

E.11.5 Closure Certification

Within 60 days after completion of closure activities for each of the CSAs, the U.S. Department of Energy (DOE) will submit to the Secretary of the NMED, via certified mail, a certification that the area has been closed in accordance with the specifications of the closure plan. 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, revised November 1, 1995. 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 the DOE/Los Alamos Area Office and LANL's Hazardous and Solid Waste Group.

E.11.6 Sampling and Analytical Procedures

The following sections describe procedures and methods for sampling, analysis, and documentation applicable to closure activities. While the procedures and methods are specific, other applicable procedures or methods given in SW-846 may be used if conditions or experience show the alternate method to be more appropriate. All sampling and analytical procedures actually used will be annotated in the final closure report. Sampling will be conducted in accordance with procedures given in SW-846 (for hazardous components) and LANL's Inorganic Trace Analysis Group (CST-9) procedures (for radiological analysis).

E.11.6.1 Soil Sampling

Soil samples will be collected at the WCRRF Outdoor CSA at TA-50-69. The soil samples will be collected to determine if contaminants have migrated from the CSA and, if so, to determine the horizontal and vertical extent of such migration.

E.11.6.1.1 Cleaning of Samplers

To prevent cross contamination, it is important to clean the samplers after each sample is collected. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry.

E.11.6.1.2 Sampling Procedures

The sampling procedures outlined below will be used to obtain samples to determine the amount of RCRA constituents in soil associated with the units undergoing closure. Soil samples will be collected from the 6-inch depth with a trowel or scoop or with a Veihmeyer soil sampler. Sampling procedures will be performed as follows:

- Trowel or Scoop
  - Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
  - Combine the samples in a container appropriate for the required analysis.
  - Cap the container, attach a label and seal, and preserve as required (see Table E.11-3). Record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form. Deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.
- Veihmeyer Sampler
  - Assemble the sampler by screwing in the tip and drive head on the sampling tube.
  - Insert the tapered handle (drive guide) of the drive hammer through the drive head.
  - Place the sampler in a perpendicular position on the soil to be sampled.
  - With the left hand holding the tube, drive the sampler into the soil to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.
  - Record the length of the tube that penetrated the material.
  - Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
  - Rotate the sampler at least two revolutions to shear off the sample at the bottom.
  - Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.

- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a puller jack and grip.

- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.

- Store the sample in an appropriate sample container.

- Label the sample, affix the seals, preserve as required (see Table E.11-3), record in the field logbook, complete the sample analysis request sheet and chain-of-custody form, and deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.

E.11.6.2 Liquid Sampling

A coliwasa or similar device will be used to sample unused wash water solutions before decontamination begins in order to determine baseline parameters. It will also be used to sample the wash water used in cleaning structures and equipment. As an alternative to the coliwasa, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of appropriately after each sample is collected, thus eliminating the potential for cross contamination.

E.11.6.2.1 Cleaning of Samplers

The 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. Samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the coliwasa is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Improper cleaning of sampling equipment will cause cross contamination of samples. Clean samplers should be stored in clean polyethylene plastic tubes or bags in a clean and protected area.

E.11.6.2.2 Sampling Procedure

Liquid sampling with a coliwasa will be performed as follows:

- Ensure that the coliwasa is clean.

- Assemble the coliwasa.

- Check that the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.

- Wear necessary protective clothing and gear, and observe required sampling precautions.

- Put the sampler in the open position by placing the stopper-rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.

- Slowly lower the coliwasa into the liquid at a rate that permits the level of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.

- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.

- Slowly withdraw the sampler from the container with one hand, while wiping the sampler tube with a disposable cloth with the other hand.

- Carefully discharge the sample into a sample container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block, while the lower end of the sampler is positioned in the sample container.

- Preserve as required (see Table E.11-4), cap the container, attach a label and seal, place immediately in an insulated container with ice (if required), record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site, or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.11.6.3 Sample Handling and Documentation

Samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and sample analysis request form. 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: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the logbook. The laboratory portion is intended to be completed by the 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. Sample containers, preservation, and holding times will conform to those specified in SW-846 for the corresponding analyses. 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 packed in vermiculite, sawdust, or if refrigeration is required, an insulated container with ice. Recommended sample containers, preservation, and holding times are presented in Tables E.11-3 and E.11-4.

The sample container must be sealed with a gummed paper 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 must 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 shall 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 all information pertinent to field surveys and sampling. The logbook shall have bound and consecutively numbered pages in 8 1/2 - by 11 inch format. Minimum entries should 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, etc.
- Date and time of sample collection
- Sample destination and transporter's name (e.g., name of laboratory, United Parcel Service, etc.)
- 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 specific 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.11.7 Quality Assurance/Quality Control

A qualified individual or individuals shall be designated to independently oversee the closure activities and to report directly to senior management on the quality of the closure performance. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed, and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the level of decontamination verification achieved.

E.11.8 Closure Report

Upon completion of the closure activities for each CSA addressed in this closure plan, a closure report shall be submitted to the Secretary of the NMED. The report shall document the closure and contain, at a minimum, the following:

- The certification described in Section E.11.5
- Any variance from the approved activities and the reason for the variance
- A tabular summary of all sampling results, showing:
  - Sample identification
  - Sampling location
  - The 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 QA/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.
- Disposition location of RCRA-regulated closure materials
- A certification of accuracy of the report.

TABLE E.11-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 69 (TA-50-69), WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDDOR AND OUTDOOR CONTAINER STORAGE AREAS

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L) SW1010 (L) ASTM D93-80
Reactivity	Test method to determine hydrogen cyanide released from waste Test method to determine hydrogen sulfide released from waste	(L, S) HCN Test Method, Section 7.3 (L, S) H_2S Test Method, Section 7.3
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040A
Toxicity characteristic	Toxicity characteristic leaching procedure (TCLP) extraction	(L, S) SW1311
Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761

Refer to footnotes at end of attachment.

TABLE E.11-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 69 (TA-50-69), WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Mercury	Manual cold-vapor technique	(L)SW7470A, (S) SW7471A
Volatile organics	Gas chromatography (GC)/mass spectrometry (MS) GC/MS capillary column technique	(L, S) SW8240B (L, S) SW8260A
Semivolatile organics	GC/MS GC/MS capillary column technique	(L, S) SW8250A (L, S) SW8270B
Organochlorine pesticides	TCLP extraction and GC	(L, S) SW8080A
Chlorinated herbicides		(L, S) SW8150B
Total metals[c]	Acid digestion Inductively coupled plasma atomic emission spectroscopy	(L) SW3010A, (S) SW3050A (L, S) SW6010A
Arsenic		(L, S) SW6010A
Barium		(L, S) SW6010A
Beryllium		(L, S) SW6010A

Refer to footnotes at end of attachment.

TABLE E.11-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 69 (TA-50-69), WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Cadmium		(L, S) SW6010A
Chromium		(L, S) SW6010A
Lead		(L, S) SW6010A
Nickel		(L, S) SW6010A
Selenium		(L, S) SW6010A
Silver		(L, S) SW6010A
Thallium		(L, S) SW6010A
Zinc		(L, S) SW6010A
Mercury	Manual cold-vapor technique	(L) SW7470A (S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include, but are not limited to, gross alpha, beta, and gamma screening.
[b] "ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
[c] See also atomic absorption methods.

TABLE E.11-2
SCHEDULE FOR CLOSURE ACTIVITIES AT THE TECHNICAL AREA 50, BUILDING 69 (TA-50-69), WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS

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
Collect background samples	-5 Days
Final receipt of waste	Day 0
Begin closure activities (perform washdown of structures)	Day 10
Perform initial sampling of the waste management area	Day 15
Analyze samples	Day 45
Perform additional washdown (if necessary)	Day 50
Perform additional sampling (if necessary)	Day 60
Analyze samples (if necessary)	Day 90
Perform pad washdown and sampling	Day 100
Analyze samples	Day 130
Perform final cleanup (e.g., removal of decontaminated equipment and decontamination wastes)	Day 130
Verify decontamination	Day 140
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.

TABLE E.11-3
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES FOR SEDIMENT/SOIL/SLUDGE SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	8 ounce (oz.) WM[c]-G[d]	Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 120 milliliter (ml) G vial Teflon™-lined cap	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	8 oz. WM-G	Cool 4°C	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinative analysis
Mercury	1 liter P[e]	HNO_3[f] to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	120 ml G vial	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] WM = Wide-mouth
[d] G = Glass
[e] P = Polyethylene
[f] HNO_3 = Nitric acid

TABLE E.11-4
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES FOR LIQUID SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	2 x 40 milliliter (ml) AG[c] septa vials	HCl[d], Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 1 liter AG	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	1 liter P[e]	HNO_3[f] to pH <2	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinate analysis
Mercury	500 ml P	HNO_3 to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	40 ml G[g] vial, no septa	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] AG = Amber glass
[d] HCl = Hydrochloric acid
[e] P = Polyethylene
[f] HNO_3 = Nitric acid
[g] G = Glass

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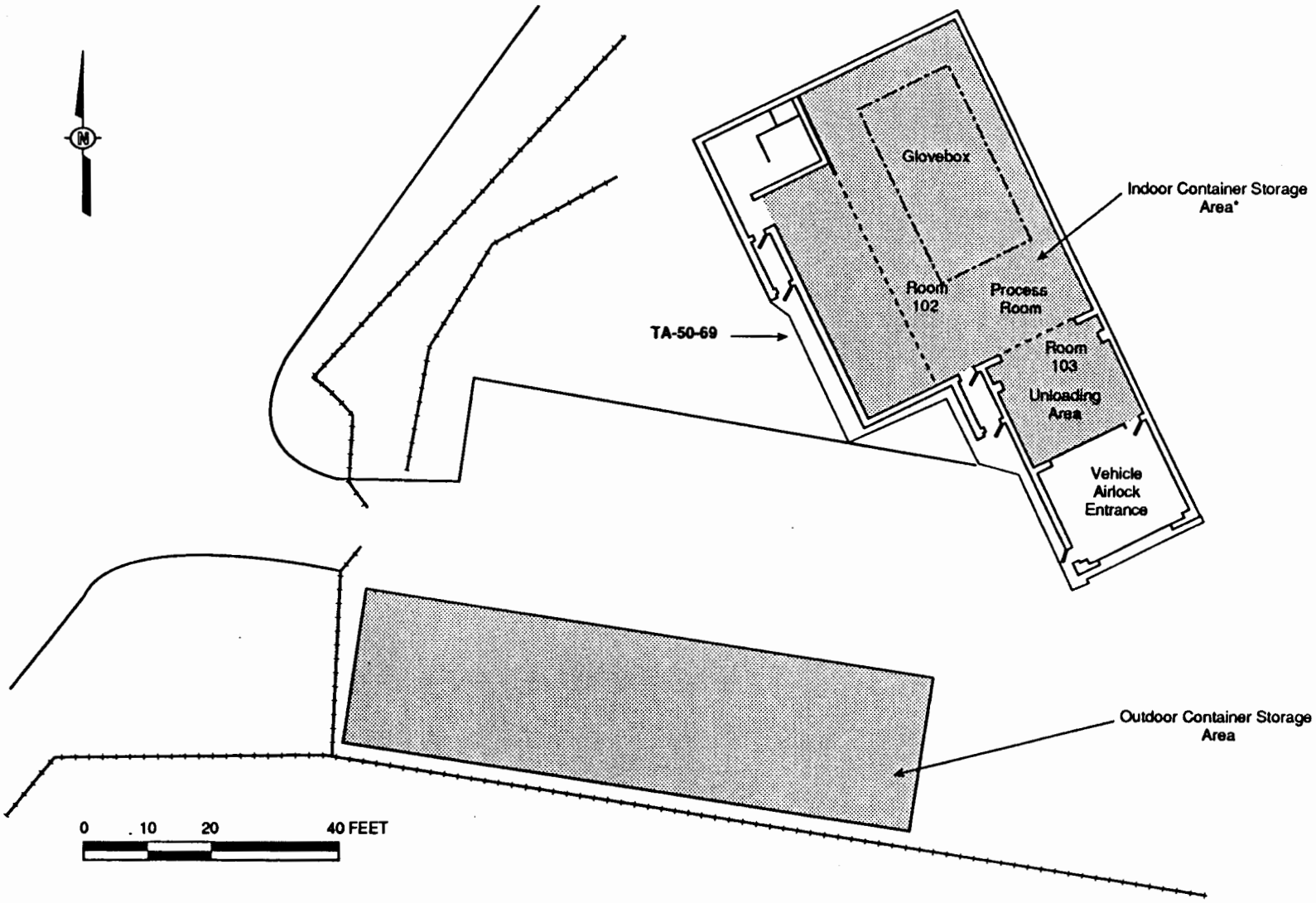

*Note: Container Storage Area in Building 69 does not include mezzanine.

FIGURE E.11-1

TECHNICAL AREA (TA) 50, BUILDING 69, WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS

CLOSURE PLAN
PERMIT ATTACHMENT E.12
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.12
NM0890010515-1

E.12 TECHNICAL AREA 54 WEST, BUILDING 38, RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS

The container storage areas (CSA) addressed in this closure plan include the Low Bay, the High Bay, the Loading Dock, and the Outdoor CSAs at the Technical Area 54 West, Building 38 (TA-54-38), Radioassay and Nondestructive Testing (RANT) Facility (Figure E.12-1). The CSAs are used to store transuranic (TRU) mixed waste and low-level mixed waste.

Waste drums of various sizes are stored in the Low Bay CSA and the Loading Dock CSA. The Low Bay CSA is approximately 11 feet (ft) square, and the low bay floor is 6-inch reinforced concrete slab coated with industrial grade enamel paint. The Loading Dock, located just east of the low bay, is approximately 16 ft wide and 39 ft long. It is constructed of cast-in-place concrete. A truck ramp, which is not part of the Loading Dock CSA, runs perpendicular to the loading dock platform. At the bottom of the truck ramp is a 38-inch-square grate covering a drainage culvert. A slide gate valve is closed to seal the culvert whenever potential liquid-bearing waste containers are loaded or unloaded at the loading dock. The Loading Dock CSA is divided into two areas on the platform. One area at the north end of the loading dock is 16 ft by 10 ft. The second area at the south end of the loading dock is 16 ft by 12 ft.

The High Bay CSA stores drums of various sizes, fiberglass-reinforced plywood boxes, standard waste boxes (SWB), and B25 boxes. The High Bay CSA, located along the south side of the center wall, is approximately 11 ft wide and 34 ft long. The high bay floor is 6-inch reinforced concrete slab. It slopes gently toward a central 50-ft trench and a sump. The sump is locked out and a pipe plug has been installed.

Waste containers stored in the Outdoor CSA include drums of various sizes, SWBs, and B25 boxes. The Outdoor CSA, located just north of the RANT Facility, is 40 ft square. It is constructed of asphaltic concrete, is approximately 4 inches thick, and slopes gently to the northeast.

E.12.1 Estimate of Maximum Waste in Storage

The maximum inventory of waste in storage at any time at the TA-54-38 RANT Facility is estimated at 11,660 gallons. A breakdown of the maximum inventories for each of these areas is as follows:

- Low Bay CSA - 880 gallons
- High Bay CSA - 2,200 gallons
- Loading Dock CSA - 660 gallons
- Outdoor CSA - 7,920 gallons

E.12.2 Description of Waste

TRU mixed waste stored in the TA-54-38 RANT Facility CSAs is generated during research activities, processing and recovery operations, and decontamination and decommissioning operations primarily at TA-3, TA-21, TA-50, and TA-55. Low-level mixed waste stored is generated during research activities, processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities at various TAs throughout Los Alamos National Laboratory (LANL). These wastes are classified as 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.

E.12.3 Closure Procedure and Decontamination

E.12.3.1 Partial Closure

Partial closure would consist of closing one or more of the RCRA-regulated waste management units or subunits at the LANL facility, while leaving the other RCRA-regulated waste management units at LANL in service. In the event of a partial closure, the following procedures would apply to the unit(s) being closed.

E.12.3.2 Unit Closure

To the extent possible, all contaminated structures and equipment at the CSAs addressed in this closure plan will be decontaminated. Structures, equipment, and media that cannot be decontaminated will be containerized and managed in compliance with appropriate regulations. All sampling conducted during closure and decontamination will be done in accordance with quality assurance/quality control (QA/QC) procedures (see Section E.12.7).

Before proceeding with any closure activities, the CSAs will be surveyed for radiological contamination. Personal protective equipment (PPE) and monitoring requirements will be determined by LANL's Health Physics Operations (ESH-1) and Industrial Hygiene and Safety (ESH-5) Groups following a field inspection. Radiation and chemical monitoring will occur throughout closure activities. If any contamination is found, the contaminated materials, equipment, and/or structures will be decontaminated (if possible) or containerized and taken to an approved storage location at LANL appropriate for the waste type.

Personnel involved in closure activities will wear appropriate PPE, specified by ESH-1 and ESH-5, and will follow good hygiene practices to protect employees from exposure to hazardous and/or mixed waste. 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 ESH-1 and ESH-5 surveys do not indicate detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed boots, and safety glasses or face shields. If an overhead danger is present, a hard hat will be worn. All workers involved in closure activities will be required to have training and medical monitoring. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.

All wastes will be removed from the CSA scheduled to be closed prior to the initiation of closure activities. Containers will be removed from each storage area primarily with forklifts. Small containers

may be handled manually or with dollies. All containers will be placed onto flatbed trucks or trailers for transport. All appropriate shipping papers will accompany the wastes during transport. Containers holding RCRA-regulated wastes will be moved to an approved on-site facility or permitted off-site treatment and/or disposal facility.

Before decontamination activities begin, samples of the clean water and detergent (wash water) solution squeezed from mops and/or sponges prior to use will be collected for analysis of the parameters listed in Table E.12-1. The analytical results from these samples will be used to provide a baseline for decontamination verification.

The walls, floors, and equipment in the Low Bay, High Bay, and Loading Dock CSAs will then be wiped down with wash water solution. Portable berms will be used to collect and provide containment for the used wash water. After the washdown process, the used wash water will be collected, sampled, and analyzed for the parameters in Table E.12-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, the used wash water will be managed at an appropriate on-site facility, depending on the regulated constituents present. If sampling and analysis indicate that hazardous and/or radioactive constituents are present, the wash cycles and analyses will continue until the area has been decontaminated or the decision is made to segregate contaminated portions of the storage area for subsequent management as contaminated waste. Decontamination verification is discussed further in Section E.12.3.3.

Under normal circumstances, the following soil sampling information will not be applicable for the Low Bay and High Bay CSAs because they are located inside a building with an impervious floor. However, if soil sampling is deemed necessary based on analytical evidence and the operational history of the unit, sampling of the area will be performed to verify that no hazardous constituents remain upon closure as a result of container storage. A grid will be sited over the area to be sampled, boreholes will be drilled through the floor material, and soil samples will be collected and analyzed to determine the horizontal and vertical extent of contamination.

Prior to use, all decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks will be collected and analyzed in accordance with QA/QC procedures (see Section E.12.7). Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution and scraped as necessary to remove any residue. 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 wash water will be collected and analyzed for the parameters listed in Table E.12-1. If the used wash water is nonhazardous and nonradioactive, the water will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

The Outdoor CSA asphaltic concrete pad will be washed down with a wash water solution. Portable berms or other containment structures will be used to collect the wash water from the pad. Before the first washdown, a sample of clean wash water solution will be collected and analyzed for the parameters listed in Table E.12-1 to provide a baseline for decontamination verification. The used wash water will also be collected, transferred to DOT-approved containers, sampled, and analyzed for the parameters in Table E.12-1. If the used wash water is nonhazardous and nonradioactive, it will be discharged to the

industrial wastewater sewer. Otherwise, the used wash water will be managed at an appropriate on-site facility, depending on the regulated constituents present.

Used wash water samples from the Outdoor CSA may exhibit anomalously high levels of organic compounds due to leaching of the asphaltic concrete pad materials during washdown. If this is the case, record reviews (e.g., manufacturer's specifications, MSDS) and additional analyses may be performed to determine if leaching of organic constituents from the pad contributed to the organic compound concentration in the used wash water. If this additional evaluation confirms the asphaltic concrete materials as the source of contamination, baseline concentrations for clean wash water will be adjusted accordingly. The pad area may undergo up to two wash cycles. If decontamination verification cannot be demonstrated after two wash cycles, the asphaltic concrete material will be removed from the site and managed as appropriate for the waste type. If the wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

The RANT Facility Outdoor CSA is situated on an extensive asphalt area and container storage is not likely to result in soil contamination except in the case of a major spill that would initiate the cleanup conditions of the contingency plan and be recorded in the facility record. Therefore, after washdown activities at the CSA are complete, a statistically representative number of small area washdown samples will be collected from the asphalt surrounding the pad in a manner similar to the above washdown of the CSA. One-foot-square areas approximately 3 feet from the boundary of the CSA will be wiped down. This wash water will be collected and analyzed for the parameters listed in Table E.12-1. The baseline concentration asphalt leachate samples or information described above will also apply for these samples. The degree of contamination, if present, will be assessed for these areas. If the samples do not exhibit contamination, the area will be considered to be decontaminated. If contamination is found in these samples as a result of container storage on the pad, the asphalt area around the CSA may be subject to the same wash down or removal process described above for the asphalt inside the CSA.

E.12.3.3 Decontamination Verification

Sufficient sampling and analysis will be required to demonstrate that hazardous or mixed waste residue is not present at the site after closure. Two samples of clean wash water solution squeezed from mops and/or sponges prior to use will be collected before initial washdown of the CSAs. The samples will be analyzed for parameters listed in Table E.12-1 to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in the most current version of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846). Used washdown solutions will also be analyzed for the parameters listed in Table E.12-1. Washdown solutions will be considered contaminated if the used wash water solution shows a significant increase (i.e., determined using statistical methods defined in SW-846) in the analytical parameters over the clean wash water solution. If subsequent washdowns are deemed necessary, an additional sample of clean wash water solution squeezed from mops and/or sponges prior to use will be taken for each additional washdown event.

Existing background soil data for the RANT Facility CSAs may also be used to demonstrate that hazardous or mixed waste residue resulting from storage activities is not present at the site after closure. A comparison of closure sampling data to existing background soil data will be used to establish the source of any hazardous waste or constituents present in the soil. If the data comparison indicates that

contamination is from container storage activities, additional contaminated soil excavations will be performed until at least one of the decontamination criteria has been met successfully.

Successful decontamination meets one of the following criteria:

- No detectable hazardous waste or constituents from container storage activities are found in the final sample.
- Detectable hazardous waste or constituents from container storage activities in the final sample are removed to statistically significant levels based on baseline concentrations in the clean wash water or established background soil data.
- Detectable hazardous waste or constituents from container storage activities in the final sample are at or below levels negotiated with the New Mexico Environment Department (NMED).
- Detectable hazardous waste or constituent concentrations from container storage activities do not significantly decrease after several washdowns.

E.12.4 Closure Schedule

Closure will not commence until all of the wastes have been removed from the CSA scheduled to be closed. Closure activities will begin in accordance with the approved closure plan, as required by the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.113(a), revised November 1, 1995, within 90 days after final receipt of waste at the CSA. This timeframe will be met as long as facilities are available for treatment and/or disposal of these wastes. In the event that closure activities cannot be completed at the CSA within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements cited in 20 NMAC 4.1, Subpart V, 264.113(a), revised November 1, 1995. Closure activities and reporting requirements will be completed within 180 days of the receipt of the final volume of waste at the waste management area to be closed. Closure will be conducted in accordance with the schedule presented in Table E.12-2. In the event that closure of a CSA 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), revised November 1, 1995. In addition, the demonstrations in 20 NMAC 4.1, Subpart V, 264.113(a)(1) and (b)(1), revised November 1, 1995, will be made in accordance with 20 NMAC 4.1, Subpart V, 264.113(c), revised November 1, 1995.

E.12.5 Closure Certification

Within 60 days after completion of closure activities for each of the CSAs, the U.S. Department of Energy (DOE) will submit to the Secretary of the NMED, via certified mail, a certification that the area has been closed in accordance with the specifications of the closure plan. 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, revised November 1, 1995. 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 the DOE/Los Alamos Area Office and LANL's Hazardous and Solid Waste Group.

E.12.6 Sampling and Analytical Procedures

The following sections describe procedures and methods for sampling, analysis, and documentation applicable to closure activities. While the procedures and methods are specific, other applicable procedures or methods given in SW-846 may be used if conditions or experience show the alternate method to be more appropriate. All sampling and analytical procedures actually used will be annotated in the final closure report. Sampling will be conducted in accordance with procedures given in SW-846 (for hazardous components) and LANL's Inorganic Trace Analysis Group (CST-9) procedures (for radiological analysis).

E.12.6.1 Soil and Sediment Sampling

Soil samples will be collected only if evidence is found that hazardous constituents have migrated from the CSAs discussed in this closure plan. The soil samples will only then be collected to determine if contaminants have migrated from the CSAs and, if so, to determine the horizontal and vertical extent of such migration. Sediment samples from the sump associated with the High Bay CSA may also need to be obtained if evidence is found that hazardous constituents have migrated from this CSA.

E.12.6.1.1 Cleaning of Samplers

To prevent cross contamination, it is important to clean the samplers after each sample is collected. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry.

E.12.6.1.2 Sampling Procedures

The sampling procedures outlined below will be used to obtain samples to determine the amount of RCRA constituents in soil associated with the units undergoing closure. Soil samples will be collected from the 6-inch depth with a trowel or scoop or with a Veihmeyer soil sampler. Sediment samples will be collected with a trowel or scoop. Sampling procedures will be performed as follows:

- Trowel or Scoop
  - Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
  - Combine the samples in a container appropriate for the required analysis.
  - Cap the container, attach a label and seal, and preserve as required (see Table E.12-3). Record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form. Deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.

- Veihmeyer Sampler
  - Assemble the sampler by screwing in the tip and drive head on the sampling tube.
  - Insert the tapered handle (drive guide) of the drive hammer through the drive head.
  - Place the sampler in a perpendicular position on the soil to be sampled.
  - With the left hand holding the tube, drive the sampler into the soil to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.
  - Record the length of the tube that penetrated the material.
  - Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
  - Rotate the sampler at least two revolutions to shear off the sample at the bottom.
  - Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
  - Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a puller jack and grip.
  - Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.
  - Store the sample in an appropriate sample container.
  - Label the sample, affix the seals, preserve as required (see Table E.12-3), record in the field logbook, complete the sample analysis request sheet and chain-of-custody form, and deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.

E.12.6.2 Liquid Sampling

A coliwasa or similar device will be used to sample unused wash water solutions before decontamination begins in order to determine baseline parameters. It will also be used to sample the wash water used in cleaning structures and equipment. As an alternative to the coliwasa, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of appropriately after each sample is collected, thus eliminating the potential for cross contamination.

E.12.6.2.1 Cleaning of Samplers

The 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. Samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the coliwasa is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Improper cleaning of sampling equipment will cause cross contamination of samples. Clean samplers should be stored in clean polyethylene plastic tubes or bags in a clean and protected area.

E.12.6.2.2 Sampling Procedure

Liquid sampling with a coliwasa will be performed as follows:

- Ensure that the coliwasa is clean.
- Assemble the coliwasa.
- Check that the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.
- Wear necessary protective clothing and gear, and observe required sampling precautions.
- Put the sampler in the open position by placing the stopper-rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.
- Slowly lower the coliwasa into the liquid at a rate that permits the level of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.
- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.
- Slowly withdraw the sampler from the container with one hand, while wiping the sampler tube with a disposable cloth with the other hand.
- Carefully discharge the sample into a sample container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block, while the lower end of the sampler is positioned in the sample container.
- Preserve as required (see Table E.12-4), cap the container, attach a label and seal, place immediately in an insulated container with ice (if required), record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site, or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.12.6.3 Sample Handling and Documentation

Samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and sample analysis request form. 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: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the logbook. The laboratory portion is intended to be completed by the 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. Sample containers, preservation, and holding times will conform to those specified in SW-846 for the corresponding analyses. 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 packed in vermiculite, sawdust, or if refrigeration is required, an insulated container with ice. Recommended sample containers, preservation, and holding times are presented in Tables E.12-3 and E.12-4.

The sample container must be sealed with a gummed paper 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 must 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 shall 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 all information pertinent to field surveys and sampling. The logbook shall have bound and consecutively numbered pages in 8 1/2 - by 11 inch format. Minimum entries should 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, etc.
- Date and time of sample collection
- Sample destination and transporter's name (e.g., name of laboratory, United Parcel Service, etc.)
- 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 specific 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.12.7 Quality Assurance/Quality Control

A qualified individual or individuals shall be designated to independently oversee the closure activities and to report directly to senior management on the quality of the closure performance. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed, and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the level of decontamination verification achieved.

E.12.8 Closure Report

Upon completion of the closure activities for each CSA addressed in this closure plan, a closure report shall be submitted to the Secretary of the NMED. The report shall document the closure and contain, at a minimum, the following:

- The certification described in Section E.12.5
- Any variance from the approved activities and the reason for the variance
- A tabular summary of all sampling results, showing:
  - Sample identification

- Sampling location
- The 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 QA/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.

* Disposition location of RCRA-regulated closure materials

* A certification of accuracy of the report.

TABLE E.12-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, BUILDING 38 (TA-54-38), RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L) SW1010 (L) ASTM D93-80
Reactivity	Test method to determine hydrogen cyanide released from waste Test method to determine hydrogen sulfide released from waste	(L, S) HCN Test Method, Section 7.3 (L, S) H_2S Test Method, Section 7.3
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic	Toxicity characteristic leaching procedure (TCLP) extraction	(L, S) SW1311
Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761
Mercury	Manual cold-vapor technique	(L)SW7470A, (S) SW7471A

Refer to footnotes at end of attachment.

TABLE E.12-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, BUILDING 38 (TA-54-38), RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Volatile organics	Gas chromatography (GC)/mass spectrometry (MS) GC/MS capillary column technique	(L, S) SW8240B (L, S) SW8260A
Semivolatile organics	GC/MS GC/MS capillary column technique	(L, S) SW8250A (L, S) SW8270B
Organochlorine pesticides	TCLP extraction and GC	(L, S) SW8080A
Chlorinated herbicides		(L, S) SW8150B
Total metals[c]	Acid digestion Inductively coupled plasma atomic emission spectroscopy	(L) SW3010A, (S) SW3050A (L, S) SW6010A
Arsenic		(L, S) SW6010A
Barium		(L, S) SW6010A
Beryllium		(L, S) SW6010A
Cadmium		(L, S) SW6010A
Chromium		(L, S) SW6010A
Lead		(L, S) SW6010A
Nickel		(L, S) SW6010A

Refer to footnotes at end of attachment.

TABLE E.12-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, BUILDING 38 (TA-54-38), RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Selenium		(L, S) SW6010A
Silver		(L, S) SW6010A
Thallium		(L, S) SW6010A
Zinc		(L, S) SW6010A
Mercury	Manual cold-vapor technique	(L) SW7470A (S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include, but are not limited to, gross alpha, beta, and gamma screening.
[b] "ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
[c] See also atomic absorption methods.

TABLE E.12-2
SCHEDULE FOR CLOSURE ACTIVITIES AT THE TECHNICAL AREA 54, BUILDING 38 (TA-54-38), RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS

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
Collect background samples	-5 Days
Final receipt of waste	Day 0
Begin closure activities (perform washdown of structures)	Day 10
Perform initial sampling of the waste management area	Day 15
Analyze samples	Day 45
Perform additional washdown (if necessary)	Day 50
Perform additional sampling (if necessary)	Day 60
Analyze samples (if necessary)	Day 90
Perform pad washdown and sampling	Day 100
Analyze samples	Day 130
Perform final cleanup (e.g., removal of decontaminated equipment and decontamination wastes)	Day 130
Verify decontamination	Day 140
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.

TABLE E.12-3
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES FOR SEDIMENT/SOIL/SLUDGE SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	8 ounce (oz.) WM[c]-G[d]	Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 120 milliliter (ml) G vial Teflon™-lined cap	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	8 oz. WM-G	Cool 4°C	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinative analysis
Mercury	1 liter P[e]	HNO_3[f] to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	120 ml G vial	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] WM = Wide-mouth
[d] G = Glass
[e] P = Polyethylene
[f] HNO_3 = Nitric acid

TABLE E.12-4
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES FOR LIQUID SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	2 x 40 milliliter (ml) AG[c] septa vials	HCl[d], Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 1 liter AG	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	1 liter P[e]	HNO_3[f] to pH <2	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinate analysis
Mercury	500 ml P	HNO_3 to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	40 ml G[g] vial, no septa	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] AG = Amber glass
[d] HCl = Hydrochloric acid
[e] P = Polyethylene
[f] HNO_3 = Nitric acid
[g] G = Glass

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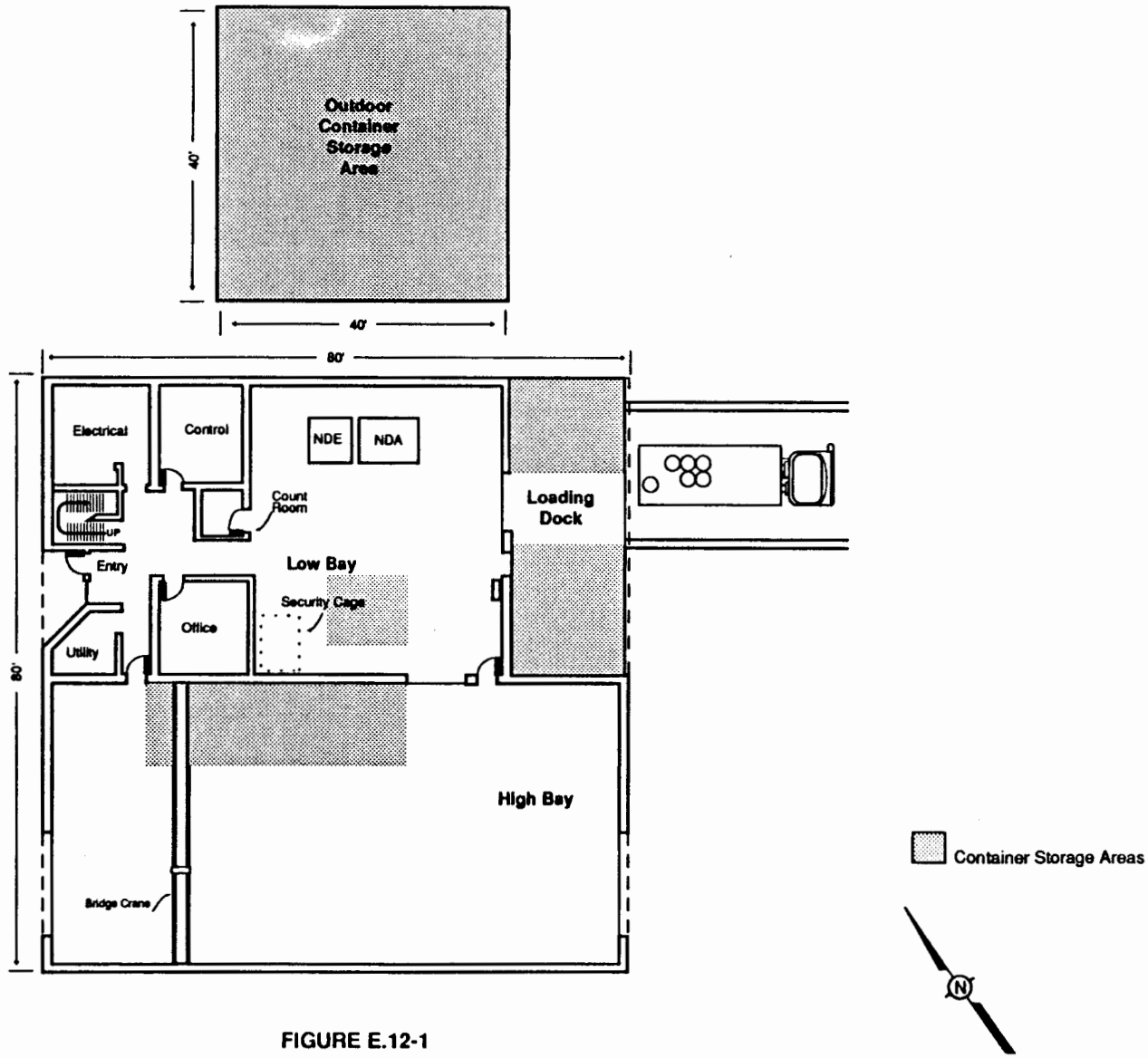

FIGURE E.12-1

TECHNICAL AREA (TA) 54 WEST, BUILDING 38, RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY
LOW BAY, HIGH BAY, LOADING DOCK, AND OUTDOOR CONTAINER STORAGE AREAS

CONTAINER MANAGEMENT
PERMIT ATTACHMENT F
NM0890010515-1

ATTACHMENT F
CONTAINER MANAGEMENT

F.1 CONTAINER PACKAGING, SAMPLING and LABELING

F.1.1 Container Packaging and Transport

When chemical substances are declared to be in excess, the originating group completes a Waste Profile Form (WPF, see Permit Attachments A.2 and A.3) ~~Chemical Waste Disposal Request Form 10-3A)~~ and sends the form to the Chemical and Mixed Waste Management Group (CMWM) ~~(HSE-7)~~. The WPF provides waste characterization information for subsequent management of the material. The WPF is reviewed for adequacy of information and assignation of segregation codes, Department of Transportation (DOT) information, and Environmental Protection Agency (EPA) Hazardous Waste Numbers. When the WPF is approved, the waste generator submits a Chemical Waste Disposal Request (CWDR) to the CMWM. The CWDR ~~The request~~ lists the chemical waste the generating group needs to dispose of, the quantity ~~and physical form~~ of the waste, and other pertinent information about ~~such as the condition of~~ the containers. ~~Material Safety Data Sheets (MSDS's) and existing analytical data may also be available. The containers described will range from two ounce bottles of unusable chemical to 330-gallon Tuff-Tanks of plating material.~~

A uniform hazardous waste manifest is prepared for use when the waste is collected, packaged, and transported. ~~The Chemical Waste Disposal Request form is reviewed for adequacy of information and assignation of segregation codes, DOT information, and EPA codes. It is then used by HSE-7 personnel as the shipping form when the waste is collected. HSE-7 personnel then visit the generating site to package the waste for transport to TA-54, Area L.~~ All waste materials are packaged and ~~is~~ transferred in accordance with DOT regulations.~~the Laboratory's On-Site Transportation Manual.~~

~~Small containers of waste (<5 gallon size), will be overpacked in either a DOT approved cardboard box or plastic or metal drum with absorbent material (referred to as labpacks). Vermiculite will be the most commonly used absorbent; however, the organic waste is compatible with absorbents such as comcobs and sawdust. These absorbents may be used for this category of waste since in cases of contamination of the absorbent incinerators prefer to receive a more combustible material than vermiculite. Containers that will be composited at TA-54, Area L will be sorted and packaged separately from those that will remain in labpacks for storage.~~

Containers ~~Drums and Tuff-Tanks~~ will be visually inspected for integrity before transport. If the container ~~drum~~ is unacceptable, it will be repackaged or overpacked prior to transport. The wastes are transported by vehicles ranging from ~~on a~~ half-ton ~~to twelve-ton~~ trucks to semitrailers with maximum capacities of up to 80,000 pounds.

Upon arrival at a hazardous or mixed waste management unit, ~~TA-54, Area L,~~ the wastes are unloaded from the transport vehicle and placed into appropriate storage areas. Labpack waste will be temporary placed at the packaging building for labeling or compositing. Drums and Tuff-Tanks will be placed on either the sampling pad or storage pad for sampling and labeling.

F.1.2 Drum Labeling, Recording, and Sampling System

Each unique package of waste~~, meaning labpack or drum,~~ is labeled with the following information:

— chemical segregation group number

— unique record number

— date of generation (if this information is not already on the container, the date from the CWDR ~~Chemical Waste Disposal Request~~ form is used)

— either an EPA hazardous waste label or the words "hazardous waste."

This information and the data from the CWDR are entered into a chemical and mixed waste database. ~~Chemical Disposal Request Form is provided to the resident data analyst. This individual creates a second record as part of the Hazardous Waste Database.~~ All records are then maintained ~~by the data analyst~~ in accordance with the requirements of this permit.

Sampling of the waste is then performed as outlined in Permit Attachment A. The sampling pad at TA-54, Area L, is restricted to one compatibility group ~~family~~ of chemicals at a time~~, for example~~ (e.g., organics). The group allowed at the time will be posted on the pad. This ensures that incompatible chemicals do not react in the containment basin of the pad. Before a new compatibility group ~~family~~ of chemicals is placed on the pad, the containment area will be cleaned. For this reason, the main sampling pad will generally be used for organic waste; and acid/base waste will be sampled at the appropriate storage cell.

After all packages are labeled and/or sampled, they are moved to one of the Laboratory's storage areas. The permitted areas are defined in Permit Module III.

F.2 STORAGE AREA PRACTICES

F.2.1 Specific Storage Areas

The Laboratory has the following ~~five groups of~~ storage areas: two modular storage units and the main storage pad at TA-54, Area L; the modular storage units and two storage pads at TA-50; ~~and~~ the storage room at the incinerator; the TA-50-1, Rooms 35, 36, and 38/38A storage units (three total); the TA-50-69 indoor and outdoor storage units (two total); and the TA-54-38 storage units (four total). The usage of each of these units is discussed below.

F.2.1.1 Modular Storage Units, TA-54, Area L (TA-54-68 and -69)

The primary usage of the modular units will be for the storage of labpack waste, particularly those in fiberboard containers. After labeling, the labpacks are placed directly in the appropriate storage cell. Each modular unit has three cells allowing a maximum of six chemical family groups to be stored at any one time. However, multiple cells may be used for the same chemical family, such as two cells contain organic waste. Each cell will be labeled as to the chemical family stored there. If at any time the cell

designation changes, such as from organic to reactive, the cell will first be cleaned to ensure that no organic residues remain that would create an incompatibility problem during a spill.

F.2.1.2 Storage Pad at TA-54, Area L (TA-54-32)

Material stored on the storage pad at TA-54, Area L, will generally be placed there after labeling and sampling. This may not be the case for acids and bases where the storage cell is also used as the sampling pad. The pad is divided into six cells allowing the storage of six families of chemicals. However, more than one cell may be used for the same chemical type. All cells will be labeled as to which chemical type is stored there. If at any time it is necessary to change the designation of a cell, it will first be cleaned to remove any residues that might produce an unfavorable reaction with the new chemical type.

F.2.1.3 Modular Storage Units at TA-50 (TA-50-114, -137, and -138)

The modular storage units at TA-50 will be used primarily to store acid and base wastes that will be treated at the Batch Waste Treatment Unit. Each cell will be labeled acid or base to indicate the type of waste stored there. If at any time the designation of a cell needs to be changed, the cell will first be cleaned to ensure that incompatibility residues have been removed. All waste stored here will have been labeled and sampled at TA-54, Area L.

F.2.1.4 Storage Pads at TA-50 (TA-50-139 and -140)

Two large storage pads will be located at TA-50. Each pad will have six divisions capable of storing six types of chemicals. Multiple cells may be used for the same chemical type. Each cell will be labeled to indicate the type of chemical stored there. If a cell designation needs to be changed, the cell will first be cleaned to remove any residues that might result in an incompatibility problem. All waste stored at this location will have been labeled and sampled at TA-54, Area L.

F.2.1.5 Storage Room at TA-50-37, Room 117

The storage room at TA-50-37 is divided into two areas, one for solids and one for liquids. The liquid side is further divided into two cells. Therefore, up to three chemical types may be stored at any one time. Cells will be labeled as to the chemical type stored there. If at any time the cell designation needs to be changed, the cell will be cleaned to remove any incompatible residues. Generally, only waste that is already approved for onsite incineration will be stored there. This means the waste has not only been sampled and labeled but also analyzed per Permit Attachment A. However, if the need should arise, the area will be used for compatible waste for which analytical results are pending. All labeling and sampling will have occurred at TA-54, Area L. The primary chemical type stored here will be organic waste. If small quantities of other waste types, such as oxidizers, are to be incinerated, it will generally be delivered the day of the burn to avoid storage in this room.

F.2.1.6 Technical Area 50, Building 1 (TA-50-1), Rooms 35, 36, and 38/38A Container Storage Areas

The container storage areas at TA-50-1, Rooms 35, 36, and 38/38A, are used for storage of transuranic (TRU) mixed waste, low-level mixed waste, and hazardous waste. Potentially incompatible wastes will

be segregated on self-containment pallets in the Rooms 35, 36, and 38/38A storage areas. Potential liquid-bearing waste containers will be stored on self-containment pallets in the Rooms 35 and 38/38A storage areas. Only solid physical forms of waste will be stored in the Room 36 storage area.

F.2.1.7 TA-50-69 Indoor and Outdoor Container Storage Areas

The indoor and outdoor storage areas associated with TA-50-69 are used for storage of TRU mixed waste, low-level mixed waste, and hazardous waste. Potentially incompatible wastes will be segregated on self-containment pallets at both the indoor and outdoor storage areas. Potential liquid-bearing waste containers will be stored on self-containment pallets at both the indoor and outdoor storage areas.

F.2.1.8 TA-54-38 Container Storage Areas

The four container storage areas at TA-54-38 are used for storage of TRU mixed waste and low-level mixed waste. Potentially incompatible wastes will be segregated on self-containment pallets at each storage area. Potential liquid-bearing waste containers will be stored on self-containment pallets at each storage area.

F.2.2 General Container Management Practices

All recyclable materials are stored as hazardous waste until such time as they are recycled. They are placed in the same segregated storage areas as the other waste.

Any bulging drums are handled in accordance with accepted practice and Laboratory procedures. Generally this means that such practices as slowly venting the drum as it is being opened and personnel wearing protective clothing and splash guards will be followed.

Any spills resulting from the transfer/storage of waste will be cleaned up in accordance with Permit Attachment D.

Inspection will be conducted and aisle space will be maintained in accordance with Permit Attachment B.

Off-site shipments of waste will occur at either the given storage area directly or from the transport pad at TA-54, Area L. This will avoid unnecessary transport on Pajarito Road.

Repackaging of waste will generally occur adjacent to the storage area the waste was removed from. Other possible areas include the TA-54, Area L, sampling pad (TA-54-31), transport pad (TA-54-58), and TA-54-59; the TA-50-69 indoor storage area; and the TA-50-1, Rooms 35 and 36 storage areas. Repackaging can range from overpacking a leaking container to off-site contractors repackaging the labpack waste to meet incinerator specifications.

Permit Module III provides additional requirements ~~such as required aisle space~~ for all container storage ~~in container~~ areas.

AUTHORIZED WASTES

PERMIT ATTACHMENT G
NM0890010515-1

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
Technical Area 50, Building 1, Rooms 35, 36, and 38/38A Container Storage Areas							
1	D001	50	K	S01			Low-Level Mixed Waste (LLMW) and Transuranic Mixed Waste (TRUMW)
2	D002	30	K	S01			LLMW and TRUMW
3	D003	10	K	S01			LLMW and TRUMW
4	D004	20	K	S01			LLMW and TRUMW
5	D005	20	K	S01			LLMW and TRUMW
6	D006	2,300	K	S01			LLMW and TRUMW
7	D007	2,390	K	S01			LLMW and TRUMW
8	D008	5,410	K	S01			LLMW and TRUMW
9	D009	170	K	S01			LLMW and TRUMW
10	D010	20	K	S01			LLMW and TRUMW
11	D011	20	K	S01			LLMW and TRUMW
12	D018	10	K	S01			LLMW and TRUMW
13	D019	20	K	S01			LLMW and TRUMW
14	D021	10	K	S01			LLMW and TRUMW
15	D022	10	K	S01			LLMW and TRUMW
16	D027	10	K	S01			LLMW and TRUMW
17	D028	730	K	S01			LLMW and TRUMW
18	D029	730	K	S01			LLMW and TRUMW
19	D030	20	K	S01			LLMW and TRUMW
20	D031	10	K	S01			LLMW and TRUMW
21	D032	10	K	S01			LLMW and TRUMW
22	D033	10	K	S01			LLMW and TRUMW
23	D034	10	K	S01			LLMW and TRUMW
24	D035	10	K	S01			LLMW and TRUMW
25	D036	10	K	S01			LLMW and TRUMW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
26	D037	20	K	S01			LLMW and TRUMW
27	D038	10	K	S01			LLMW and TRUMW
28	D039	10	K	S01			LLMW and TRUMW
29	D040	10	K	S01			LLMW and TRUMW
30	D041	10	K	S01			LLMW and TRUMW
31	D042	10	K	S01			LLMW and TRUMW
32	D043	10	K	S01			LLMW and TRUMW
33	F001	1,400	K	S01			LLMW and TRUMW
34	F002	180	K	S01			LLMW and TRUMW
35	F003	100	K	S01			LLMW and TRUMW
36	F004	10	K	S01			LLMW and TRUMW
37	F005	820	K	S01			LLMW and TRUMW
38	P003	10	K	S01			LLMW and TRUMW
39	P012	10	K	S01			LLMW AND TRUMW
40	P015	10	K	S01			LLMW and TRUMW
41	P029	10	K	S01			LLMW and TRUMW
42	P030	10	K	S01			LLMW and TRUMW
43	P031	10	K	S01			LLMW and TRUMW
44	P038	10	K	S01			LLMW and TRUMW
45	P056	10	K	S01			LLMW and TRUMW
46	P063	10	K	S01			LLMW and TRUMW
47	P068	10	K	S01			LLMW and TRUMW
48	P073	10	K	S01			LLMW and TRUMW
49	P076	10	K	S01			LLMW and TRUMW
50	P078	10	K	S01			LLMW and TRUMW
51	P095	10	K	S01			LLMW and TRUMW
52	P096	10	K	S01			LLMW and TRUMW

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)			(2) Process Description (If a code is not entered in D[1])
53	P098	10	K	S01			LLMW and TRUMW
54	P106	10	K	S01			LLMW and TRUMW
55	P113	10	K	S01			LLMW and TRUMW
56	P120	10	K	S01			LLMW and TRUMW
57	U001	10	K	S01			LLMW and TRUMW
58	U002	10	K	S01			LLMW and TRUMW
59	U003	10	K	S01			LLMW and TRUMW
60	U012	10	K	S01			LLMW and TRUMW
61	U019	10	K	S01			LLMW and TRUMW
62	U022	10	K	S01			LLMW and TRUMW
63	U029	10	K	S01			LLMW and TRUMW
64	U031	10	K	S01			LLMW and TRUMW
65	U037	10	K	S01			LLMW and TRUMW
66	U044	10	K	S01			LLMW and TRUMW
67	U045	10	K	S01			LLMW and TRUMW
68	U052	10	K	S01			LLMW and TRUMW
69	U056	10	K	S01			LLMW and TRUMW
70	U057	10	K	S01			LLMW and TRUMW
71	U075	10	K	S01			LLMW and TRUMW
72	U077	10	K	S01			LLMW and TRUMW
73	U080	10	K	S01			LLMW and TRUMW
74	U108	10	K	S01			LLMW and TRUMW
75	U112	10	K	S01			LLMW and TRUMW
76	U115	10	K	S01			LLMW and TRUMW
77	U117	10	K	S01			LLMW and TRUMW
78	U121	10	K	S01			LLMW and TRUMW
79	U122	10	K	S01			LLMW and TRUMW

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)			D. Processes (2) Process Description (If a code is not entered in D(1))
80	U123	10	K	S01			LLMW and TRUMW
81	U131	10	K	S01			LLMW and TRUMW
82	U133	10	K	S01			LLMW and TRUMW
83	U134	10	K	S01			LLMW and TRUMW
84	U135	10	K	S01			LLMW and TRUMW
85	U140	10	K	S01			LLMW and TRUMW
86	U144	10	K	S01			LLMW and TRUMW
87	U145	10	K	S01			LLMW and TRUMW
88	U151	10	K	S01			LLMW and TRUMW
89	U154	10	K	S01			LLMW and TRUMW
90	U159	10	K	S01			LLMW and TRUMW
91	U160	10	K	S01			LLMW and TRUMW
92	U161	10	K	S01			LLMW and TRUMW
93	U165	10	K	S01			LLMW and TRUMW
94	U169	10	K	S01			LLMW and TRUMW
95	U188	10	K	S01			LLMW and TRUMW
96	U190	10	K	S01			LLMW and TRUMW
97	U196	10	K	S01			LLMW and TRUMW
98	U204	10	K	S01			LLMW and TRUMW
99	U210	10	K	S01			LLMW and TRUMW
100	U211	10	K	S01			LLMW and TRUMW
101	U213	10	K	S01			LLMW and TRUMW
102	U216	10	K	S01			LLMW and TRUMW
103	U218	10	K	S01			LLMW and TRUMW
104	U219	10	K	S01			LLMW and TRUMW
105	U220	10	K	S01			LLMW and TRUMW
106	U225	10	K	S01			LLMW and TRUMW

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)			D. Processes (2) Process Description (If a code is not entered in D(1))
107	U226	10	K	S01			LLMW and TRUMW
108	U227	10	K	S01			LLMW and TRUMW
109	U228	10	K	S01			LLMW and TRUMW
110	U239	10	K	S01			LLMW and TRUMW
111	U246	10	K	S01			LLMW and TRUMW
112	D001	1,020	K	S01			Hazardous Waste (HW)
113	D002	820	K	S01			HW
114	D003	50	K	S01			HW
115	D004	70	K	S01			HW
116	D005	80	K	S01			HW
117	D006	210	K	S01			HW
118	D007	380	K	S01			HW
119	D008	1,570	K	S01			HW
120	D009	660	K	S01			HW
121	D010	90	K	S01			HW
122	D011	470	K	S01			HW
123	D016	10	K	S01			HW
124	D017	10	K	S01			HW
125	D018	90	K	S01			HW
126	D019	10	K	S01			HW
127	D021	10	K	S01			HW
128	D022	60	K	S01			HW
129	D026	10	K	S01			HW
130	D027	10	K	S01			HW
131	D028	740	K	S01			HW
132	D029	740	K	S01			HW
133	D030	30	K	S01			HW

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)			D. Processes (2) Process Description (If a code is not entered in D(1))
134	D031	10	K	S01			HW
135	D032	10	K	S01			HW
136	D033	10	K	S01			HW
137	D034	10	K	S01			HW
138	D035	30	K	S01			HW
139	D036	10	K	S01			HW
140	D037	10	K	S01			HW
141	D038	30	K	S01			HW
142	D039	10	K	S01			HW
143	D040	30	K	S01			HW
144	D041	10	K	S01			HW
145	D042	10	K	S01			HW
146	D043	10	K	S01			HW
147	F001	2,050	K	S01			HW
148	F002	1,850	K	S01			HW
149	F003	510	K	S01			HW
150	F004	30	K	S01			HW
151	F005	2,500	K	S01			HW
152	F009	10	K	S01			HW
153	F027	10	K	S01			HW
154	P003	10	K	S01			HW
155	P006	10	K	S01			HW
156	P011	10	K	S01			HW
157	P012	10	K	S01			HW
158	P015	10	K	S01			HW
159	P029	10	K	S01			HW
160	P030	10	K	S01			HW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
161	P031	10	K	S01			HW
162	P033	10	K	S01			HW
163	P038	10	K	S01			HW
164	P043	10	K	S01			HW
165	P048	10	K	S01			HW
166	P056	50	K	S01			HW
167	P063	10	K	S01			HW
168	P068	10	K	S01			HW
169	P073	10	K	S01			HW
170	P076	10	K	S01			HW
171	P078	10	K	S01			HW
172	P092	10	K	S01			HW
173	P095	10	K	S01			HW
174	P096	10	K	S01			HW
175	P098	10	K	S01			HW
176	P104	10	K	S01			HW
177	P105	10	K	S01			HW
178	P106	10	K	S01			HW
179	P112	10	K	S01			HW
180	P113	10	K	S01			HW
181	P119	10	K	S01			HW
182	P120	10	K	S01			HW
183	U001	10	K	S01			HW
184	U002	10	K	S01			HW
185	U003	10	K	S01			HW
186	U007	10	K	S01			HW
187	U008	10	K	S01			HW

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)			(2) Process Description (If a code is not entered in D[1])
188	U009	10	K	S01			HW
189	U012	10	K	S01			HW
190	U018	10	K	S01			HW
191	U019	10	K	S01			HW
192	U022	10	K	S01			HW
193	U029	10	K	S01			HW
194	U031	10	K	S01			HW
195	U033	10	K	S01			HW
196	U037	10	K	S01			HW
197	U041	10	K	S01			HW
198	U044	10	K	S01			HW
199	U045	10	K	S01			HW
200	U052	10	K	S01			HW
201	U055	10	K	S01			HW
202	U056	10	K	S01			HW
203	U057	10	K	S01			HW
204	U067	10	K	S01			HW
205	U068	10	K	S01			HW
206	U070	10	K	S01			HW
207	U075	10	K	S01			HW
208	U077	10	K	S01			HW
209	U080	70	K	S01			HW
210	U085	10	K	S01			HW
211	U091	10	K	S01			HW
212	U092	10	K	S01			HW
213	U103	10	K	S01			HW
214	U108	10	K	S01			HW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
215	U109	10	K	S01			HW
216	U112	10	K	S01			HW
217	U115	10	K	S01			HW
218	U117	10	K	S01			HW
219	U121	10	K	S01			HW
220	U122	10	K	S01			HW
221	U123	10	K	S01			HW
222	U124	10	K	S01			HW
223	U131	10	K	S01			HW
224	U133	10	K	S01			HW
225	U134	10	K	S01			HW
226	U135	10	K	S01			HW
227	U136	10	K	S01			HW
228	U140	10	K	S01			HW
229	U144	10	K	S01			HW
230	U145	10	K	S01			HW
231	U151	10	K	S01			HW
232	U153	10	K	S01			HW
233	U154	10	K	S01			HW
234	U159	10	K	S01			HW
235	U160	10	K	S01			HW
236	U161	10	K	S01			HW
237	U162	10	K	S01			HW
238	U163	10	K	S01			HW
239	U165	10	K	S01			HW
240	U167	10	K	S01			HW
241	U168	10	K	S01			HW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
242	U169	10	K	S01			HW
243	U170	10	K	S01			HW
244	U188	10	K	S01			HW
245	U190	10	K	S01			HW
246	U196	10	K	S01			HW
247	U204	10	K	S01			HW
248	U210	10	K	S01			HW
249	U211	10	K	S01			HW
250	U213	10	K	S01			HW
251	U216	10	K	S01			HW
252	U218	10	K	S01			HW
253	U219	10	K	S01			HW
254	U220	10	K	S01			HW
255	U223	10	K	S01			HW
256	U225	10	K	S01			HW
257	U226	100	K	S01			HW
258	U227	10	K	S01			HW
259	U228	20	K	S01			HW
260	U239	10	K	S01			HW
261	U240	10	K	S01			HW
262	U246	10	K	S01			HW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
Technical Area 50, Building 69, Indoor and Outdoor Container Storage Areas							
263	D001	1,170	K	S01			Low-Level Mixed Waste (LLMW) and Transuranic Mixed Waste (TRUMW)
264	D002	610	K	S01			LLMW and TRUMW
265	D003	60	K	S01			LLMW and TRUMW
266	D004	390	K	S01			LLMW and TRUMW
267	D005	360	K	S01			LLMW and TRUMW
268	D006	57,130	K	S01			LLMW and TRUMW
269	D007	59,610	K	S01			LLMW and TRUMW
270	D008	135,280	K	S01			LLMW and TRUMW
271	D009	4,120	K	S01			LLMW and TRUMW
272	D010	430	K	S01			LLMW and TRUMW
273	D011	480	K	S01			LLMW and TRUMW
274	D018	20	K	S01			LLMW and TRUMW
275	D019	450	K	S01			LLMW and TRUMW
276	D021	170	K	S01			LLMW and TRUMW
277	D022	100	K	S01			LLMW and TRUMW
278	D027	70	K	S01			LLMW and TRUMW
279	D028	18,250	K	S01			LLMW and TRUMW
280	D029	18,160	K	S01			LLMW and TRUMW
281	D030	410	K	S01			LLMW and TRUMW
282	D031	10	K	S01			LLMW and TRUMW
283	D032	260	K	S01			LLMW and TRUMW
284	D033	180	K	S01			LLMW and TRUMW
285	D034	90	K	S01			LLMW and TRUMW
286	D035	10	K	S01			LLMW and TRUMW
287	D036	30	K	S01			LLMW and TRUMW
288	D037	50	K	S01			LLMW and TRUMW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
289	D038	10	K	S01			LLMW and TRUMW
290	D039	120	K	S01			LLMW and TRUMW
291	D040	280	K	S01			LLMW and TRUMW
292	D041	10	K	S01			LLMW and TRUMW
293	D042	90	K	S01			LLMW and TRUMW
294	D043	.40	K	S01			LLMW and TRUMW
295	F001	35,050	K	S01			LLMW and TRUMW
296	F002	4,540	K	S01			LLMW and TRUMW
297	F003	2,300	K	S01			LLMW and TRUMW
298	F004	130	K	S01			LLMW and TRUMW
299	F005	20,430	K	S01			LLMW and TRUMW
300	P003	10	K	S01			LLMW and TRUMW
301	P012	10	K	S01			LLMW AND TRUMW
302	P015	10	K	S01			LLMW and TRUMW
303	P029	10	K	S01			LLMW and TRUMW
304	P030	10	K	S01			LLMW and TRUMW
305	P031	10	K	S01			LLMW and TRUMW
306	P038	10	K	S01			LLMW and TRUMW
307	P056	20	K	S01			LLMW and TRUMW
308	P063	10	K	S01			LLMW and TRUMW
309	P068	10	K	S01			LLMW and TRUMW
310	P073	10	K	S01			LLMW and TRUMW
311	P076	10	K	S01			LLMW and TRUMW
312	P078	10	K	S01			LLMW and TRUMW
313	P095	10	K	S01			LLMW and TRUMW
314	P096	10	K	S01			LLMW and TRUMW
315	P098	10	K	S01			LLMW and TRUMW
316	P106	10	K	S01			LLMW and TRUMW

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)			D. Processes (2) Process Description (If a code is not entered in D(1))
317	P113	10	K	S01			LLMW and TRUMW
318	P120	10	K	S01			LLMW and TRUMW
319	U001	10	K	S01			LLMW and TRUMW
320	U002	10	K	S01			LLMW and TRUMW
321	U003	10	K	S01			LLMW and TRUMW
322	U012	10	K	S01			LLMW and TRUMW
323	U019	10	K	S01			LLMW and TRUMW
324	U022	10	K	S01			LLMW and TRUMW
325	U029	10	K	S01			LLMW and TRUMW
326	U031	10	K	S01			LLMW and TRUMW
327	U037	10	K	S01			LLMW and TRUMW
328	U044	10	K	S01			LLMW and TRUMW
329	U045	10	K	S01			LLMW and TRUMW
330	U052	10	K	S01			LLMW and TRUMW
331	U056	10	K	S01			LLMW and TRUMW
332	U057	10	K	S01			LLMW and TRUMW
333	U075	10	K	S01			LLMW and TRUMW
334	U077	10	K	S01			LLMW and TRUMW
335	U080	10	K	S01			LLMW and TRUMW
336	U108	10	K	S01			LLMW and TRUMW
337	U112	10	K	S01			LLMW and TRUMW
338	U115	10	K	S01			LLMW and TRUMW
339	U117	10	K	S01			LLMW and TRUMW
340	U121	10	K	S01			LLMW and TRUMW
341	U122	10	K	S01			LLMW and TRUMW
342	U123	10	K	S01			LLMW and TRUMW
343	U131	10	K	S01			LLMW and TRUMW
344	U133	10	K	S01			LLMW and TRUMW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
345	U134	10	K	S01			LLMW and TRUMW
346	U135	10	K	S01			LLMW and TRUMW
347	U140	10	K	S01			LLMW and TRUMW
348	U144	10	K	S01			LLMW and TRUMW
349	U145	10	K	S01			LLMW and TRUMW
350	U151	20	K	S01			LLMW and TRUMW
351	U154	10	K	S01			LLMW and TRUMW
352	U159	10	K	S01			LLMW and TRUMW
353	U160	10	K	S01			LLMW and TRUMW
354	U161	10	K	S01			LLMW and TRUMW
355	U165	10	K	S01			LLMW and TRUMW
356	U169	10	K	S01			LLMW and TRUMW
357	U188	10	K	S01			LLMW and TRUMW
358	U190	10	K	S01			LLMW and TRUMW
359	U196	10	K	S01			LLMW and TRUMW
360	U204	10	K	S01			LLMW and TRUMW
361	U210	10	K	S01			LLMW and TRUMW
362	U211	10	K	S01			LLMW and TRUMW
363	U213	10	K	S01			LLMW and TRUMW
364	U216	10	K	S01			LLMW and TRUMW
365	U218	10	K	S01			LLMW and TRUMW
366	U219	10	K	S01			LLMW and TRUMW
367	U220	10	K	S01			LLMW and TRUMW
368	U225	10	K	S01			LLMW and TRUMW
369	U226	70	K	S01			LLMW and TRUMW
370	U227	10	K	S01			LLMW and TRUMW
371	U228	10	K	S01			LLMW and TRUMW
372	U239	10	K	S01			LLMW and TRUMW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
373	U246	10	K	S01			LLMW and TRUMW
374	D001	25,360	K	S01			Hazardous Waste (HW)
375	D002	20,550	K	S01			HW
376	D003	1,200	K	S01			HW
377	D004	1,700	K	S01			HW
378	D005	1,900	K	S01			HW
379	D006	5,250	K	S01			HW
380	D007	9,400	K	S01			HW
381	D008	39,200	K	S01			HW
382	D009	16,400	K	S01			HW
383	D010	2,150	K	S01			HW
384	D011	11,700	K	S01			HW
385	D016	10	K	S01			HW
386	D017	20	K	S01			HW
387	D018	2,270	K	S01			HW
388	D019	40	K	S01			HW
389	D021	110	K	S01			HW
390	D022	1,450	K	S01			HW
391	D026	180	K	S01			HW
392	D027	80	K	S01			HW
393	D028	18,400	K	S01			HW
394	D029	18,300	K	S01			HW
395	D030	730	K	S01			HW
396	D031	10	KQ	S01			HW
397	D032	300	K	S01			HW
398	D033	210	K	S01			HW
399	D034	120	K	S01			HW
400	D035	670	K	S01			HW

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)			D. Processes (2) Process Description (If a code is not entered in D(1))
401	D036	50	K	S01			HW
402	D037	50	K	S01			HW
403	D038	580	K	S01			HW
404	D039	200	K	S01			HW
405	D040	570	K	S01			HW
406	D041	10	K	S01			HW
407	D042	100	K	S01			HW
408	D043	60	K	S01			HW
409	F001	51,170	K	S01			HW
410	F002	46,030	K	S01			HW
411	F003	12,770	K	S01			HW
412	F004	660	K	S01			HW
413	F005	61,560	K	S01			HW
414	F009	20	K	S01			HW
415	F027	20	K	S01			HW
416	P003	10	K	S01			HW
417	P006	10	K	S01			HW
418	P011	10	K	S01			HW
419	P012	10	K	S01			HW
420	P015	10	K	S01			HW
421	P029	10	K	S01			HW
422	P030	10	K	S01			HW
423	P031	10	K	S01			HW
424	P033	10	K	S01			HW
425	P038	10	K	S01			HW
426	P043	10	K	S01			HW
427	P048	10	K	S01			HW
428	P056	1,030	K	S01			HW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
429	P063	10	K	S01			HW
430	P068	10	K	S01			HW
431	P073	10	K	S01			HW
432	P076	60	K	S01			HW
433	P078	70	K	S01			HW
434	P092	10	K	S01			HW
435	P095	10	K	S01			HW
436	P096	10	K	S01			HW
437	P098	10	K	S01			HW
438	P104	10	K	S01			HW
439	P105	10	K	S01			HW
440	P106	10	K	S01			HW
441	P112	10	K	S01			HW
442	P113	10	K	S01			HW
443	P119	10	K	S01			HW
444	P120	10	K	S01			HW
445	U001	10	K	S01			HW
446	U002	310	K	S01			HW
447	U003	10	K	S01			HW
448	U007	10	K	S01			HW
449	U008	10	K	S01			HW
450	U009	10	K	S01			HW
451	U012	10	K	S01			HW
452	U018	10	K	S01			HW
453	U019	90	K	S01			HW
454	U022	10	K	S01			HW
455	U029	10	K	S01			HW
456	U031	10	K	S01			HW

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)			D. Processes (2) Process Description (If a code is not entered in D(1))
457	U033	10	K	S01			HW
458	U037	10	K	S01			HW
459	U041	10	K	S01			HW
460	U044	10	K	S01			HW
461	U045	10	K	S01			HW
462	U052	10	K	S01			HW
463	U055	10	K	S01			HW
464	U056	10	K	S01			HW
465	U057	10	K	S01			HW
466	U067	10	K	S01			HW
467	U068	10	K	S01			HW
468	U070	20	K	S01			HW
469	U075	50	K	S01			HW
470	U077	10	K	S01			HW
471	U080	1,690	K	S01			HW
472	U085	10	K	S01			HW
473	U091	180	K	S01			HW
474	U092	10	K	S01			HW
475	U103	10	K	S01			HW
476	U108	10	K	S01			HW
477	U109	10	K	S01			HW
478	U112	10	K	S01			HW
479	U115	10	K	S01			HW
480	U117	10	K	S01			HW
481	U121	10	K	S01			HW
482	U122	230	K	S01			HW
483	U123	10	K	S01			HW
484	U124	10	K	S01			HW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
485	U131	10	K	S01			HW
486	U133	10	K	S01			HW
487	U134	180	K	S01			HW
488	U135	80	K	S01			HW
489	U136	10	K	S01			HW
490	U140	10	K	S01			HW
491	U144	10	K	S01			HW
492	U145	10	K	S01			HW
493	U151	240	K	S01			HW
494	U153	10	K	S01			HW
495	U154	40	K	S01			HW
496	U159	20	K	S01			HW
497	U160	10	K	S01			HW
498	U161	90	K	S01			HW
499	U162	10	K	S01			HW
500	U163	10	K	S01			HW
501	U165	10	K	S01			HW
502	U167	10	K	S01			HW
503	U168	10	K	S01			HW
504	U169	10	K	S01			HW
505	U170	10	K	S01			HW
506	U188	10	K	S01			HW
507	U190	10	K	S01			HW
508	U196	10	K	S01			HW
509	U204	10	K	S01			HW
510	U210	100	K	S01			HW
511	U211	40	K	S01			HW
512	U213	10	K	S01			HW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
513	U216	10	K	S01			HW
514	U218	10	K	S01			HW
515	U219	10	K	S01			HW
516	U220	100	K	S01			HW
517	U223	10	K	S01			HW
518	U225	10	K	S01			HW
519	U226	2,540	K	S01			HW
520	U227	10	K	S01			HW
521	U228	420	K	S01			HW
522	U239	170	K	S01			HW
523	U240	10	K	S01			HW
524	U246	10	K	S01			HW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
Technical Area 54 West, Building 38, Container Storage Areas							
525	D001	4,210	K	S01			Low-Level Mixed Waste (LLMW) and Transuranic Mixed Waste (TRUMW)
526	D002	2,180	K	S01			LLMW and TRUMW
527	D003	200	K	S01			LLMW and TRUMW
528	D004	1,400	K	S01			LLMW and TRUMW
529	D005	1,280	K	S01			LLMW and TRUMW
530	D006	205,660	K	S01			LLMW and TRUMW
531	D007	214,580	K	S01			LLMW and TRUMW
532	D008	487,000	K	S01			LLMW and TRUMW
533	D009	14,840	K	S01			LLMW and TRUMW
534	D010	1,540	K	S01			LLMW and TRUMW
535	D011	1,720	K	S01			LLMW and TRUMW
536	D018	80	K	S01			LLMW and TRUMW
537	D019	1,600	K	S01			LLMW and TRUMW
538	D021	610	K	S01			LLMW and TRUMW
539	D022	380	K	S01			LLMW and TRUMW
540	D027	230	K	S01			LLMW and TRUMW
541	D028	65,680	K	S01			LLMW and TRUMW
542	D029	65,350	K	S01			LLMW and TRUMW
543	D030	1,480	K	S01			LLMW and TRUMW
544	D031	20	K	S01			LLMW and TRUMW
545	D032	940	K	S01			LLMW and TRUMW
546	D033	630	K	S01			LLMW and TRUMW
547	D034	330	K	S01			LLMW and TRUMW
548	D035	30	K	S01			LLMW and TRUMW
549	D036	100	K	S01			LLMW and TRUMW
550	D037	160	K	S01			LLMW and TRUMW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
551	D038	20	K	S01			LLMW and TRUMW
552	D039	440	K	S01			LLMW and TRUMW
553	D040	990	K	S01			LLMW and TRUMW
554	D041	20	K	S01			LLMW and TRUMW
555	D042	320	K	S01			LLMW and TRUMW
556	D043	120	K	S01			LLMW and TRUMW
557	F001	126,190	K	S01			LLMW and TRUMW
558	F002	16,330	K	S01			LLMW and TRUMW
559	F003	8,270	K	S01			LLMW and TRUMW
560	F004	490	K	S01			LLMW and TRUMW
561	F005	73,530	K	S01			LLMW and TRUMW
562	P003	10	K	S01			LLMW and TRUMW
563	P012	10	K	S01			LLMW AND TRUMW
564	P015	10	K	S01			LLMW and TRUMW
565	P029	10	K	S01			LLMW and TRUMW
566	P030	10	K	S01			LLMW and TRUMW
567	P031	10	K	S01			LLMW and TRUMW
568	P038	10	K	S01			LLMW and TRUMW
569	P056	80	K	S01			LLMW and TRUMW
570	P063	10	K	S01			LLMW and TRUMW
571	P068	10	K	S01			LLMW and TRUMW
572	P073	10	K	S01			LLMW and TRUMW
573	P076	10	K	S01			LLMW and TRUMW
574	P078	10	K	S01			LLMW and TRUMW
575	P095	10	K	S01			LLMW and TRUMW
576	P096	10	K	S01			LLMW and TRUMW
577	P098	10	K	S01			LLMW and TRUMW
578	P106	10	K	S01			LLMW and TRUMW

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)			D. Processes (2) Process Description (If a code is not entered in D[1])
579	P113	10	K	S01			LLMW and TRUMW
580	P120	10	K	S01			LLMW and TRUMW
581	U001	10	K	S01			LLMW and TRUMW
582	U002	10	K	S01			LLMW and TRUMW
583	U003	10	K	S01			LLMW and TRUMW
584	U012	10	K	S01			LLMW and TRUMW
585	U019	10	K	S01			LLMW and TRUMW
586	U022	10	K	S01			LLMW and TRUMW
587	U029	10	K	S01			LLMW and TRUMW
588	U031	10	K	S01			LLMW and TRUMW
589	U037	10	K	S01			LLMW and TRUMW
590	U044	10	K	S01			LLMW and TRUMW
591	U045	10	K	S01			LLMW and TRUMW
592	U052	10	K	S01			LLMW and TRUMW
593	U056	10	K	S01			LLMW and TRUMW
594	U057	10	K	S01			LLMW and TRUMW
595	U075	10	K	S01			LLMW and TRUMW
596	U077	10	K	S01			LLMW and TRUMW
597	U080	30	K	S01			LLMW and TRUMW
598	U108	10	K	S01			LLMW and TRUMW
599	U112	10	K	S01			LLMW and TRUMW
600	U115	10	K	S01			LLMW and TRUMW
601	U117	10	K	S01			LLMW and TRUMW
602	U121	10	K	S01			LLMW and TRUMW
603	U122	10	K	S01			LLMW and TRUMW
604	U123	10	K	S01			LLMW and TRUMW
605	U131	10	K	S01			LLMW and TRUMW
606	U133	10	K	S01			LLMW and TRUMW

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)			(2) Process Description (If a code is not entered in D(1))
607	U134	10	K	S01			LLMW and TRUMW
608	U135	10	K	S01			LLMW and TRUMW
609	U140	10	K	S01			LLMW and TRUMW
610	U144	10	K	S01			LLMW and TRUMW
611	U145	10	K	S01			LLMW and TRUMW
612	U151	60	K	S01			LLMW and TRUMW
613	U154	20	K	S01			LLMW and TRUMW
614	U159	30	K	S01			LLMW and TRUMW
615	U160	10	K	S01			LLMW and TRUMW
616	U161	10	K	S01			LLMW and TRUMW
617	U165	10	K	S01			LLMW and TRUMW
618	U169	10	K	S01			LLMW and TRUMW
619	U188	10	K	S01			LLMW and TRUMW
620	U190	10	K	S01			LLMW and TRUMW
621	U196	10	K	S01			LLMW and TRUMW
622	U204	10	K	S01			LLMW and TRUMW
623	U210	10	K	S01			LLMW and TRUMW
624	U211	10	K	S01			LLMW and TRUMW
625	U213	10	K	S01			LLMW and TRUMW
626	U216	10	K	S01			LLMW and TRUMW
627	U218	10	K	S01			LLMW and TRUMW
628	U219	10	K	S01			LLMW and TRUMW
629	U220	10	K	S01			LLMW and TRUMW
630	U225	10	K	S01			LLMW and TRUMW
631	U226	260	K	S01			LLMW and TRUMW
632	U227	10	K	S01			LLMW and TRUMW
633	U228	20	K	S01			LLMW and TRUMW
634	U239	20	K	S01			LLMW and TRUMW

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)			(2) Process Description (If a code is not entered in D[1])
635	U246	10	K	S01			LLMW and TRUMW

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

12/21/95

Dennis J. Erickson
Division Director for Environment, Safety, and Health Division
Los Alamos National Laboratory
Operator

Date Signed

12/21/95

Larry D. Kirkman
Acting Area Manager, Los Alamos Area Office
U.S. Department of Energy
Albuquerque Operations
Owner/Operator

Date Signed